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# Section 0

# General Information

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## General Information

### Introduction

#### RPO Code List

The following table provides the description of the Regular Production Option (RPO) codes that are available on the vehicle. The vehicle's RPO list is printed on the Service Parts Identification Label.

| RPO | Description |
|---|---|
| H0Y | INTERIOR TRIM CONFIG - LEATHER, LEVEL 1, JET BLACK |
| H1T | INTERIOR TRIM CONFIG - CLOTH, LEVEL 1, JET BLACK |
| H1Y | INTERIOR TRIM CONFIG - LEATHER, LEVEL 2, JET BLACK |
| H24 | INTERIOR TRIM CONFIG - LEATHER, LEVEL 4, ATMOSPHERE/BROWNSTONE |
| H2G | INTERIOR TRIM CONFIG - VINYL, LEVEL 1, JET BLACK |
| H2X | INTERIOR TRIM CONFIG - LEATHER, LEVEL 4, JET BLACK |
| H40 | INTERIOR TRIM CONFIG - LEATHER, LEVEL 10, JET BLACK/VECCHIO BASE SAUVAGE PRINT |
| H9J | INTERIOR TRIM CONFIG - LEATHER, LEVEL 9, JET BLACK/CERAMIC WHITE |
| HS1 | ALERT - SAFETY HAPTIC SEAT |
| HV5 | INTERIOR TRIM CONFIG - CLOTH, LEVEL 2, GIDEON/VY DK ATMOSPHERE |
| HVC | INTERIOR TRIM CONFIG - LEATHER, LEVEL 1, GIDEON/VY DK ATMOSPHERE |
| HVD | INTERIOR TRIM CONFIG - LEATHER, LEVEL 2, JET BLACK/KALAHARI |
| HVE | INTERIOR TRIM CONFIG - LEATHER, LEVEL 2, GIDEON/VY DK ATMOSPHERE |
| ICY | ACCESSORY - ARCTIC HOSE - POWER STEERING |
| IOK | RADIO - INFOTAINMENT SYSTEM - 3.X MID/HIGH HMI,ENHANCED CONNECTIVITY 2.0, VOICE RECOGNITION |
| IOR | RADIO - INFOTAINMENT SYSTEM - 3.X LOW HMI, MIDLEVEL CONNECTIVITY 3.X |
| J26 | ENGINEERING YEAR - 2026 |
| J61 | BRAKE SYSTEM - POWER, FRT & RR DISC, ABS, 17" |
| JBP | BRAKE LINING WEAR SY - LIFE SPAN PROGNOSTIC INDICATOR |
| JHD | BRK APL CTRL FEATURE - HILL DESCENT, GEAR HOLD |
| JL1 | BRK APL CTRL FEATURE - INTEGRATED TRAILER BRAKE |
| K05 | HEATER ENG - BLOCK |

| RPO | Description |
|---|---|
| K1O | FILTER MONITOR - ENGINE AIR |
| K34 | CRUISE CONTROL - AUTOMATIC, ELECTRONIC |
| K40 | ENGINE BRAKE - EXHAUST |
| K47 | AIR CLEANER - HIGH CAPACITY |
| K4C | CHARGER - INDUCTIVE PORTABLE WIRELESS DEVICE |
| K4Z | BATTERY - LN3, AGM, 12V, 70AH, 700 CCA, AUX |
| KA1 | HEATER SEAT FRT - DRVR & PASS |
| KA6 | HEATER SEAT - REAR |
| KC4 | COOLING SYSTEM - ENG OIL |
| KC5 | RECEPTACLE - ELECTRICAL, ACCESSORY |
| KC9 | RECEPTACLE PUBX - ELECTRICAL, 110 VOLT |
| KGU | MODULE - UPFITTER, SERIAL DATA GATEWAY |
| KHF | GENERATOR - 170 AMP AND 220 AMP, DUAL |
| | FC0325 - GRILLE-UNIQUE TRIM DESIGN |
| | FC0335 - GVW - GROSS VEHICLE WEIGHT |
| | RESTRAINT - SEAT BELT TENSIONER, FRT [A70] |
| 00J | IDENTIFICATION - EQUIPPED WITH SENSING DIAGNOSTIC MODULE DESIGN 2 |
| 1SA | PACKAGE - OPTION 01 |
| 3SA | PACKAGE - SLE OPTION 1 |
| 4AA | INTERIOR TRIM - JET BLACK |
| 4B4 | INTERIOR TRIM - JET BLACK/CERAMIC WHITE |
| 4DK | INTERIOR TRIM - JET BLACK / VECCHIO BASE SAUVAGE PRINT |
| 4DL | INTERIOR TRIM - ATMOSPHERE / BROWNSTONE |
| 4F2 | INTERIOR TRIM - JET BLACK / KALAHARI |
| 4JJ | INTERIOR TRIM - GIDEON/VY DK ATMOSPHERE |
| 4SA | PACKAGE - SLT OPTION 1 |
| 4SB | PACKAGE - SLT OPTION 2 |
| 4SG | PACKAGE - AT4 OPTION 2 |
| 5A7 | WHEEL SPARE - NONE |
| 5JY | ACCESSORY - TONNEAU - RR COMPT - SOFT FOLDING |
| 5LE | ACCESSORY - GARAGE DOOR OPENER |
| 5SA | PACKAGE - DENALI OPTION 1 |
| 5SB | PACKAGE - DENALI OPTION 2 |
| 5VE | ACCESSORY - EXHAUST TIP - DESIGN 5 |

| RPO | Description |
|---|---|
| 5VG | ACCESSORY - EXHAUST TIP - DESIGN 4 |
| 5VI | ACCESSORY - TIE DOWN RINGS - CARGO AREA |
| 63G | ACCESSORY - TAILGATE ASSIST LIGHTING |
| 65C | LABEL, WARNING - CALIFORNIA, PROP 65 COMPLIANT |
| 6K5 | GATE FUNCTION - POWER |
| 6K5 | GATE TYPE - PUBX END ENHANCED |
| 6K5 | IMAGE ADJUSTMENT - HITCH VIEW |
| 6K5 | INDICATOR - SMART TRAILER INTEGRATION |
| 6K5 | LAMP - CARGO |
| 6K5 | OPENER - GARAGE DOOR, UNIVERSAL |
| 6K5 | WINDOW RR - FULL WIDTH, SLIDING, POWER |
| 6K5 | SALES PACKAGE - CONVENIENCE II |
| 77S | LABEL, REGULATORY - CALIFORNIA, SECTION 177 STATES |
| 9J4 | BUMPER RR - (NONE) |
| 9L3 | TIRE SPARE - NONE |
| 9L7 | EQUIPMENT - ACSRY WRG JUNC BLK |
| A2S | ADJUSTER DRIVER SEAT - 4WAY, DISCONT MAN RECLINE, MAN FORE/AFT |
| A2X | ADJUSTER DRIVER SEAT - 8WAY, PWR RECLINE, PWR FORE/AFT, PWR HEIGHT, PWR TILT |
| A45 | MEMORY - SEAT ADJUSTER, MIRROR, POWER, DRIVER, PERSONALIZATION |
| A48 | WINDOW RR - FULL WIDTH, SLIDING, POWER |
| A50 | SEAT - FRT BKT |
| A60 | LOCK CONTROL RR CMPT - LID, TAILGATE, KEY ACTIVATED |
| A68 | SEAT RR - SPLIT, FOLDING |
| A7E | ADJUSTER PASS ST - 4WAY, DISCONT MAN RECLINE, MAN FORE/AFT |
| A7K | ADJUSTER PASS ST - 8WAY, PWR RECLINE, PWR FORE/AFT, PWR HEIGHT, PWR TILT |
| AAK | ACCESSORY - FLOOR LINER - CONTOURED - ALT DESIGN 1 |
| AAO | ACCESSORY - FLOOR LINER - CONTOURED - ALT DESIGN 2 |
| AED | WINDOW REG PASS DR - POWER OPERATED,EXPRESS DOWN |
| AEF | WINDOW REG PASS DR - POWER OPERATED, EXPRESS UP/DOWN |
| AEQ | WINDOW REG REAR DR - POWER OPERATED, EXPRESS DOWN |
| AF6 | CONTROL - SEAT, MASSAGE, DRIVER |

| RPO | Description |
|---|---|
| AHE | BOLSTER DRVR - SEAT, POWER |
| AHH | BOLSTER PASS - SEAT, POWER |
| AKE | CONTROL - SEAT, MASSAGE, PASSENGER |
| AKO | WINDOW TYPE - PRIVACY |
| AKP | WINDOW TYPE - SOLAR ABSORBING |
| AL0 | SENSOR INDICATOR - INFLATABLE RESTRAINT, FRT PASS/CHILD PRESENCE DETECTOR |
| ANM | SALES PACKAGE - FIRE AND RESCUE |
| ANQ | COVERING FLOOR - RUBBER |
| ANQ | DECAL - ALASKAN |
| ANQ | DECAL - PICK UP BOX - DELETE |
| ANQ | EQUIPMENT - SUPPLIER INSTALLED |
| ANQ | LAMP - FIVE, ROOF MARKER, TRUCK |
| ANQ | LINER - PUBX, SPRAY ON |
| ANQ | PROVISIONS - SNOW PLOW PREP |
| ANQ | TIRE ALL - LT275/65R20 E 126/123 S BW AT VAR 1 |
| ANQ | TIRE ALL - LT275/65R20 E 126/123 S BW OOR VAR 1 |
| ANQ | TIRE ALL - LT275/70R18 E 125/122 S BW AT VAR 1 |
| ANQ | WHEEL - 18 X 8.0, J, ALUMINUM, DESIGN 2 |
| ANQ | WHEEL - 20 X 8.5 - J - ALUMINUM - DESIGN 21 |
| AQN | CONTROL - SEAT, POWER SHOULDER ADJUST, DRIVER |
| AQQ | LOCK CONTROL, ENTRY - REMOTE ENTRY, EXTENDED RANGE (MY 09 AND FUTURE) |
| AQS | CONTROL - SEAT, POWER SHOULDER ADJUST, PASS |
| AU3 | LOCK CONTROL - SIDE DR, ELEC |
| AVI | RESTRAINT PROVISIONS - ADJUSTABLE GUIDE LOOP |
| AVJ | LOCK CONTROL, ENTRY - REMOTE ENTRY, EXTENDED RANGE, PASSIVE ENTRY, FRONT DOORS |
| AVK | LUMBAR DRIVER - SEAT, POWER, 4 WAY |
| AVU | LUMBAR PASSENGER - SEAT, POWER, 4-WAY |
| AXG | WINDOW REG DRVR DR - POWER OPERATED, EXPRESS UP/DOWN |
| AXK | VEHICLE TYPE - TRUCK |
| AY0 | RESTRAINT SYSTEM - SEAT, INFLATABLE, DRIVER & PASS FRT, SEAT SIDE, ROOF SIDE |
| AZ3 | SEAT - FRT SPLIT, DRIVER, PASS, FULL FEATURE CENTER |
| B1J | LINER - RR WHEELHOUSE |

| RPO | Description |
|---|---|
| B26 | ALERT - SAFETY HAPTIC SEAT |
| B26 | INDICATOR - SMART TRAILER INTEGRATION |
| B26 | PARK ASSIST - FRONT AND REAR |
| B26 | REAR CROSS TRAFFIC - ALERT |
| B26 | SIDE ACTIVE SAFETY - OBSTACLE DETECTION ENHANCED |
| B26 | SIDE ACTIVE SAFETY - OBSTACLE DETECTION ENHANCED, EXTENDED TRAILER VIEW |
| B26 | VISION - 360 VIEW, MONO, HD DIGITAL |
| B26 | VISION AUXILIARY - CARGO BED |
| B26 | VISION TRAILER - INSIDE VIEW, REAR VIEW |
| B26 | SALES PACKAGE - SAFETY PACKAGE VAR. 1 |
| B30 | COVERING FLOOR - CARPET |
| B32 | COVERING FRT - FLOOR MATS, AUX |
| B33 | COVERING REAR - FLOOR MATS, AUX |
| B34 | COVERING FRT - FLOOR MATS, CARPETED INSERT |
| B35 | COVERING REAR - FLOOR MATS, CARPETED INSERT |
| B3L | STEPS, RUNNINGBOARD - SIDE, RETRACTABLE, POWER, BLACK |
| B59 | DEFOGGER - RR WINDOW, ELECTRIC |
| B59 | REMOTE START - VEHICLE |
| B59 | THEFT DETERENT - ELECTRICAL, UNAUTHORIZED ENTRY |
| B59 | SALES PACKAGE - FUNCTIONAL PACKAGE |
| BG9 | COVERING FLOOR - RUBBER |
| BHP | COVER - WINTER GRILLE |
| BKE | COVERING REAR - FLOOR MATS, FLOOR LINER CARPET INSERT |
| BKF | COVERING FRT - FLOOR MATS, FLOOR LINER CARPET INSERT |
| BPH | BRK APL CTRL FEATURE - HILL DESCENT, GEAR HOLD |
| BPH | CHASSIS PACKAGE - "OFF ROAD" |
| BPH | SALES PACKAGE - SKID PLATE, "OFF ROAD" SPORT |
| BPH | TIRE ALL - LT265/60R22 E 123/120S BW AT VAR 1 |
| BPH | TIRE ALL - LT265/70R17 E 121/118 Q BW AT |
| BPH | TIRE ALL - LT275/65R20 E 126/123 S BW AT VAR 1 |
| BPH | TIRE ALL - LT275/65R20 E 126/123 S BW OOR VAR 1 |
| BPH | TIRE ALL - LT275/70R18 E 125/122 S BW AT VAR 1 |

| RPO | Description |
|---|---|
| BRS | STEPS, RUNNINGBOARD - SIDE, RETRACTABLE, POWER, BRIGHT |
| BTM | SWITCH - START, KEYLESS |
| BTV | REMOTE START - VEHICLE |
| BVQ | STEPS, RUNNINGBOARD - SIDE, TUBULAR, CHROME |
| BWN | STEPS - CORNER ASSIST, BUMPER |
| C32 | HEATER AIR SYSTEM - HEATING/ DEFROSTER SYSTEM, REINFORCED, ELECTRIC |
| C49 | DEFOGGER - RR WINDOW, ELECTRIC |
| C59 | VENT - AIR, CONSOLE, RR |
| C67 | HVAC SYSTEM - AIR CONDITIONER FRT, ELECTRONIC CONTROLS |
| CE1 | WIPER SYS WINDSHIELD - PULSE, MOISTURE SENSITIVE |
| CF5 | ROOF - SUN, GLASS, SLIDING, ELEC |
| CGN | LINER - PUBX, SPRAY ON |
| CGO | COLLECTION GVW - COLLECTION GVW LESS THAN OR EQUAL TO 10,000 LBS |
| CJ2 | HVAC SYSTEM - AIR CONDITIONER FRT, AUTO TEMP CONT, AUX TEMP CONT |
| CMD | PLANT CODE - FLINT, MI, USA (TRK) |
| CMT | BRK APL CTRL FEATURE - INTEGRATED TRAILER BRAKE |
| CMT | LINER - PUBX, SPRAY ON |
| CMT | PROVISIONS - SPECIAL EQUIPMENT, 5TH WHEEL/ GOOSENECK TRAILER HITCH PREP PACKAGE |
| CMT | SALES PACKAGE - GOOSE NECK/5TH WHEEL PREP AND CAMERA |
| CTT | HITCH ASSIST - GUIDELINES |
| CWK | BUMPER FRT - COLOR |
| CWK | BUMPER RR - COLOR KEYED |
| CWK | HOOK - TOW |
| CWK | WHEEL - 20 X 8.5 - J - ALUMINUM - DESIGN 21 |
| CWM | CRUISE CONTROL - AUTOMATIC, ADAPTIVE, WITH STOP/GO |
| CWM | HEAD UP DISPLAY - WINDSHIELD |
| CWM | MIRROR I/S R/V - LT SENSITIVE, FULL VIDEO DISPLAY |
| CWM | SALES PACKAGE - TECHNOLOGY |
| CXH | INTERIOR TRIM CONFIG - LEATHER, LEVEL 1, GIDEON/VY DK ATMOSPHERE |
| CXH | INTERIOR TRIM CONFIG - LEATHER, LEVEL 1, JET BLACK |
| CXH | SEAT RR - SPLIT, FOLDING, DELUXE STORAGE |
| CXH | SALES PACKAGE - INTERIOR LEATHER PACKAGE |

| RPO | Description |
|---|---|
| D07 | CONSOLE - FRT COMPT, FLOOR, CUSTOM |
| D31 | MIRROR I/S R/V - TILT |
| D72 | HANDLE O/S DOOR - BLACK |
| D75 | HANDLE O/S DOOR - BODY COLOR |
| DBG | MIRROR O/S - MAN EXT, PWR ADJ, HEAT, MAN FOLD, TURN SIG, AUX CLR, FLAT DRVR/PASS, WFOV DRVR/PASS |
| DD8 | MIRROR I/S R/V - LT SENSITIVE |
| DH6 | MIRROR I/S FRT VAN - LH & RH, SUNSHADE, ILLUM |
| DLN | MIRROR O/S - LH & RH, ELEC REMOTE CONTROL, HEATER, MANUAL FOLD, FLAT/DRVR, FLAT/PASS |
| DNS | EQUIPMENT - SUPPLIER INSTALLED |
| DP6 | MIRROR PROVISIONS - HOUSING, PAINTED |
| DP9 | MIRROR PROVISIONS - HOUSING, CHROME |
| DRC | MIRROR I/S R/V - LT SENSITIVE, PARTIAL VIDEO DISPLAY |
| DRZ | MIRROR I/S R/V - LT SENSITIVE, FULL VIDEO DISPLAY |
| DUD | MIRROR O/S - LH & RH, WFOV, MANUAL, MAN FOLD, MAN EXT, FLAT/COVN DR/ PASS |
| DWI | MIRROR O/S - LH&RH,WFOV,MAN EXT,PWR FLD,HTD,TURN SIG,R/ CON,ELEC,AUX CARGO,AUX CLR,PERM LIGHT,FLAT LT SENS DR/PAS |
| DZC | MIRROR O/S - LH&RH,WFOV,PWR EXT,PWR FOLD,HTD,TURN SID,R/CON MEM,AUX CARGO,AUX CLR,PERM LT,FLAT LT SENS DR/PAS |
| DZW | CHASSIS - DUAL REAR WHEEL, RIDE & HANDLING |
| E20 | HANDLE O/S DOOR - CHROME |
| E63 | BODY EQUIPMENT - FLEETSIDE PICK-UP BOX |
| EF7 | COUNTRY - UNITED STATES OF AMERICA (USA) |
| F48 | CHASSIS DRIVE LINE - ALL WHEEL DRIVE (AWD)/FOUR WHEEL DRIVE(4WD), DRIVER SELECT |
| F60 | SPRING FRONT - HEAVY DUTY |
| FE9 | CERTIFICATION - EMISSION, FEDERAL |
| FHS | VEHICLE FUEL - GASOLINE E85 |
| FHX | VEHICLE FUEL - DIESEL B20 |
| FJW | VEHICLE FUEL - GASOLINE E15 |
| FPF | EQUIPMENT - EMISSION-DIESEL DPF MANUAL REGENERATION |
| G42 | PRIMARY COLOR - EXTERIOR, WHITE SANDS SOLID (234L) |

| RPO | Description |
|---|---|
| G4J | PRIMARY COLOR - EXTERIOR, POLAR WHITE TRI MET-1 (241L) |
| G6M | PRIMARY COLOR - EXTERIOR, RUSH MET-1 (618G) |
| G7C | PRIMARY COLOR - EXTERIOR, PULL ME OVER RED SOLID (130X) |
| G80 | AXLE POSITRACTION - LIMITED SLIP |
| G94 | AXLE - RR ELECTRONIC LOCKING DIFFERENTIAL, DRIVER SELECT |
| GA4 | TRIM PACKAGE - AT4 X |
| GAZ | PRIMARY COLOR - EXTERIOR, SUMMIT WHITE (G) 8624 |
| GBA | PRIMARY COLOR - EXTERIOR, BLACK (G) 8555 |
| GFF | TRIM PACKAGE - BASE |
| GFG | TRIM PACKAGE - AT4 |
| GFI | TRIM PACKAGE - SLE |
| GFU | TRIM PACKAGE - SLT |
| GFW | TRIM PACKAGE - DENALI |
| GFY | TRIM PACKAGE - DENALI ULTIMATE |
| GNT | PRIMARY COLOR - EXTERIOR, RADIANT RED TINT MET-1 (170H) |
| GT4 | AXLE REAR - 3.73 RATIO |
| GTY | AXLE - WIDE TRACK |
| GU6 | AXLE REAR - 3.42 RATIO |
| GXD | PRIMARY COLOR - EXTERIOR, SHARKSKIN MET-1 (130H) |
| GXP | PRIMARY COLOR - EXTERIOR, COSMONAUT MET-1 (136H) |
| H0U | INTERIOR TRIM CONFIG - CLOTH, LEVEL 2, JET BLACK |
| KI3 | STEERING WHEEL HEAT - AUTOMATIC |
| KI4 | RECEPTACLE I/P - ELECTRICAL, 110 VOLT |
| KNP | COOLING SYSTEM - TRANS, HD |
| KQV | HEATER - SEAT, VENTED, FRT |
| KSG | CRUISE CONTROL - AUTOMATIC, ADAPTIVE, WITH STOP/GO |
| KW5 | GENERATOR - 220 AMP |
| KW7 | GENERATOR - 170 AMP |
| L5P | ENGINE - DIESEL, 8 CYL, 6.6L, DI, V8, TURBO, DURAMAX, GEN 5, VAR. 1 |
| L8T | ENGINE - GAS, 8 CYL, 6.6L, SIDI, VVT, CAST IRON |
| M1F | POWER TAKE OFF - RR PTO |
| MAH | MARKETING AREA - US, PUERTO RICO/ USVI |
| MGM | TRANSMISSION - AUTO 10 SPD, 10L1000, GRX, GEN 1, VAR 1 |
| MGU | TRANSMISSION - AUTO 10 SPD, 10L1000, GRX, GEN 2, VAR 2 |

| RPO | Description |
|---|---|
| MKM | TRANSMISSION - AUTO 10 SPD, RWD 4.54 1ST, 2.86 2ND, 2.06 3RD, 1.71 4TH, 1.48 5TH, 1.26 6TH, 1.00 7TH, 10L1001 |
| N06 | STEERING COLUMN LOCK - ELECTRICAL |
| N2L | FUEL TANK - REAR TANK 40 GAL (151L) |
| N2N | FUEL TANK - DUAL TANK, FRONT TANK 23.5 GAL (89L) REAR TANK 40 GAL (151L) |
| N33 | STEERING COLUMN - TILT TYPE |
| N37 | STEERING COLUMN - TILT, TELESCOPING |
| N57 | STEERING WHEEL - SYNTHETIC, 4 SPOKE, THIN, ROUND |
| N79 | WHEEL SPARE - 18 X 8.0, J, STEEL, DESIGN 2 |
| NB5 | EXHAUST SYSTEM - SINGLE |
| NE1 | CERTIFICATION - EMISSION, GEOGRAPH-ICALLY RESTRICTED REGISTRATION |
| NHT | BRK APL CTRL FEATURE - INTEGRATED TRAILER BRAKE |
| NHT | ENGINE - DIESEL, 8 CYL, 6.6L, DI, V8, TURBO, DURAMAX, GEN 5, VAR. 1 |
| NHT | PROVISIONS - SPECIAL EQUIPMENT, 5TH WHEEL/ GOOSENECK TRAILER HITCH PREP PACKAGE |
| NHT | TRAILER PROVISIONS - SPECIAL EQUIPMENT, H.D. |
| NHT | WHEEL - 18 X 6.5, J, ALUMINUM, DESIGN 1 |
| NHT | PERFORMANCE PACKAGE - ENHANCED TOWING |
| NK5 | STEERING WHEEL - STANDARD |
| NLI | EMISSION SYSTEM - ULEV200/BIN200: CA LEV4/FED TIER3, 8.5K-10K GVW |
| NLJ | EMISSION SYSTEM - SULEV170/BIN170: CA LEV4/FED TIER3, 8.5K-10K GVW |
| NLQ | EMISSION SYSTEM - ULEV270/BIN270: CA LEV4/FED TIER3, 10K-14K GVW |
| NLR | EMISSION SYSTEM - SULEV230/BIN230: CA LEV4/FED TIER3, 10K-14K GVW |
| NP5 | STEERING WHEEL - LEATHER WRAPPED |
| NQF | TRANSFER CASE - ELECTRIC SHIFT CONT, TWO SPEED, ALUM |
| NQH | TRANSFER CASE - ACTIVE, TWO SPEED, SWITCH ACTIVATED, ALUM |
| NV8 | STEERING - POWER, MAGNETIC SPEED, VARIABLE ASSIST |
| NZ4 | WHEEL SPARE - 17 X 7.5, J, STEEL, DESIGN 2 |
| NZZ | SALES PACKAGE - SKID PLATE, "OFF ROAD" SPORT |
| P03 | COVER, WHEEL - VAR 3 |
| P06 | TRIM DISCS - WHEEL |
| PPW | PHONE PROJECTION - PHONE PROJECTION WIRELESS |

| RPO | Description |
|---|---|
| PTO | ENGINE CONTROL - POWER TAKE OFF (PTO) CONTROLS |
| PTT | TRAILER TIRE PRESSUR - MANUAL LEARN |
| PXD | WHEEL - 18 X 8.0, J, ALUMINUM, DESIGN 25 |
| PYN | WHEEL - 17 X 7.5, J, STEEL, DESIGN 7 |
| PYQ | WHEEL - 17 X 7.5, J, ALUMINUM, DESIGN 7 |
| PYT | WHEEL - 18 X 8.0, J, STEEL, DESIGN 2 |
| PYW | WHEEL - 17 X 6.5, J, STEEL, DESIGN 2 |
| PZ8 | IMAGE ADJUSTMENT - HITCH VIEW |
| PZG | PLATE - SKID FRT |
| PZN | PLATE - SKID TRANSFER CASE |
| PZZ | PLATE - FRT UNDERBODY, SKID |
| Q21 | WHEEL - 18 X 6.5, J, ALUMINUM, DESIGN 1 |
| Q7F | WHEEL - 20 X 8.5, J, ALUMINUM, DESIGN 5 |
| Q7H | WHEEL - 20 X 8.5, J, ALUMINUM, DESIGN 7 |
| Q7J | WHEEL - 20 X 8.5, J, ALUMINUM, DESIGN 8 |
| Q7N | WHEEL - 20 X 8.5, J, ALUMINUM, DESIGN 10 |
| Q7Q | WHEEL - 20 X 8.5, J, ALUMINUM, DESIGN 12 |
| QF6 | TIRE ALL - LT275/70R18 E 125/122 S BW AT VAR 1 |
| QF9 | TIRE ALL - LT275/65R20 E 126/123 S BW AT VAR 1 |
| QFG | TIRE ALL - LT275/65R20 E 126/123 S BW OOR VAR 1 |
| QHQ | TIRE ALL - LT245/75R17 E 121/118R BW ALS |
| QHY | TIRE ALL - LT235/80R18 E 121/118R BW AT |
| QK1 | GATE TYPE - PUBX END STANDARD |
| QK2 | GATE TYPE - PUBX END ENHANCED |
| QMG | TIRE ALL - LT305/70R18 E 126/123 R BW OOR VAR 1 |
| QN5 | WHEEL SPARE - 17 X 7.5, J, ALUMINUM, DESIGN 1 |
| QNB | WHEEL SPARE - 18 X 9.0, J, ALUMINUM, DESIGN 1 |
| QNN | WHEEL SPARE - 18 X 9.0, J, ALUMINUM, DESIGN 3 |
| QNZ | TIRE SPARE - LT305/70R18 E 126/123 R BW OOR VAR 1 |
| QT2 | GATE FUNCTION - MANUAL |
| QT5 | GATE FUNCTION - MANUAL ASSIST POWER RELEASE |
| QT6 | GATE FUNCTION - POWER |

| RPO | Description |
|---|---|
| QXT | TIRE ALL - LT265/70R17 E 121/118 Q BW AT |
| QZT | TIRE ALL - LT235/80R17 E 120/117R BW AT |
| R5K | WHEEL - 18 X 6.5, J, STEEL, DESIGN 1 |
| R7O | SEAT RR - SPLIT, FOLDING, BASE STORAGE |
| R88 | ACCESSORY - ILLUMINATED EMBLEM - EXTERIOR - DESIGN 2 |
| RBJ | WHEEL - 18 X 9.0, J, ALUMINUM, DESIGN 3 |
| RCS | WHEEL - 18 X 9.0, J, ALUMINUM, DESIGN 1 |
| RDI | ACCESSORY - KEYLESS ENTRY |
| REM | ACCESSORY TIRE - TIRE ALL - LT275/65R20 E 126/123 S BW AT VAR 1 |
| RIA | ACCESSORY - FLOOR LINER - CONTOURED |
| RIK | ACCESSORY - BADGE - EXTERIOR, PACKAGE, DESIGN 1 |
| RN2 | ACCESSORY - ILLUMINATED EMBLEM - EXTERIOR - DESIGN 1 |
| RN6 | WHEEL - 22 X 8.5, J, STEEL, DESIGN 1 |
| RS7 | WHEEL - 17 X 6.5, J, ALUMINUM, DESIGN 1 |
| RSR | OCCUPANT DETECT SYS - REAR SEAT, DOOR ACTIVATED |
| RVG | ACCESSORY - ADAPTER - TRAILER HARNESS |
| RVQ | ACCESSORY - ASSIST STEPS - TUBULAR - OVAL - BLACK |
| RVS | ACCESSORY - ASSIST STEPS - TUBULAR - ROUND - BLACK |
| RW9 | ACCESSORY - BED STORAGE BOX - SIDE FULL LENGTH - COMPOSITE |
| RWA | ACCESSORY - BED STORAGE BOX - FOAM |
| RWL | CHASSIS DRIVE LINE - REAR WHEEL DRIVE (RWD) |
| RWS | ACCESSORY - FLOOR MATS - CARPET |
| RXJ | ACCESSORY - CENTER CAP - WHEEL - DESIGN 2 |
| RXQ | ACCESSORY - CONVENIENCE NET - BED MOUNTED |
| RYT | ACCESSORY - FIRST AID KIT |
| S08 | ACCESSORY - HIGHWAY SAFETY KIT |
| S0M | ACCESSORY - ILLUMINATED DOOR SILLS |
| S0T | ACCESSORY - INTERIOR TRIM KIT - ALTERNATE FINISH 1 |
| S1H | ACCESSORY - OFF-ROAD RECOVERY KIT |
| S1O | ACCESSORY - CONTAINER - LOCKABLE STORAGE - INTERIOR |
| S3I | ACCESSORY - LAMPS - PERIMETER ILLUMINATION |
| S41 | ACCESSORY - LINER - WHEEL HOUSE |
| S47 | ACCESSORY - LUG NUTS |
| S4W | ACCESSORY - LUG NUT AND WHEEL LOCK KIT DESIGN 2 |
| S6L | ACCESSORY - PROTECTOR - ROCKER PANEL |
| S6N | ACCESSORY - RECEIVER COVER - TRAILER HITCH |
| S6P | ACCESSORY - REMOTE START KIT |
| S6Z | ACCESSORY - SEAT COVER - TAILORED - ALTERNATE MATERIAL |
| SAF | LOCK - SPARE TIRE, HOIST SHAFT |
| SAK | ACCESSORY - WHEEL - 22 X 8.5 - J - ALUMINUM DESIGN 1 |
| SAM | ACCESSORY - SKID PLATES |
| SAX | ACCESSORY - SPEAKER KIT - LEVEL 1 |
| SAY | ACCESSORY - WHEEL - 22 X 8.5 - J - ALUMINUM DESIGN 2 |
| SBL | ACCESSORY - WHEEL - 22 X 8.5 - J - ALUMINUM DESIGN 3 |
| SBZ | ACCESSORY - SPORT PEDAL KIT |
| SD5 | ACCESSORY - TIRE PRESSURE MONITOR |
| SDE | ACCESSORY - TRAILER HITCH - REMOVABLE |
| SDI | ACCESSORY - TRIANGLE - REFLECTIVE |
| SF6 | ACCESSORY - WHEEL FLARES - ALTERNATE DESIGN - PAINTED |
| SFE | ACCESSORY - WHEEL LOCKS |
| SFJ | ACCESSORY - WINDOW SHADES - REFLECTIVE |
| SFZ | ACCESSORY - EMBLEM - EXTERIOR - DESIGN 1 |
| SHH | ACCESSORY - WHEEL - 20 X 8.5 - J - ALUMINUM - DESIGN 1 |
| SIE | ACCESSORY - PUBX TIERED STORAGE |
| SJ9 | ACCESSORY - GRILLE / GRILLE INSERTS - ALTERNATE FINISH 1 |
| SK1 | WHEEL SPARE - 18 X 6.5, J, STEEL, DESIGN 1 |
| SKP | WHEEL SPARE - 17 X 6.5, J, STEEL, DESIGN 1 |
| SKX | ACCESSORY - WHEEL - 20 X 8.5 - J - ALUMINUM - DESIGN 7 |
| SL7 | ACCESSORY - PUBX LADDER / UTILITY RACK STANCHIONS |
| SNO | ACCESSORY - HITCH COMPLETION PKG - GOOSENECK |
| SNR | SEAT RR - SPLIT, FOLDING, DELUXE STORAGE |
| SPY | ACCESSORY - LUG NUTS - ALT FINISH |

| RPO | Description |
|---|---|
| SPZ | ACCESSORY - WHEEL LOCKS - ALT FINISH |
| SQ9 | ACCESSORY - WHEEL - 20 X 8.5 - J - ALUMINUM - DESIGN 8 |
| SRW | CHASSIS - SINGLE REAR WHEEL, RIDE & HANDLING |
| SUR | ACCESSORY - TRAILER TIRE PRESSURE MONITOR |
| T3U | LAMP FRT FOG - FRT FOG |
| T4L | HEADLAMPS - LED |
| T4Z | SEAT BELT SAFETY SYS - SHIFTER INTERLOCK, GEN 1, NON-CUSTOMIZABLE |
| T8Z | SEAT BELT SAFETY SYS - SHIFTER INTERLOCK, GEN 3, INFOTAINMENT CUSTOMIZABLE |
| TDM | MODE DRIVER SETTINGS - TEEN DRIVER, INFOTAINMENT |
| TGH | HANDLE - ASSIST, PUBX |
| TPU | ACCESSORY - CAMERA PKG - TRAILERING UPGRADE |
| TQ5 | HEADLAMP HIGH BEAM - AUTO CONTROL |
| TRG | VISION TRAILER - INSIDE VIEW, REAR VIEW |
| TRO | ACCESSORY - CAMERA PKG - TRAILERING AUX MOUNTED |
| TUF | ORNAMENTATION - EMBLEM, "TEXAS EDITION" |
| U01 | LAMP - FIVE, ROOF MARKER, TRUCK |
| U12 | LAMP - EXTR, OSRV MIRROR, TASK |
| U2J | DIGITAL AUDIO SYSTEM - S-BAND - NONE |
| U2K | DIGITAL AUDIO SYSTEM - S-BAND |
| U73 | ANTENNA - FIXED, RADIO |
| U95 | SPEAKER SYSTEM - 2, BASE |
| UBC | RECPT USB ARMREST - DUAL, CHARGE, DATA |
| UBD | RECPT USB FLR CNSL F - DUAL, CHARGE, DATA |
| UBI | RECPT USB FLR CNSL R - DUAL, CHARGE |
| UBJ | RECPT USB IP LWR - DUAL, CHARGE, DATA |
| UD5 | PARK ASSIST - FRONT AND REAR |
| UDC | DISPLAY INSTRUMENT - DRIVER INFO ENHANCED (ONE COLOR GRAPHIC) |
| UDU | PROVISIONS - REAR CAMERA PREP |
| UDV | DISPLAY INSTRUMENT - DRIVER INFO ENHANCED, FULL CLUSTER (MULTI COLOR GRAPHIC) |
| UE1 | COMMUNICATION SYSTEM - VEHICLE, ONSTAR |

| RPO | Description |
|---|---|
| UE4 | SENSOR INDICATOR - FOLLOWING DISTANCE |
| UET | INDICATOR - SMART TRAILER INTEGRATION |
| UEU | SENSOR INDICATOR - FORWARD COLLISION ALERT |
| UF2 | LAMP - CARGO |
| UF3 | SWITCH - HIGH IDLE |
| UFG | REAR CROSS TRAFFIC - ALERT |
| UFL | LANE ACTIVE SAFETY - DEPARTURE WARNING |
| UG1 | OPENER - GARAGE DOOR, UNIVERSAL |
| UGA | HOOK - TOW, RED |
| UH5 | INDICATOR - SEAT BELT WARNING, REAR SEAT |
| UHY | COLL IMMINENT BRK - LOW SPEED, VEH FWD MOVEMENT, BRAKE PREFILL, INTEGRATED BRAKE ASSIST |
| UIR | INFOTAINMENT DISPLAY - NORMALLY BLACK COLOR (TFT), 7", WVGA 800X480P |
| UJM | TIRE PRESS INDICATOR - MANUAL LEARN |
| UJN | TIRE PRESS INDICATOR - AUTO LEARN |
| UK3 | CONTROL - STEERING WHEEL, ACCESSORY |
| UKC | SIDE ACTIVE SAFETY - OBSTACLE DETECTION ENHANCED |
| UKJ | PED DETECTION FRT - BASIC, PEDESTRIANS |
| UKV | SIDE ACTIVE SAFETY - OBSTACLE DETECTION ENHANCED, EXTENDED TRAILER VIEW |
| ULV | ACCESSORY - FLOOR LINER - CONTOURED - ALT DESIGN 2 |
| ULV | BUMPER - RR, VAR 1 |
| ULV | BUMPER FRT - SPORT |
| ULV | GATE TYPE - PUBX END ENHANCED |
| ULV | HEATER ENG - BLOCK |
| ULV | PLATE - FRT UNDERBODY, SKID |
| ULV | PLATE - SKID FRT |
| ULV | PLATE - SKID TRANSFER CASE |
| ULV | WHEEL - 18 X 9.0, J, ALUMINUM, DESIGN 3 |
| ULV | WHEEL - 18 X 9.0, J, ALUMINUM, DESIGN 4 |
| ULV | WHEEL SPARE - 18 X 9.0, J, ALUMINUM, DESIGN 1 |
| ULV | WHEEL SPARE - 18 X 9.0, J, ALUMINUM, DESIGN 4 |
| ULV | SALES PACKAGE - CHEVROLET BISON |
| UMN | SPEEDOMETER - INST, MILES & KILO, MILES ODOMETER |

| RPO | Description |
|---|---|
| UQA | SPEAKER SYSTEM - PREMIUM AUDIO, BRANDED AMPLIFIER |
| UQF | SPEAKER SYSTEM - STANDARD AUDIO |
| UQS | SPEAKER SYSTEM - PREMIUM AUDIO, BRANDED SURROUND AMPLIFIER |
| URC | SWITCH - FLEXRIDE MODE SYSTEM |
| URD | INFOTAINMENT DISPLAY - NORMALLY BLACK COLOR (TFT) ,13.4", 2400X960 |
| UTJ | THEFT DETERENT - ELECTRICAL, UNAUTHORIZED ENTRY |
| UV2 | VISION - 360 VIEW, MONO, HD DIGITAL |
| UV6 | HEAD UP DISPLAY - WINDSHIELD |
| UVB | VISION - REAR VIEW, MONO, HD DIGITAL |
| UVN | VISION AUXILIARY - CARGO BED |
| UVO | VISION AUXILIARY - CARGO BED BASE |
| UY2 | WIRING PROVISIONS - CAMPER & 5TH WHEEL TRAILER |
| V46 | BUMPER FRT - CHROME |
| V76 | HOOK - TOW |
| V8D | VEHICLE STATEMENT - VEHICLE LABEL CONTENT - U.S. FMVSS |
| VAV | ACCESSORY - FLOOR MATS - ALL WEATHER |
| VB5 | BUMPER FRT - COLOR |
| VBJ | ACCESSORY - UNDERSEAT STORAGE |
| VBR | ACCESSORY - PUBX RUBBER MAT |
| VDA | ACCESSORY - CAMPER & 5TH WHEEL TRAILER CONNECTION |
| VGC | PROTECTOR - FILM, PAINT ETCH PREVENTIVE |
| VHU | BUMPER FRT - SPORT |
| VJH | BUMPER RR - CHROME |
| VK3 | LICENSE PLATE FRONT - FRT MOUNTING PKG |
| VKU | ACCESSORY - MIRROR CAPS - CHROME |
| VKY | ACCESSORY - DOOR HANDLES - ALTERNATE FINISH - CHROME |
| VLQ | HOOK - TOW, CHROME |
| VMK | ACCESSORY - CARGO MANAGEMENT SYSTEM RAILS |
| VOZ | ACCESSORY - TONNEAU - RR COMPT - HARD FOLDING - ALT DESIGN |
| VPB | ACCESSORY - TONNEAU - RR COMPT - VINYL W/ INTEGRAL CROSSBOW SUPPORTS |
| VQH | BUMPER - RR, VAR 1 |
| VQK | ACCESSORY - SPLASH GUARDS - CUSTOM MOLDED |
| VQO | ACCESSORY - ASSIST STEPS - BLACK |
| VQY | ACCESSORY - TOW HOOKS - CHROME |

| RPO | Description |
|---|---|
| VQZ | ACCESSORY - EXHAUST TIP - DESIGN 1 |
| VST | ACCESSORY - SILL PLATES - ALTERNATE DESIGN 1 |
| VSX | LABEL - TOWING |
| VT5 | BUMPER RR - COLOR KEYED |
| VT7 | OWNERS MANUAL - ENGLISH LANGUAGE |
| VTA | ACCESSORY - EXHAUST TIP - DESIGN 2 |
| VTI | SHUTTERS - FRONT GRILLE, ACTIVE, UPR |
| VTP | ACCESSORY - ASSIST STEPS - COMMERCIAL |
| VUK | ACCESSORY - TAILGATE LINER - PUBX |
| VV4 | COMMUNICATION EQUIP - MOBILE INTERNET CONNECTIVITY |
| VW9 | ACCESSORY - CENTER CAP - WHEEL - DESIGN 3 |
| VXH | ACCESSORY - ASSIST STEPS - TUBULAR - CHROME - OVAL |
| VXJ | ACCESSORY - ASSIST STEPS - TUBULAR - CHROME - ROUND |
| VXT | VEHICLE TYPE - INCOMPLETE |
| VXW | ACCESSORY - ASSIST STEPS - MOLDED |
| VYU | PROVISIONS - SNOW PLOW PREP |
| VZX | ACCESSORY - PUBX BEDLINER |
| W2D | ACCESSORY - CARGO NET |
| WBL | BUMPER FRT - COLOR |
| WBL | BUMPER RR - COLOR KEYED |
| WBL | EQUIPMENT - SUPPLIER INSTALLED |
| WBL | HANDLE O/S DOOR - CHROME |
| WBL | HEADLAMPS - LED |
| WBL | INDICATOR - SMART TRAILER INTEGRATION |
| WBL | LINER - PUBX, SPRAY ON |
| WBL | MIRROR PROVISIONS - HOUSING, CHROME |
| WBL | TIRE ALL - LT275/65R20 E 126/123 S BW AT VAR 1 |
| WBL | VISION TRAILER - INSIDE VIEW, REAR VIEW |
| WBL | WHEEL - 20 X 8.5, J, ALUMINUM, DESIGN 25 |
| WBL | WHEEL - 20 X 8.5, J, ALUMINUM, DESIGN 27 |
| WJP | ACCESSORY - WHEEL - 22 X 8.5 - J - ALUMINUM DESIGN 3 |
| WJP | BUMPER FRT - COLOR |
| WJP | BUMPER RR - COLOR KEYED |
| WJP | HANDLE O/S DOOR - BODY COLOR |
| WJP | INDICATOR - SMART TRAILER INTEGRATION |

| RPO | Description |
|---|---|
| WJP | MIRROR PROVISIONS - HOUSING, PAINTED |
| WJP | PRIMARY COLOR - EXTERIOR, BLACK (G) 8555 |
| WJP | STEPS, RUNNINGBOARD - SIDE, RETRACTABLE, POWER, BLACK |
| WJP | TIRE ALL - LT265/60R22 E 123/120S BW AT VAR 1 |
| WJP | TIRE ALL - LT275/65R20 E 126/123 S BW AT VAR 1 |
| WJP | TIRE ALL - LT275/65R20 E 126/123 S BW OOR VAR 1 |
| WJP | VISION TRAILER - INSIDE VIEW, REAR VIEW |
| WJP | WHEEL - 18 X 8.0, J, ALUMINUM, DESIGN 2 |
| WJP | WHEEL - 20 X 8.5 - J - ALUMINUM - DESIGN 21 |
| WLD | WINDOW CONTROL - REMOTE EXPRESS DOWN, ALL WINDOWS |
| WNO | VIN MODEL YEAR - 2026 |
| WPC | CRUISE CONTROL - AUTOMATIC, ADAPTIVE, WITH STOP/GO |
| WPC | GATE FUNCTION - POWER |
| WPC | HEATER SEAT - REAR |
| WPC | OPENER - GARAGE DOOR, UNIVERSAL |
| WPC | WINDOW RR - FULL WIDTH, SLIDING, POWER |
| WPC | SALES PACKAGE - COMFORT AND CONVENIENCE |
| WPK | BUMPER FRT - COLOR |
| WPK | BUMPER RR - COLOR KEYED |
| WPK | EQUIPMENT - SUPPLIER INSTALLED |
| WPK | HANDLE O/S DOOR - BODY COLOR |
| WPK | HEADLAMPS - LED |
| WPK | HOOK - TOW, RED |
| WPK | INDICATOR - SMART TRAILER INTEGRATION |
| WPK | LINER - PUBX, SPRAY ON |
| WPK | MIRROR PROVISIONS - HOUSING, PAINTED |
| WPK | STEPS, RUNNINGBOARD - SIDE, RETRACTABLE, POWER, BLACK |
| WPK | TIRE ALL - LT265/60R22 E 123/120S BW AT VAR 1 |
| WPK | TIRE ALL - LT275/65R20 E 126/123 S BW AT VAR 1 |
| WPK | TIRE ALL - LT275/65R20 E 126/123 S BW OOR VAR 1 |
| WPK | TIRE ALL - LT275/70R18 E 125/122 S BW AT VAR 1 |

| RPO | Description |
|---|---|
| WPK | VISION TRAILER - INSIDE VIEW, REAR VIEW |
| WPK | WHEEL - 18 X 8.0, J, ALUMINUM, DESIGN 2 |
| WPK | WHEEL - 20 X 8.5 - J - ALUMINUM - DESIGN 21 |
| WPQ | EQUIPMENT - SUPPLIER INSTALLED |
| WPQ | LINER - PUBX, SPRAY ON |
| WPQ | LINER - RR WHEELHOUSE |
| X31 | BRK APL CTRL FEATURE - HILL DESCENT, GEAR HOLD |
| X31 | CHASSIS PACKAGE - "OFF ROAD" |
| X31 | SALES PACKAGE - SKID PLATE, "OFF ROAD" SPORT |
| X31 | TIRE ALL - LT265/70R17 E 121/118 Q BW AT |
| X31 | TIRE ALL - LT275/65R20 E 126/123 S BW AT VAR 1 |
| X31 | TIRE ALL - LT275/70R18 E 125/122 S BW AT VAR 1 |
| X31 | APPEARANCE PACKAGE - GMC "X31 OFF ROAD" |
| XGC | ACCESSORY TIRE - TIRE ALL- LT265/60R22 E 123/120S BW AT |
| XGD | TIRE ALL - LT265/60R22 E 123/120S BW AT VAR 1 |
| YF5 | CERTIFICATION - EMISSION, CALIFORNIA |
| Z6A | PROVISIONS - SPECIAL EQUIPMENT, 5TH WHEEL/ GOOSENECK TRAILER HITCH PREP PACKAGE |
| Z71 | CHASSIS PACKAGE - "OFF ROAD" |
| Z82 | TRAILER PROVISIONS - SPECIAL EQUIPMENT, H.D. |
| Z85 | CHASSIS PACKAGE - INCREASED CAPACITY |
| Z88 | MARKET BRAND - GMC |
| ZAE | TIRE SPARE - LT235/80R18 E 121/118R BW AT |
| ZHQ | TIRE SPARE - LT245/75R17 E 121/118 R BW ALS |
| ZL3 | ADJUSTER DRIVER SEAT - 8WAY, PWR RECLINE, PWR FORE/AFT, PWR HEIGHT, PWR TILT |
| ZL3 | BRK APL CTRL FEATURE - INTEGRATED TRAILER BRAKE |
| ZL3 | CHARGER - INDUCTIVE PORTABLE WIRELESS DEVICE |
| ZL3 | CONSOLE - FRT COMPT, FLOOR, CUSTOM |
| ZL3 | DEFOGGER - RR WINDOW, ELECTRIC |
| ZL3 | GATE FUNCTION - MANUAL ASSIST POWER RELEASE |
| ZL3 | GATE FUNCTION - POWER |

| RPO | Description |
|---|---|
| ZL3 | GATE TYPE - PUBX END ENHANCED |
| ZL3 | GATE TYPE - PUBX END STANDARD |
| ZL3 | HEATER - SEAT, VENTED, FRT |
| ZL3 | HVAC SYSTEM - AIR CONDITIONER FRT, AUTO TEMP CONT, AUX TEMP CONT |
| ZL3 | LAMP - CARGO |
| ZL3 | LAMP - FIVE, ROOF MARKER, TRUCK |
| ZL3 | LAMP FRT FOG - FRT FOG |
| ZL3 | MIRROR O/S - LH & RH, ELEC REMOTE CONTROL, HEATER, MANUAL FOLD, FLAT/DRVR, FLAT/PASS |
| ZL3 | MIRROR O/S - LH&RH,WFOV,MAN EXT,PWR FLD,HTD,TURN SIG,R/CON,ELEC,AUX CARGO,AUX CLR,PERM LIGHT,FLAT LT SENS DR/PAS |
| ZL3 | MIRROR O/S - MAN EXT, PWR ADJ, HEAT, MAN FOLD, TURN SIG, AUX CLR, FLAT DRVR/PASS, WFOV DRVR/PASS |
| ZL3 | RECEPTACLE I/P - ELECTRICAL, 110 VOLT |
| ZL3 | RECEPTACLE PUBX - ELECTRICAL, 110 VOLT |
| ZL3 | RECPT USB ARMREST - DUAL, CHARGE, DATA |
| ZL3 | RECPT USB FLR CNSL R - DUAL, CHARGE |
| ZL3 | REMOTE START - VEHICLE |
| ZL3 | SEAT - FRT BKT |
| ZL3 | SPEAKER SYSTEM - PREMIUM AUDIO, BRANDED AMPLIFIER |
| ZL3 | STEERING COLUMN - TILT, TELESCOPING |
| ZL3 | WINDOW REG DRVR DR - POWER OPERATED, EXPRESS UP/DOWN |
| ZL3 | WINDOW REG PASS DR - POWER OPER-ATED,EXPRESS DOWN |
| ZL3 | WINDOW TYPE - PRIVACY |
| ZL3 | SALES PACKAGE - CONVENIENCE |
| ZLQ | GATE FUNCTION - MANUAL ASSIST POWER RELEASE |
| ZLQ | MIRROR O/S - LH & RH, ELEC REMOTE CONTROL, HEATER, MANUAL FOLD, FLAT/DRVR, FLAT/PASS |
| ZLQ | MIRROR O/S - LH&RH,WFOV,MAN EXT,PWR FLD,HTD,TURN SIG,R/CON,ELEC,AUX CARGO,AUX CLR,PERM LIGHT,FLAT LT SENS DR/PAS |
| ZLQ | MIRROR O/S - MAN EXT, PWR ADJ, HEAT, MAN FOLD, TURN SIG, AUX CLR, FLAT DRVR/PASS, WFOV DRVR/PASS |
| ZLQ | WINDOW REG DRVR DR - POWER OPERATED, EXPRESS UP/DOWN |
| ZLQ | WINDOW REG PASS DR - POWER OPER-ATED,EXPRESS DOWN |
| ZLQ | SALES PACKAGE - LS FLEET |
| ZM9 | HEATER SEAT FRT - DRVR & PASS |

| RPO | Description |
|---|---|
| ZM9 | STEERING WHEEL HEAT - AUTOMATIC |
| ZM9 | SALES PACKAGE - COMFORT & CONVENIENCE |
| ZRX | CHASSIS PACKAGE - HIGH PERFORMANCE LIFTED |
| ZW9 | BODY EQUIPMENT - BASE BODY OR CHASSIS |
| ZXT | TIRE SPARE - LT265/70R17/E BW TL |
| ZYG | TIRE SPARE - LT275/70R18 E 125/122 S BW AT VAR 1 |
| ZZT | TIRE SPARE - LT235/80R17 E 120/117 R BW AT |

# Section 1

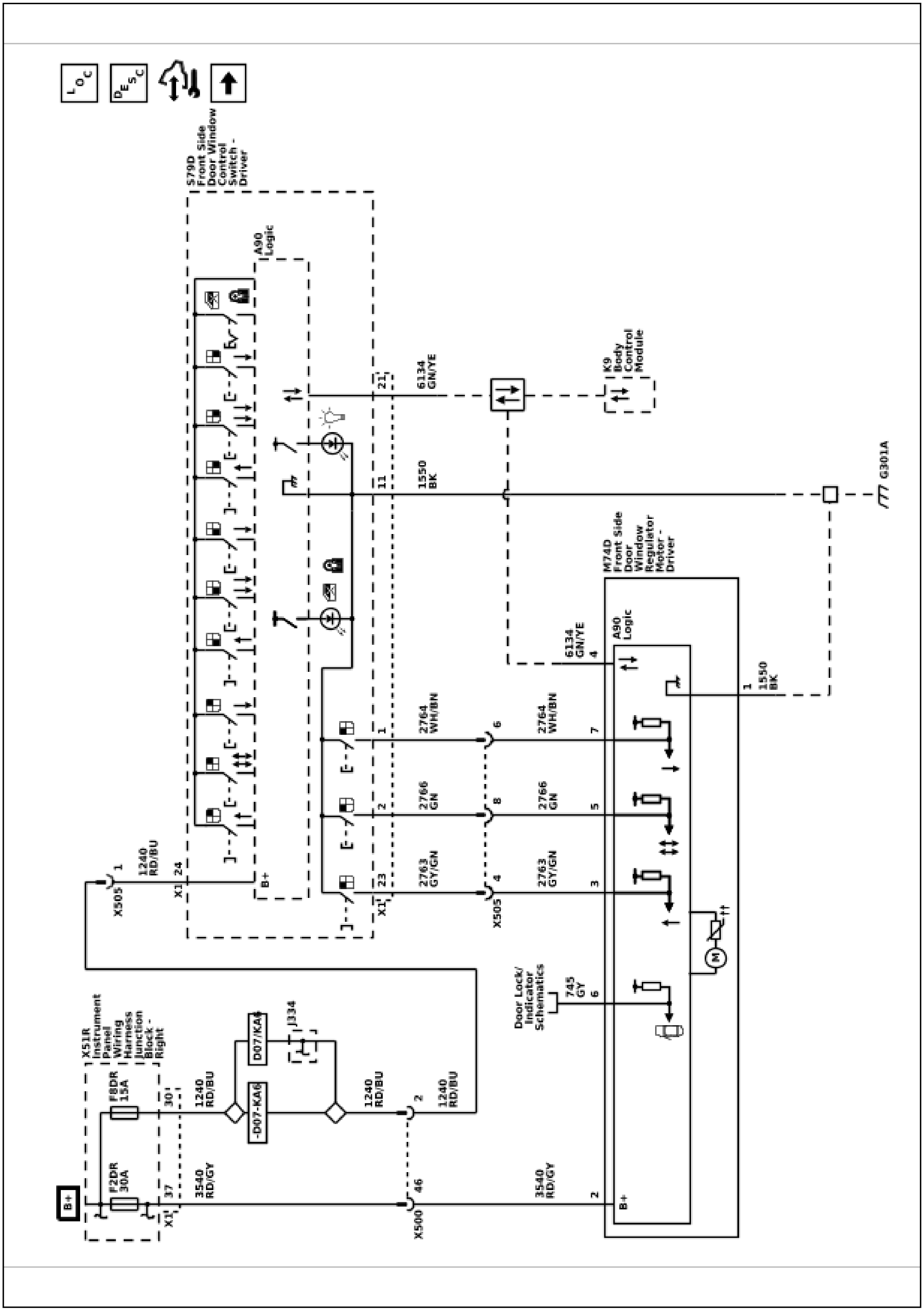
# Body Systems

# Body Systems

## Fixed and Moveable Windows

### Schematic and Routing Diagrams

Moveable Window Schematics (Driver Window (AXG))

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## Moveable Window Schematics (Passenger Window (AED))

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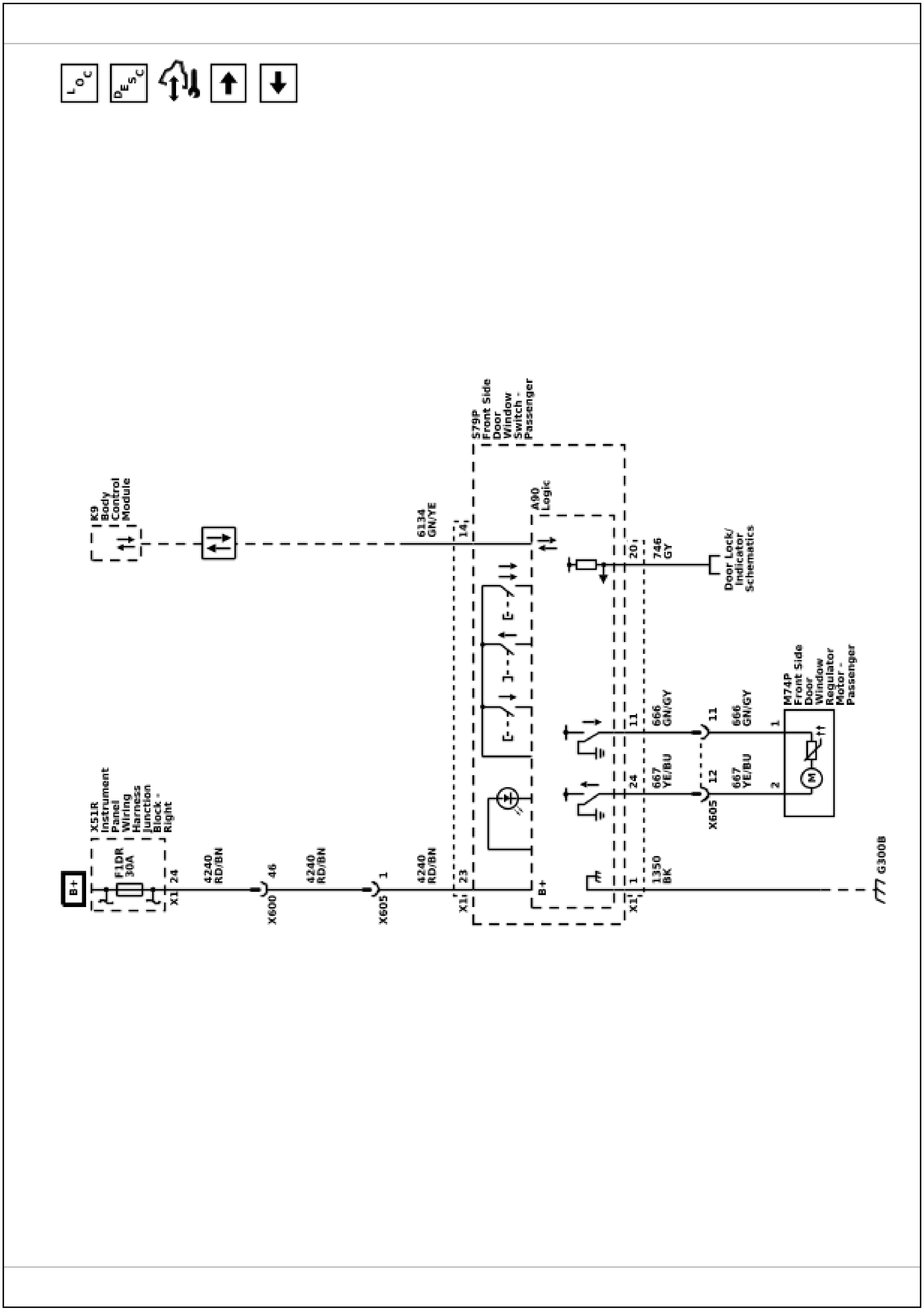
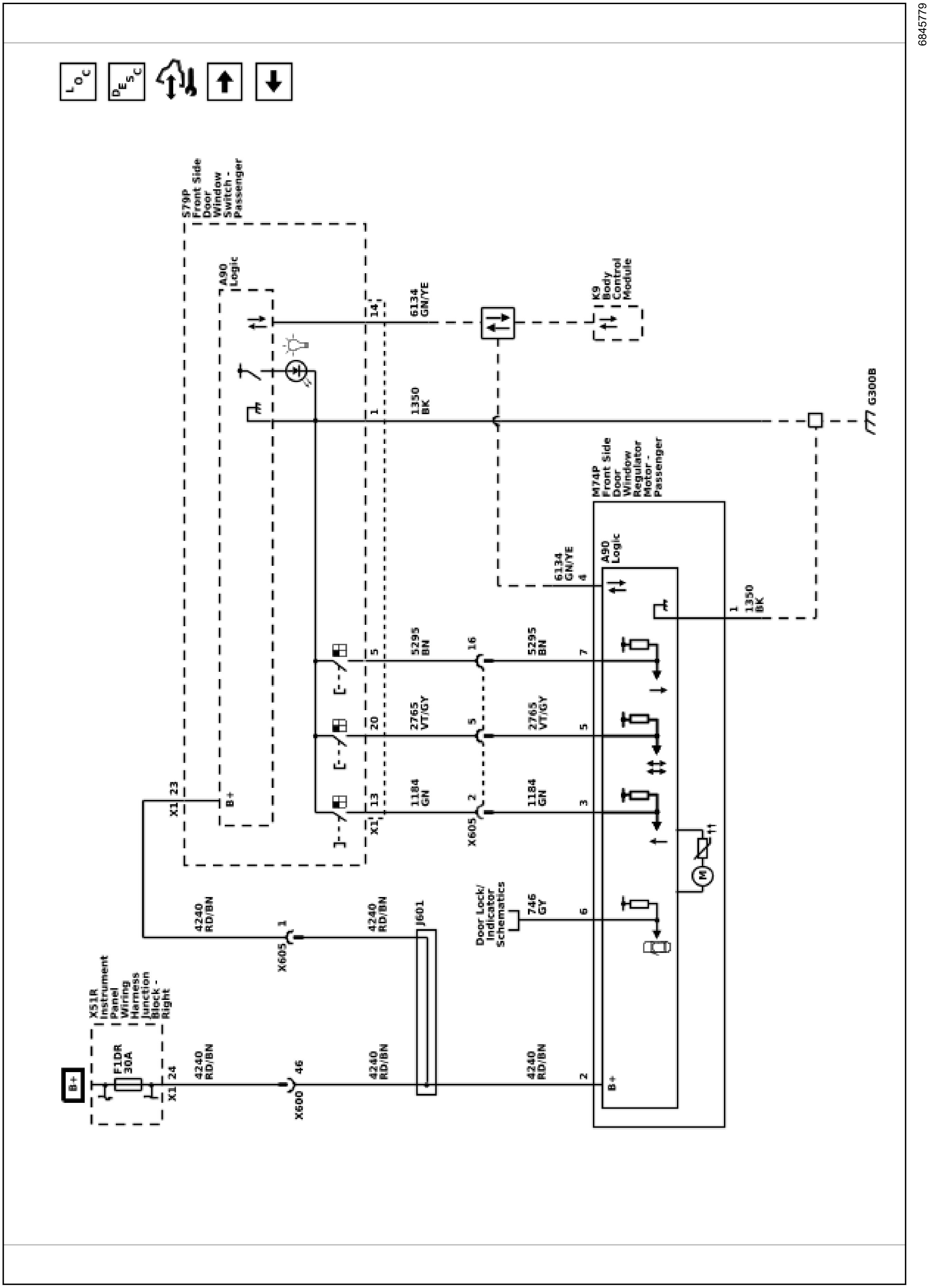
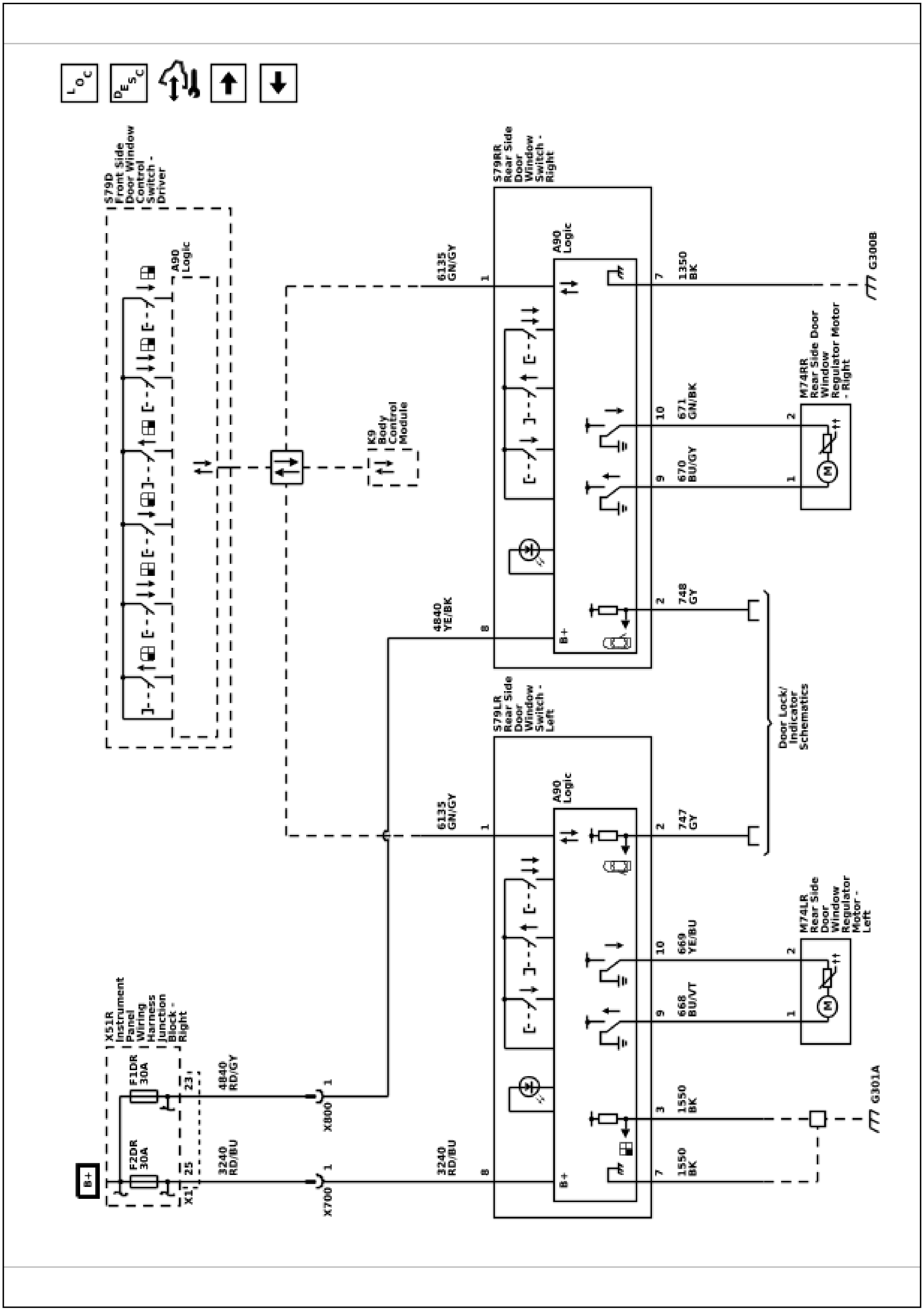


## Moveable Window Schematics (Passenger Window (AEF))



## Moveable Window Schematics (Rear Windows (AEQ))

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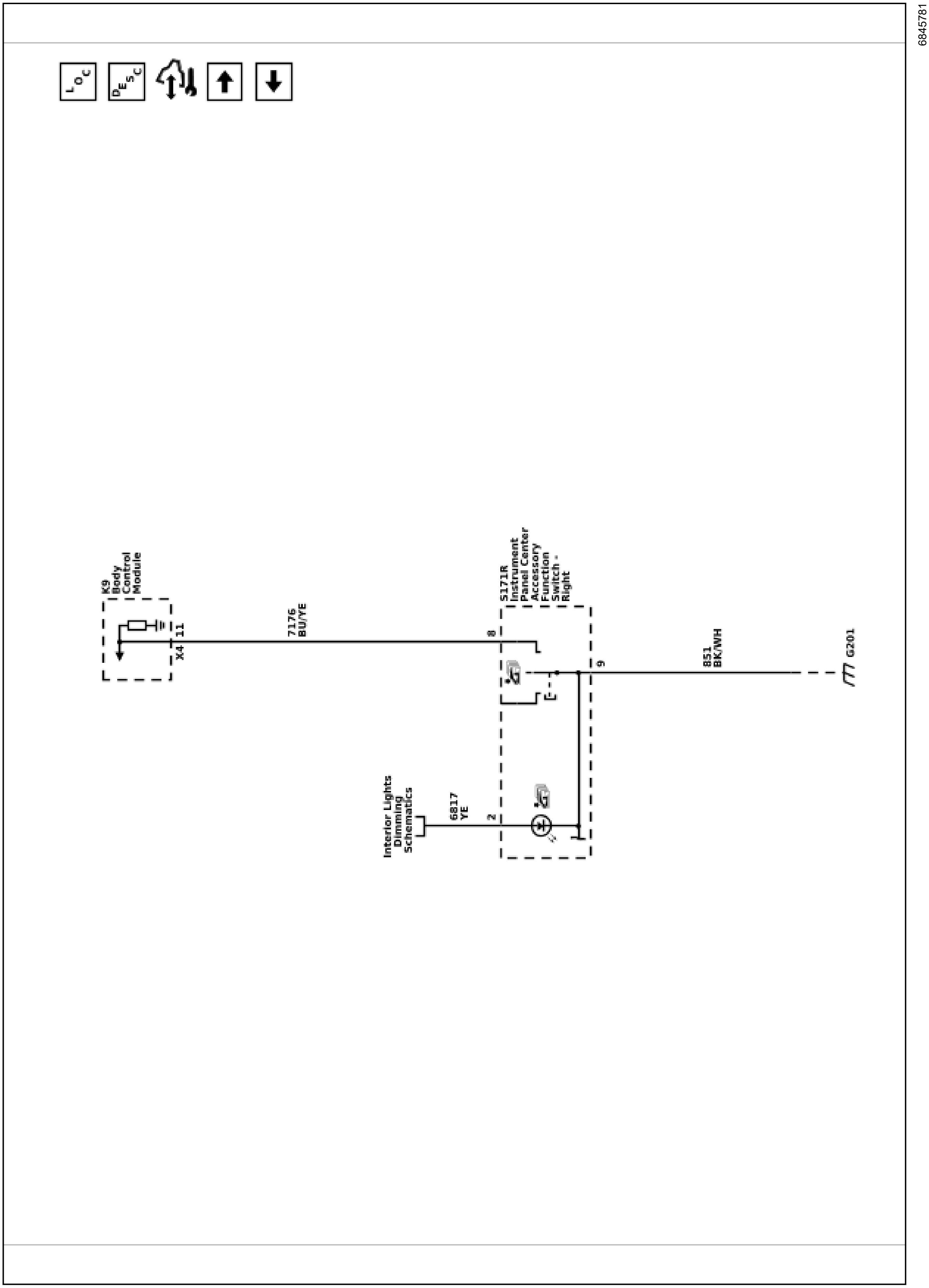
## Moveable Window Schematics (Global Window Express Down Switch - In Right IP Accessory Function Switch (WLD))



Moveable Window Schematics (Rear Sliding Window (A48))

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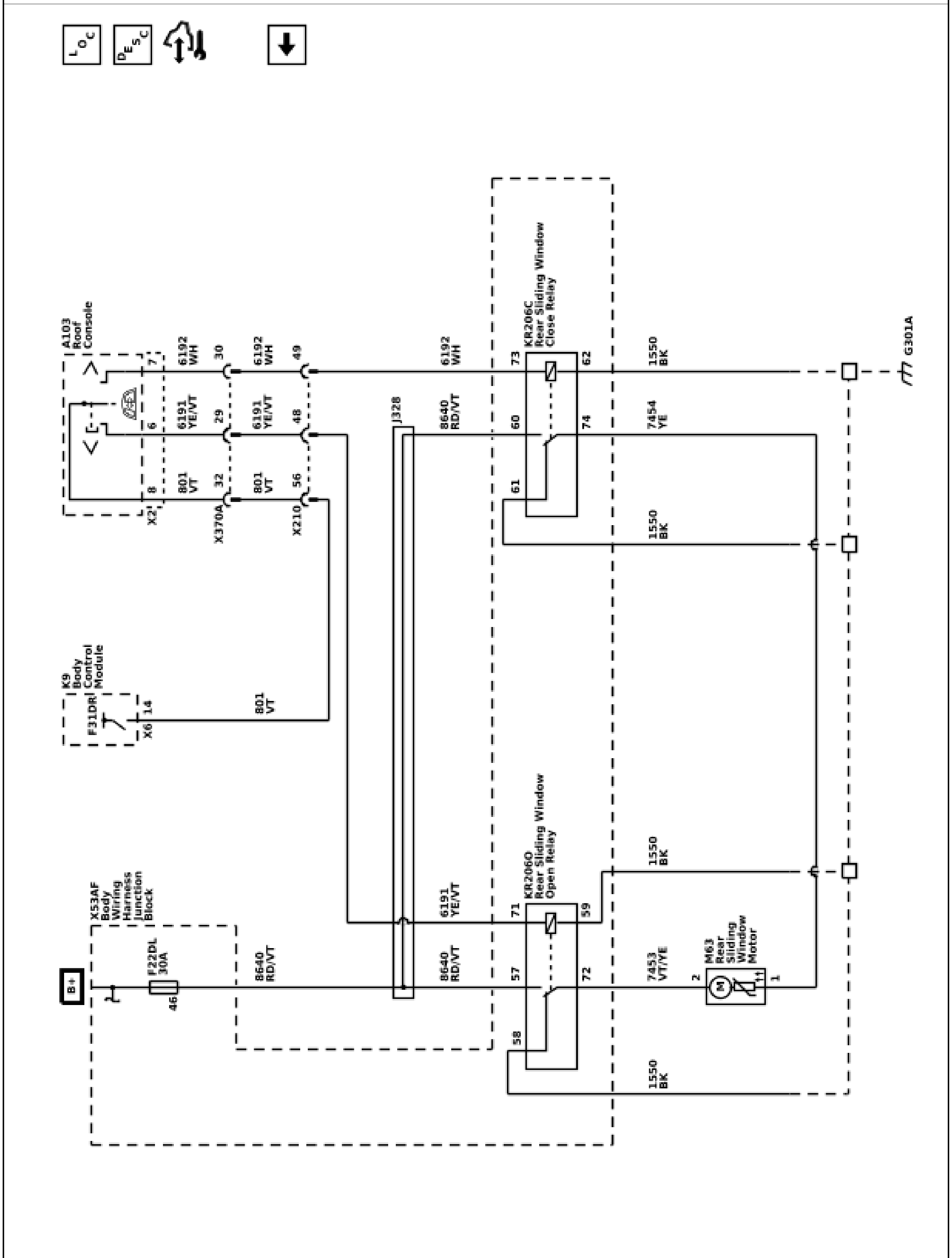
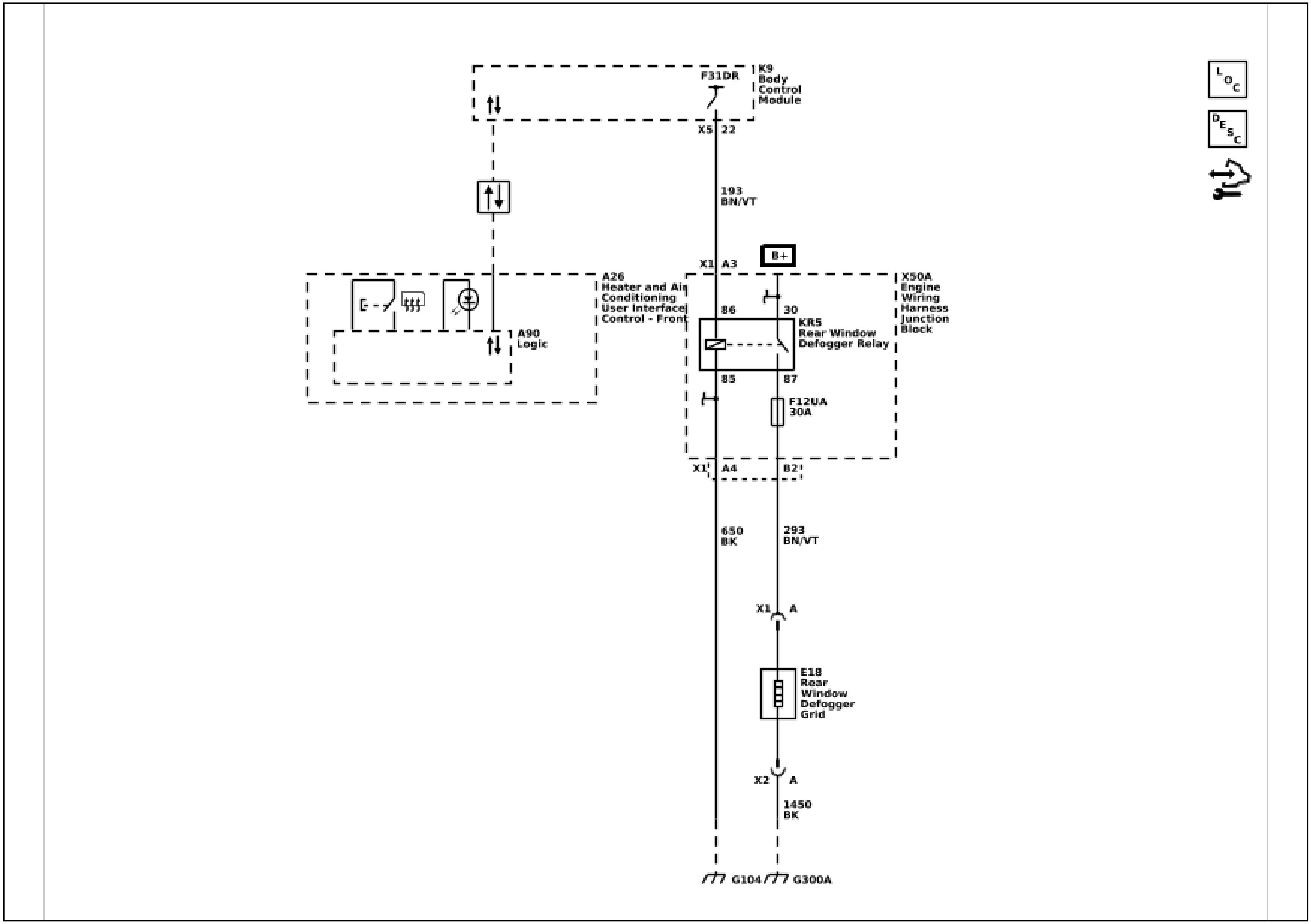


## Defogger Schematics (Defogger)

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# Description and Operation

## Power Windows Description and Operation

### Power Windows System Components

The power window system consists of the following components:

- Driver front side door window control switch
- Passenger front side door window control switch
- Left rear side door window switch
- Right rear side door window switch
- Window motors in each of the doors
- Body control module (BCM)

### Driver and Passenger Express Up and Express Down Power Window Motors

The driver and passenger doors contain a smart window motor that will detect excessive resistance while performing the express up function and automatically reverse direction to prevent injury to any occupants that may become trapped between the closing window and the door frame. The automatic reverse safety feature can be overridden by pulling and holding the window switch.

The logic circuits within the window motor monitor the up, down and express signal circuits which are normally equal to B+ voltage. When a switch is used on the front side door window control switch, the contacts close causing a voltage drop within the appropriate signal circuit. The window motor will detect the voltage drop and will command the window to move in the direction requested.

The driver front side door window control switch communicates to the BCM by a serial data circuit. When the driver wishes to control the passenger window, the driver will use the appropriate switch on the driver front side door window control switch. When this switch is used, a serial data message is sent to the BCM requesting the passenger window motor command, the BCM will then send a serial data message to the passenger window motor which will then move in the direction requested.

### Left Rear, Right Rear Express Down Window Motors

For the left rear and right rear doors, when their window switch is pressed in the down position, battery positive voltage is applied to their respective window motor control circuit and ground to the other window motor control circuit causing that window to open. When the individual window switch is pulled in the up position, voltage and ground is applied to the window motor in the opposite direction causing that window to close. The return path to ground is supplied through the inactive control circuit being normally grounded through the window switch.

Each rear side door window switch communicates to the BCM by a serial data circuit. When the driver wishes to control the left rear or right rear window, the driver will use the appropriate switch on the driver front side door window control switch. When this switch is used, a serial data message is sent to the BCM requesting a window motor command, the BCM will then send a serial data message to the appropriate rear side door window switch which will then command that window to move in the direction requested.

### Lockout Switch Feature

The driver front side door window control switch contains a window lockout switch, when the driver presses the window lockout switch, a serial data message is sent to the BCM which will send a disable command to the rear side door window switches, deactivating them. The rear windows will still function normally from the switches on the driver front side door window control switch.

## Rear Window Defogger Description and Operation

### Rear Window Defogger System Components

The rear window defogger system consists of the following components:

- Body Control Module
- Front Heater and Air Conditioning User Interface Control
- Rear Body Wiring Harness Junction Block (Contains PCB Rear Defogger Relay
- Rear Defogger Grid
- 40A Fuse

### Rear Window Defogger Operation

The rear defog control system utilizes a single zone backlight design, driven with a single relay configuration. A switch for the customer to control the system is provided within the front heater and air conditioning user interface control. Also included in the front heater and air conditioning user interface control is an indicator to inform the customer with the current state of the system. The system is only operational when engine is running or during remote start.

Pressing the heated rear window switch causes the front heater and air conditioning user interface control to send a serial data message to the body control module requesting rear window defog operation. The body control module upon receipt of the serial data message will provide voltage to the coil side of the rear defogger relay, this will energize the relay causing the relay switch contacts to close allowing B+ voltage to flow through the rear defogger grid control circuit to the rear defogger grid.

When the rear heated rear window switch is pressed and the engine is running, the rear window defogger grid will activate and will turn off automatically depending upon the vehicle speed (refer to owner’s manual for rear window defogger operation cycles)

# Horns and Pedestrian Alerts

## Schematic and Routing Diagrams

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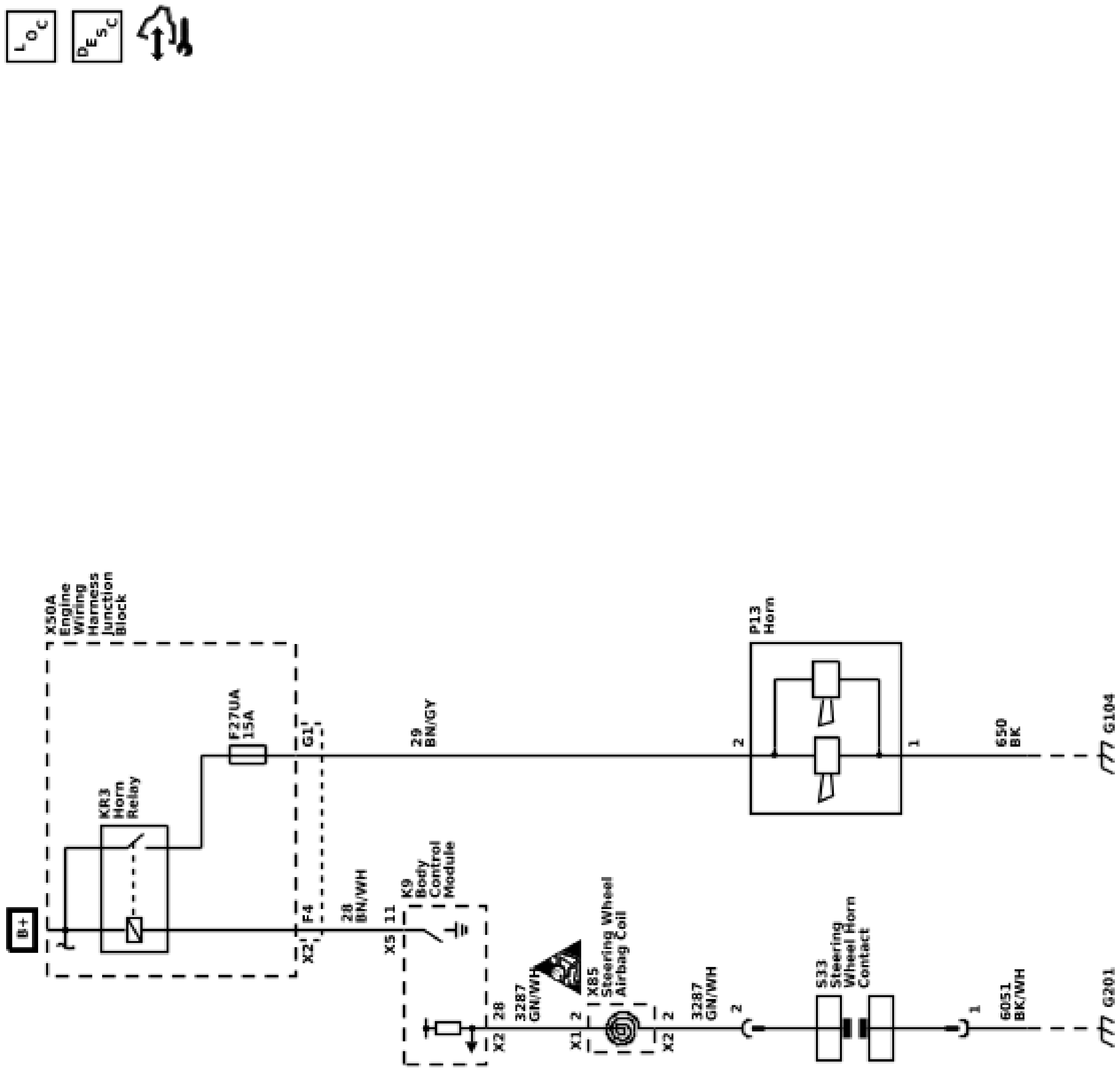
## Horn Schematics (Horn)



# Description and Operation

## Horns System Description and Operation

### System Description

The horn system consists of the following components:

- HORN fuse
- Engine wiring harness junction block (contains horn PCB relay)
- Steering wheel horn contact
- Steering wheel airbag coil
- Horn
- Body control module (BCM)

### System Operation

The vehicle horn system is activated under the following conditions:

- When the horn switch is depressed
- The BCM commands the horns ON under any of the following conditions:
  − When the content theft deterrent system detects a vehicle intrusion.
  − When the panic button is depressed on the remote control door lock transmitter—For further information refer to *Keyless Entry System Description and Operation 9-40*.
  − When the keyless entry system is used to lock the vehicle, a horn chirp may sound to notify the driver that the vehicle has been locked. The notification feature may be enabled or disabled through personalization. For further information refer to *Keyless Entry System Description and Operation 9-40*.
  − When the OnStar® system is used to sound the horns if equipped—For further information, refer to *OnStar Description and Operation 5-21*.

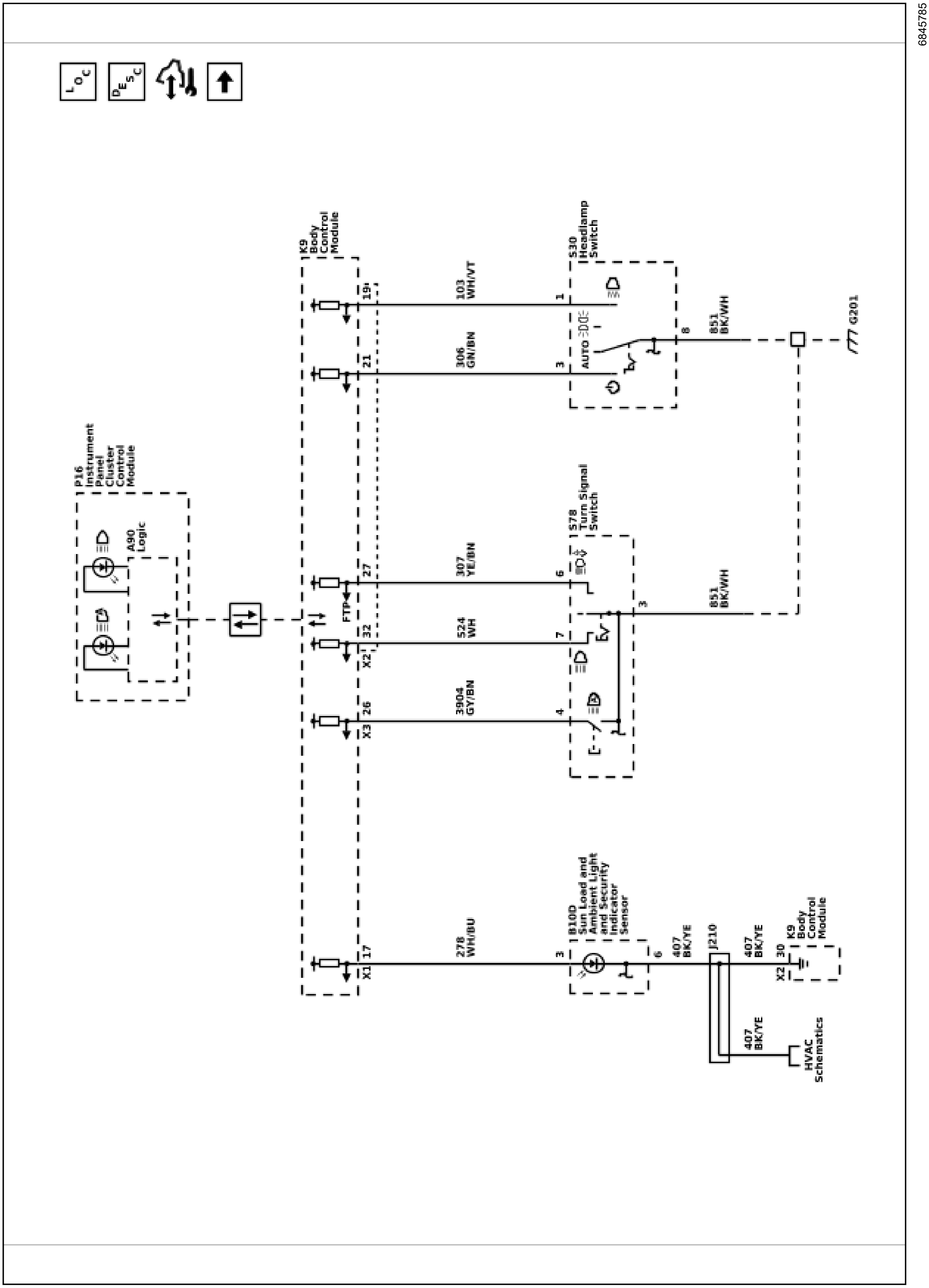
### Circuit Operation

Battery positive voltage is applied at all times to the horn relay coil and the horn relay switch. Pressing either of the horn switches applies ground to the horn relay control circuit. The BCM may also apply ground to the horn relay control circuit as described above. When the horn relay control circuit is grounded, the horn relay is energized and battery positive voltage is applied to the horns through the horn control circuit. The horns sound as long as ground is applied to the horn relay control circuit.

# Lighting

## Schematic and Routing Diagrams

## Headlights/Daytime Running Lights (DRL) Schematics (Controls and Indicators)



## Headlights/Daytime Running Lights (DRL) Schematics (Headlamps and Daytime Running Lamps - Left)

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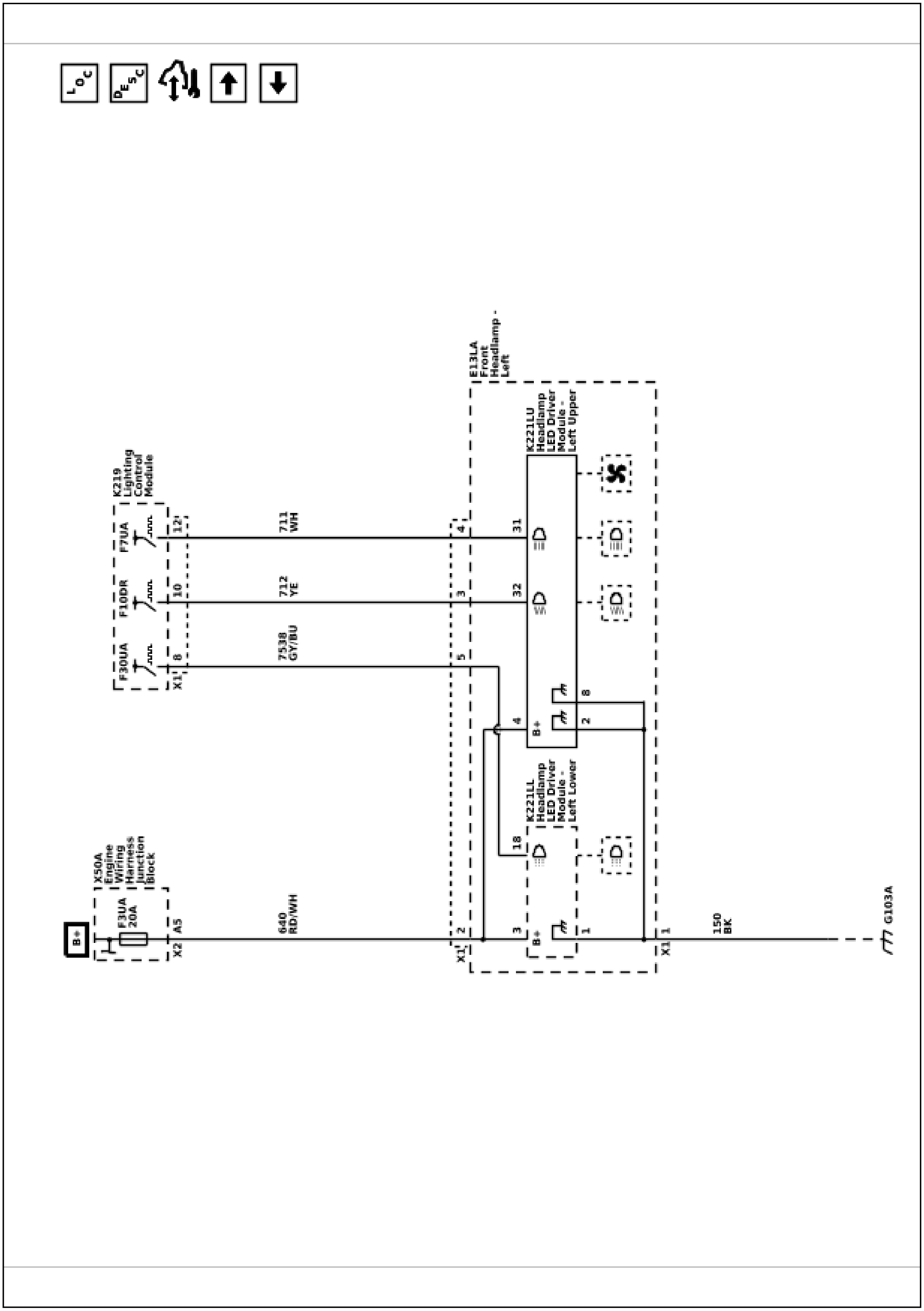

## Headlights/Daytime Running Lights (DRL) Schematics (Headlamps and Daytime Running Lamps - Right)

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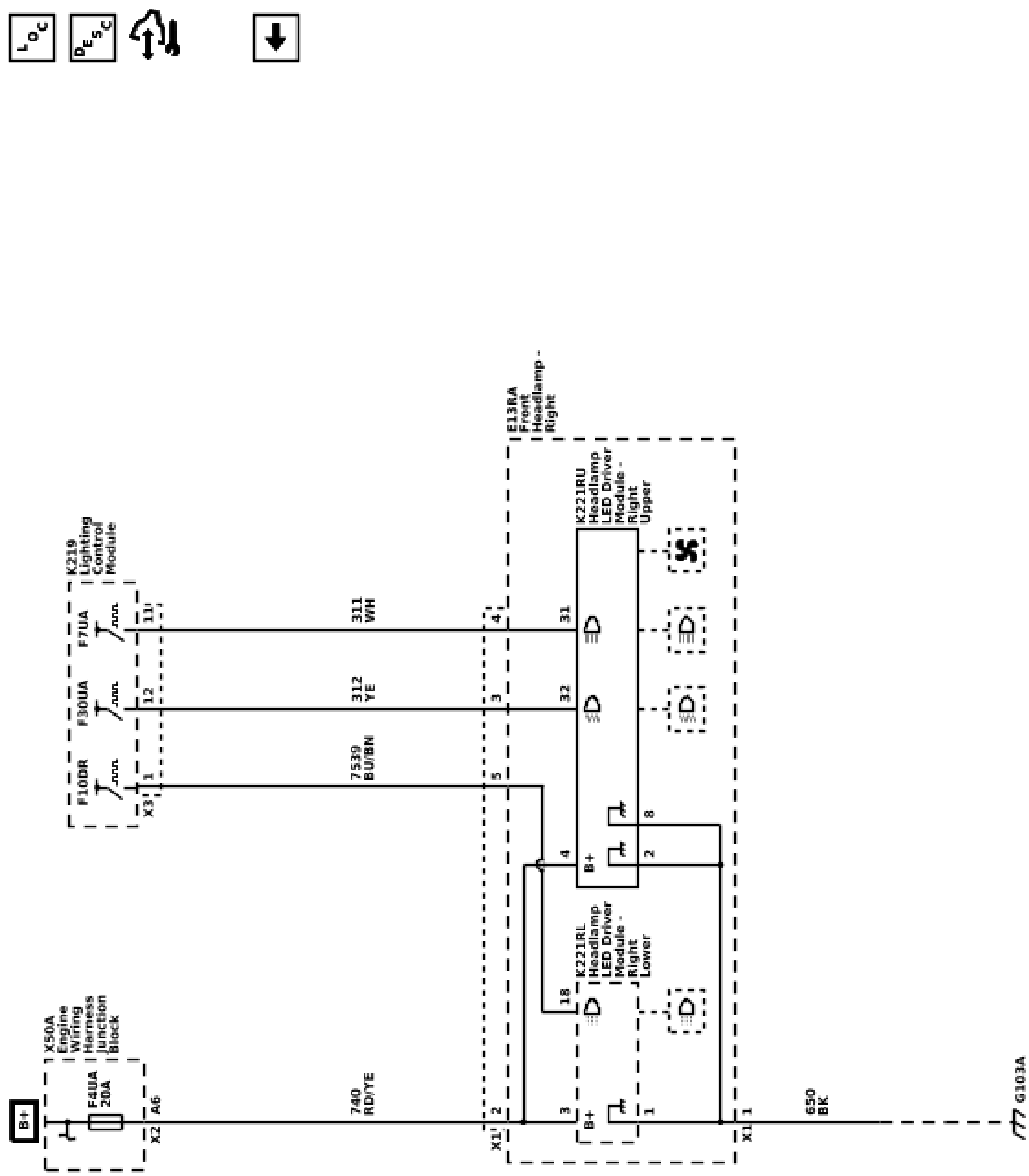
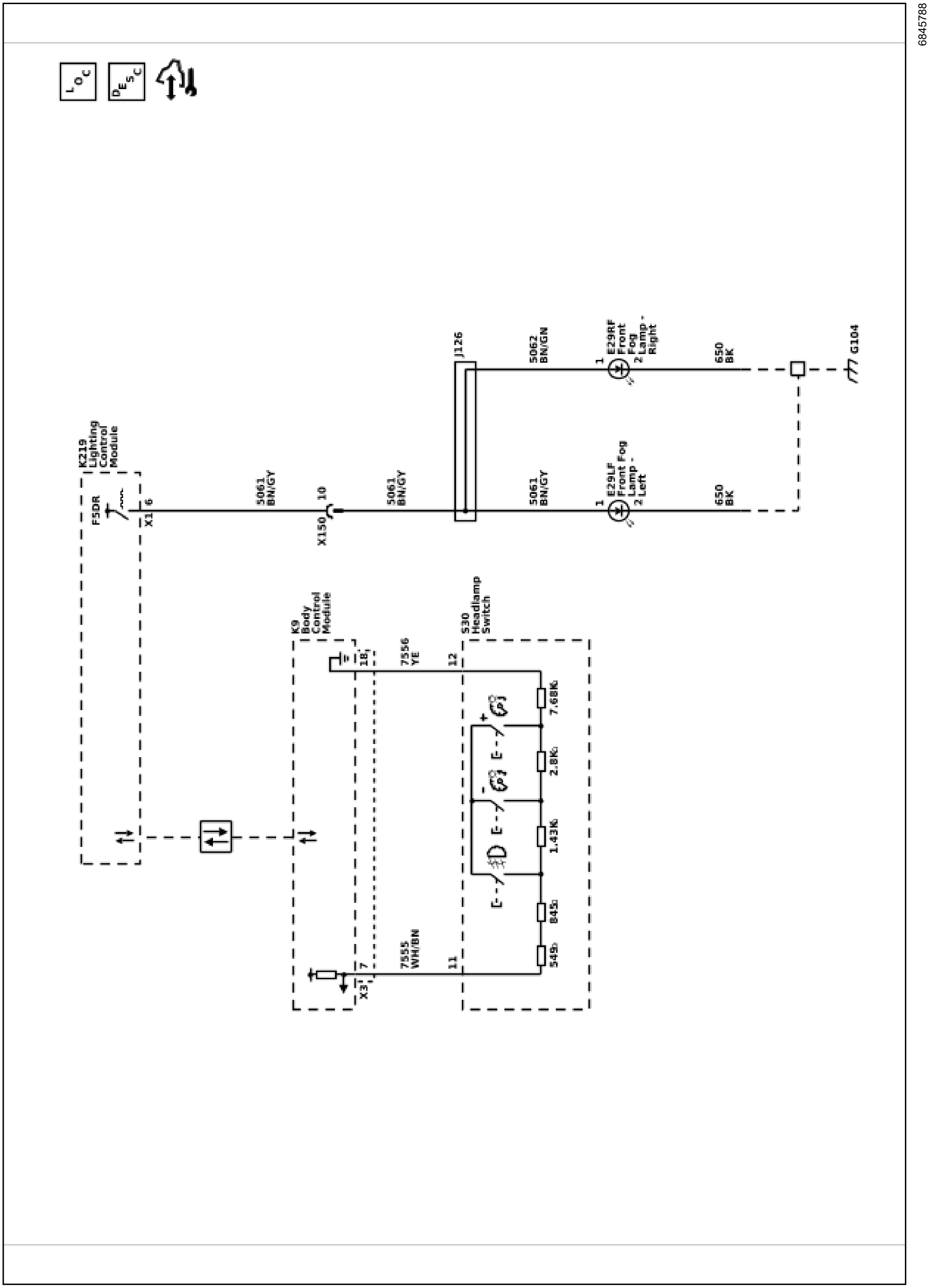
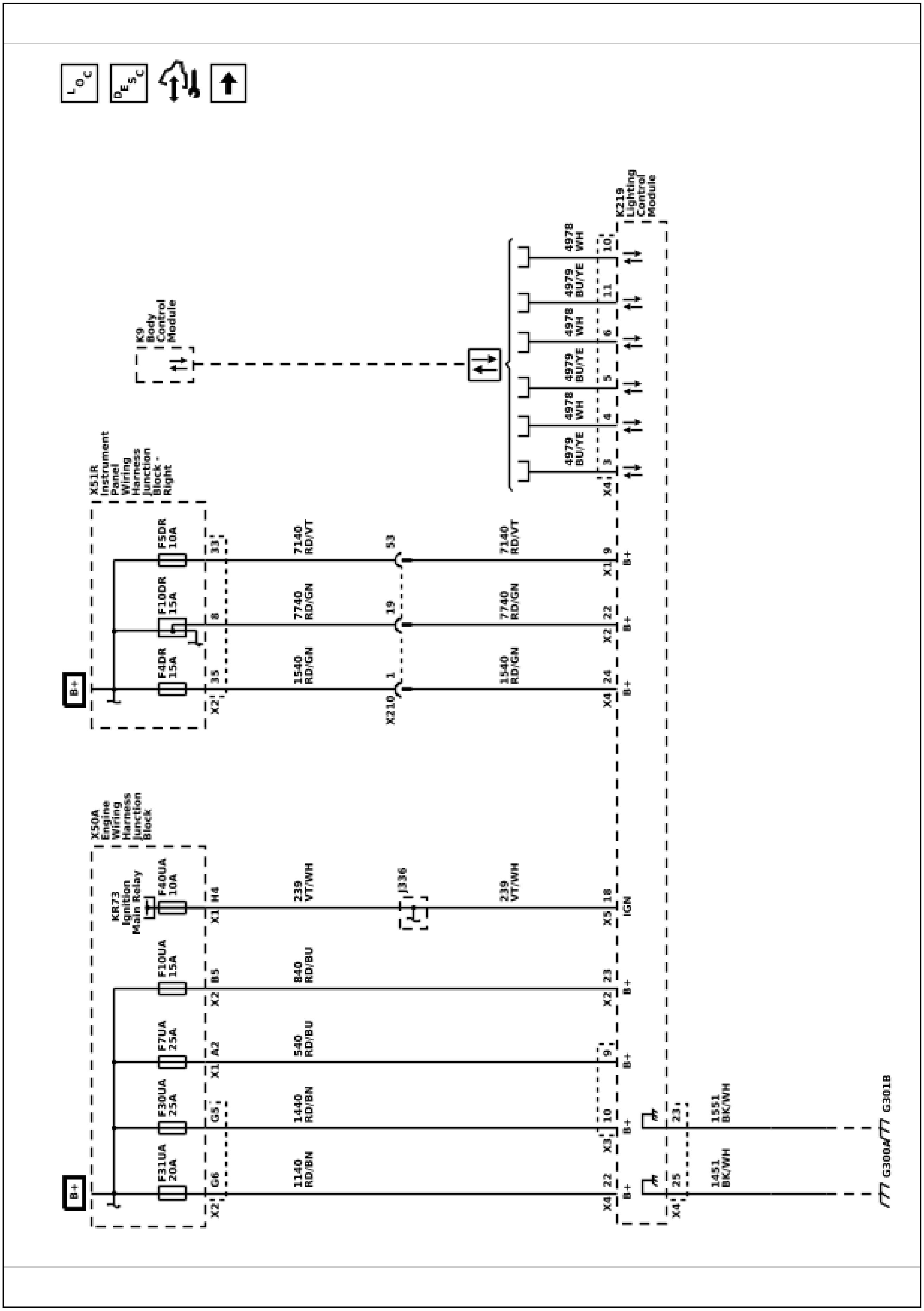


## Fog Lights Schematics (Fog Lamps (T3U))



## Exterior Lights Schematics (Lighting Control Module Power, Ground, and Serial Data)

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## Exterior Lights Schematics (Lighting Control Module Subsystem References)

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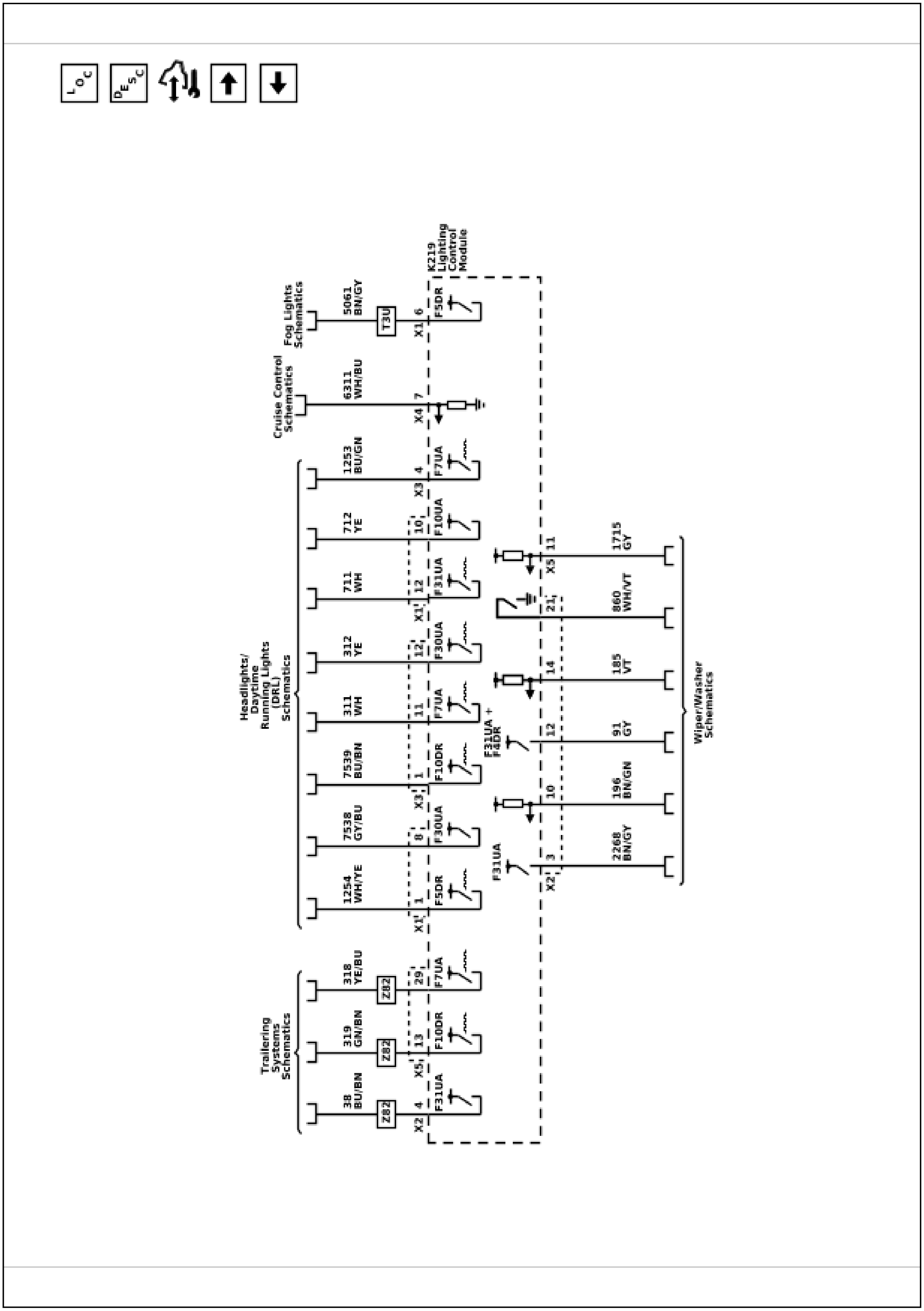
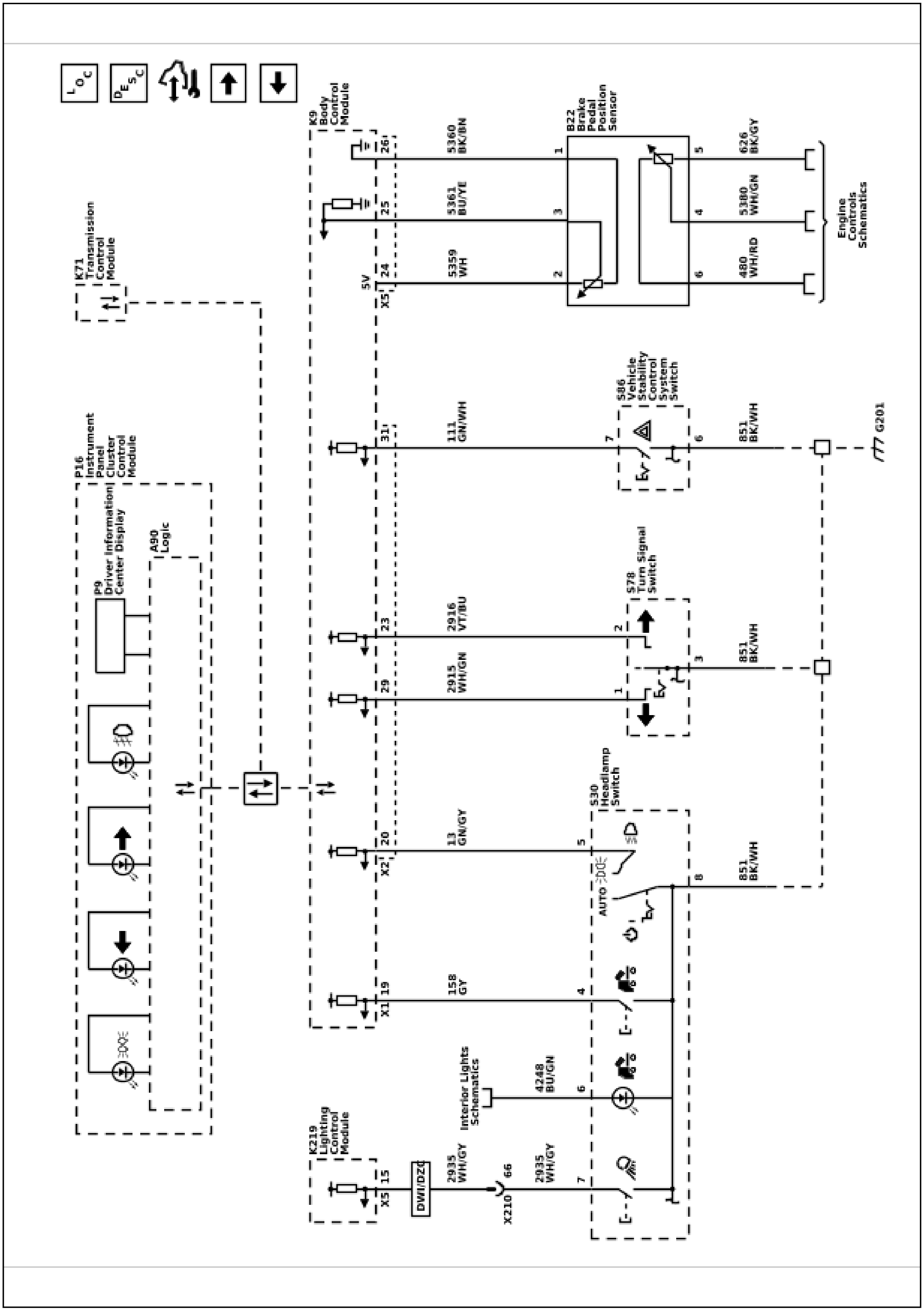
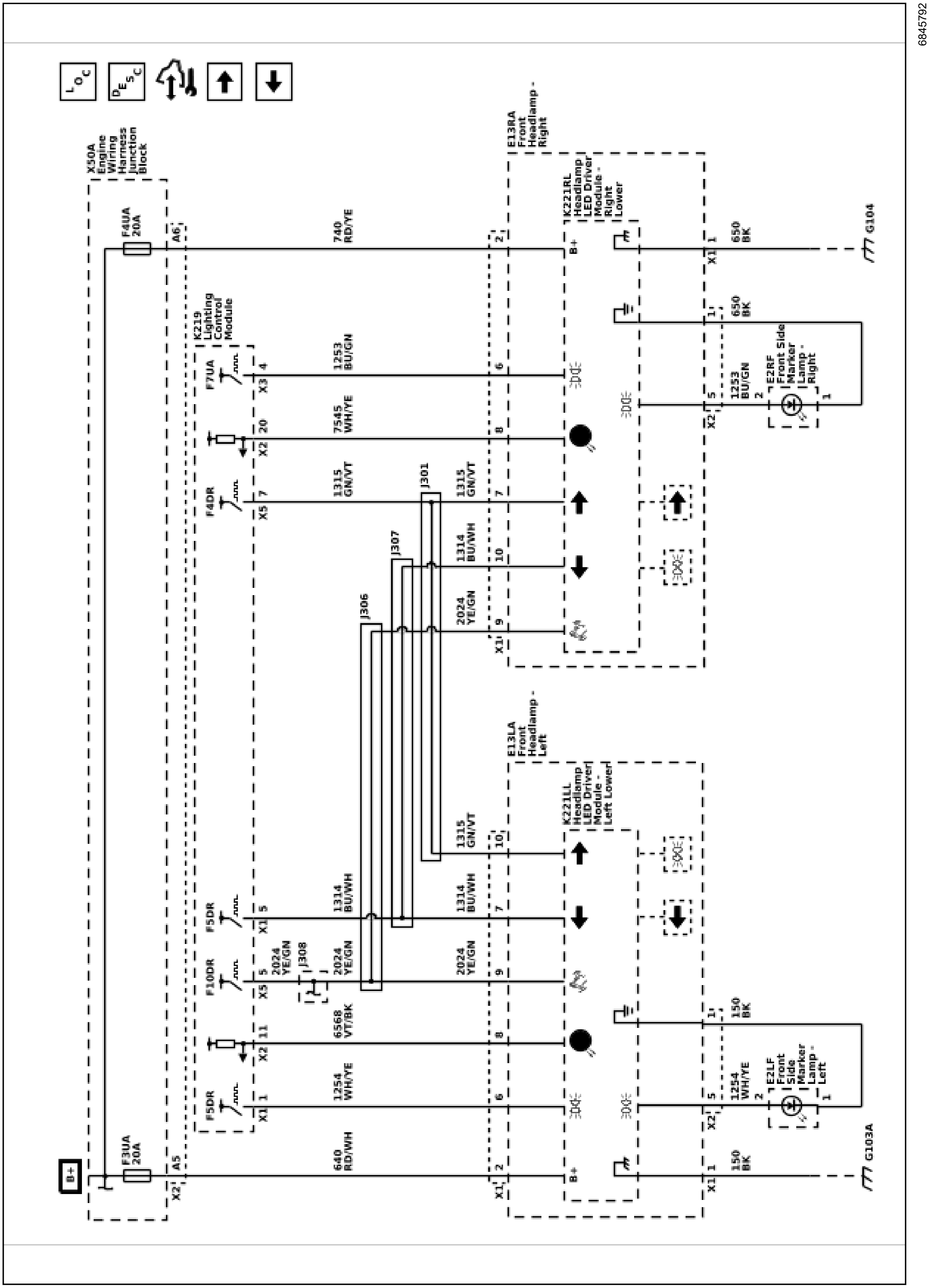


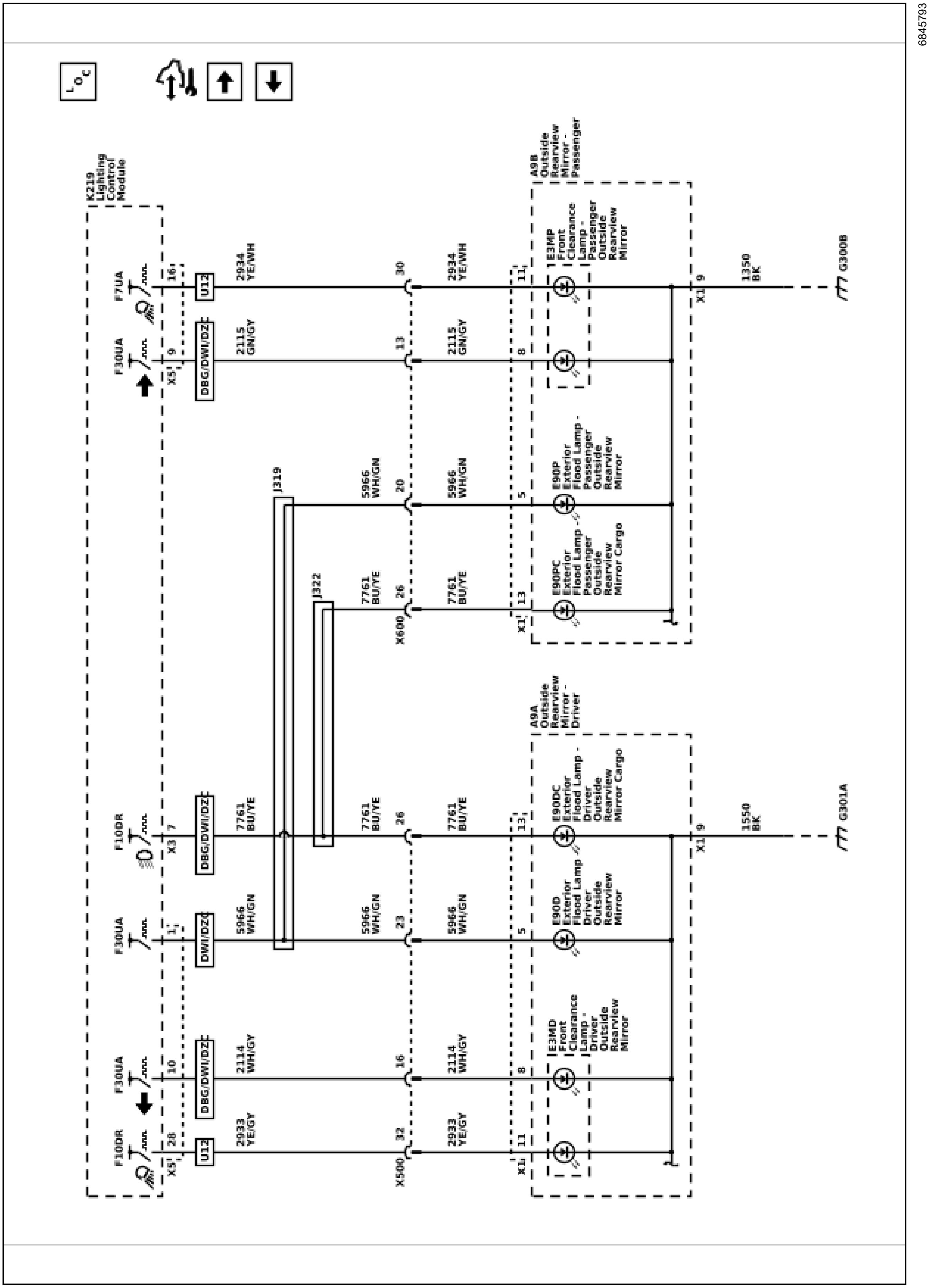
## Exterior Lights Schematics (Controls and Indictors)



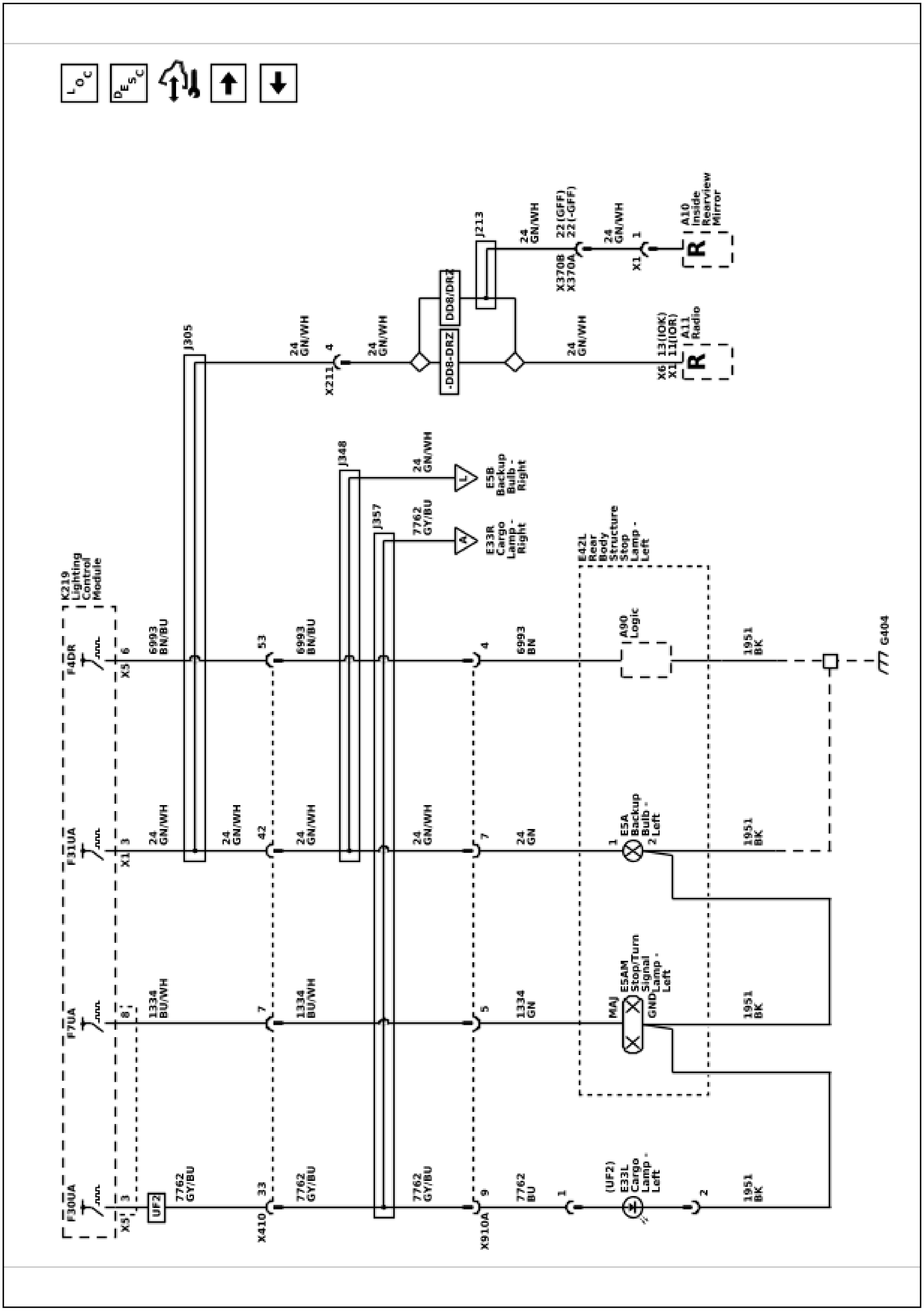
## Exterior Lights Schematics (Front Turn Signals, Park Lamps, and Side Marker Lamps)



## Exterior Lights Schematics (Outside Rearview Mirror Task, Turn, Approach, and Flood Lights (DBG / DWI / DZC))



## Exterior Lights Schematics (Tail Lamp Assembly - Left ((GFF / GFI) & SRW))

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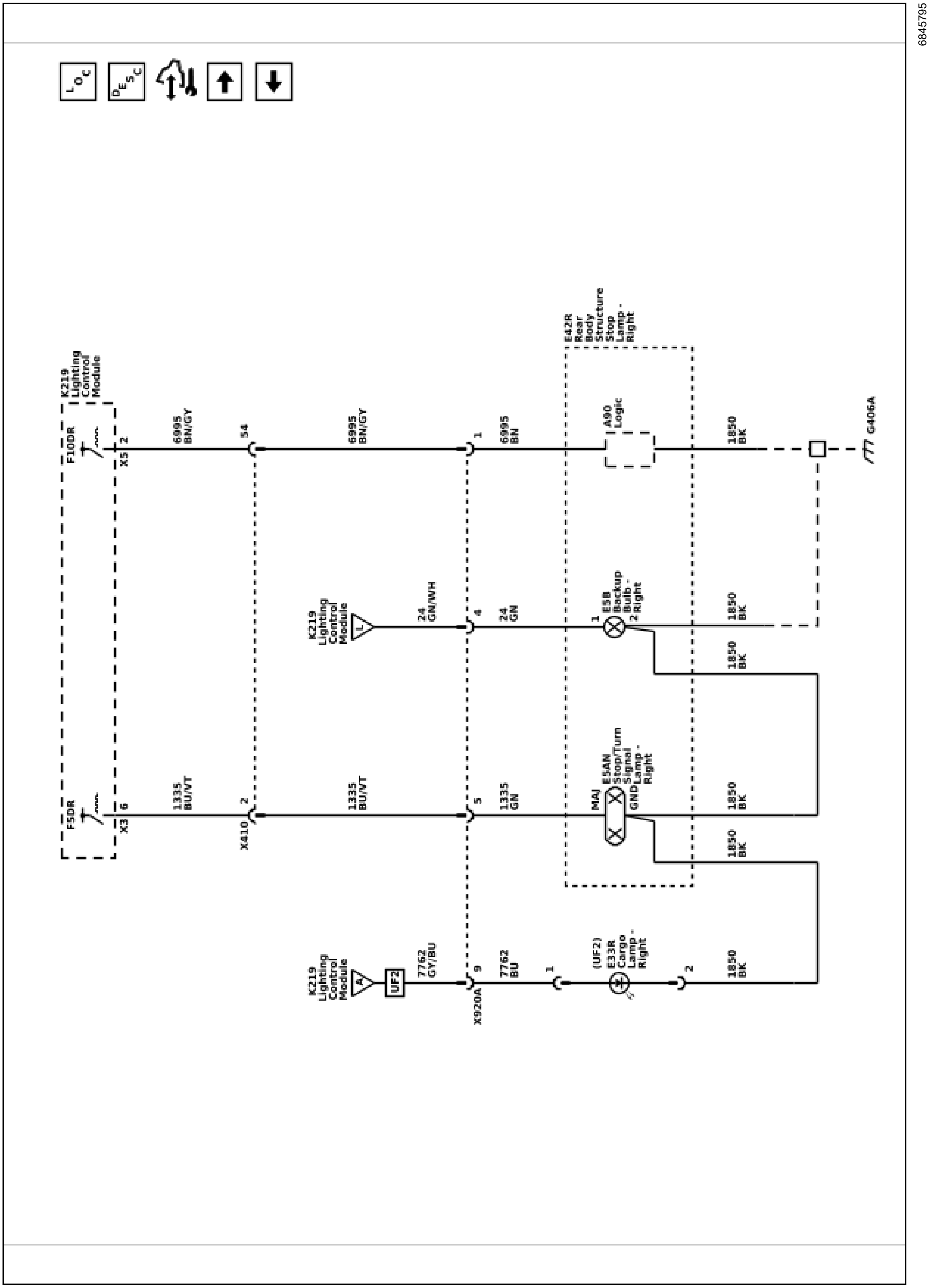
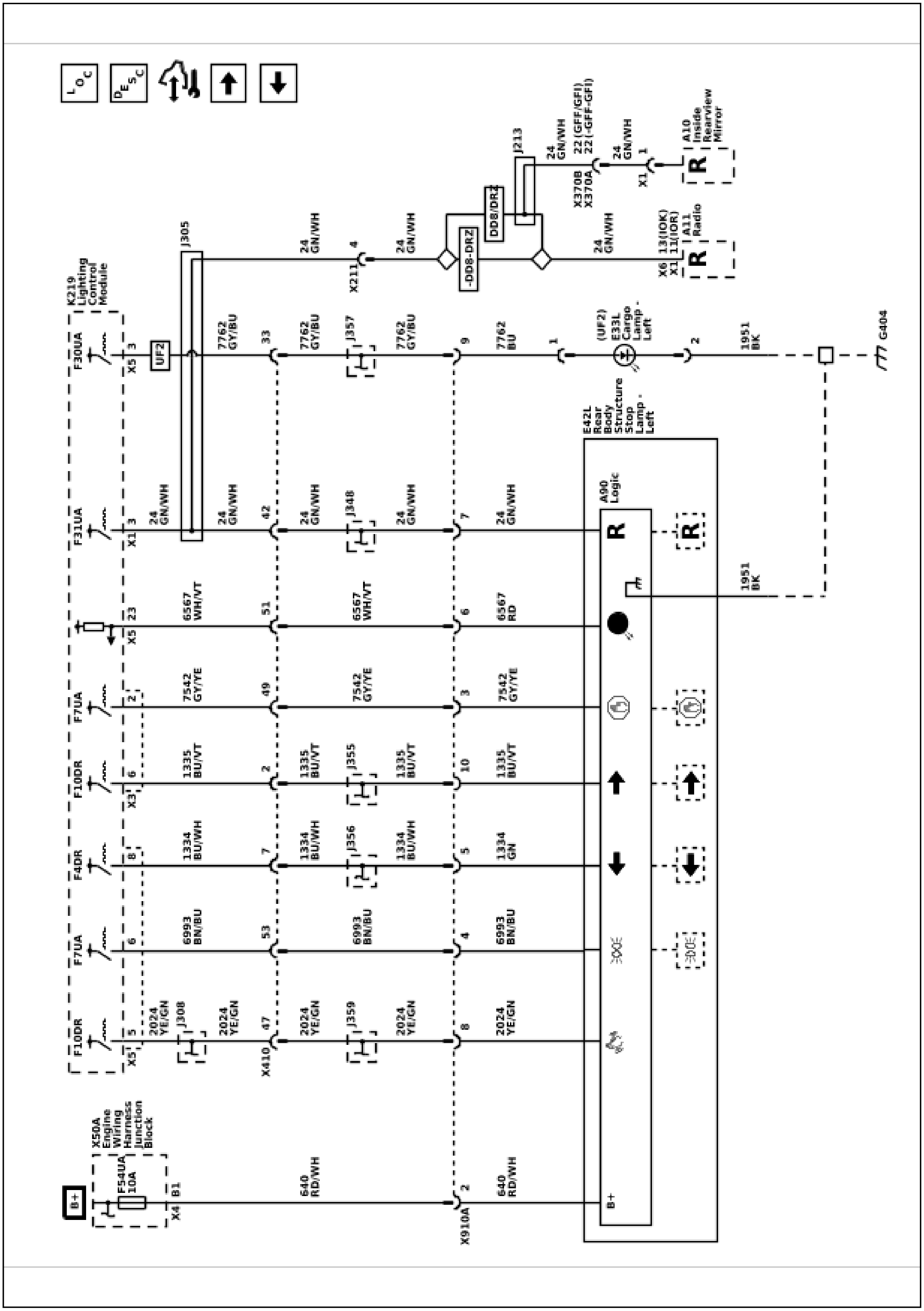
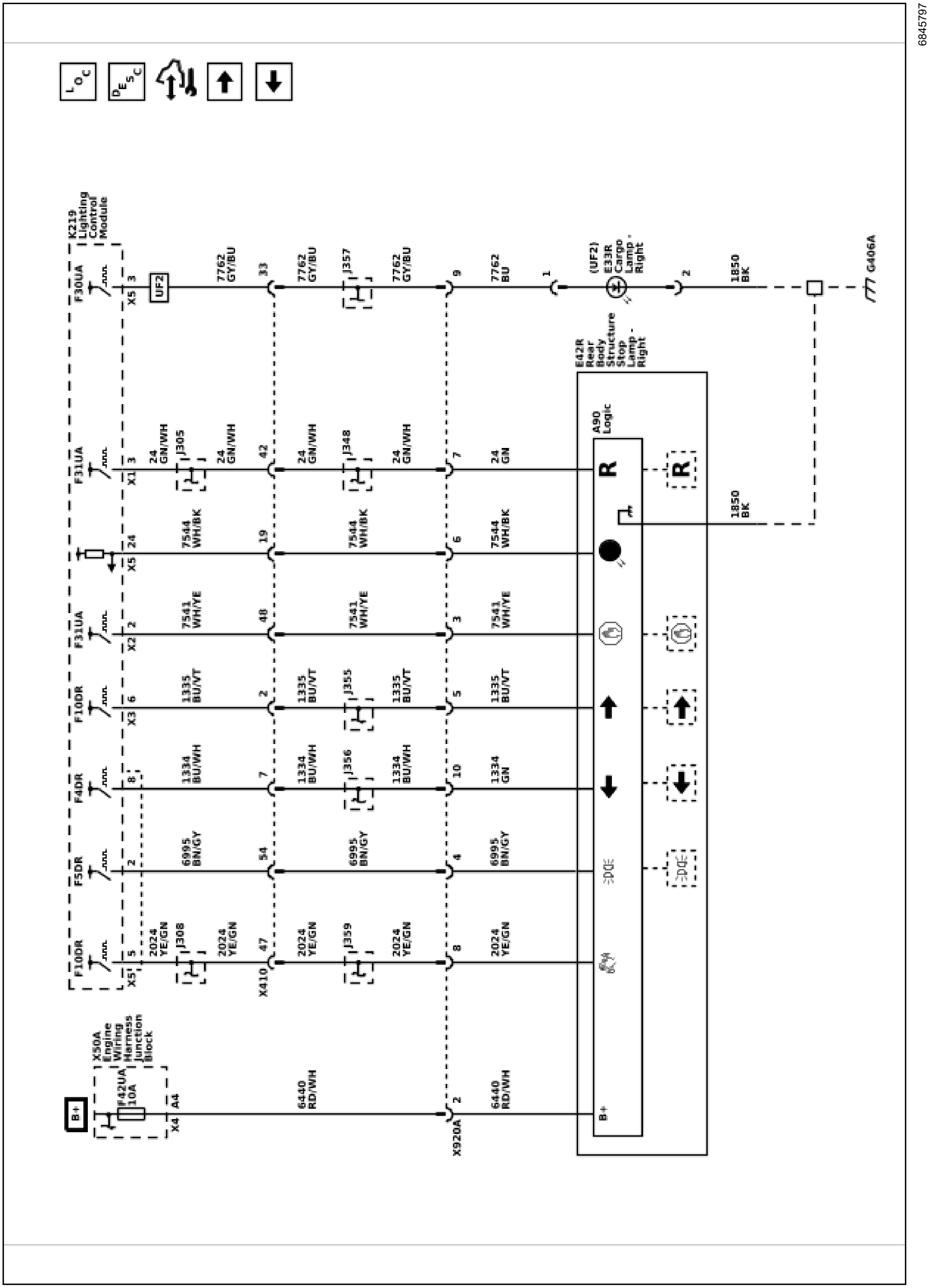
## Exterior Lights Schematics (Tail Lamp Assembly - Right ((GFF / GFI) & SRW))



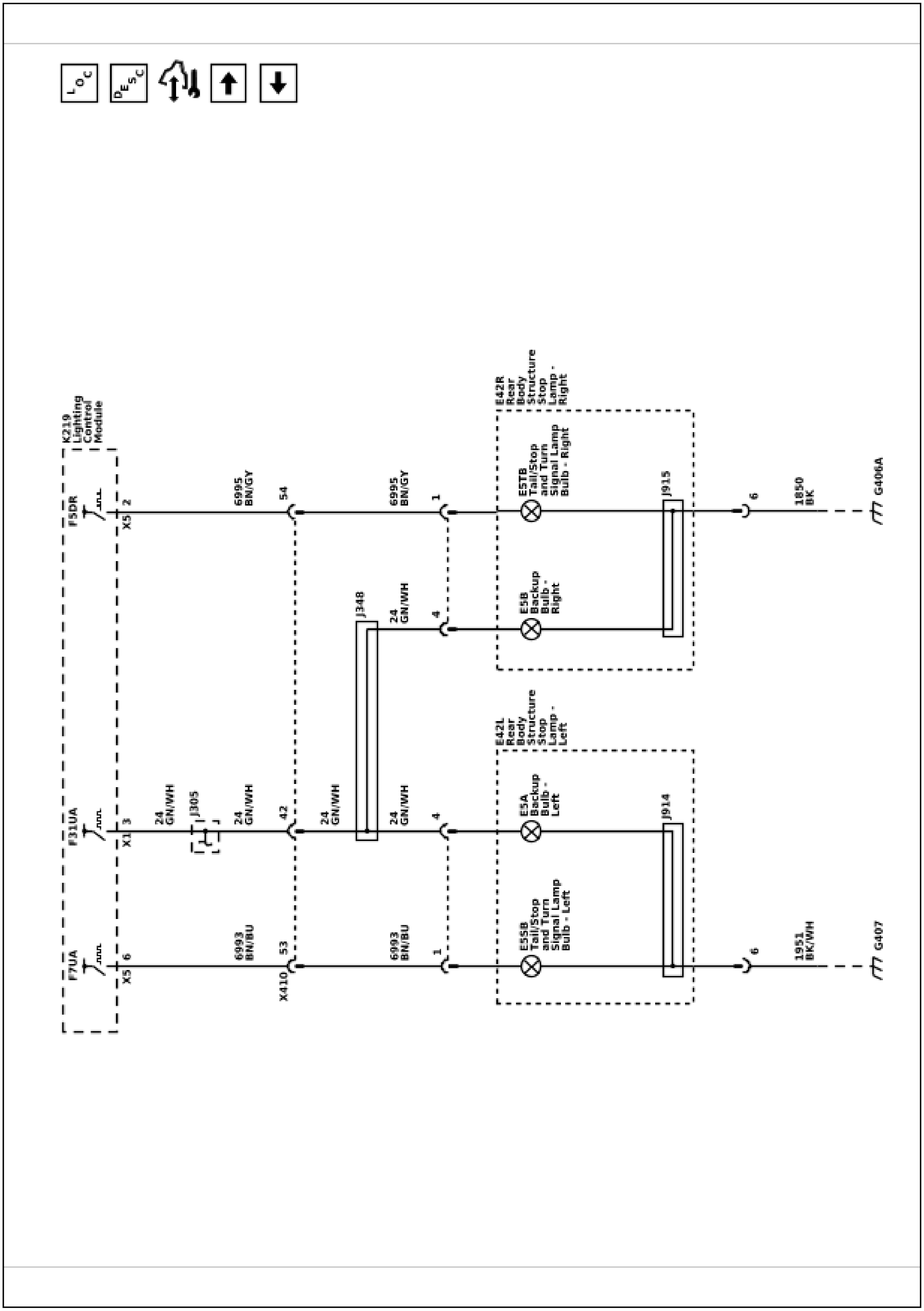
## Exterior Lights Schematics (Tail Lamp Assembly - Left (DZW / ((GA4 / GFG / GFU / GFW / GFY) & SRW)))



## Exterior Lights Schematics (Tail Lamp Assembly - Right (DZW / ((GA4 / GFG / GFU / GFW / GFY) & SRW)))



## Exterior Lights Schematics (Tail Lamp Assemblies (ZW9))

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Exterior Lights Schematics (Center High Mount Stop and Exterior Courtesy Lights - Regular Cab)

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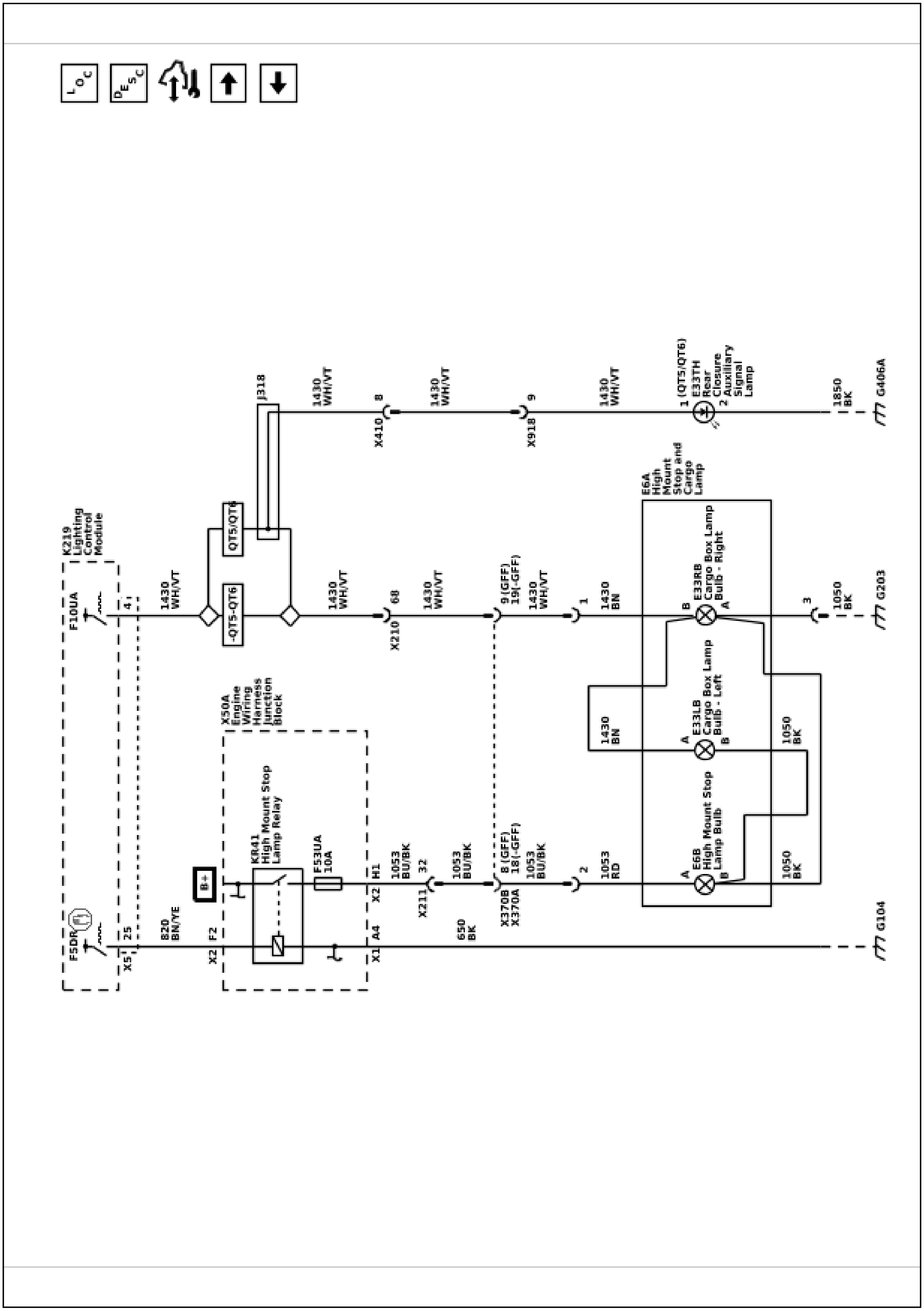
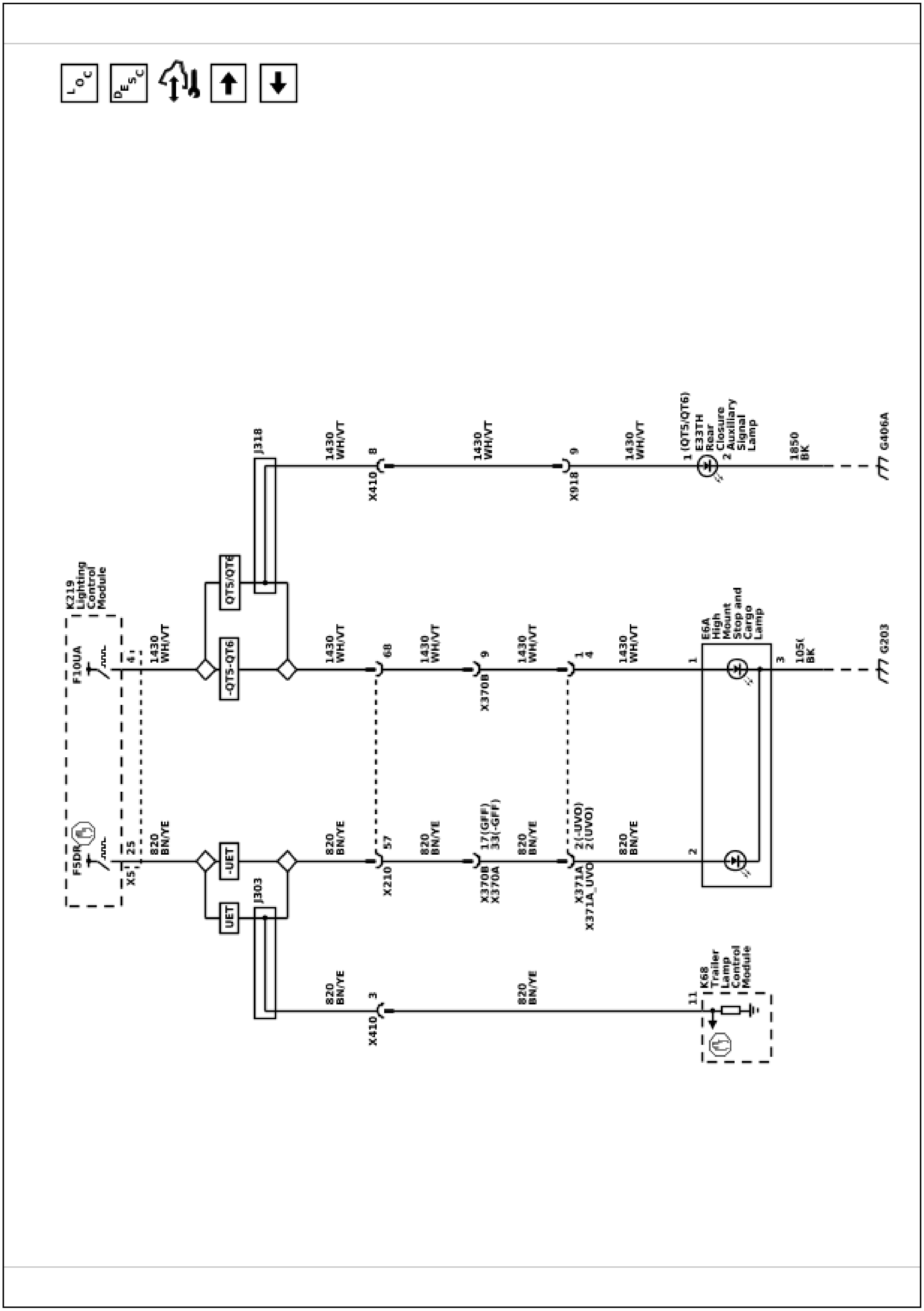
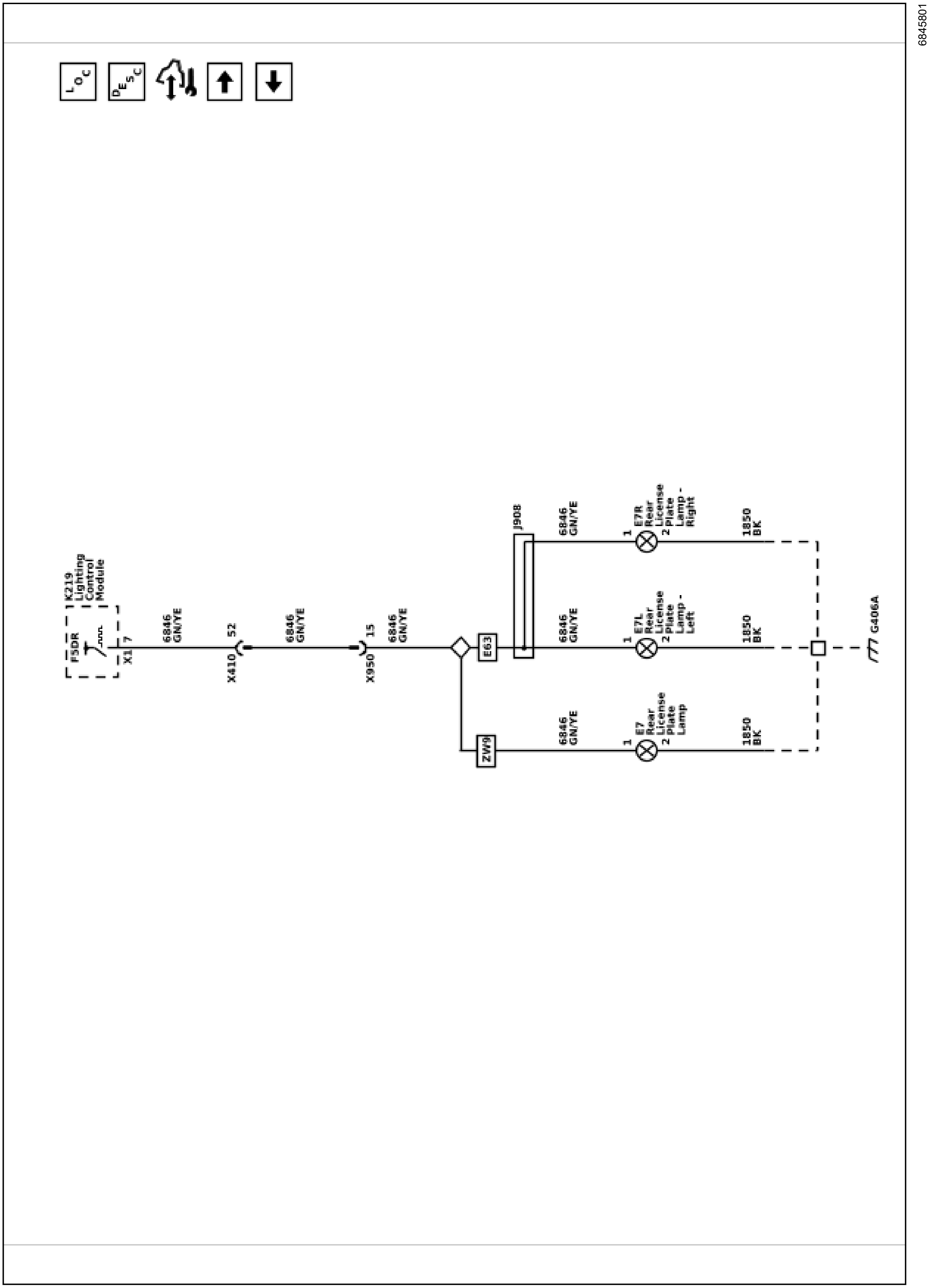


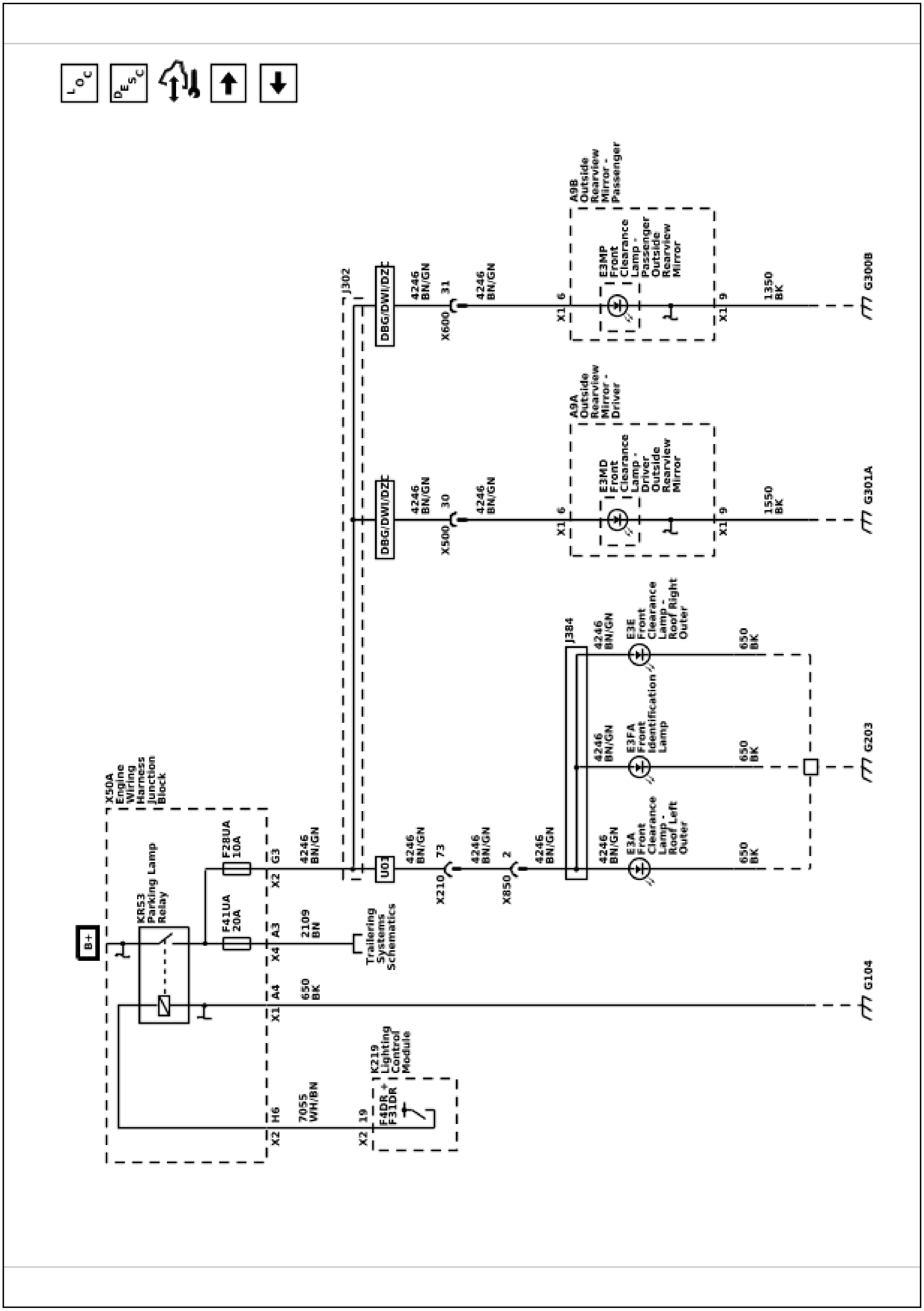
## Exterior Lights Schematics (Center High Mount Stop and Exterior Courtesy Lights - Double Cab/Crew Cab)



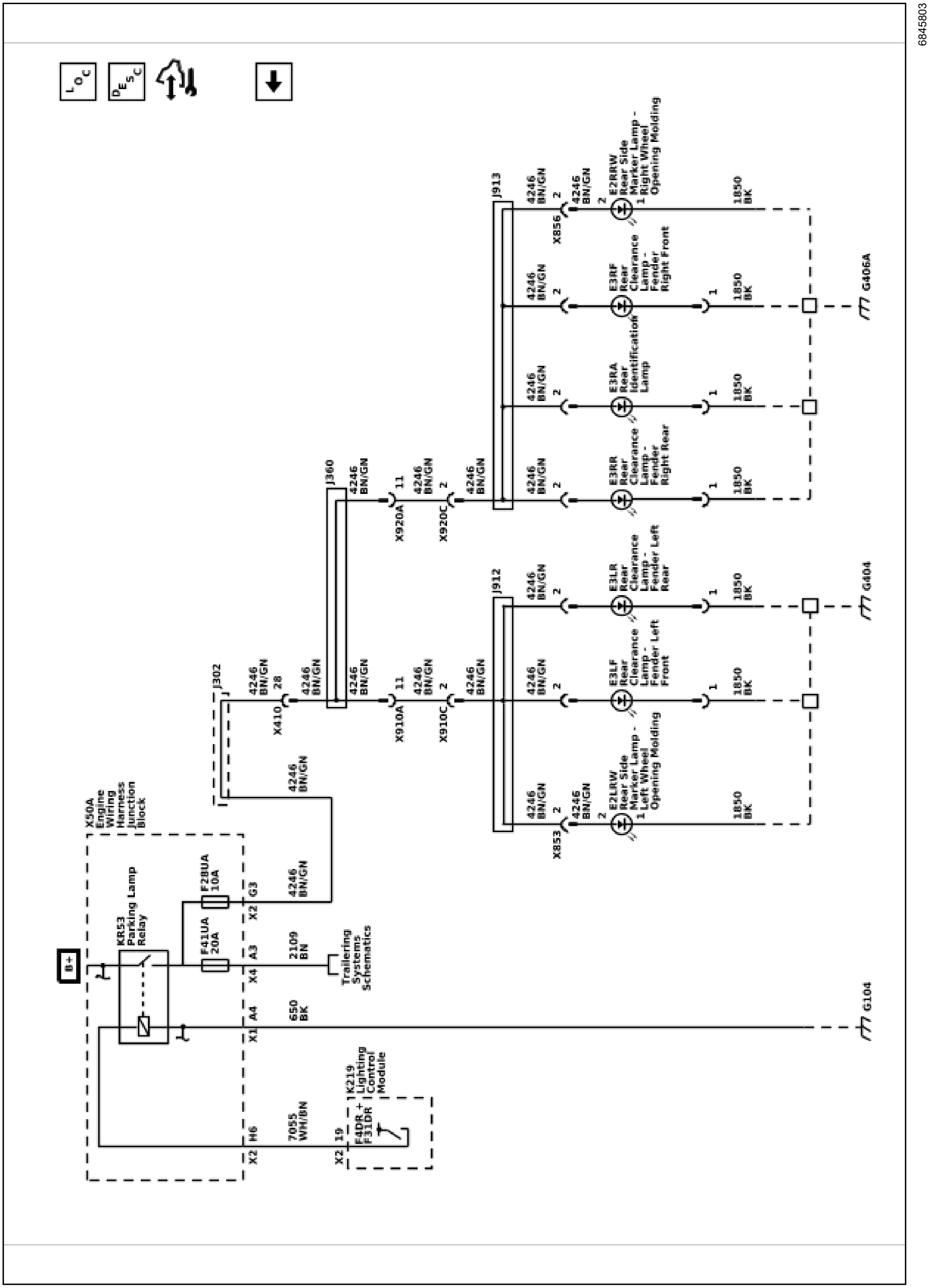
## Exterior Lights Schematics (License Plate Lamps)



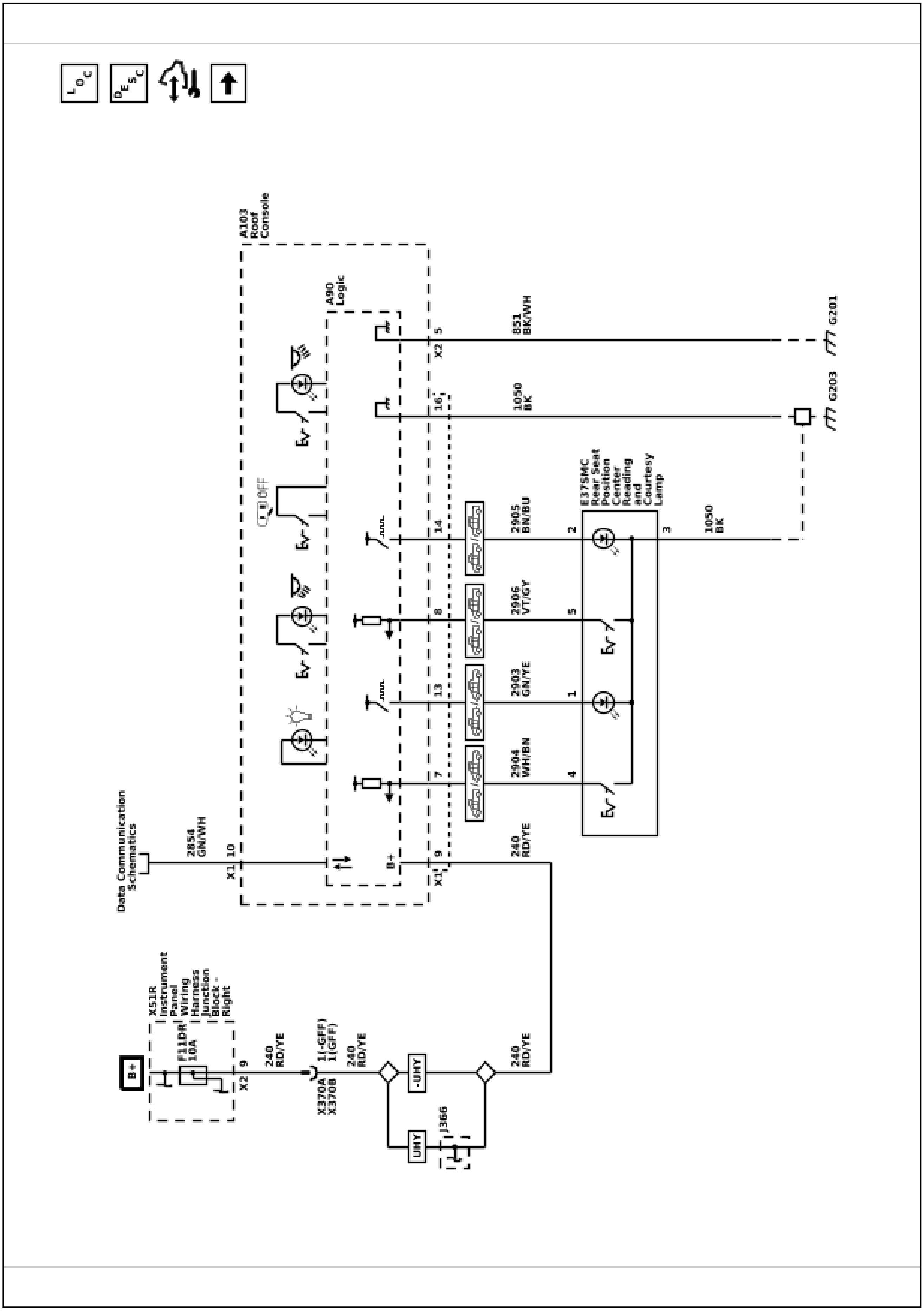
## Exterior Lights Schematics (Identification Lights - Front)



## Exterior Lights Schematics (Identification Lights - Rear)



## Interior Lights Schematics (Roof Console and Rear Seat Reading and Courtesy Lamps - Double Cab/Crew Cab)

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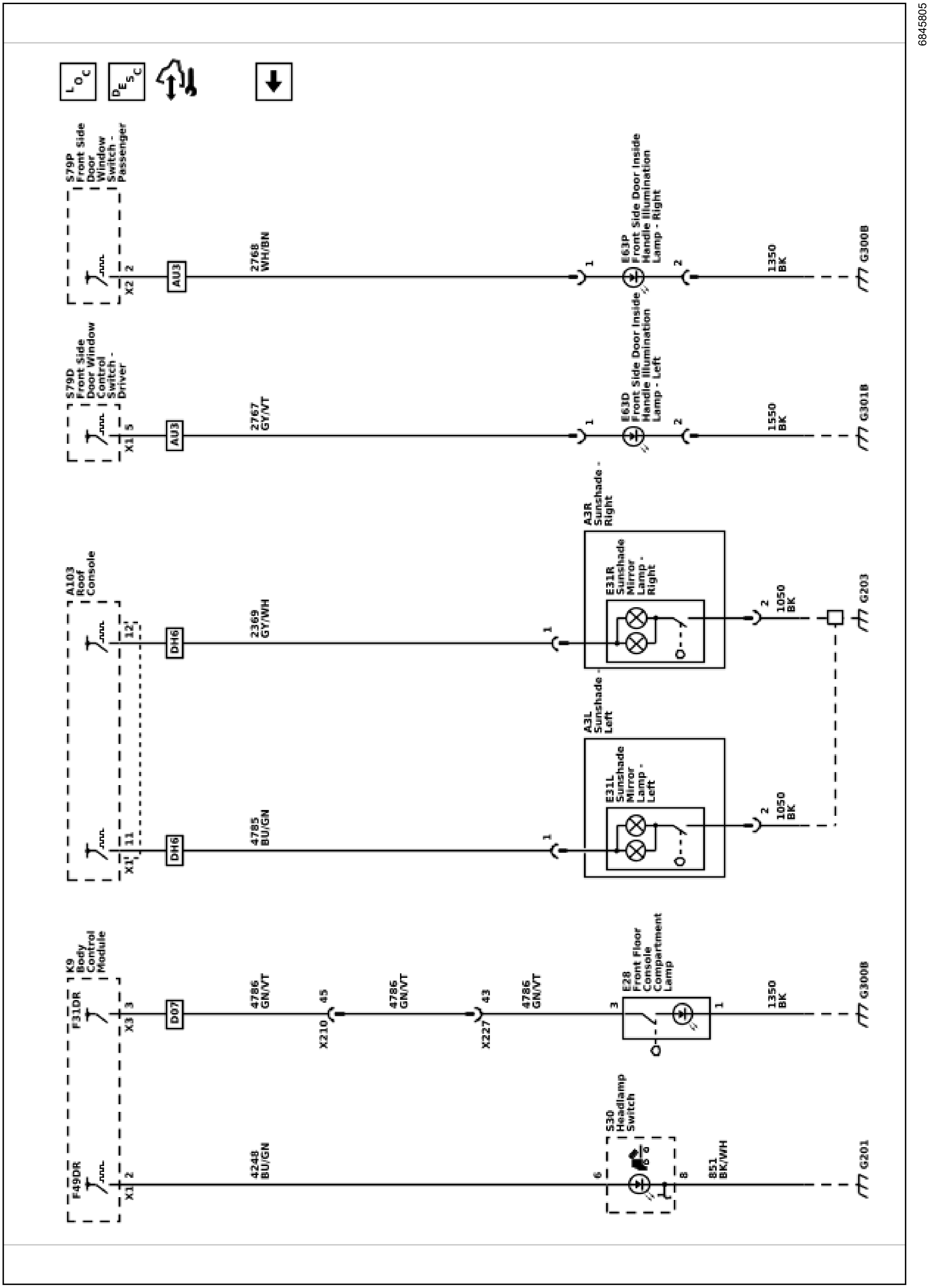
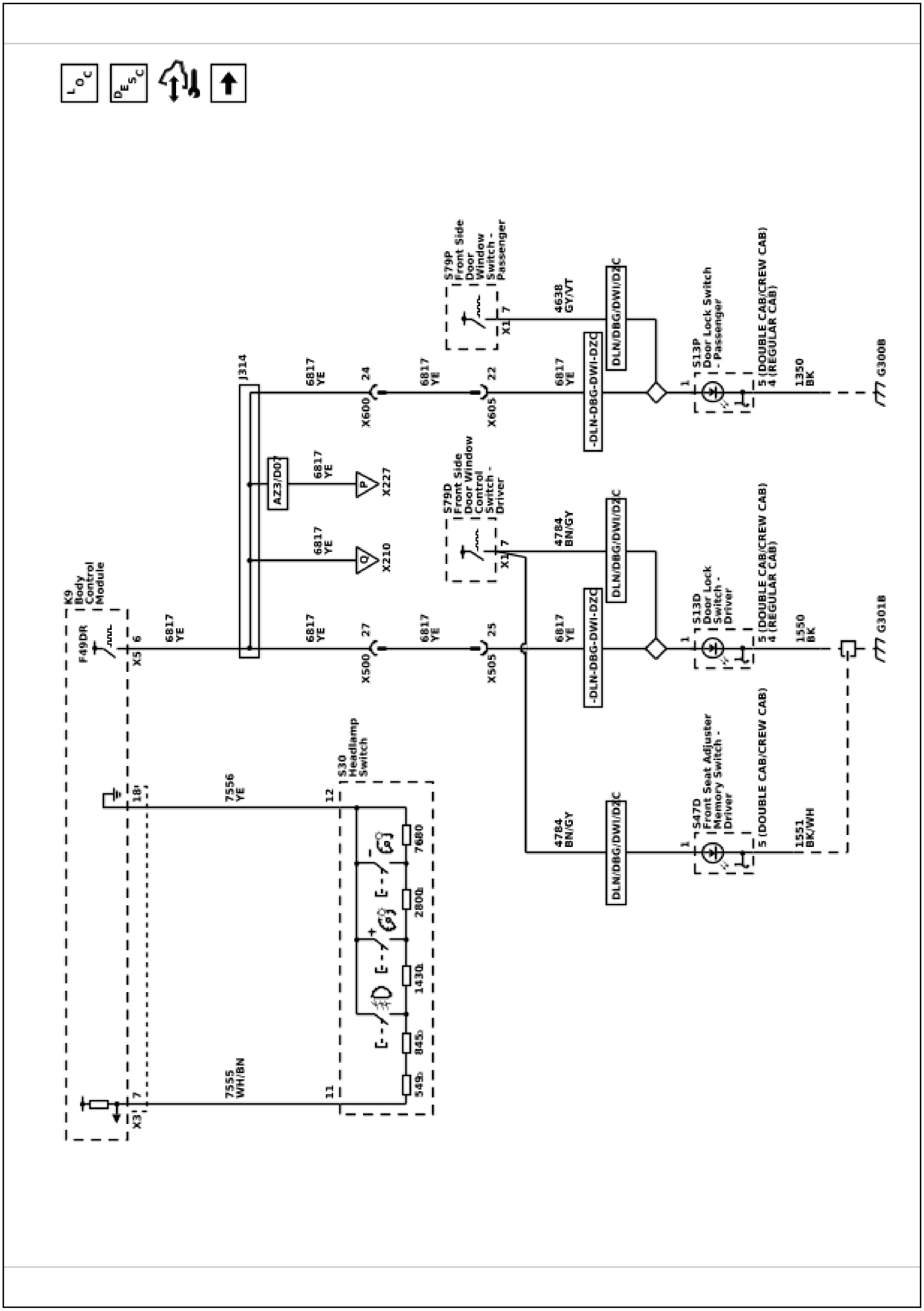
## Interior Lights Schematics (Cargo Lamp Indicator, Sunshade, Center Console, and Door Lamps)



## Interior Lights Dimming Schematics (Controls and Front Door Backlights)

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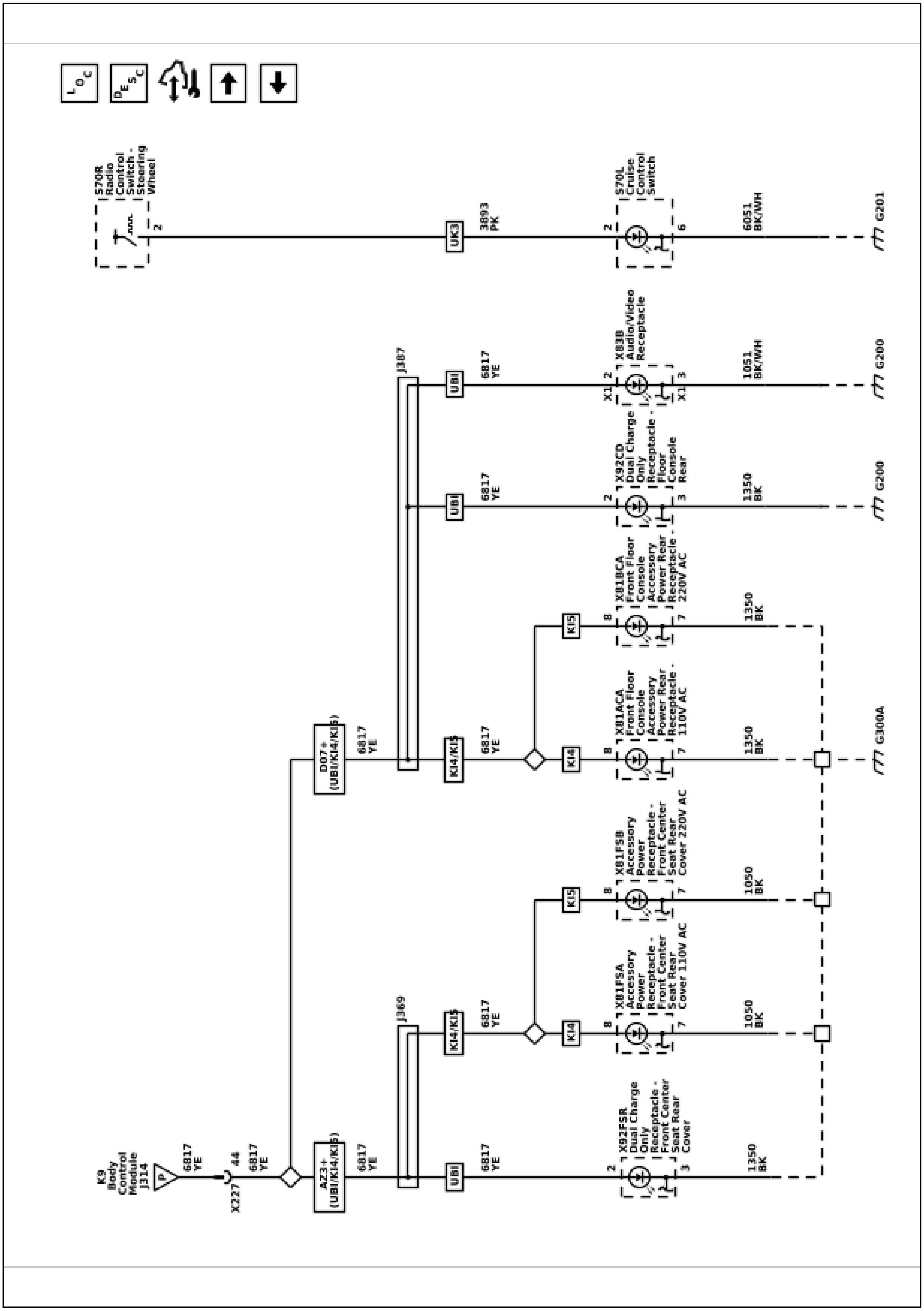
## Interior Lights Dimming Schematics (Steering Wheel, Floor Console, and Center Seat Backlights)

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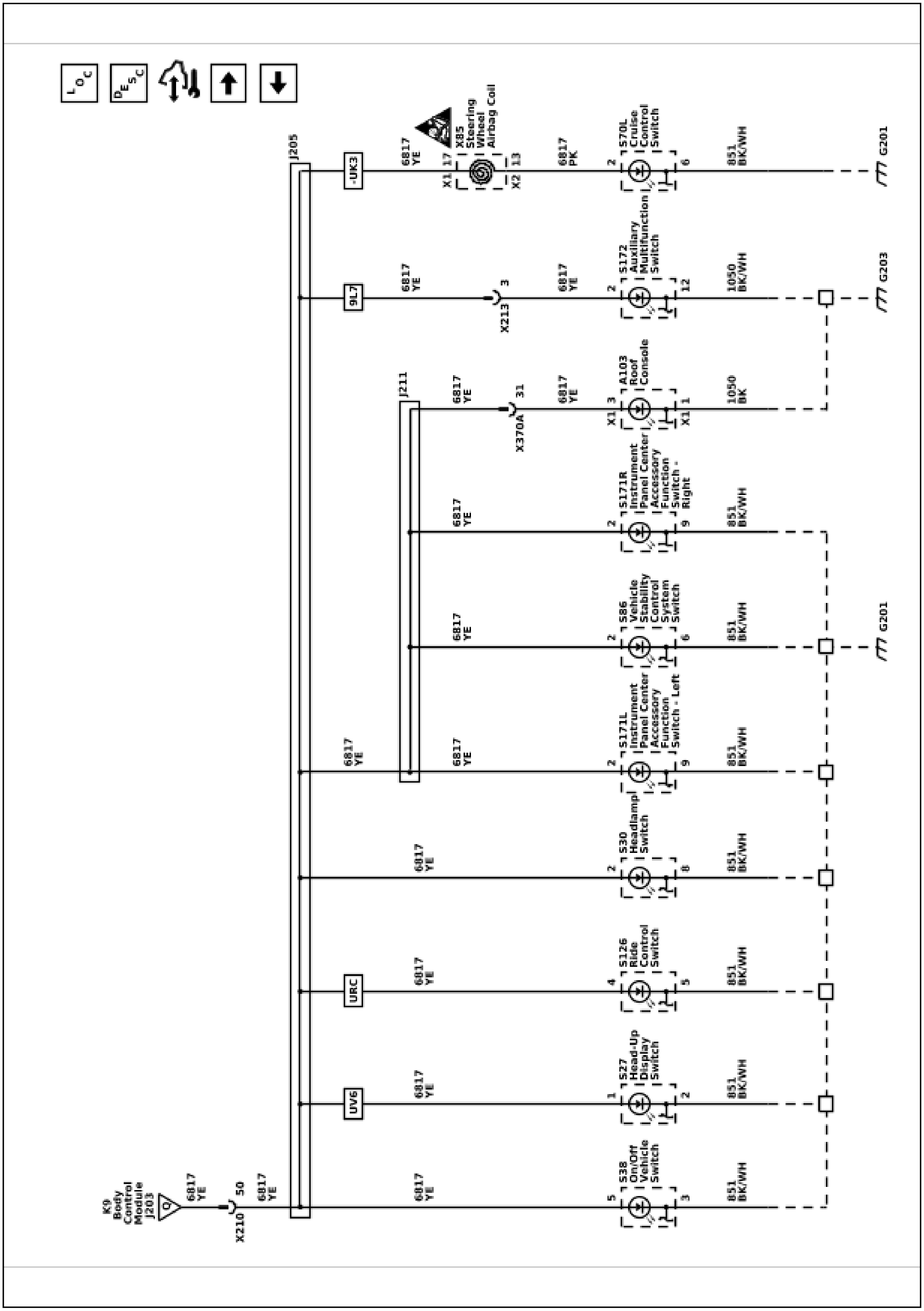
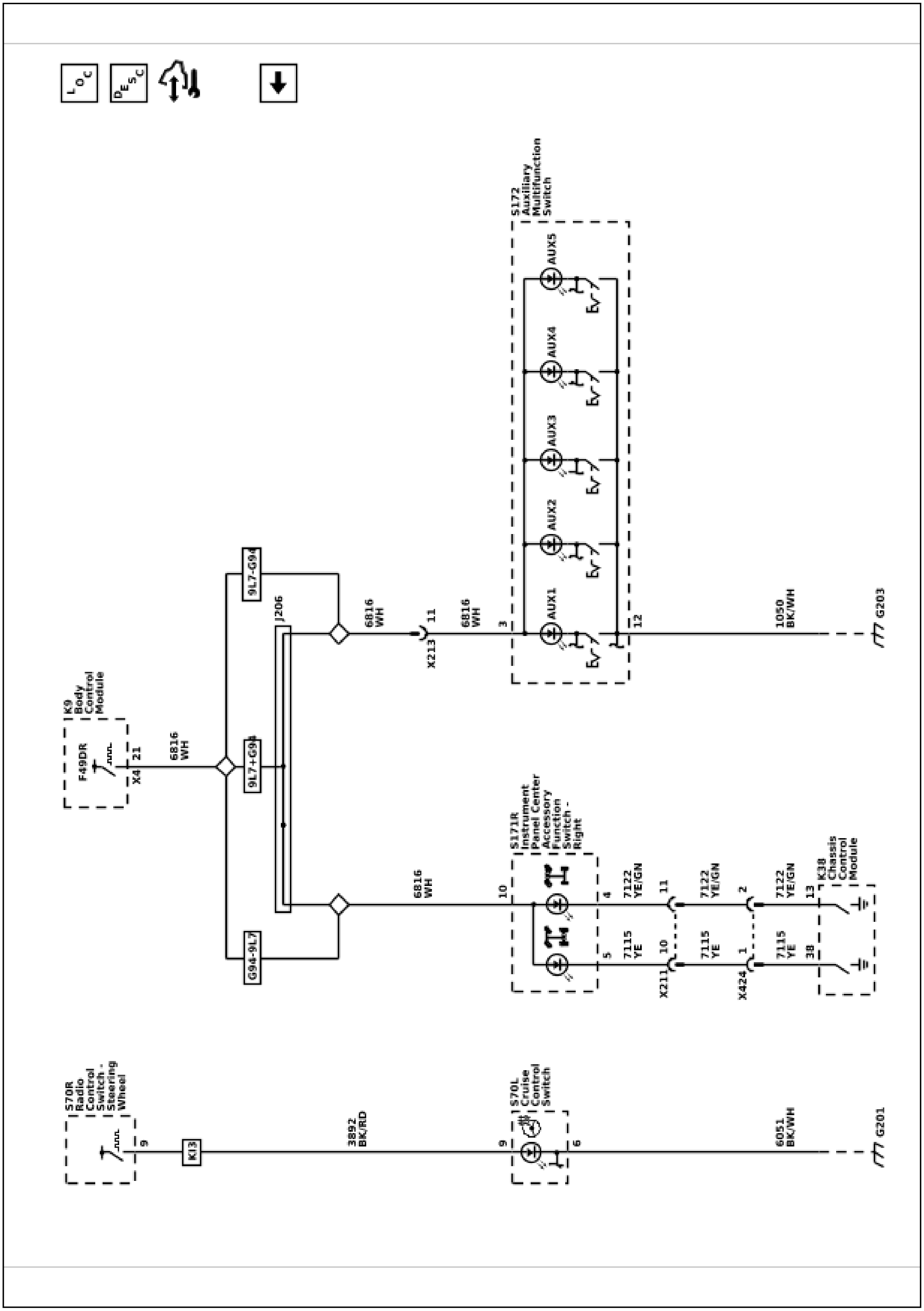
## Interior Lights Dimming Schematics (Instrument Panel Backlights)



## Interior Lights Dimming Schematics (Indicators)

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# Description and Operation

## Exterior Lighting Systems Description and Operation

The exterior lighting system consist of the following lamps:

- Backup lamps
- Cargo lamps
- Daytime running lamps (DRL)
- Exterior courtesy lamps
- Hazard warning lamps
- Headlamps
- Park, tail, license, and marker lamps
- {T3U} Front fog lamps
- {B3L / BRS} Running board lamps
- Stop lamps
- Task lamps
- Turn signal lamps
- Trailer lighting, refer to *Trailering Description and Operation 1-67* for more information.

### Low Beam Headlamps

The headlamps may be turned ON in 3 different ways:

- When the headlamp switch is placed in the ON position, for normal operation
- When the headlamp switch is placed in the AUTO position, for automatic lamp control during low ambient light conditions
- When the headlamp switch is placed in the AUTO position, with the windshield wipers ON in daylight conditions, after a 6 second delay

The K9 Body Control Module (BCM) monitors three signal circuits from the S30 Headlamp Switch. When the headlamp switch is in the AUTO position, the three signal circuits are unaffected (open) and the BCM relies on the B10D Sun Load and Ambient Light and Security Indicator Sensor input to determine if headlamps are required or if daytime running lamps will be activated based on outside lighting conditions. When the headlamp switch is placed in the headlamp OFF position, the headlamp switch headlamps OFF signal circuit is grounded, indicating to the BCM that the exterior lamps should be turned OFF. With the headlamp switch in the PARK LAMPS position, the headlamp switch park lamps ON signal circuit is grounded, indicating that the park lamps have been requested. When the headlamp switch is in the HEADLAMP position, both the headlamp switch park lamps ON signal circuit and the headlamps ON signal circuit are grounded. The BCM responds to these inputs by sending a serial data message to the K219 Lighting Control Module. The Lighting Control Module responds by applying pulse width modulated (PWM) voltage to both headlamp low beam control circuits, illuminating the low beam headlamps. When the Lighting Control Module commands the low beam headlamps ON, the operator will notice the interior backlighting for the instrument cluster and the various other switches dim to the level of brightness selected by the instrument panel dimmer switch.

### High Beam Headlamps

The high beam and flash to pass (FTP) functions are contained within the S78 Turn Signal Switch. The K9 Body Control Module (BCM) provides the turn signal/ multifunction switch with two signal circuits, the high beam signal circuit and the FTP signal circuit. When the low beam headlamps are ON, and the turn signal/ multifunction switch is placed in either the high beam position or FTP position, ground is applied to the BCM through the high beam/FTP signal circuit. The BCM responds to the high beam request by sending a serial data message to the K219 Lighting Control Module. The Lighting Control Module responds by applying pulse width modulated (PWM) voltage to both headlamp high beam control circuits, illuminating the high beam headlamps. The status of the high beam lamps is shown by a blue indicator located on the instrument cluster. When high beams are commanded on, the indicator will be illuminated continuously. If the driver turns the high beams off, the indicator will also turn off.

## Flash to Pass

When the S78 Turn Signal Switch is momentarily placed in the flash to pass position, ground is applied to the turn signal/multifunction switch. The turn signal/ multifunction switch applies ground to the K9 Body Control Module (BCM) through the flash to pass switch signal circuit. The BCM responds to the flash to pass request by sending a serial data message to the K219 Lighting Control Module. The Lighting Control Module responds by applying pulse width modulated (PWM) voltage to both headlamp high beam control circuits, illuminating the high beam headlamps. This causes the high beam headlamps to illuminate at full brightness until the turn signal/multifunction switch is returned to the at rest position.

## Automatic Headlamp Control

The K9 Body Control Module (BCM) monitors three signal circuits from the S30 Headlamp Switch. When the headlamp switch is in the AUTO position, the three signal circuits are unaffected (open) and the BCM relies on the B10D Sun Load and Ambient Light and Security Indicator Sensor input to determine if headlamps are required or if daytime running lamps will be activated based on outside lighting conditions. During automatic lamp control, the headlamps will be off during daylight conditions but will turn on when the ambient light sensor detects low ambient light conditions. The ambient light sensor is a light sensitive transistor that varies the voltage signal to the BCM. The BCM provides a 5 volt reference signal and a low reference ground to the ambient light sensor. During low light conditions the BCM will request the low beam headlamps ON by sending a serial data message to the K219 Lighting Control Module. The Lighting Control Module responds by applying pulse width modulated (PWM) voltage to both headlamp low beam control circuits, illuminating the low beam headlamps.

## {TQ5} Intellibeam – Automatic High Beam Assist

The IntelliBeam system is activated by pressing the auto high beam assist button on the turn signal switch while the exterior lamp control is in AUTO or ON mode and the engine running. The IntelliBeam system consists of a front camera module that detects light, and is able to identify approaching vehicles on an even, straight road at a distance of greater than 0.4 km (0.25 mi). The front camera module analyzes light color, intensity, and movement. The IntelliBeam system will turn OFF the high beam headlamps when approaching vehicle headlamps or preceding vehicle taillights are detected by the front camera module. On vehicles equipped with Side Blind Zone Alert, IntelliBeam will proactively turn OFF the high beam headlamps when a vehicle is passing on the left or right side. The IntelliBeam system is turned off anytime the headlamp switch is moved out of the AUTO position.

### IntelliBeam System Activation

- Vehicle ON
- Headlamp switch placed in the AUTO or ON position
- Outside lighting conditions must be dark
- Vehicle speed greater than 25 mph (40 km/h)

### IntelliBeam System Operation

The following are conditions that the IntelliBeam system will turn the high beam headlamps off during operation:

- The system detects approaching traffic headlamps
- The system detects preceding traffic tail lamps
- The system detects a vehicle passing to the right or left (SBZA equipped only)
- Ambient light level too high due to towns or twilight situations
- The vehicle’s speed drops below 13 mph (22 km/h)
- Delay

**Note:** IntelliBeam may not operate properly if any of the following conditions exist:

- Approaching and preceding vehicles lamps are undetectable due to dirt, snow, road spray, smoke, fog, or any other airborne conditions.
- The front camera and/or side object sensor module(s) is covered with ice, dirt, snow, haze, or is obstructed.
- The vehicle is being driven on winding or hilly road conditions which would make any on coming vehicle headlamps undetectable by the IntelliBeam.

### IntelliBeam System Deactivation

- Manually operating the headlamp switch from neutral to high beam position
- IntelliBeam is deactivated automatically when the front or rear fog lamps are turned ON

### IntelliBeam System Indicator

The status of the IntelliBeam system is shown by a green indicator located on the instrument panel cluster. When IntelliBeam is active, the indicator will be illuminated continuously. If the operator deactivates the IntelliBeam system, the indicator will turn off.

## Daytime Running Lamps

The daytime running lamps (DRL) will illuminate continuously when the following conditions are met:

- Engine running
- The headlamp switch is in the AUTO position
- Ambient light conditions are daytime conditions

The B10D Sun Load and Ambient Light and Security Indicator Sensor is used to monitor outside lighting conditions. The ambient light sensor provides a voltage signal that will vary between 0.2 and 4.9 volts depending on outside lighting conditions. The K9 Body Control Module (BCM) provides a 5 volt reference signal and a low reference ground to the ambient light sensor. The BCM monitors the ambient light sensor signal circuit to determine if outside lighting conditions are correct for either daytime running lamps (DRL) or automatic lamp control when the headlamp switch is in the AUTO position. In daylight conditions the BCM will send a serial data message to the K219 Lighting Control Module to command the DRLs ON, the Lighting Control Module responds by applying pulse width modulated (PWM) voltage to both DRL control circuits, illuminating the DRLs. During low light conditions the Lighting Control Module will command the low beam headlamps ON.

### Hazard Lamps

The hazard flashers may be activated in any power mode. The Hazard Warning Switch signal circuit is momentarily grounded when the hazard switch is pressed. The K9 Body Control Module (BCM) responds to the hazard switch signal input by sending a serial data message to the K219 Lighting Control Module. The Lighting Control Module responds by supplying battery voltage to all turn signal lamps in an ON and OFF duty cycle. When the hazard switch is activated, the BCM also sends a serial data message to the instrument cluster requesting both turn signal indicators to be cycled ON and OFF.

### Park, Tail, and License Lamps

When the S30 Headlamp Switch is placed in the HEAD or PARK position, ground is applied to the park lamp switch ON signal circuit to the K9 Body Control Module (BCM). The BCM responds to the park lamp switch signal input by sending a serial data message to the K219 Lighting Control Module. The Lighting Control Module responds by applying battery voltage to the park lamps, tail lamps, and license lamps control circuits illuminating the park, tail, and license lamps.

### {T3U} Front Fog Lamps

The S30 Headlamp Switch is used to control the fog lights when equipped. The K9 Body Control Module (BCM) provides a 5V signal circuit and low reference circuit to the headlamp switch for backlight dimming and fog light controls. When a dimming/fog light button is pressed, the signal circuit becomes grounded through the appropriate resistor internal to the headlight switch and voltage from the BCM will decrease accordingly. The BCM interprets the signal and responds by sending a serial data message to the K219 Lighting Control Module. The lighting control module responds by applying pulse width modulated (PWM) voltage to the appropriate fog light(s).

### {B3L / BRS} Running Board Lamps

When equipped (B3L / BRS), the running board assist step lamps become illuminated anytime unlock is pressed on the keyless entry transmitter during low ambient light conditions as part of the approach lighting system. The K9 Body Control Module responds to the unlock request during low ambient light conditions by sending a serial data message to the K4 Running Board Control Module to command the running board assist step lamps on. The running board control module responds by applying voltage to the running board assist step lamp control circuits illuminating the running board assist step lamp LEDs.

### Stop Lamps

The B22 Brake Pedal Position Sensor is used to sense the action of the driver application of the brake pedal. The K9 Body Control Module (BCM) provides the brake pedal position sensor with low reference, signal, and 5 volt reference circuits. When the variable signal reaches a voltage threshold indicating the brakes have been applied, the BCM will respond by sending a serial data message to the K219 Lighting Control Module requesting the stop lamps to be turned ON. The Lighting Control Module responds by applying battery voltage to the left and right stop lamp control circuits as well as the center high mounted stop lamp control circuit illuminating the left and right stop lamps and the center high mounted stop lamp. If serial data communication is lost between the BCM and the Lighting Control Module, the Lighting Control Module will receive a serial data message from the Electronic Brake Control Module indicating that the brakes have been applied. If serial data communication is lost between all three modules, the Lighting Control Module also receives a hard wired voltage signal from the BCM to signal the brake lamps ON.

### Turn Signal Lamps

#### Turn Signals

The K9 Body Control Module (BCM) provides the S78 Turn Signal Switch with left and right turn signal switch signal circuits. Ground is applied at all times to the turn signal/multifunction switch. The turn signal lamps may only be activated with the ignition switch in the ON or START positions. When the turn signal/multifunction switch is placed in either the turn right or turn left position, ground is applied to the BCM through either the right turn or left turn signal switch signal circuit. The BCM responds to the turn signal switch input by sending a serial data message to the K219 Lighting Control Module. The Lighting Control Module responds by applying a pulsating voltage to the turn signal lamps through there respective control circuits. When a turn signal request is received by the BCM, a serial data message is also sent to the instrument cluster requesting the respective turn signal indicator be pulsed ON and OFF.

#### Turn Signal Outage Detection

Vehicles with LED turn signals require additional turn signal outage detection circuits that provide turn signal feedback to the K219 Lighting Control Module. The Lighting Control Module uses the feedback information to send a serial data message to the instrument cluster to alert the driver anytime a turn signal fault is detected. If a fault is detected on a turn signal circuit or a turn signal feedback circuit, the turn signals will flash in a rapid manner to alert the driver of the fault.

#### Turn Signal Animation

When the K219 Lighting Control Module receives a serial data message from the K9 Body Control Module (BCM) that the turn signals are being commanded on, the lighting control module responds by applying a pulsating voltage to the front, mirror, and rear turn signal lamps through their respective control circuits. The left and right turn signal control circuits are connected to each front and rear lamp assemblies, this is for animation purposes. When a lamp assembly only receives one turn signal input, an animation effect takes place as a “swiping” motion for the turn signals. When a lamp assembly receives both turn signal inputs as part of the hazard lamps becoming active, the turn signals do not exhibit the animation effect and will flash without the “swiping” motion.

### Backup Lamps

With the engine running and the transmission in the reverse position, the transmission control module (TCM) sends a serial data message to the multiple control modules. The message indicates that the gear selector is in the reverse position. The K9 Body Control Module (BCM) responds to the reverse position message by sending a serial data message to the K219 Lighting Control Module to request the backup lamps on. The Lighting Control Module responds by applying battery voltage to the backup lamps control circuit(s) illuminating the backup lamps. The applied voltage is also sent to the A11 Radio and A10 Inside Rearview Mirror for rearview camera purposes. Once the driver moves the gear selector out of the reverse position, a serial data message is sent by the TCM that the transmission is no longer in the reverse position. The BCM responds to the reverse position message by sending a serial data message to the Lighting Control Module to request the backup lamps off. The Lighting Control Module responds by removing battery voltage from the backup lamp circuits. The engine must be running for the backup lamps to operate.

### Cargo Lamps

#### Cargo Lamps

When the K9 Body Control Module (BCM) receives a task lamp switch input from the S30 Headlamp Switch, the BCM responds by sending a serial data message to the K219 Lighting Control Module. The lighting control module responds by applying pulse width modulated (PWM) voltage to the cargo lamp control circuits illuminating the cargo lamps. In the event that the cargo lamps were to remain illuminated for more than 10 minutes with the ignition switch in the OFF position, the lighting control module will deactivate the cargo lamp control circuits to prevent total battery discharge.

#### Task Lamps

When the K9 Body Control Module (BCM) receives a task lamp switch input from the S30 Headlamp Switch, the BCM responds by sending a serial data message to the K219 Lighting Control Module. The lighting control module responds by applying pulse width modulated (PWM) voltage to the task lamp control circuits illuminating the task lamps in each outside rearview mirror assembly. When the task lamp switch is pressed a second time, the left task lamp control circuit will stay illuminated while the right side will be turned off. When the task lamp switch is pressed a third time, the left task lamp control circuit will be turned off while the right side will be turned back on. When the task lamp switch is pressed a fourth time, both task lamps will be turned off. In the event that the task lamps were to remain illuminated for more than 10 minutes with the ignition switch in the OFF position, the lighting control module will deactivate the cargo lamp control circuit to prevent total battery discharge.

## Approach Lighting

Approach lighting is commanded ON when the unlock button is pressed on the keyless entry transmitter during dark ambient light conditions. When the keyless entry transmitter unlock button is pressed, a serial data message is sent by the K9 Body Control Module (BCM) that the vehicle is being unlocked. The K219 Lighting Control Module responds to the serial data message by applying voltage to the approach lamp control circuit illuminating the LED lighting located under each outside rearview mirror as part of approach lighting.

## Battery Run Down Protection/Inadvertent Power

To provide battery run down protection, the exterior lamps will be deactivated automatically under certain conditions. The K9 Body Control Module (BCM) monitors the state of the S30 Headlamp Switch. If the headlamp switch is in the park or headlamp position when the ignition switch is ON and then the ignition switch is placed in the OFF position, the BCM initiates a 10 minutes timer. At the end of the 10 minutes, the BCM will send a serial data message to the K219 Lighting Control Module to deactivate the exterior lamps to prevent total battery discharge. This feature will be cancelled if any power mode other than OFF becomes active.

The BCM will disable battery run down protection if any of the following conditions exist:

- The park or headlamp switch is changed from the ON to OFF position, and back to the ON position during battery run down protection.
- The BCM determined that the park or headlamp switch was not active when the ignition was turned OFF.

## Interior Lighting Systems Description and Operation

## Interior Lamps

### Dome Lamps

The dome lamps are controlled by door ajar inputs to the K9 Body Control Module (BCM). When any door is opened, the door ajar switch contacts close and the BCM receives a door-open input. The BCM responds by sending a serial data message to the A103 Roof Console. The Roof Console responds by applying battery voltage to the dome lamps illuminating the dome lamps. The BCM will also send a serial data message to request the dome lamps on when a door lock/unlock request is activated with the key fob. After all doors have been closed, the dome lamp will remain illuminated approximately 3 seconds after the last door closes. In the event that the dome lamp were to remain illuminated for more than 10 minutes with the ignition switch in the OFF position, the BCM will deactivate the dome lamp control circuit to prevent total battery discharge. The dome lamps will turn OFF using the theater dimming feature when controlled by the BCM.

### Center Console Compartment Lamp

The K9 Body Control Module (BCM) supplies battery voltage to the center console lamp through control circuit 4786 anytime the ignition/vehicle is turned on or the dome lamps are requested on through the dome lamp control switch on the A103 Roof Console. In the event that the center console lamp were to remain illuminated for more than 10 minutes with the ignition/vehicle off, the BCM will deactivate the courtesy lamp control circuit to prevent total battery discharge.

### Keyless Entry Interior Illumination

When the operator uses the keyless entry transmitter in order to unlock the doors, the K9 Body Control Module (BCM) receives a door-unlock signal. The BCM must receive inputs from various systems that indicate that the ignition switch is OFF, the courtesy lamp switch is OFF, and all doors are closed before the BCM will activate the interior lamps. After all doors have been closed, the courtesy lamps will turn OFF immediately if the ignition switch is turned to the ON position, the door locks are LOCKED, or approximately 20 seconds after the last door closes. The BCM will turn off the courtesy lamps through the theater dimming feature. The BCM keeps the courtesy lamps on for 40 seconds after an alarm event is completed.

### Reading Lamps

When a reading lamp button is pressed, the switch contacts close providing a path to ground for the signal circuit from the A103 Roof Console. The roof console responds by applying battery voltage to the appropriate reading lamp control circuit illuminating the reading lamp. If the operator inadvertently leaves a reading lamp ON, the BCM will send a serial data message to turn all interior lighting off after 10 minutes has passed to prevent total battery discharge.

### Sunshade Mirror Lamp

The inadvertent power supply voltage circuit from the K9 Body Control Module (BCM) provides battery voltage to the passenger side sunshade mirror lamp. When the sunshade mirror cover is opened, a switch closes providing ground and the sunshade lamp illuminates. If the operator inadvertently leaves the sunshade mirror cover open with the lamp ON, the BCM will turn all interior lamps OFF after 10 minutes has passed to prevent total battery discharge.

## Interior Lamps Dimming

With the S30 Headlamp Switch in the PARK or HEAD position, the park lamp switch signal circuit provides an input to the K9 Body Control Module (BCM). The BCM responds by applying voltage to the backlight dimming control circuits illuminating all components with interior backlighting. All interior backlighting turns on at the dimming level set by the dimmer buttons within the headlamp switch. The headlamp switch is used to increase and decrease the brightness of the interior backlighting components. The BCM provides a signal circuit and a low reference circuit to the headlamp switch for backlight dimming. When a dimming button is pressed, the signal circuit becomes grounded through the appropriate resistor internal to the headlight switch and voltage from the BCM will decrease accordingly. The BCM interprets the signal and responds in two ways. The BCM applies a pulse width modulated (PWM) voltage through the LED dimming control circuits illuminating the interior backlighting to the requested level of brightness. The BCM also sends a serial data message to the appropriate control modules requesting all dimming components to be illuminated to the same level of brightness.

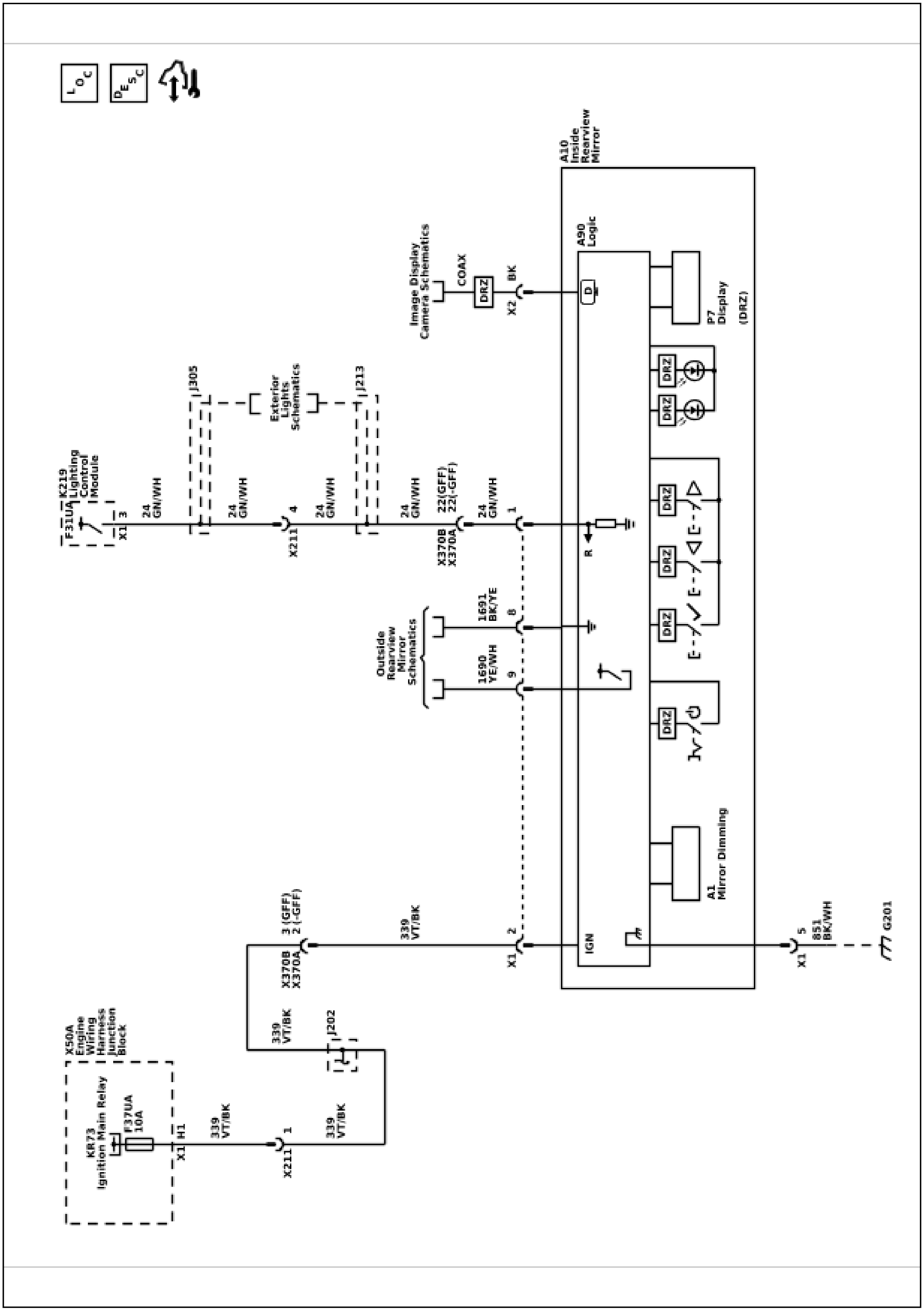
## Battery Rundown Protection/Inadvertent Power

The K9 Body Control Module (BCM) inadvertent power supply voltage circuit provides battery voltage to all of the interior courtesy lamps. In the event that any of these lamps were to remain illuminated for a period of more than 10 minutes with the ignition switch in the OFF position, the BCM will deactivate the inadvertent power supply voltage circuit to prevent total battery discharge. If the ignition switch is turned to any position other than OFF, or if a lamp switch is activated during this 10 minute period, the timer resets for another 10 minutes.

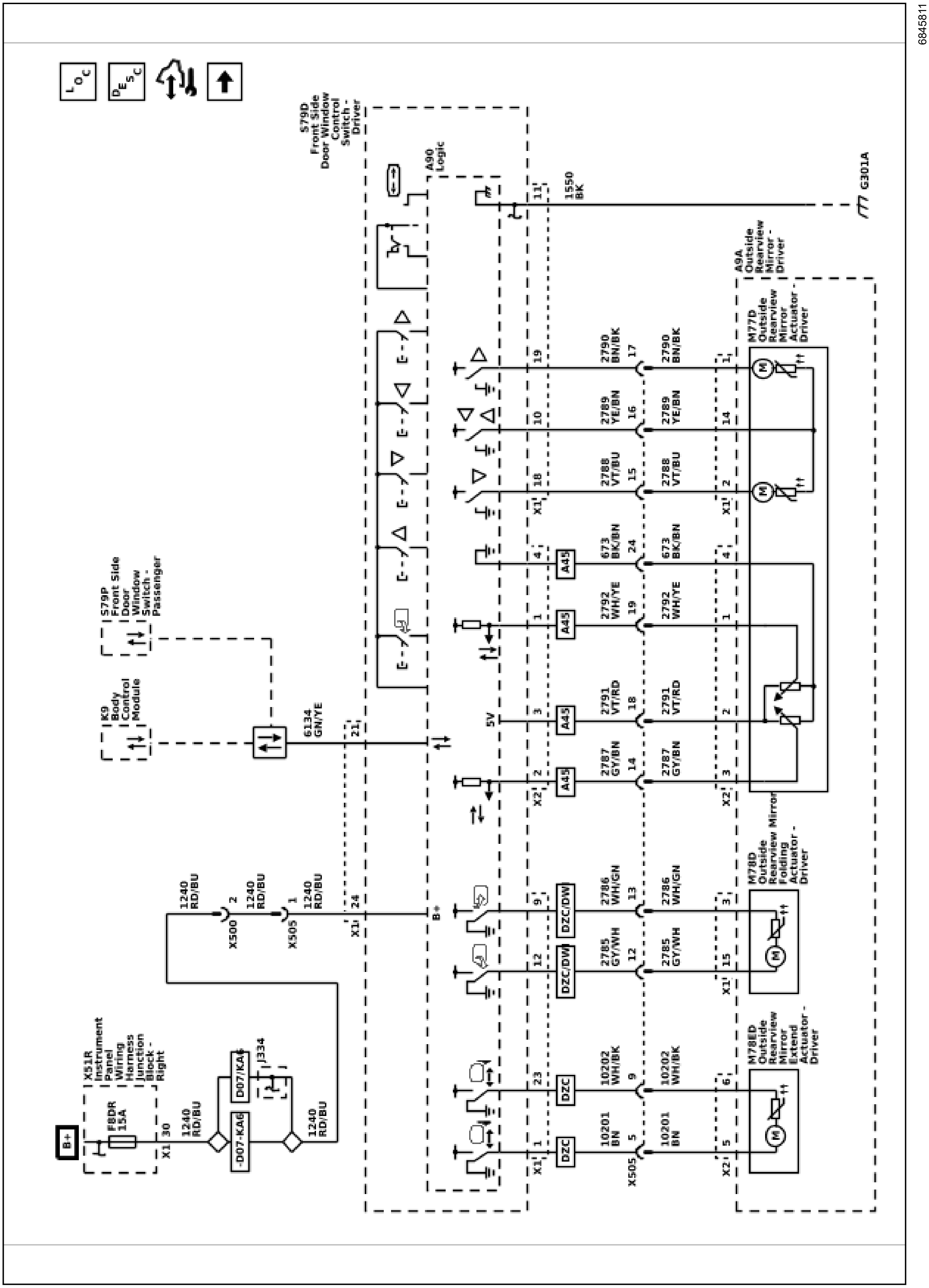
# Mirrors

## Schematic and Routing Diagrams

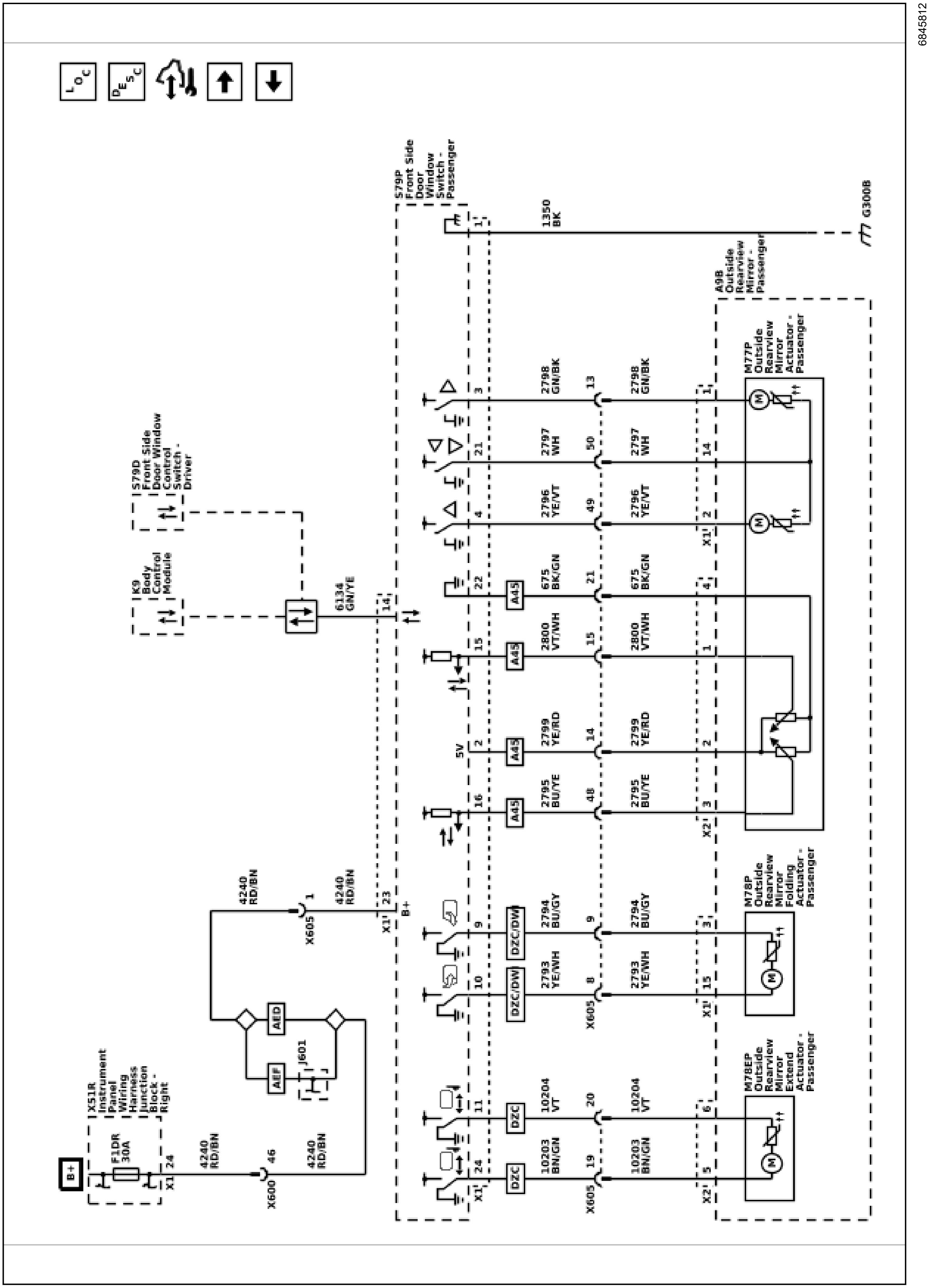
## Inside Rearview Mirror Schematics (Inside Rearview Mirror (DD8 / DRZ))



## Outside Rearview Mirror Schematics (Driver Controls, Position, and Folding (DWI / DZC))



## Outside Rearview Mirror Schematics (Passenger Controls, Position, and Folding (DWI / DZC))



## Outside Rearview Mirror Schematics (Dimming and Heating (DD8 / DRZ))

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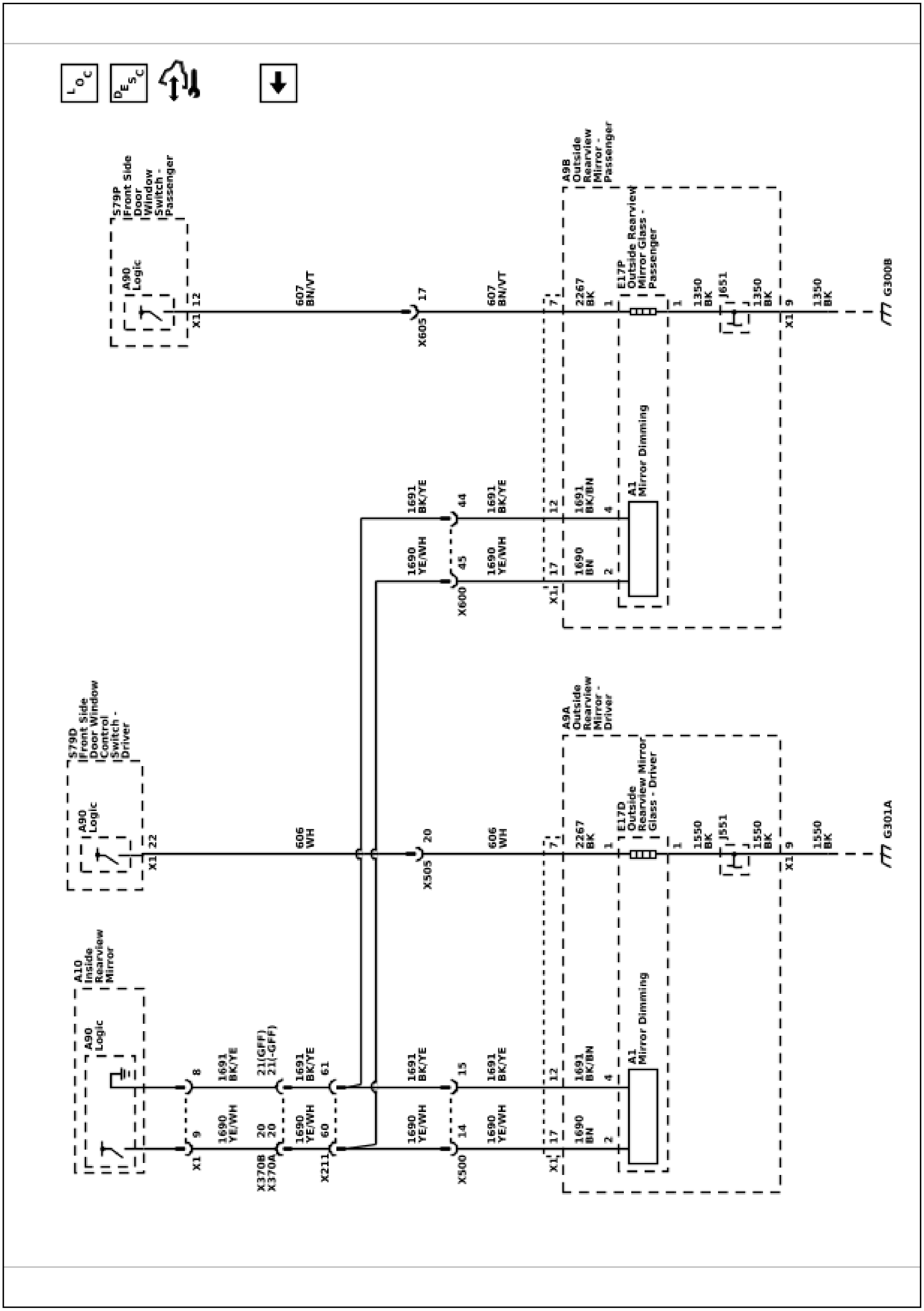


# Description and Operation

## Automatic Day-Night Mirror Description and Operation

### Inside Rearview Mirror with the Automatic Day-Night Feature System Operation

The inside rearview mirror uses 2 photocell sensors. One sensor is the headlight sensor, located on the face side of the mirror. The headlight sensor is used to determine light conditions present at the mirror face. The other sensor is the ambient light sensor, located on the rear of the mirror or windshield side. The ambient light sensor is used to determine the exterior light conditions. With a low exterior light condition detected, and a high light condition from behind the car at the headlight sensor, the inside rearview mirror will automatically darken the face of the mirror.

In the daytime, the mirror is in a normal state because of the high exterior light condition that is indicated by the ambient light sensor. With the gear selector lever in the REVERSE position and the Ignition ON/Vehicle in Service Mode, backup lamp supply voltage is supplied as an input to the inside rearview mirror. The mirror monitors this input to disable the automatic day-night feature. This allows the driver to see objects in the mirror clearly when backing up, even during the night.

### Driver Outside Rearview Mirror with Automatic Day-Night System Operation (If Equipped)

The automatic day-night feature of the driver outside rearview mirror is controlled by the inside rearview mirror. The inside rearview mirror supplies control and low reference to the driver outside rearview mirror. At night, with the automatic day-night feature enabled, the driver outside rearview mirror will automatically darken with the inside rearview mirror to reduce glare from headlamps behind the vehicle.

### Inside Rearview Camera Full Display Mirror System Operation

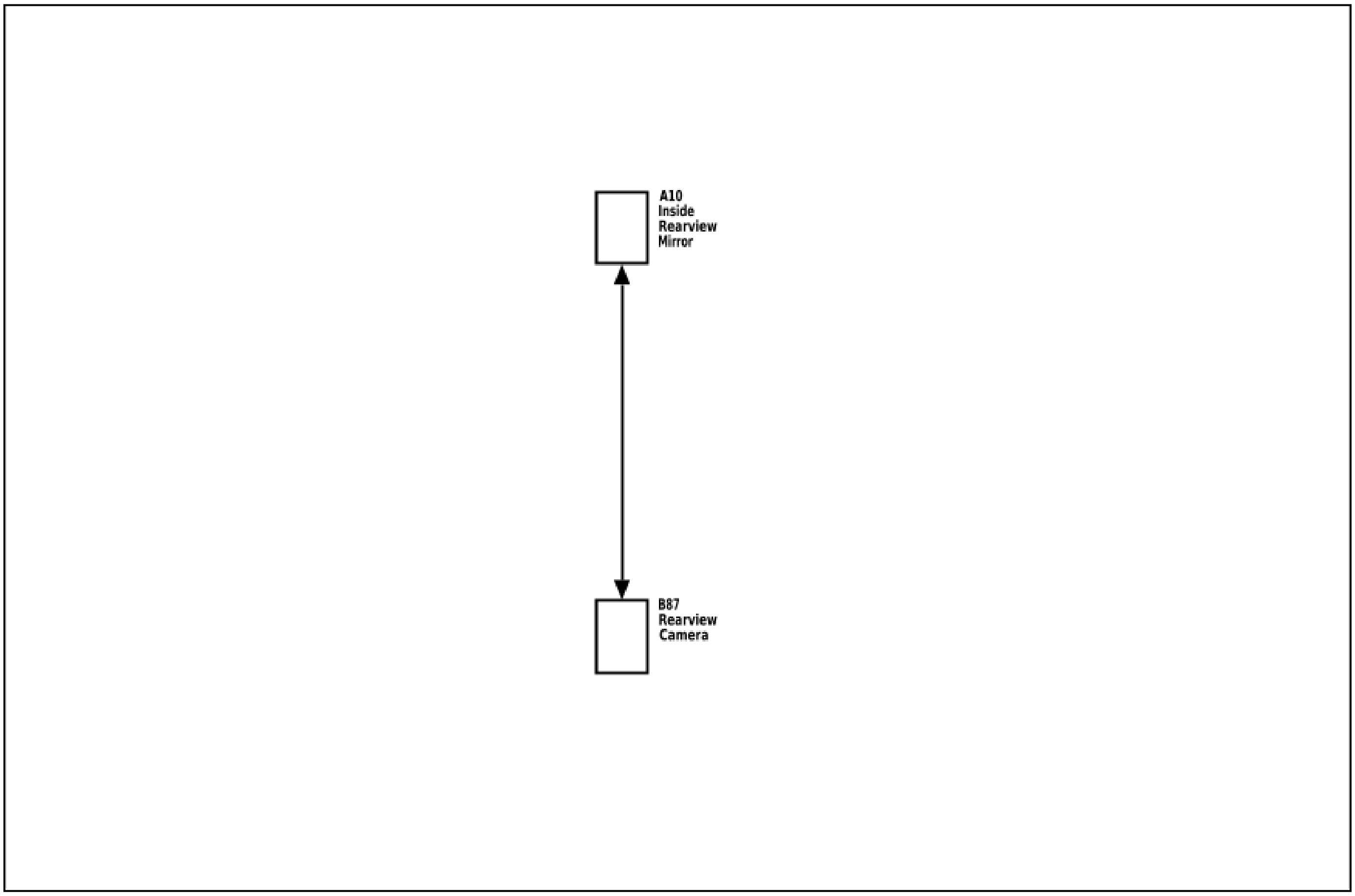
The A10 Inside Rearview Mirror is connected to the B352 Video Display inside Rearview Mirror Camera via a shielded coaxial cable. When the tab under the inside rearview mirror is pulled rearward, a view of the area behind the vehicle displays on the mirror. Adjust the rearview mirror for a clear view of the area behind the vehicle before turning on full display mirror. Use the button on the back of the mirror to adjust the brightness of the display. Make sure the light sensor is not covered when adjusting the brightness.

The inside rearview camera full display mirror may not work properly or display a clear image if:.

- It is dark.
- The sun or the beam of headlamps are shining directly into the camera lens.
- Ice, snow, mud, or anything else builds up on the camera lens. Clean the lens, rinse it with water, and wipe it with a soft cloth.

When the mirror detects that the camera is not sending a valid video signal, it “blue screens” with a “no video” decal for 3 seconds, then reverts back to the mirror.

**Rearview Camera Full Display Mirror Block Diagram**

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Hard-Wired

A10 Inside Rearview Mirror

B87 Rearview Camera

## Outside Mirror Description and Operation

### Power Mirror System Components

The power mirror system consists of the following components:

- Body Control Module
- Driver Seat Adjuster Memory Module
- Outside Mirror Switch
- Passenger Window Switch
- Left Outside Rearview Mirror
- Right Outside Rearview Mirror

### Power Mirror System Controls

The outside rearview mirror switch is part of the S79D Driver Front Side Door Window Control Switch and uses serial data to control the passenger mirror through the S79P Passenger Front Side Door Window Control Switch. Each S79 Side Door Window Control Switch has it own 12V, ground and data communications circuit along with mirror directional control and mirror fold circuits.

## Driver Mirror Controls

The S79D Driver Front Side Door Window Control Switch has internal connections for the driver mirror. When the mirror position switch is active the driver mirror is commanded to move through bi-directional motor control circuits. The motor control circuits are floating while in an inactive state and the switches will apply power and ground to the control circuits as necessary to move the mirror in the commanded direction.

## Passenger Mirror Controls

The S79D Driver Front Side Door Window Control Switch uses serial data circuits to communicate the active states for the passenger mirror switch to the S79P Passenger Front Side Door Window Control Switch. The S79P Passenger Front Side Door Window Control Switch has internal connections for the passenger mirror. When the mirror position switch is active the passenger mirror is commanded to move through bi-directional motor control circuits. The motor control circuits are floating while in an inactive state and the switches will apply power and ground to the control circuits as necessary to move the mirror in the commanded direction.

## Mirror Position

Mirror position is determined by both horizontal and vertical position sensors in each of the power mirrors. Each S79 Front Side Door Window Control Switch supplies a 5 V reference, low reference, and horizontal and vertical position signal circuits to these sensors. The signal circuits are referenced from 5 V by the S79 Front Side Door Window Control Switch and the signal circuit voltage levels represent the mirror positions. The mirror positions are stored in each S79 Front Side Door Window Control Switch for memory mirror operation. When the memory seat module receives a memory recall command, the memory seat control module will send the go to position to the S79 Front Side Door Window Control Switch. The S79 Front Side Door Window Control Switches will then drive the appropriate mirror motors to the commanded position sensor settings.

## Mirror Select

The S79D Driver Front Side Door Window Control Switch has internal connections for the mirror select switch. When the mirror select switch is active the S79 Front Side Door Window Control Switch will either control the driver mirror or send a serial data message to control the passenger mirror.

## Folding Mirrors

The S79D Driver Front Side Door Window Control Switch sends the mirror fold/unfold inputs to the K9 Body Control Module (BCM) through serial data. When the BCM receives a fold/unfold signal it will send a fold/unfold command to the S79 Driver Front Side Door Window Control Switch which will send a serial data message to the S79P Passenger Front Side Door Window Control Switch. The outside mirrors will fold or unfold depending on their current state. The BCM will also send a serial data message to unfold the mirrors when the vehicle reaches 20 km/h (12 mph) unless equipped with camper/trailer mirrors. The S79 Front Side Door Window Control Switches control the fold/unfold motors through bi-directional control circuits

## Heated Mirrors

The heated mirrors are controlled through each S79 Front Side Door Window Control Switch. When the vehicle is running and the HVAC control module receives a rear window defog request from the radio/HVAC controls, the HVAC control module will send a serial data message to the S79D Driver Front Side Door Window Control Switch and S79P Passenger Front Side Door Window Control Switch. Each S79 Front Side Door Window Control Switch provide B+ voltage to the driver and passenger outside rearview mirror heating elements.

## Memory Mirror System

### Memory Mirror System Controls

The K40D Driver Seat Adjuster Memory Module is capable of storing mirror positions and controlling the mirrors to these positions to the preferred settings of 2 different drivers. Each driver will be able to personalize the memory system by positioning the mirrors and seats to their preferred settings. Then press and hold the memory 1 or memory 2 button until an audible chime is heard and the current mirror positions will be stored into memory of the K40D Driver Seat Adjuster Memory Module. Seat and mirror position will be stored in the K40D Driver Seat Adjuster Memory Module. Once the mirror and seat positions have been stored into memory, a momentary memory 1 or memory 2 switch activation will supply the S79D Front Side Door Window Control Switch — Driver a battery voltage signal. The S79D Front Side Door Window Control Switch — Driver, upon receipt of the memory switch signal, with the transmission in park or neutral, will then drive the driver mirror to the corresponding stored memory position. The S79D Front Side Door Window Control Switch — Driver will also send a message to the S79P Front Side Door Window Switch — Passenger and K40D Driver Seat Adjuster Memory Module indicating that a memory switch activation occurred. The S79P Front Side Door Window Switch — Passenger will then drive the passenger mirror to the corresponding stored memory position. The memory system can also be controlled by any of the following, if programmed to enable/disable the features:

- Auto exit/entry seat positioning
- Mirror and seat position recall on a keyless entry unlock activation
- Mirror and seat position recall on ignition key insertion
- Mirror tilt in reverse

### Memory Mirror System Operation

Mirror position is determined by both horizontal and vertical position sensors in each of the power mirrors. The S79D Front Side Door Window Control Switch — Driver and S79P Front Side Door Window Switch —

Passenger supplies a reference voltage and a low reference to these sensors and determines mirror position through the horizontal and vertical position signal circuits.

The memory switch receives power from the S79D Front Side Door Window Control Switch — Driver through the battery supply voltage circuit and the S79D Front Side Door Window Control Switch — Driver fuse. The S79D Front Side Door Window Control Switch — Driver upon receipt of a memory switch signal input or an appropriate message from the K40D Driver Seat Adjuster Memory Module, the S79D Front Side Door Window Control Switch — Driver and S79P Front Side Door Window Switch — Passenger will then supply battery voltage and ground to the appropriate power mirror motors through the mirror motor control circuits to move the mirrors to the predetermined positions.

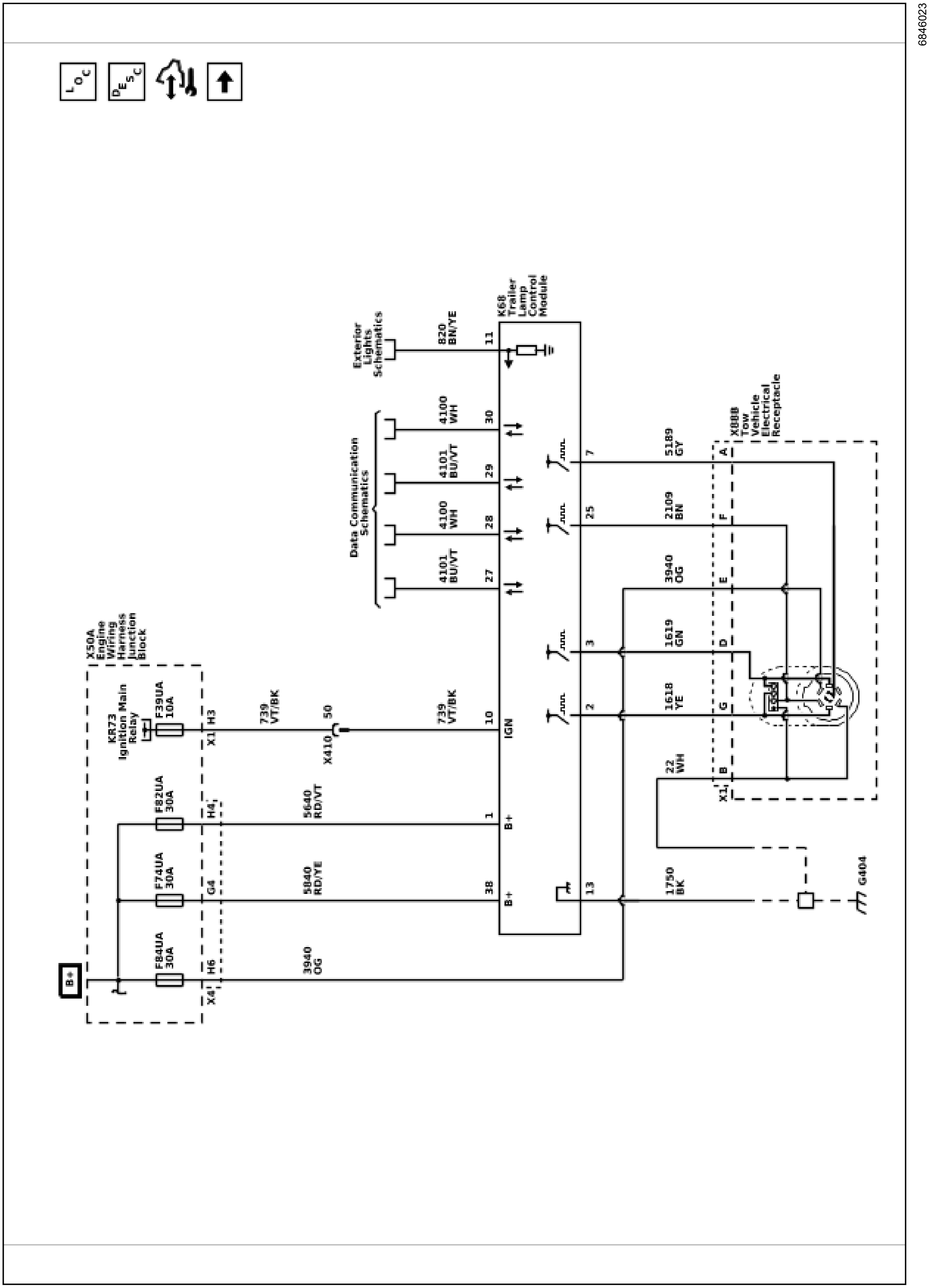
**Mirror Tilt in Reverse Controls**
This feature is capable of tilting the left, right or both power mirrors when the transmission is placed in reverse to provide enhanced visibility during parking or backing maneuvers. This feature can be personalized to the needs of 2 different drivers.

**Mirror Tilt in Reverse Operation**
When the vehicle is placed in reverse and the appropriate message from the K40D Driver Seat Adjuster Memory Module and K20 Engine Control Module is received by the S79D Front Side Door Window Control Switch — Driver and S79P Front Side Door Window Switch — Passenger, the S79D Front Side Door Window Control Switch — Driver and S79P Front Side Door Window Switch — Passenger will then supply battery voltage to the appropriate power mirror motors through the mirror motor control circuits to move the mirrors to the predetermined positions. The positions that are stored can be altered by starting the engine, applying the brake, placing the vehicle in reverse and controlling both the left and right mirrors to the desired positions and shifting the vehicle out of reverse. These new positions will be stored for the last memory recall that happened.

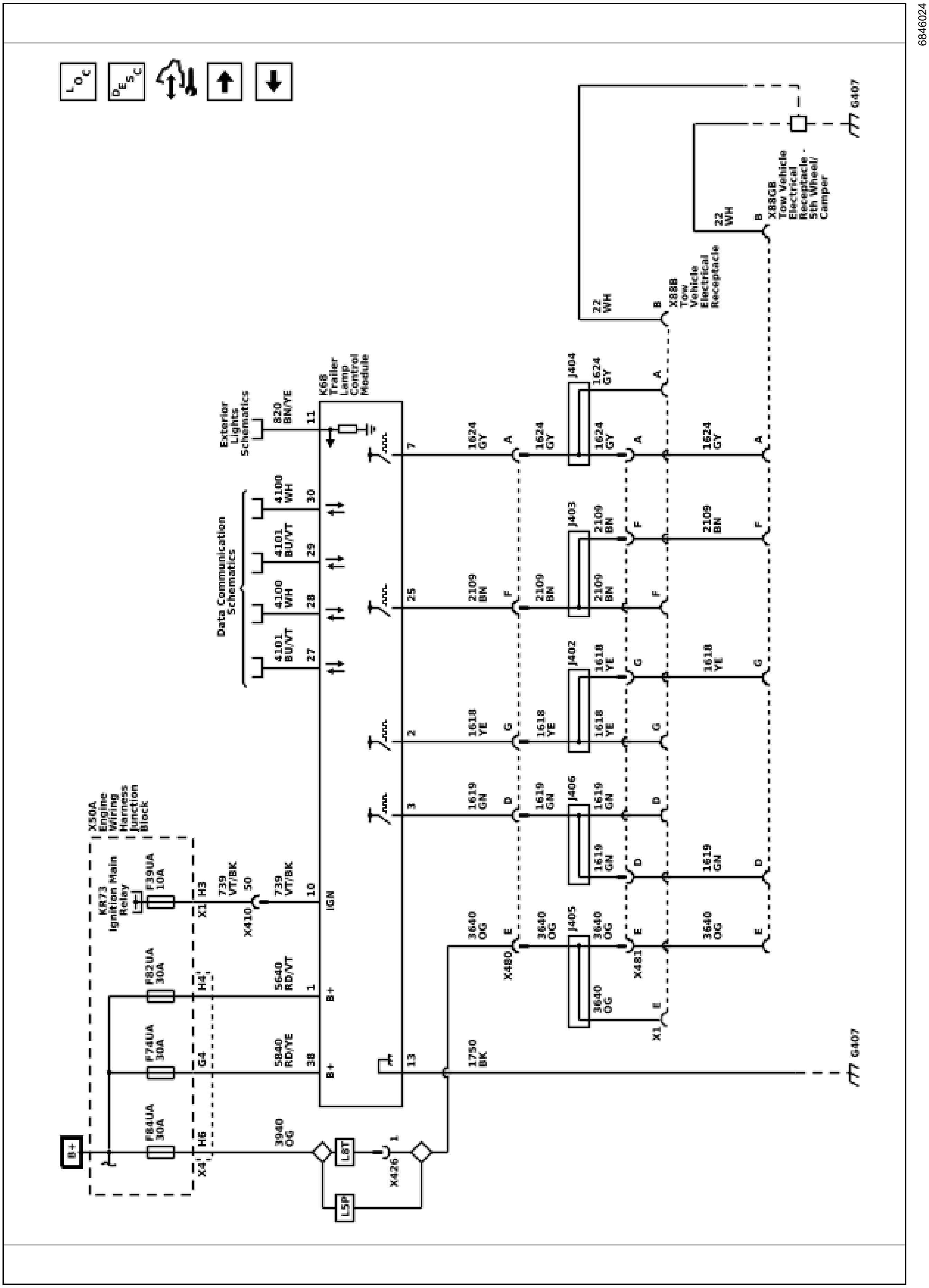
# Trailering Systems

## Schematic and Routing Diagrams

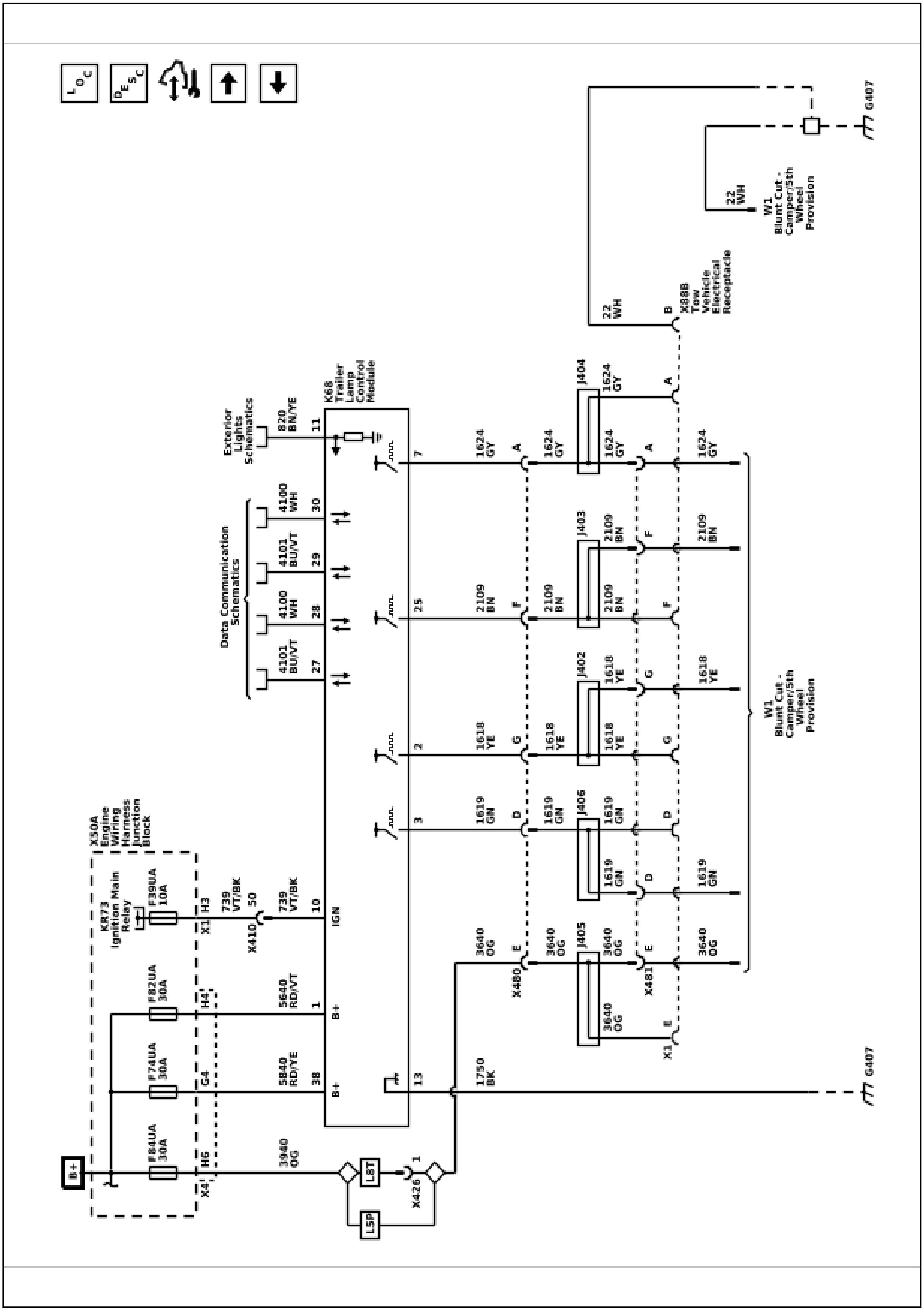
## Trailering Systems Schematics (Trailer Lighting Control Module (Z82 & UET - (UY2 / Z6A)))



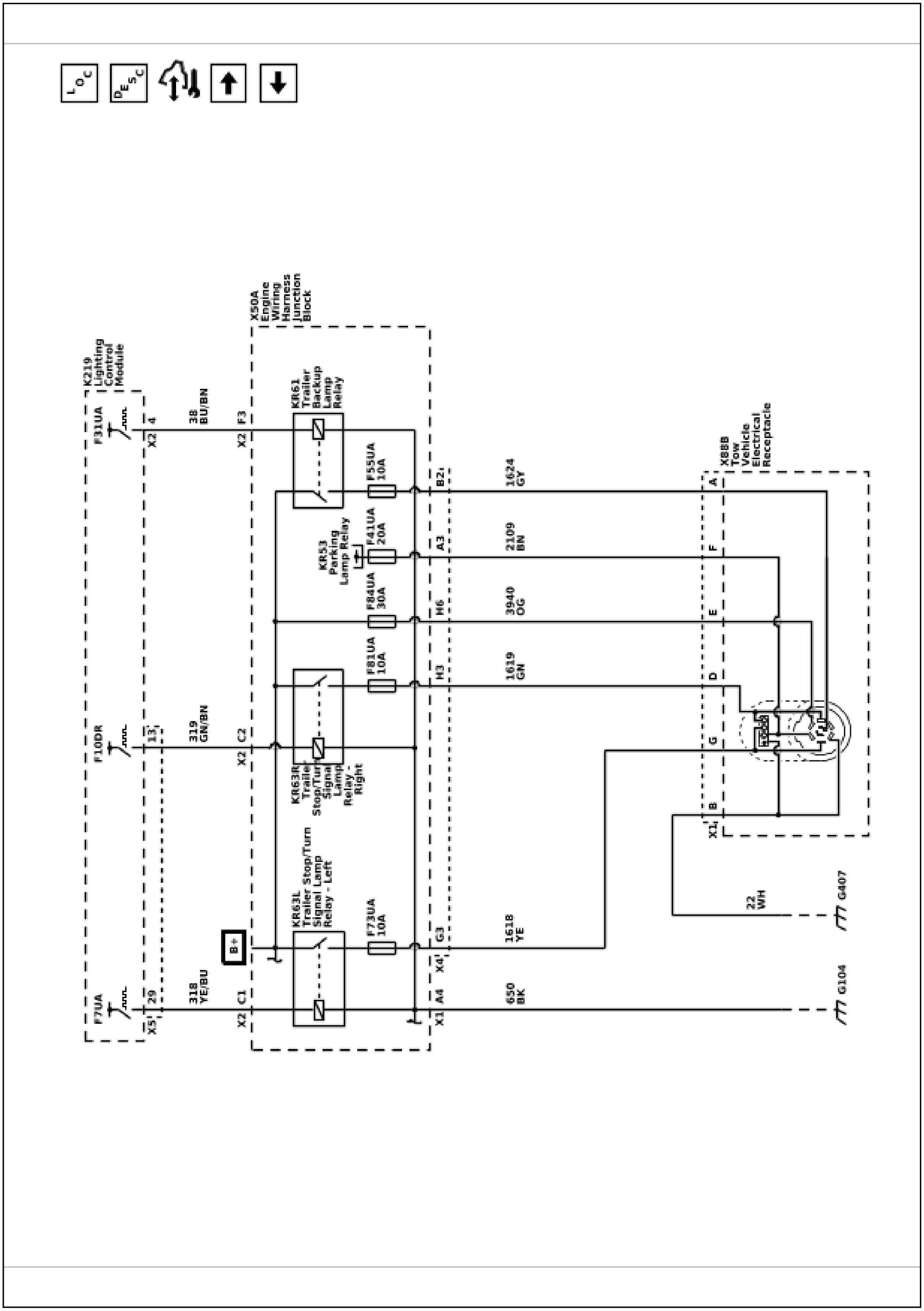
## Trailering Systems Schematics (Trailer Lighting Control Module (Z82 & UET & Z6A))



## Trailering Systems Schematics (Trailer Lighting Control Module (Z82 & UET & UY2))



## Trailering Systems Schematics (Trailer Connector Pins: A, B, D, E, F, G (Z82 - (UET / UY2 / Z6A)))

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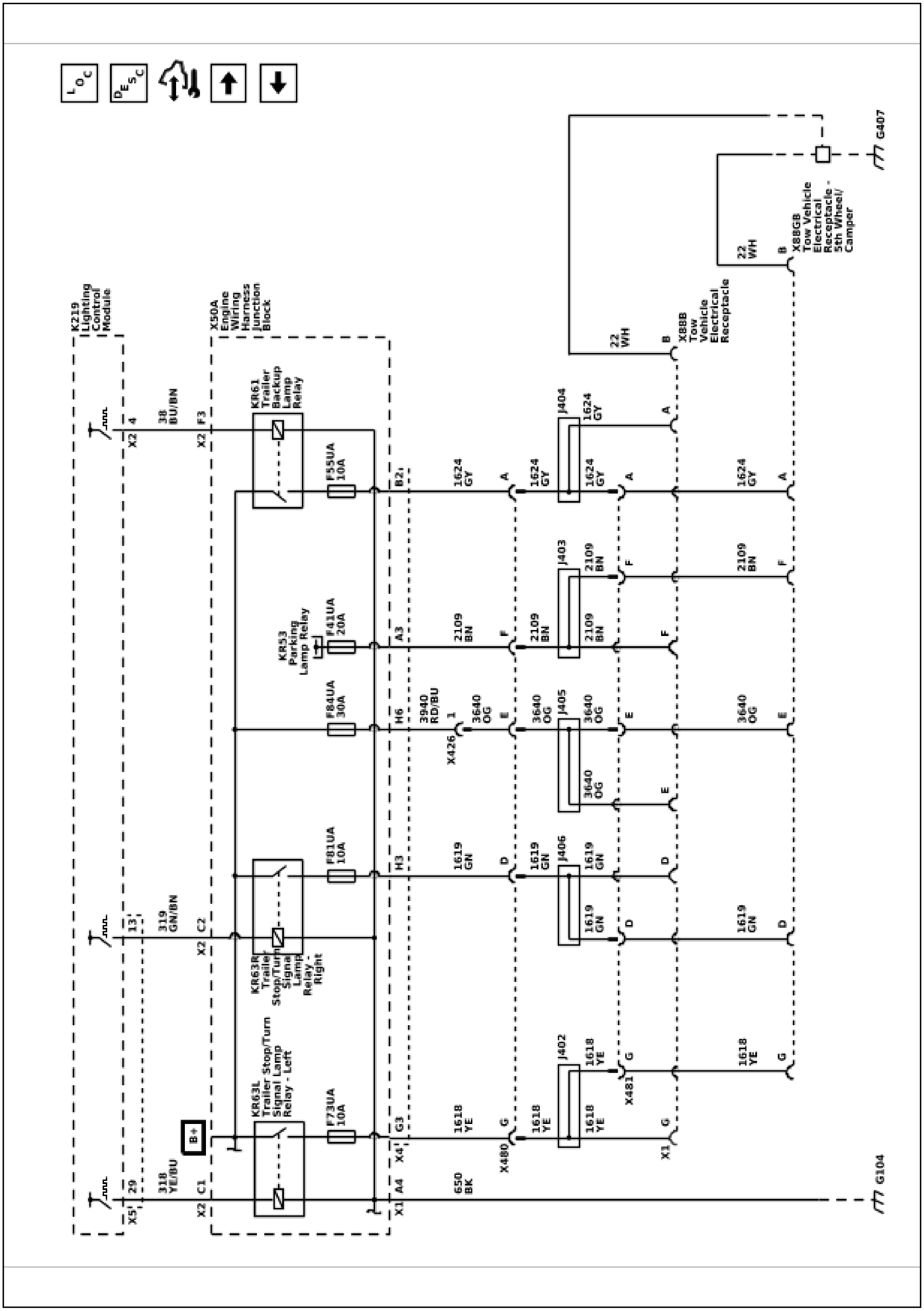
Trailering Systems Schematics (Trailer Connector Pins: A, B, D, E, F, G (Z82 & Z6A - (UET / UY2)))

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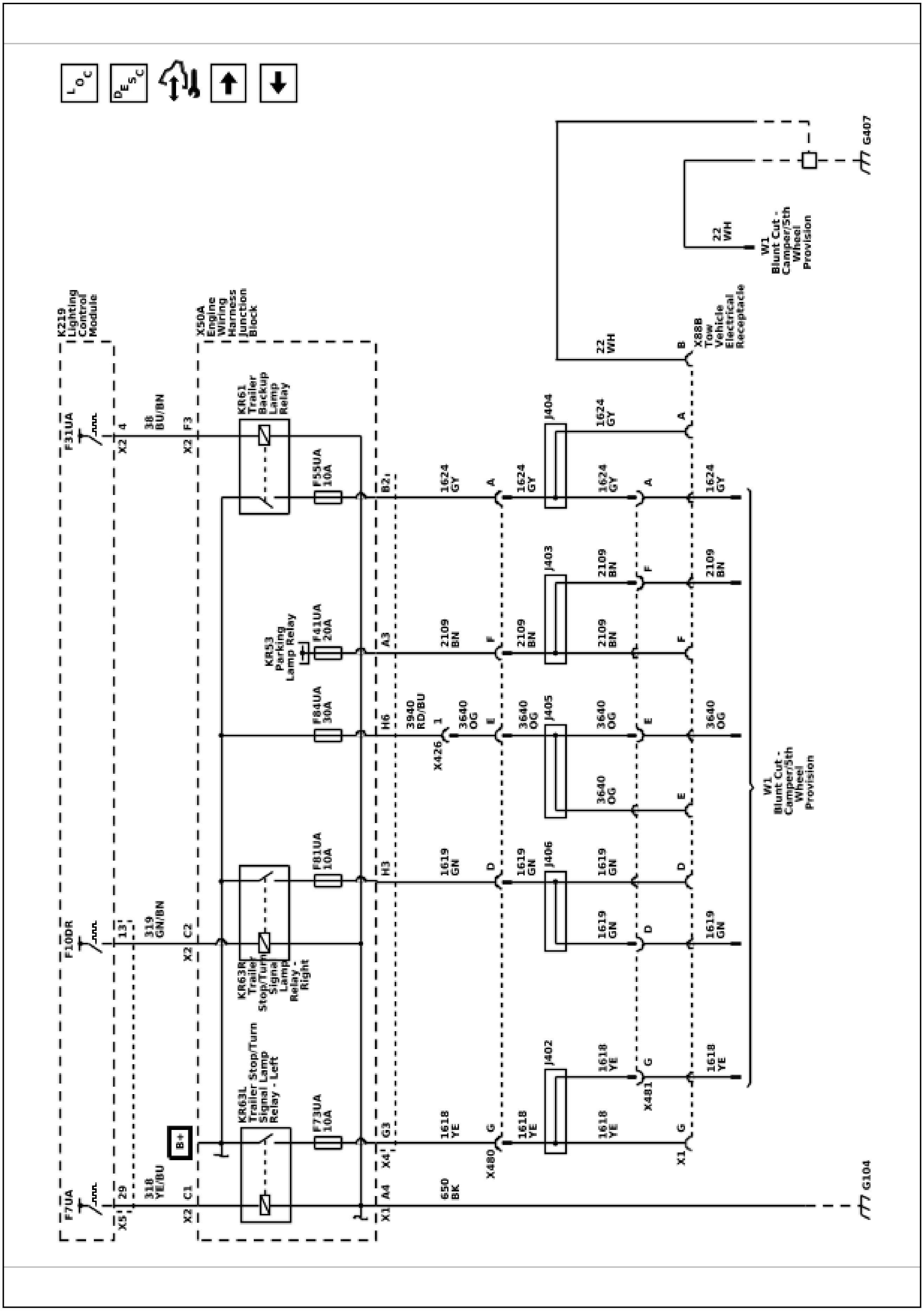
## Trailering Systems Schematics (Trailer Connector Pins: A, B, D, E, F, G (Z82 & UY2 - (UET / Z6A)))

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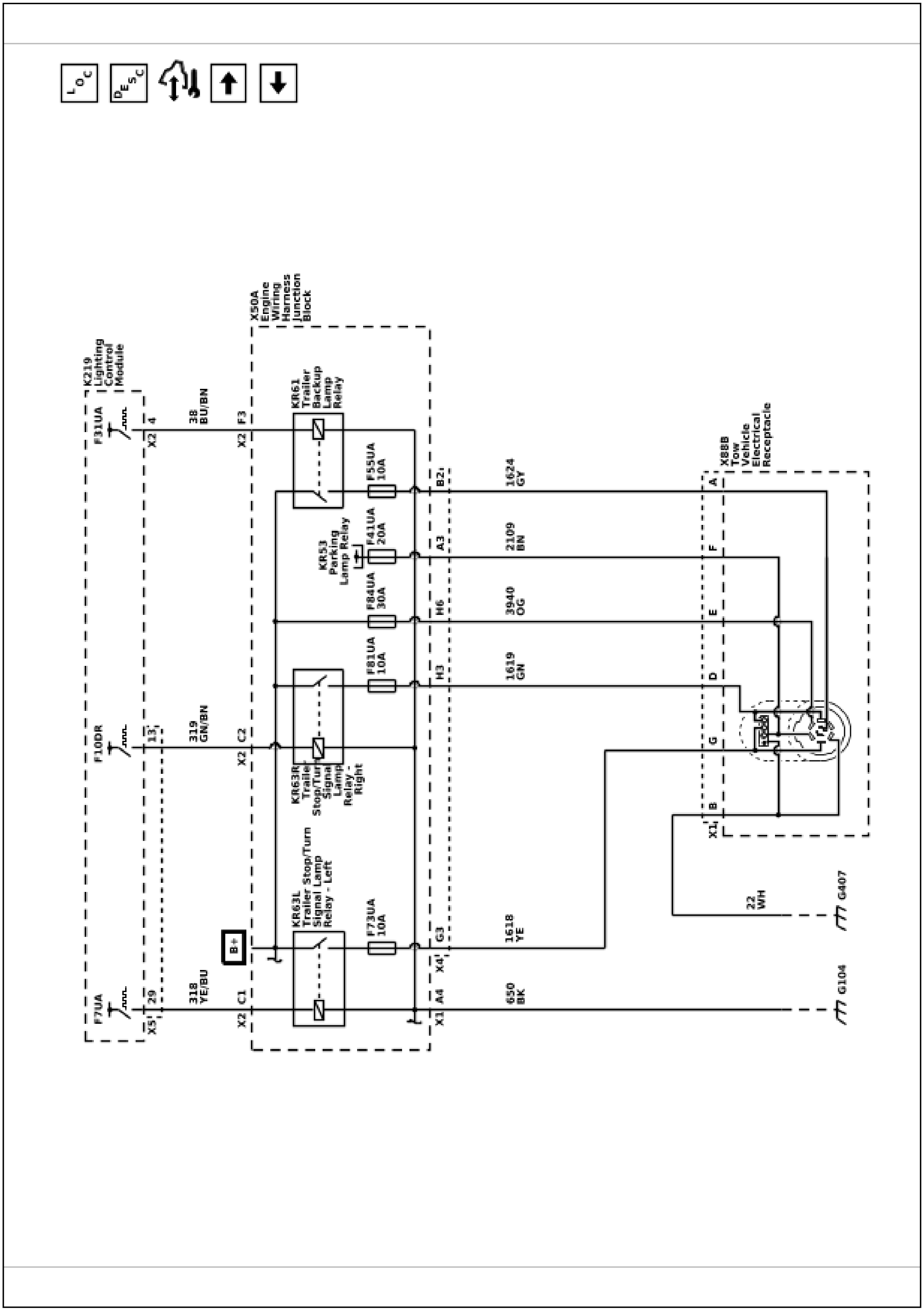
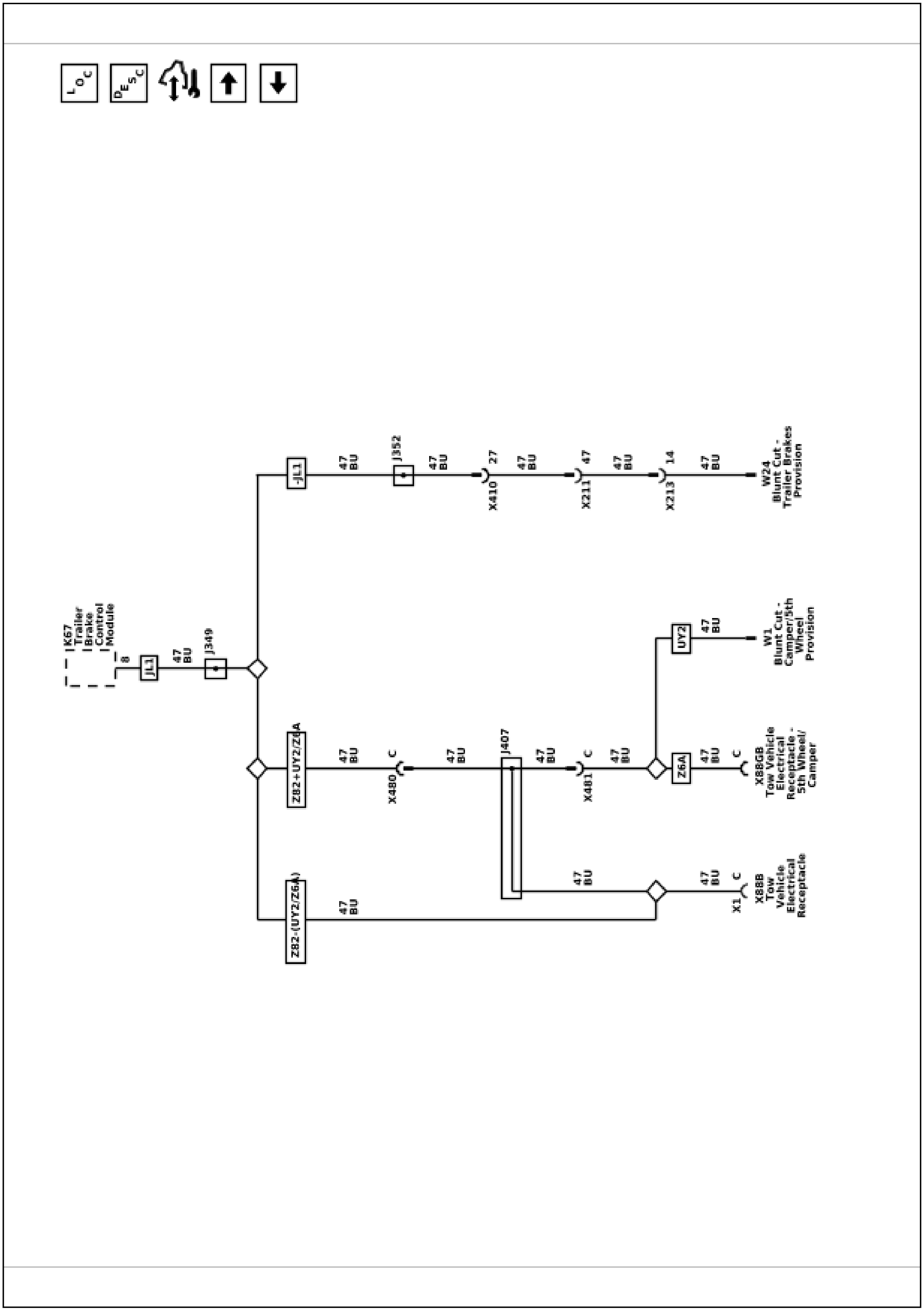
## Trailering Systems Schematics (Trailer Connector Pins: A, B, D, E, F, G - Chassis Cab)



## Trailering Systems Schematics (Trailer Connector Pin: C (Z82))

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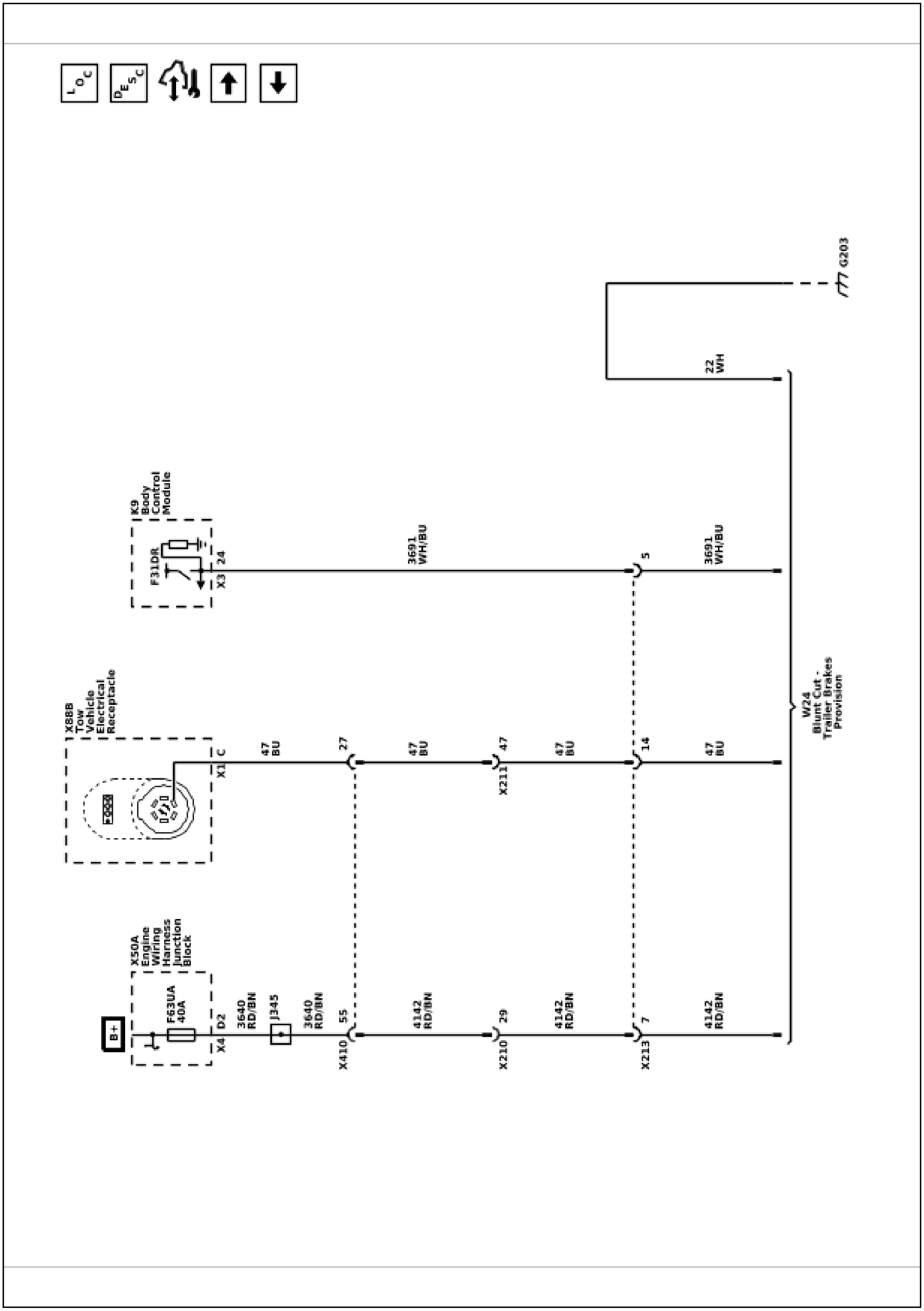
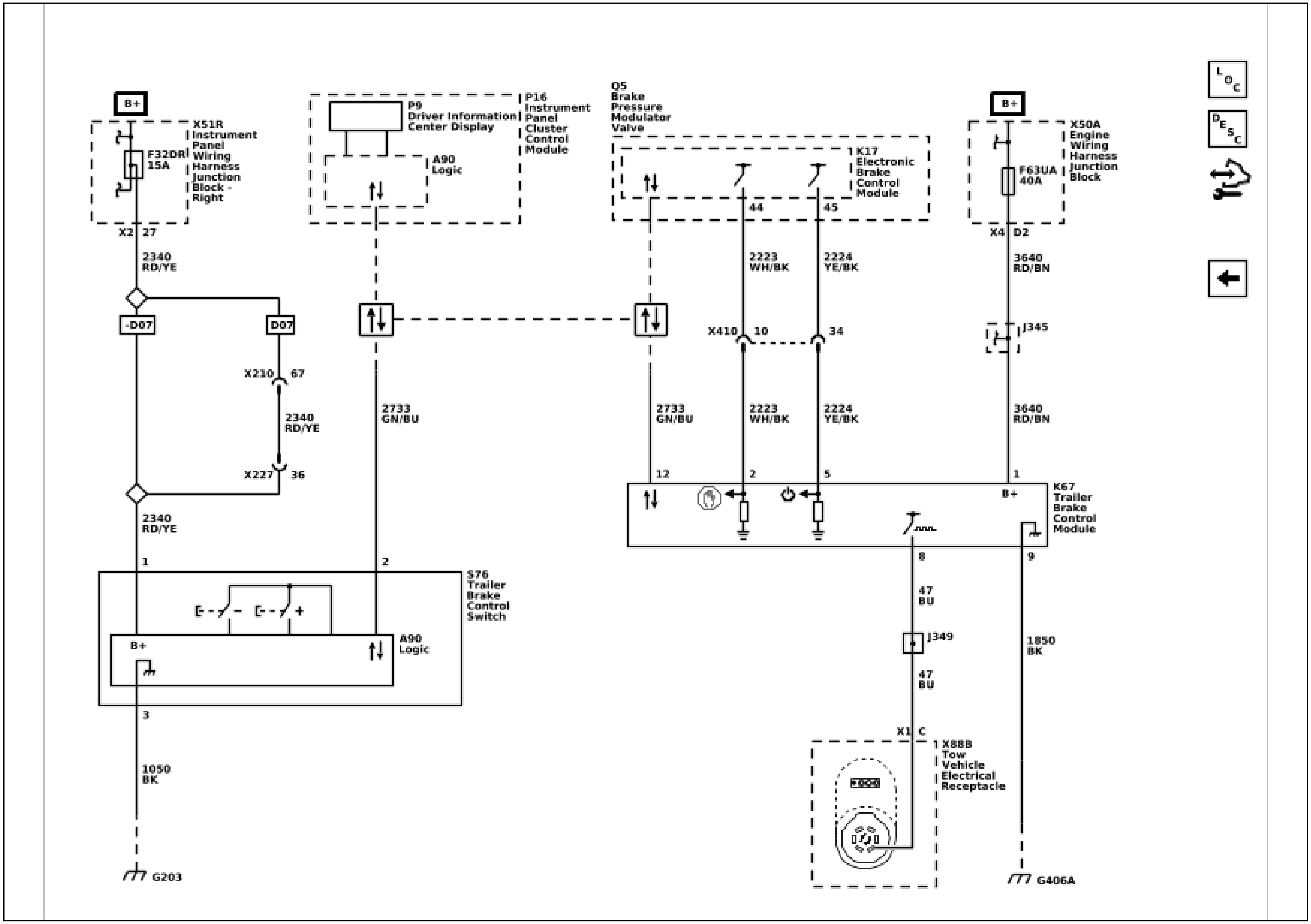
## Trailering Systems Schematics (Trailer Brake Provisions (Z82-JL1))



## Trailering Systems Schematics (Trailer Brake (JL1))



# Description and Operation

## Trailering Description and Operation

### Trailering System Overview

Begin the trailering system diagnosis with [Link target (target-id 325938-) not found] . The Diagnostic System Check - Trailering will provide a complete strategy to locate and repair a vehicle trailering electrical fault. Not following this strategy may cause additional diagnostic time and/or misdiagnosis.

The trailering system consists of the following:

- Trailer Lighting, refer to [Link target (target-id 326023-) not found] for additional diagnostic information.
- {JL1} Trailer Brakes, refer to [Link target (target-id 326020-) not found] for additional diagnostic information.
- Trailer Battery Charging System, refer to [Link target (target-id 326019-) not found] for additional diagnostic information.
- Trailer Detection, refer to [Link target (target-id 326022-) not found] for additional diagnostic information.
- Trailer Tire Pressure Monitoring System, refer to [Link target (target-id 326024-) not found] for additional diagnostic information.
- Trailer Theft Detection.

**7–Terminal Tow Vehicle Electrical Receptacle Pinout**

- Terminal A – Trailer Backup Lamp Control
- Terminal B – Ground
- Terminal C – Trailer Brake Control
- Terminal D – Right Trailer Stop/Turn Signal Lamp Control
- Terminal E – B+
- Terminal F – Trailer Park Lamp Control
- Terminal G – Left Trailer Stop/Turn Signal Lamp Control

### Connecting Aftermarket Accessories

- Some aftermarket accessories that connect to the X88B Tow Vehicle Electrical Receptacle will be recognized by the vehicle as a trailer connected, even if the accessory is not a trailer. As a result, side blind zone detection, rear park assist, and/or rear cross traffic alert will be turned off anytime the vehicle detects a trailer/accessory is connected.
- Vehicles equipped with U1D/UET have trailer theft detection that constantly monitors trailer connected status when enabled. This is done by randomly pulsing the lighting circuits of the trailer when the vehicle is parked. As a result, some aftermarket accessories may be turned ON/OFF when connected to the vehicle with theft detection enabled.
- Vehicles equipped with U1D/UET use pulse width modulation voltage (PWM) for trailer lighting functions. Some aftermarket accessories are incompatible with PWM and may not function correctly when connected to the trailer lighting circuits of the vehicle.

### Trailer Battery Charging System

Trailer battery charging is accomplished through constant battery voltage from the X50A Engine Wiring Harness Junction Block to the X88B Tow Vehicle Electrical Receptacle. Battery voltage is supplied to terminal E at the X88B Tow Vehicle Electrical Receptacle at all times. If equipped, the trailer battery will constantly be charged by the vehicle's electrical system anytime the trailer is connected. Some trailers require the B+ circuit to the X88B Tow Vehicle Electrical Receptacle for the trailer brakes to function.

### Trailer Lighting and Detection With U1D/UET

**Note:**

- Some trailers utilize a trailer mounted control module to operate some or all of the trailer lights. These trailers may use the B+ circuit from the trailer connector to power the trailer lighting circuits. These trailers may not always be detected by the Trailer Lighting Control Module and may set faults.
- When a trailer is detected on a vehicle equipped with side blind zone detection, rear park assist, and/or rear cross traffic alert, the vehicle will automatically turn these features off. These features are turned off to prevent false detections due to the trailer obstructing the view of the sensors.
- Vehicles equipped with IOR/1FL do not come equipped with the trailering APP however may still be equipped with a K68 trailer Lamp Control Module.

The K68 Trailer Lamp Control Module is responsible for controlling the trailer lighting on vehicles with U1D/UET. The combined trailer stop/turn signal lamps of the trailer must draw at least 55mA of total current to be detected as a trailer or the Trailer Lamp Control Module will not control the lighting circuits. The Trailer Lamp Control Module receives serial data messages from the K9 Body Control Module (BCM) indicating what lamps have been activated on the vehicle. The Trailer Lamp Control Module responds by applying pulse width modulated voltage (PWM) to the appropriate control circuits for the requested lamps illuminating the lamps on the attached trailer. The Trailer Lamp Control Module constantly monitors for trailer connection status, trailer lighting faults, and trailer theft deterrent purposes. This is accomplished through the lighting circuits of the trailer to determine if a trailer is connected. When a trailer is connected, the Trailer Lamp Control Module senses the trailer connection and alerts the driver by requesting a trailer profile setup through the Trailering App, which is displayed on the infotainment screen. If a trailer is disconnected with the ignition ON, the vehicle will display multiple trailer lighting messages until a trailer is reconnected or the message is dismissed by the user. With the key OFF, the Trailer Lamp Control Module will periodically pulse the lighting circuits of the trailer to verify it is still connected. The lights on the trailer may flash at different intervals with the key OFF depending on which type of lights the trailer is built with. If a trailer is disconnected with the key ON, the vehicle will display a trailer disconnected message until a trailer is reconnected or the ignition is cycled.

### Trailer Lighting Without U1D/UET

The K219 Lighting Control Module is responsible for controlling the trailer lighting on vehicles without U1D/UET. The lighting control module receives serial data messages from the K9 Body Control Module (BCM) indicating what lamps have been activated on the vehicle. The lighting control module responds by applying voltage to the appropriate relay control circuits for the requested lamps anytime the vehicle lamps are commanded ON. With the relay coil energized, the relay contacts close and allow voltage to flow through the relay illuminating the appropriate lamps on the attached trailer.

### Trailering Messages

The Infotainment Display may display one or more of the following messages to the user related to trailering:

**Trailering Messages**

| Trailering Message | Description |
|---|---|
| Check Trailer Left Turn Signal Lamp | The K68 Trailer Lighting Control Module detects a fault on the left trailer stop/turn lamp control circuit |
| Check Trailer Right Turn Signal Lamp | The K68 Trailer Lighting Control Module detects a fault on the right trailer stop/turn lamp control circuit |
| Check Trailer Rear Lamp | The K68 Trailer Lighting Control Module detects a fault on the trailer park lamp control circuit. |
| Check Trailer Reversing Lamp | The K68 Trailer Lighting Control Module detects a fault on the trailer backup lamp control circuit. |
| Check Trailer Brake Lamps | The K68 Trailer Lighting Control Module detects a fault on the left and/or right trailer stop/turn lamp control circuits |
| {JL1} Check Trailer Wiring | The K67 Trailer Brake Power Control Module detects a fault on the trailer brake control circuit or the trailer was disconnected. |
| Lane Change Alert Off | Reminder to the user that lane change alerts are turned off anytime a trailer is detected. |
| Rear Cross Traffic Alert Off | Reminder to the user that rear cross traffic alerts are turned off anytime a trailer is detected. |
| Rear Park Assist Off | Reminder to the user that rear park assist is turned off anytime a trailer is detected. |
| Remember to turn On Tow/Haul Mode | Reminder to the user to turn ON Tow/Haul Mode when towing. |
| {JL1} Service Trailer Brake System | The K67 Trailer Brake Power Control Module detects a fault on the trailer brake control circuit. |
| Service Trailer Tire Monitor System | The K214 Trailer Tire Pressure Indicator Module detects one or more issues with the trailer tire pressure monitoring system. |
| Trailer Detected | The K68 Trailer Lighting Control Module detects a trailer has been connected to the X88B Tow Vehicle electrical Receptacle. |

| Trailering Message | Description |
| --- | --- |
| {JL1} Trailer Brakes Detected | The K67 Trailer Brake Power Control Module detects a trailer with trailer brakes has been connected to the X88B Tow Vehicle electrical Receptacle. |
| Trailer Disconnected Check Connection | The K68 Trailer Lighting Control Module detects a trailer has been disconnected from the X88B Tow Vehicle electrical Receptacle. |
| Trailer Tire Pressure High | The K214 Trailer Tire Pressure Indicator Module detects one or more of the trailer tire pressures is high. |
| Trailer Tire Pressure Low | The K214 Trailer Tire Pressure Indicator Module detects one or more of the trailer tire pressures is low. |
| Trailer Tire Sensor Fault | The K214 Trailer Tire Pressure Indicator Module detects one or more of the trailer tire pressure sensors has a fault. |
| Trailer Tire Temperature High | The K214 Trailer Tire Pressure Indicator Module detects one or more of the trailer tire temperatures is too high. |

## Trailer Theft Detection (With U1D/UET Only)

Trailer theft monitoring can be turned ON and OFF through the vehicle Trailer App. When enabled, any time the trailer theft deterrent system is armed, the trailer lighting circuits are constantly monitored to determine if a trailer is connected for trailer theft deterrent purposes. With the key OFF, the K68 Trailer Lamp Control Module will randomly pulse the lighting circuits of the trailer to verify it is still connected by monitoring the voltage drop of the circuit. Depending on the configuration of the trailer lights, the trailer lights may randomly flash as part of the trailer theft deterrent function. These flashes correspond to when the K68 Trailer Lamp Control Module pulses the lighting circuits to ensure the trailer is still connected and is considered normal. If the trailer is disconnected while the trailer theft deterrent system is armed, the vehicle will flash the exterior lights and cycle the horn to alert of a trailer theft event. Refer to *Theft Systems Description and Operation 9-59* for more information on the content theft deterrent system.

## Trailer Brakes (JL1)

**The vehicle is equipped with the following trailer braking components:**

- K17 Electronic Brake Control Module
- K67 Trailer Brake Control Module
- S76 Trailer Brake Control Switch
- Trailer Brake Driver Information Center Display

### Trailer Brake Circuits

- Circuit 2223 is the trailer brake apply signal circuit. The K17 Electronic Brake Control Module receives vehicle braking force data and/or data from the application of the manual trailer brake slide lever. The Electronic Brake Control Module responds by applying the appropriate amount of pulse width modulated (PWM) voltage based on the amount of trailer brake application desired. The K67 Trailer Brake Power Control Module responds to the signal circuit by applying the appropriate amount of PWM voltage to the trailer auxiliary control circuit 47.
- Circuit 2224 is the trailer brake enable signal circuit. The K17 Electronic Brake Control Module applies voltage to the enable circuit anytime a LIN data communication fault is not present, a trailer is connected, and the vehicle brakes are being applied. The enable circuit must have voltage applied to it before the K67 Trailer Brake Control Module applies the appropriate amount of pulse width modulated (PWM) voltage to the trailer auxiliary control circuit 47.
- Circuit 2733 is the Electronic Brake Control Module LIN bus 2 circuit. The K17 Electronic Brake Control Module, K67 Trailer Brake Power Control Module, and the S76 Trailer Brake Control Switch all communicate through the Electronic Brake Control Module LIN bus 2 circuit. If the LIN bus has a fault on the circuit, trailer braking will be disabled until the fault is repaired.
- Circuit 47 is the trailer auxiliary control circuit. The K67 Trailer Brake Control Module responds to signal circuit 2223 and enable circuit 2224 by applying the appropriate amount of PWM voltage to the trailer auxiliary control circuit. A properly functioning trailer will apply the appropriate amount of braking force to the brakes of the trailer.

**The Trailer Brake Control System is compatible with two types of Trailer Brake Systems as listed below:**

1. **Electric Brakes** A controlled electrical output signal energizes an electric-magnet/lever arm assembly that directly actuates the brake mechanism. The GDS name for this system is “Electromagnetic Brakes”.
2. **Electric Over Hydraulic Brakes** A controlled electrical output signal energizes a remote, trailer mounted hydraulic pump to build brake pressure in

a closed hydraulic system on the trailer. The hydraulic fluid pressure actuates the brake mechanism. The GDS name for this system is “Electrohydraulic Brakes”.

**Trailer Brake Output Versus Trailer Brake Type**

- The trailer brake system characterizes the trailer brakes as either Electric Brake or Electric Over Hydraulic Brake automatically. This characterization may be affected by the number, type, and age of the trailer brake magnets, as well as any other devices installed on the trailer brakes (i.e. adapters for Electric Over Hydraulic brake functionality).
- The trailer brake system is fully operational with either characterization.
- Sliding the manual trailer brake apply lever will produce output at zero speed for either characterization.

The user gain allows the driver to adjust the amount of trailer brake output to match the trailer load and road surface. The controller determines the desired trailer brake output and provides a control signal to the K67 Trailer Brake Control Module (TBPM). The K67 Trailer Brake Control Module amplifies the signal and provides the output required to activate the Electric or Electric Over Hydraulic trailer brakes.

The trailer brake control can support up to a maximum of four axles with electric trailer brakes (8 brake magnets).

Connecting a trailer that is not compatible with the trailer brake system may result in reduced or complete loss of trailer braking. There may be an increase in stopping distance or trailer instability which could result in personal injury or damage to the vehicle, trailer or other property. An aftermarket controller may be available for use with incompatible trailer brake systems.

To determine the type of brakes on your trailer and the availability of controllers, check with your trailer manufacturer or dealer. Do not power up an aftermarket controller with the factory brake controller at the same time.

## Trailer Brake Control Panel

The S76 Trailer Brake Control Switch contains the trailer gain and manual apply switches. It is located in the vehicle center stack. Refer to the owner’s manual for more information on the location. The control panel and switches allows you to adjust the amount of output, referred to as trailer gain, available to the Electric or Electric Over Hydraulic brakes. It also allows you to manually apply the trailer brakes. The trailer brake control switch is used along with the trailer brake display page on the driver information center to adjust and display power output to the trailer brakes.

## Manual Trailer Brake Apply

The manual trailer brake apply lever is located on the S76 Trailer Brake Control Switch and is used to apply the trailer’s Electric or Electric Over Hydraulic brakes independent of the vehicle’s brakes. This lever is used in the trailer gain adjustment procedure to properly adjust the power output to the trailer brakes.

Sliding the lever will apply only the trailer brakes. The power output to the trailer is indicated in the trailer brake display page in the Driver Information Center (DIC). If the vehicle’s service brakes are applied while using the manual trailer brake apply lever, the trailer brake control output power will be the greater of the two.

The trailer and the vehicle’s brake lamps will come on when either the vehicle’s braking or manual trailer brakes are applied.

## Trailer Brake Gain Adjustment

Trailer gain should be set for a specific trailering condition and must be adjusted any time vehicle loading, trailer loading or road surface conditions change. It is important to re-adjust trailer gain any time the tow vehicle, trailer loading or road surface conditions change or if you notice trailer wheel lock-up at any time while you are towing.

Setting the trailer gain properly is needed for the best trailer stopping performance. A trailer that is over-gained may result in locked trailer brakes. A trailer that is under-gained may result in not enough trailer braking. Both of these conditions may result in poor stopping and stability of the vehicle and trailer.

**Trailer Gain Adjustment Procedure**

- Adjust trailer gain in 0.5 step increments up to 10 gain setting by using the gain adjustment +/− buttons on the trailer brake control panel switch. Pressing and holding a gain button will cause the trailer gain to continuously increment or decrement. To turn the output to the trailer off, set the gain to zero.

- Drive the tow vehicle and trailer combination on a level surface representative of the towing condition and free of traffic at approximately 32–40 km/h (20–25 mph) and fully apply the manual trailer brake apply lever mechanism located on the trailer brake control panel switch. Adjusting the trailer gain at slower speeds may result in an incorrect gain setting.
- Adjust the trailer gain to just below the threshold of trailer wheel lock-up . Trailer wheel lock-up may not occur if towing a heavily loaded trailer. In this case, adjust the trailer gain to the highest allowable setting for the towing condition.

#### Trailer Brake Gain and Output Display

This display menu can be accessed by scrolling through the DIC menu, or any time the trailer gain +/− button is depressed, or the manual trailer brake apply lever is actuated. The trailer output is displayed from 0 to full output and indicates the output power provided to the trailer brakes, relative to the gain setting.

After the electrical connection is made to a trailer equipped with electric brakes or electric over hydraulic brakes, the TRAILER CONNECTED message will be displayed momentarily on the DIC. The Trailer Brake Display Page can be selected on the DIC showing TRAILER GAIN and OUTPUT, after all vehicle related service messages are acknowledged by the driver. Depending on which instrument panel cluster is in the vehicle, the DIC may display dashed lines, a greyed out display, or it may be blank signifying a disconnected trailer or a trailer brake fault condition.

### Tow/Haul Mode

Tow/Haul mode is selected through the Ride Control Switch for hauling heavy loads to provide increased performance and vehicle control. Tow/Haul Mode adjusts the transmission shift pattern, steering, and Electronic Stability Contol (ESC) performance.

If the vehicle is turned off with Tow/Haul mode active and then restarted within four hours or less Tow/Haul will remain active. Otherwise, the vehicle will start in Normal mode.

If equipped with a diesel engine, exhaust braking is automatically activated when Tow/Haul mode is selected. The system will command down shifts to reduce vehicle speed when the brake is applied. The normal tow/haul shift pattern will return once the vehicle is on a low grade or when the accelerator pedal is pressed.

### Trailer Brake Driver Information Center Indicators and Messages

#### Trailer Brake Detection

The K67 Trailer Brake Control Module constantly monitors the trailer auxiliary control circuit from Terminal C at the X88B Tow Vehicle electrical Receptacle. When a trailer is connected with trailer brakes, the K67 Trailer Brake Control Module senses the connection and alerts the driver with a Trailer Connected message. If the K67 Trailer Brake Control Module senses a fault, or the trailer becomes disconnected, the vehicle will alert the driver with a Check Trailer Wiring message.

The following indicators are used to inform the driver of several different conditions:

#### Trailer Connected

This message will be briefly displayed when a trailer with Electric or Electric Over Hydraulic brakes is first connected to the vehicle. This message will automatically turn off in about ten seconds. The driver can also acknowledge this message before it automatically turns off.

#### Check Trailer Wiring

This message will be displayed if:

- The system detects that a trailer with Electric or Electric Over Hydraulic brakes is connected to the vehicle and then the trailer harness becomes disconnected from the vehicle.
- The trailer connection is recognized initially and then a disconnect occurs while the vehicle is stationary. This message will automatically turn off in about thirty seconds. This message will also turn off if the driver selects to turn this message off or if the trailer harness is reconnected.
- A disconnect of the trailer wiring harness occurs while the vehicle is moving. The Check Trailer Wiring message will continue until the ignition is turned off. The message will also turn off if the driver selects to turn this message off or it the trailer harness is re-connected.
- There is an electrical fault in the wiring to the electric trailer brakes. The Check Trailer Wiring message will continue as long as there is an electrical fault in the trailer wiring. This message will also turn off if the driver acknowledges this message off.
- A poor connection at the 7–way connector may cause the Check Trailer Wiring message. Some aftermarket 7–way trailer side connector adapters or plugs may cause deformation or excessive wear to the vehicle's trailer terminals. It is recommended that you use an OEM or Pollak heavy duty 7–way trailer side connector adapter.

#### Service Trailer Brake System

This message will be displayed when there is a problem with the trailer brake control system. The trailer brake system may not be fully functional, or may not be functioning at all. The trailer brake system is designed to provide trailer braking, if possible, even when faults prevent it from being fully functional. This reduced functionality includes:

1. Providing trailer braking when the master cylinder pressure or brake pedal switch are faulted.
2. Providing trailer braking when hill start assist and trailer sway control communication is faulted.
3. Providing trailer braking when certain manual trailer brake apply lever faults are present.

## Trailer Tire Pressure Monitoring

**Special Tools**

- *EL-46079/J-46079*
  Tire Pressure Monitor Diagnostic Tool
- *EL-50448*
  Tire Pressure Monitor Sensor Activation Tool
- *EL-52641* Trailer Presence Simulator Tool

For equivalent regional tools, refer to [Link target (target-id 59410-) not found] .

The Trailer Tire Pressure Monitor System is designed to monitor the pressure of the trailer tires, and warn the driver when a low pressure condition exists. Four Trailer Tire Pressure Monitor System sensors may be provided in the vehicle's glove box as an accessory when equipped. The system can accommodate a trailer with up to (6) tires if additional sensors are purchased from the dealership. Also, the system can be paired with up to (5) individual trailers. The sensors must be mounted onto each tire and wheel assembly, and the sensors must be learned by the vehicle by following the learning procedure as shown in the Trailering App section of this manual. For sensor installation assistance, please contact your trailer service center or tire service center. The Trailer Tire Pressure Monitor System sensors monitor the air pressure in the trailer tires and transmit the trailer tire pressure readings to a receiver located in the vehicle. The trailer tire pressure sensors can transmit up to 23 feet (7 meters) from the hitch receiver of the vehicle. The tire pressure values can be viewed in the trailering app in the vehicle's center stack.

## Trailering Diagnostic Tools

In some situations when diagnosing trailer tire pressure monitoring, trailer lighting, or integrated trailer brakes, it may be necessary to connect the vehicle to a trailer to confirm proper operation. Performing this activity may prove difficult in the service environment since trailers are not often available for diagnostic use, may have existing electrical issues outside of the issues a technician is attempting to diagnose, or simply may be too unwieldily to connect for diagnosis.

With all this in mind, it may be helpful to build or create a tool that can be plugged into the vehicle's trailer connector and simulate a connected trailer. This tool would include park lamps, stop lamps, and a reverse lamp for lighting and trailer tire pressure monitoring diagnosis. It can be expanded to include trailer brake magnets to diagnose integrated trailer brake concerns. Also, an additional lamp can be included to diagnose the B+ circuit to the trailer.

Trailer issues are NOT covered under warranty, but these tools may be used to verify the vehicle is functioning properly and to help the customer understand and correct any trailer related issues if they so choose.

## Available Trailer Presence Simulator Tool

| Illustration | Tool Number/Description |
|---|---|
|  5166189 | *EL-52641* Trailer Presence Simulator Tool |

## Simulated Trailer Lighting

Creating a tool to simulate a connected trailer can be used to diagnose issues with trailer lighting, trailer brake (if equipped), the Trailering App (if equipped), and trailer tire pressure monitoring system (if equipped).

If the vehicle is equipped with a K68 Trailer Lamp Control Module (U1D/UET), the module monitors the current on the lighting circuits to determine a trailer has been connected. The Trailer Lamp Control Module pulses current on the trailer lighting circuits every 42 minutes to monitor for a connected trailer. If a current draw greater than 55mA is detected, the Trailer Lamp Control Module recognizes this as a connected trailer. This will enable any trailer lighting controlled by the Trailer Lamp Control Module. The Center Stack Module will also use this trailer detection as a cue to enable the Trailering App and trailer tire pressure monitoring functions.

**Creating a Simulated Trailer Lighting Tool**
Parts needed:

- 7-way RV trailer connector Qty: 1

**Note:** The combination trailer stop/turn, and backup lamps must draw at least 55mA of total current to be detected as a trailer. Some LED combination lamps will not draw enough current. If an LED combination lamp is used, make sure it draws at least 55mA. A load resistor can be added to the circuit if necessary to obtain the correct load.

- Combination trailer park/stop/turn lamp (greater than 55mA drawn when on) Qty: 2
- Reverse lamp Qty: 1
- 12 gauge wire and terminals/connectors Qty: As needed
- 18 gauge wire and terminals/connectors Qty: As needed
- Mounting board Qty: 1

1. Connect a 12 gauge wire to the ground terminal of the 7-way trailer connector and the ground circuit of each combination trailer park/stop/turn lamp and the reverse lamp in parallel.
2. Connect an 18 gauge wire between the park lamp terminal of the 7-way trailer connector and the park lamp circuit of each combination trailer park/stop/turn lamp in parallel.
3. Connect an 18 gauge wire between the left turn/stop lamp terminal of the 7-way trailer connector and the turn/stop lamp circuit of left trailer park/stop/turn lamp.
4. Connect an 18 gauge wire between the right turn/stop lamp terminal of the 7-way trailer connector and the turn/stop lamp circuit of right trailer park/stop/turn lamp.
5. Connect an 18 gauge wire between the reverse lamp terminal of the 7-way trailer connector and the reverse lamp.

**Note:** A combination trailer lighting and trailer brake tool can be created on the same mounting board.

6. Mount the left combination trailer park/stop/turn lamp, right combination trailer park/stop/turn lamp, and reverse lamp to the mounting board.
7. Plug the 7-way RV trailer connector to the vehicle and verify functionality.

## Simulated Trailer Brakes

Creating a tool to simulate trailer brakes can be used to diagnose trailer brake issues.

The trailer brake control system is compatible with two types of trailer brake systems: electromagnetic or electro-over hydraulic trailer brakes. The Electronic Brake Control Module must determine which type of brakes the trailer is equipped with so the system can output correctly for the trailer's brake system. Because the Electronic Brake Control Module has to determine the type of trailer brake system that is being used, it can be sensitive to a variety of trailer wiring issues.

The Trailer Brake Control Module continuously sends a test pulse out on the trailer brake control circuit (circuit 47) to determine if a trailer with trailer brakes has been connected. How the pulse reacts when a trailer is connected is how the Trailer Brake Control Module determines which type of braking system the trailer is equipped with.

Even after the system detects the trailer, Trailer Brake Control Module will continue to send this test pulse on the trailer brake control circuit, which now is monitoring both the truck and trailer circuitry. The trailer brake control circuit continues to be monitored for any faults so the driver can be notified of any issues that may occur within the truck or trailer, as well as, to determine when the trailer is disconnected from the truck.

**Creating a Simulated Trailer Brake Tool**
Parts needed:

- 7-way RV trailer connector Qty: 1
- Electric trailer brake magnets Qty: 2, 4, 6, or 8
- Reverse lamp Qty: 1
- Mounting board Qty: 1
- 12 gauge wire and terminals/connectors Qty: As needed

1. Connect a 12 gauge wire to the ground terminal of the 7-way trailer connector.
2. Connect a 12 gauge wire to the brake controller output terminal of the 7-way trailer connector.

**Note:** The trailer brake magnets must be connected in parallel. Connecting in series will create an excessive current draw and disable the trailer brake system.

3. Connect the trailer brake magnets to the 12 gauge wires from the 7-way trailer connector in parallel.

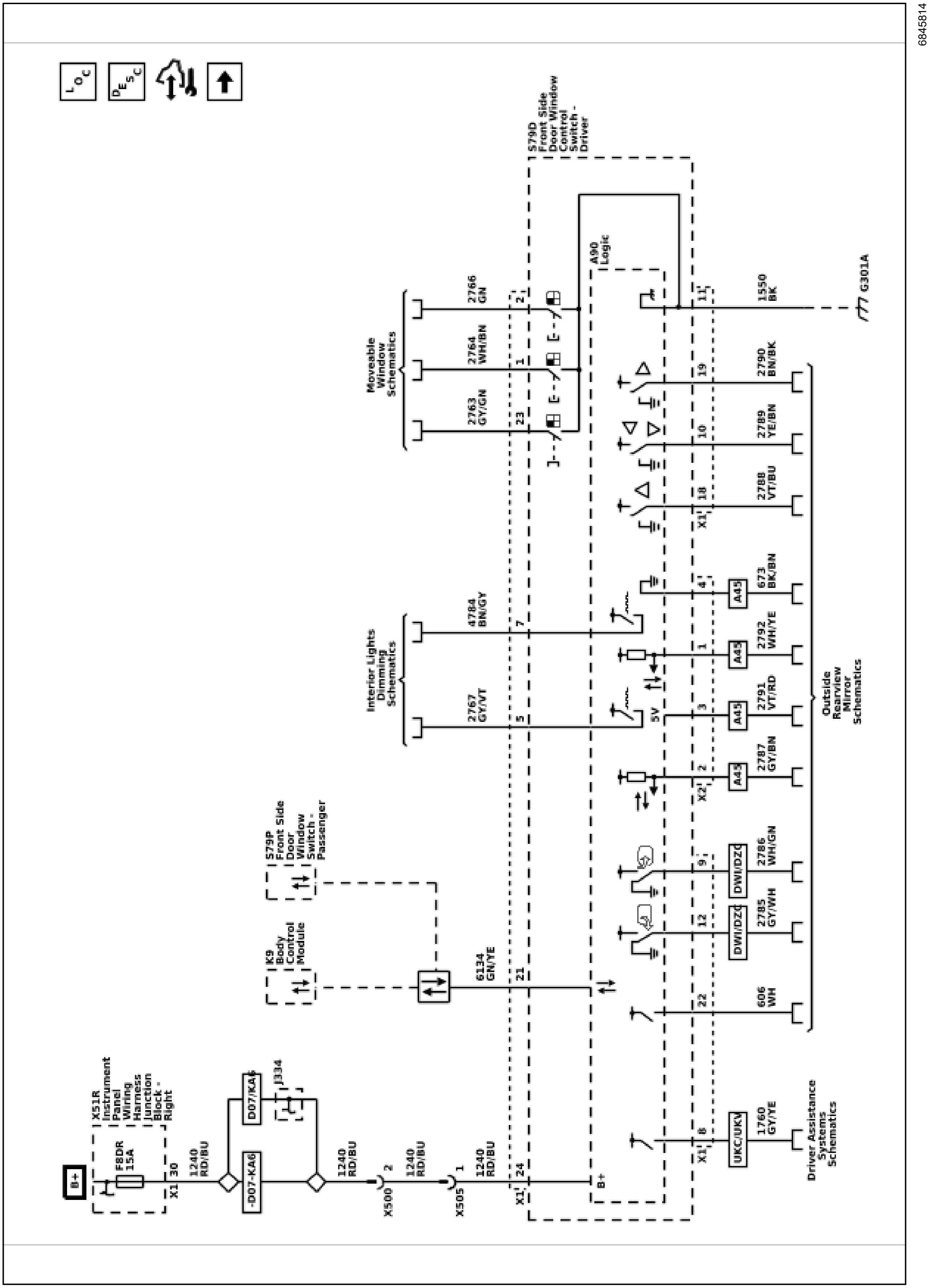
**Note:** A combination trailer lighting and trailer brake tool can be created on the same mounting board.

4. Mount the trailer brake magnets to the mounting board.
5. Plug the 7-way RV trailer connector to the vehicle and verify functionality.

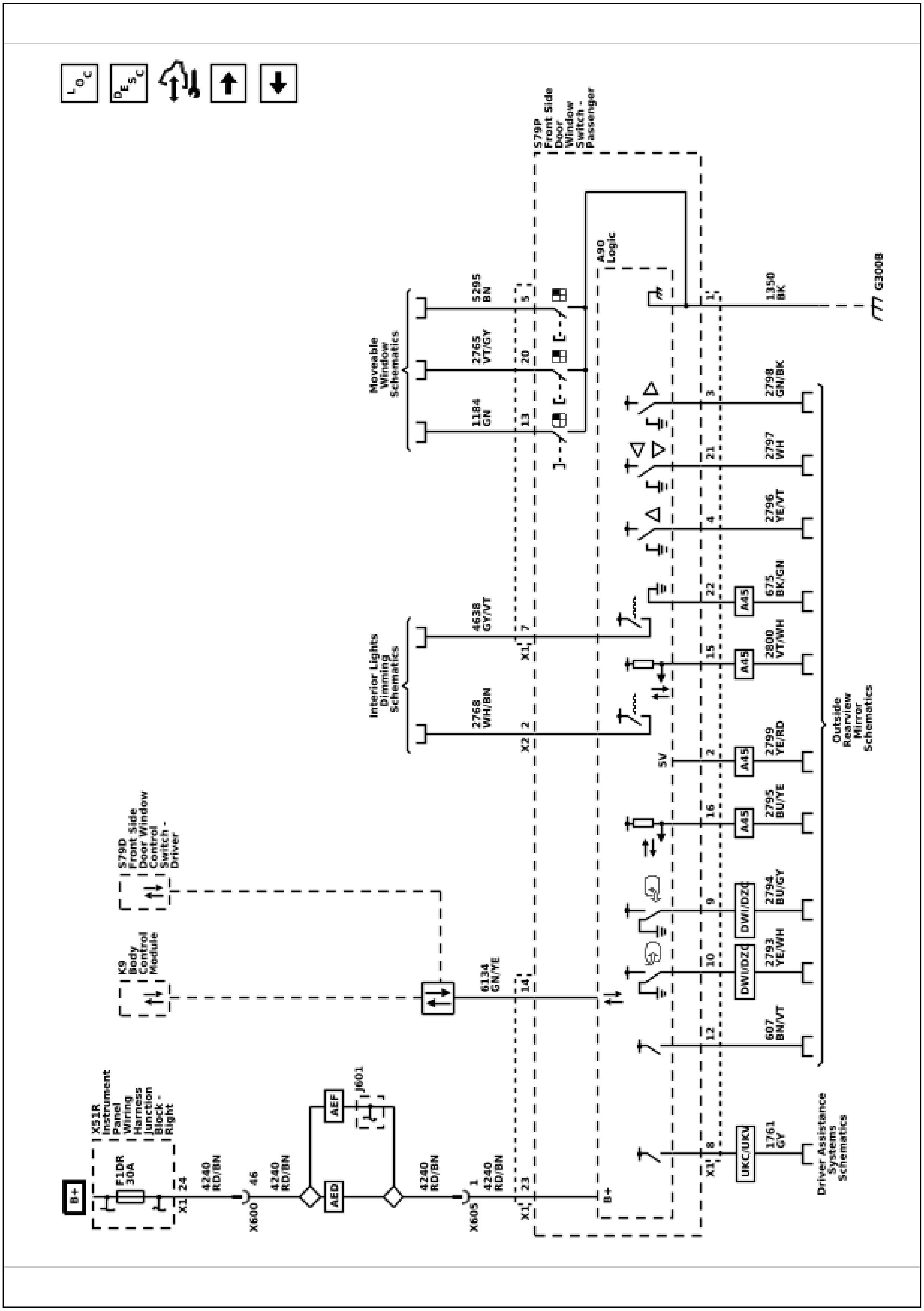
# Vehicle Access

## Schematic and Routing Diagrams

## Door Lock/Indicator Schematics (Driver Door Switch Panel Control Module Power, Ground, Serial Data, and Subsystem References)



## Door Lock/Indicator Schematics (Passenger Door Switch Panel Control Module Power, Ground, Serial Data, and Subsystem References)

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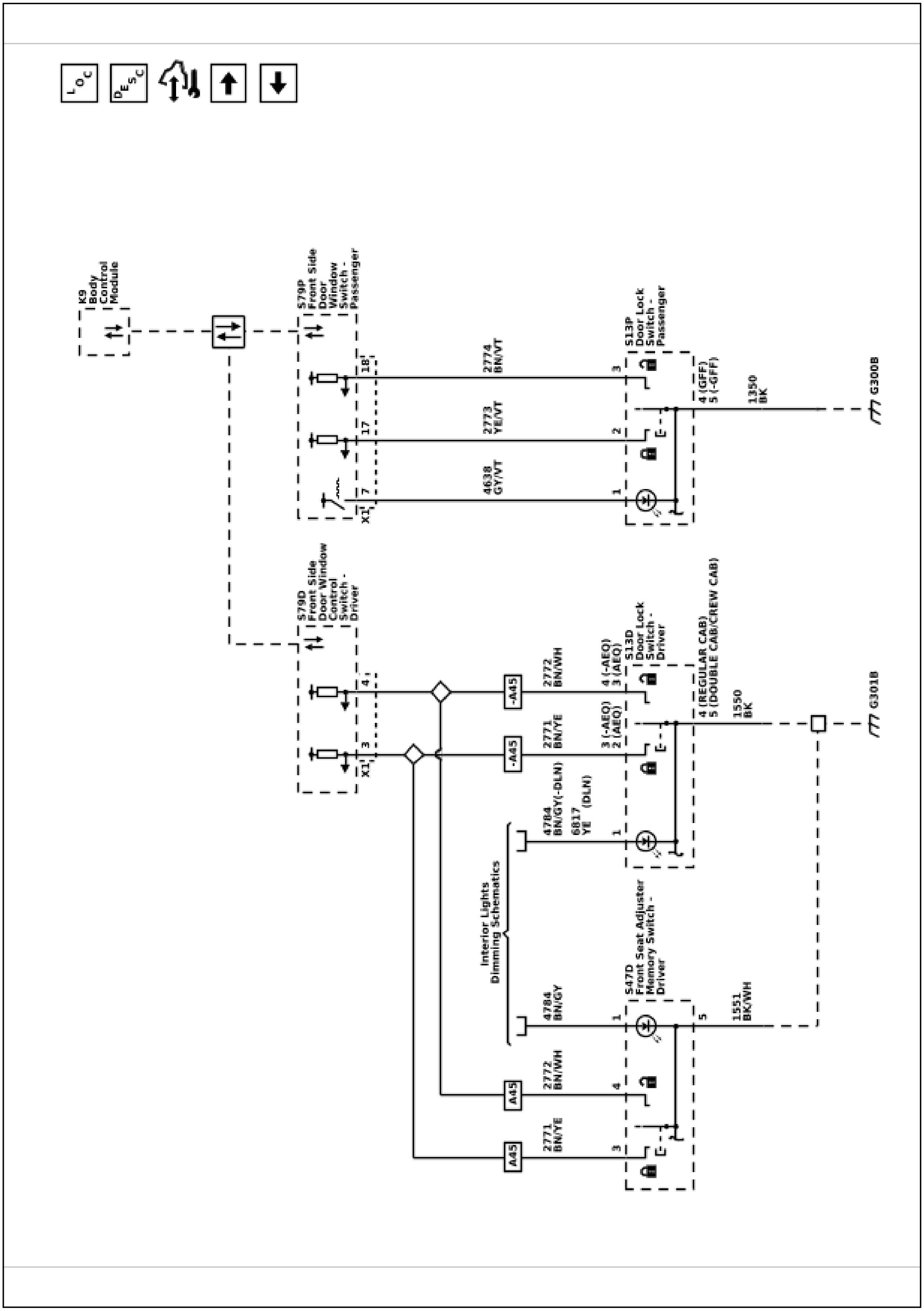
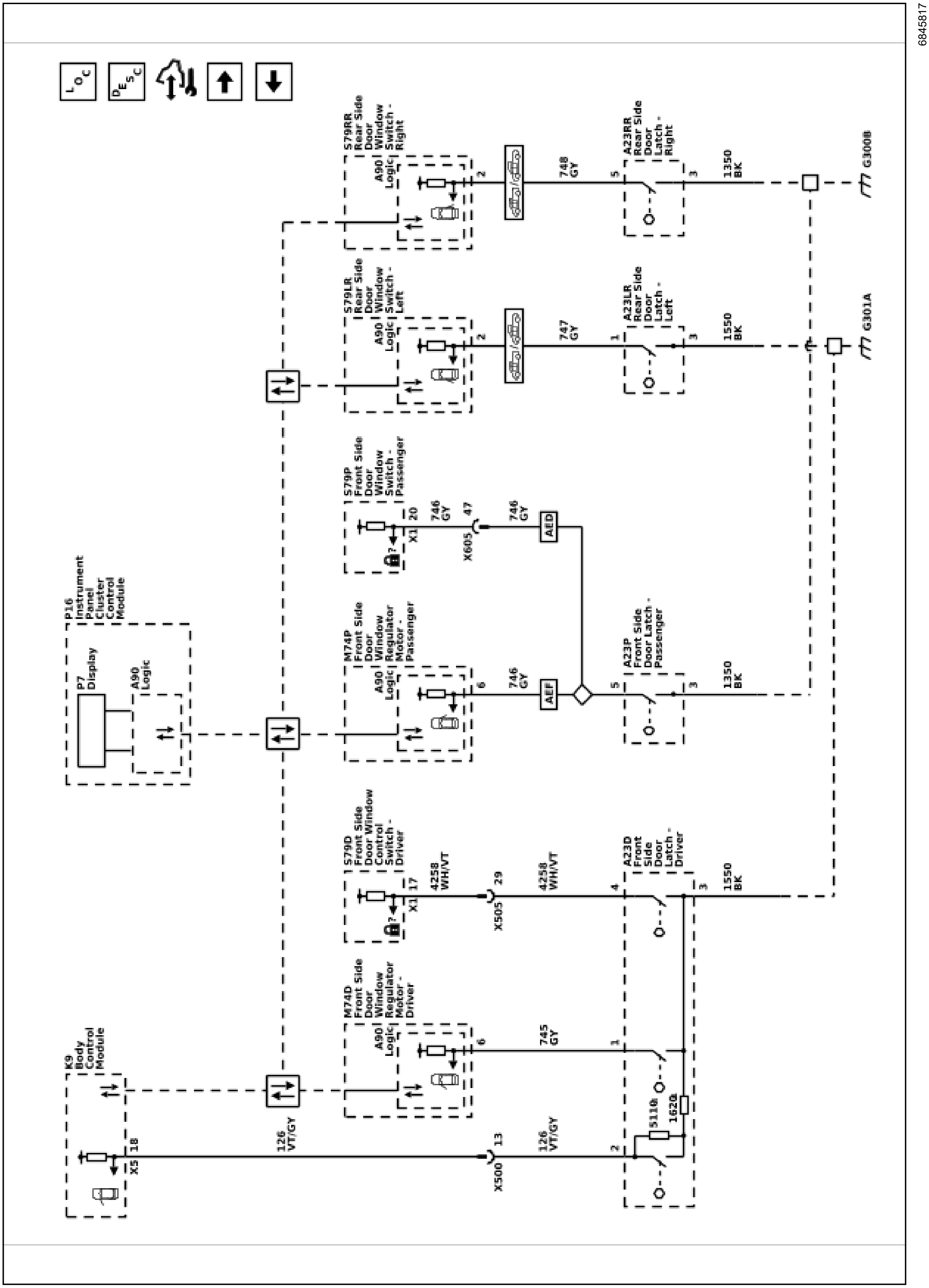
## Door Lock/Indicator Schematics (Door Lock Switches and Indicators)

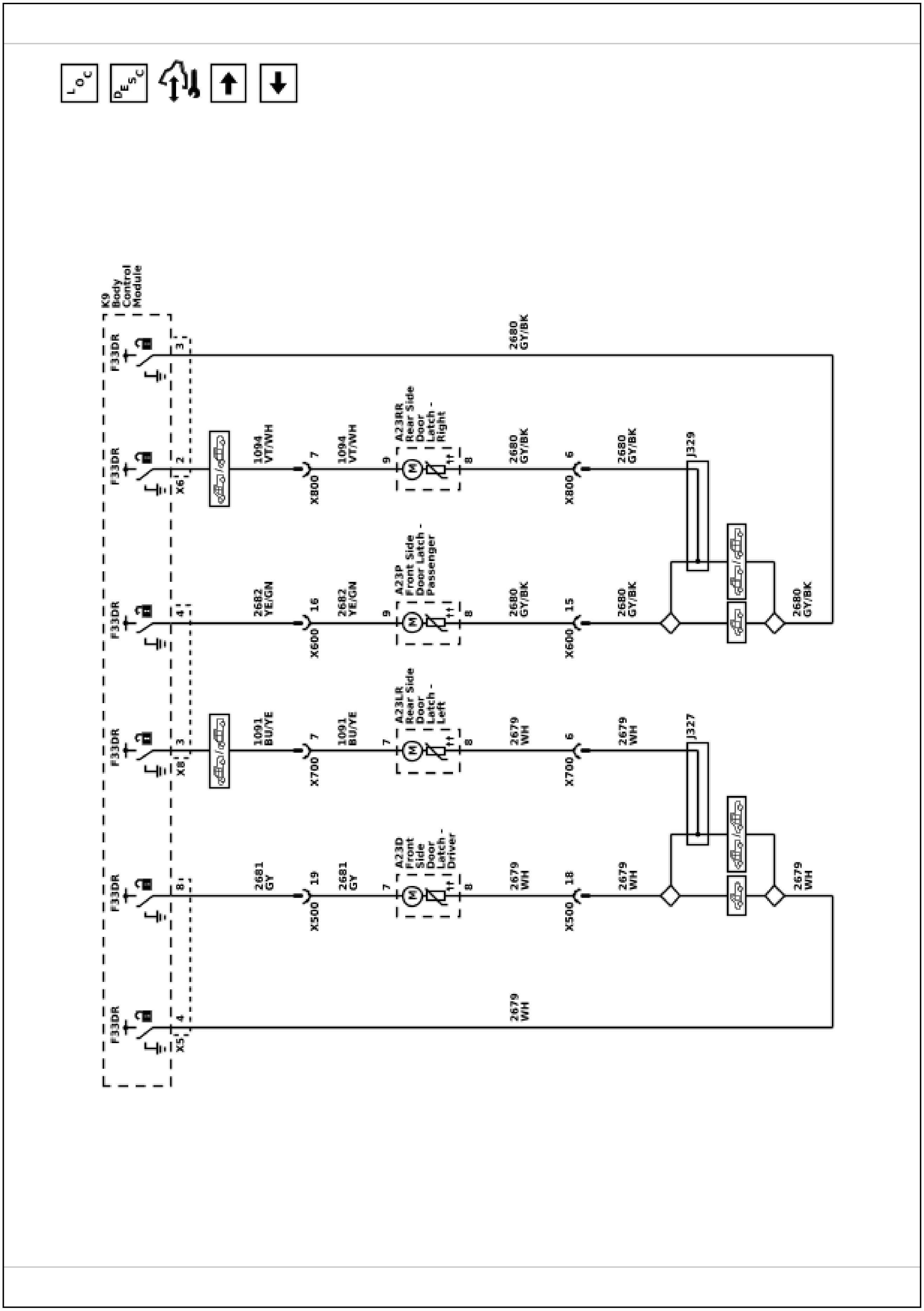
6845816



## Door Lock/Indicator Schematics (Ajar Switches, Lock Status and Child Lock Status)



## Door Lock/Indicator Schematics (Actuators)

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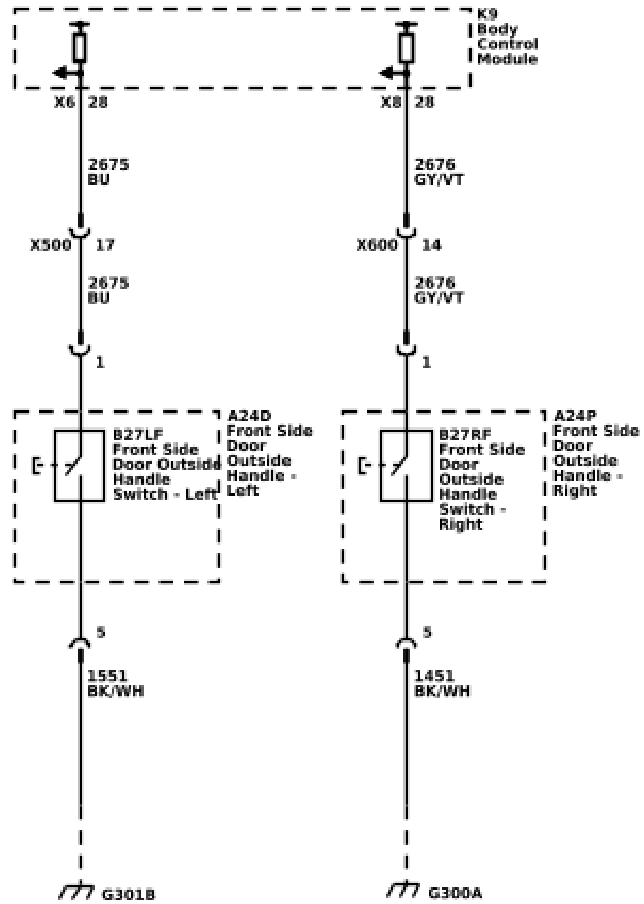
## Door Lock/Indicator Schematics (Door Handle Switches)

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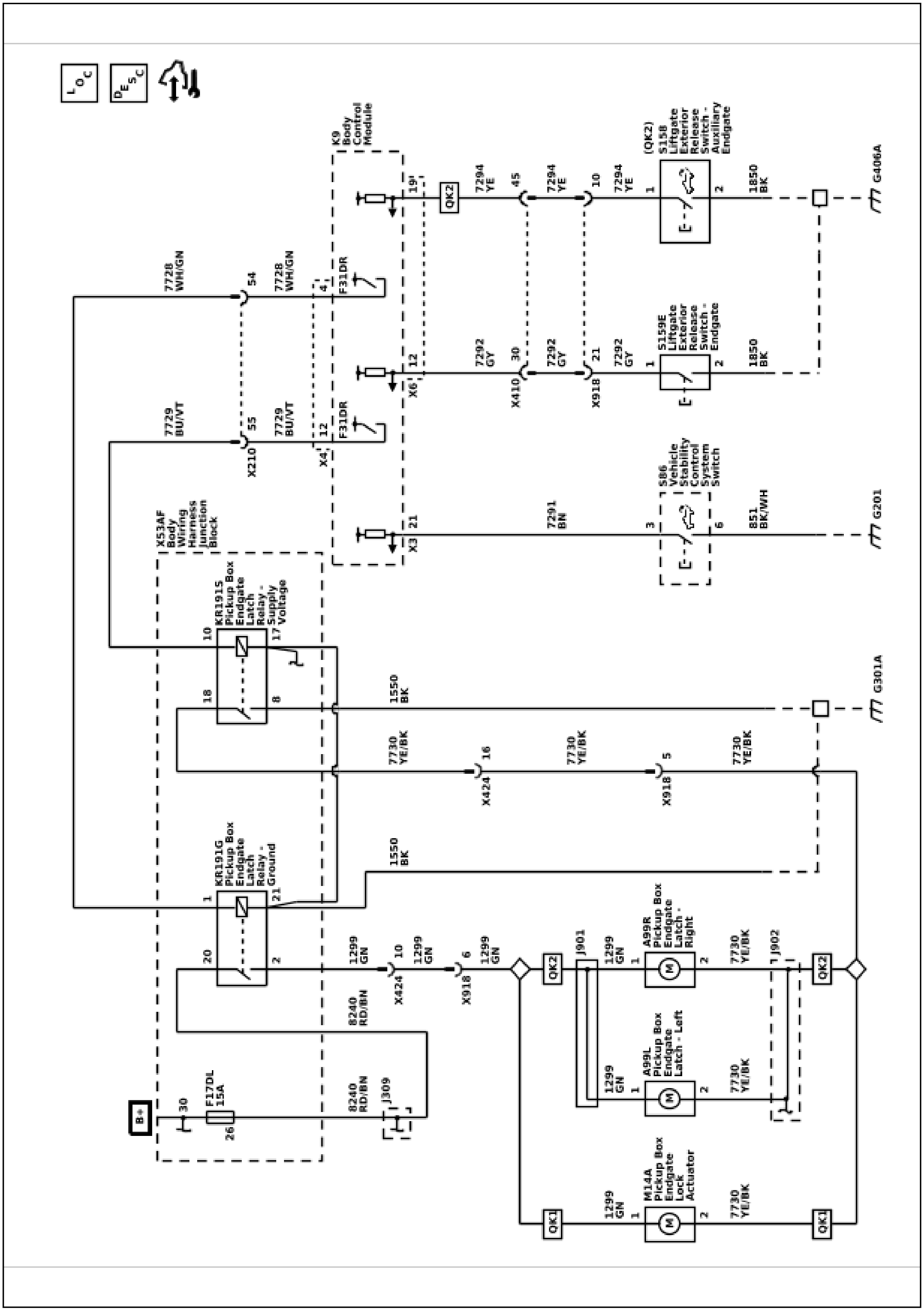
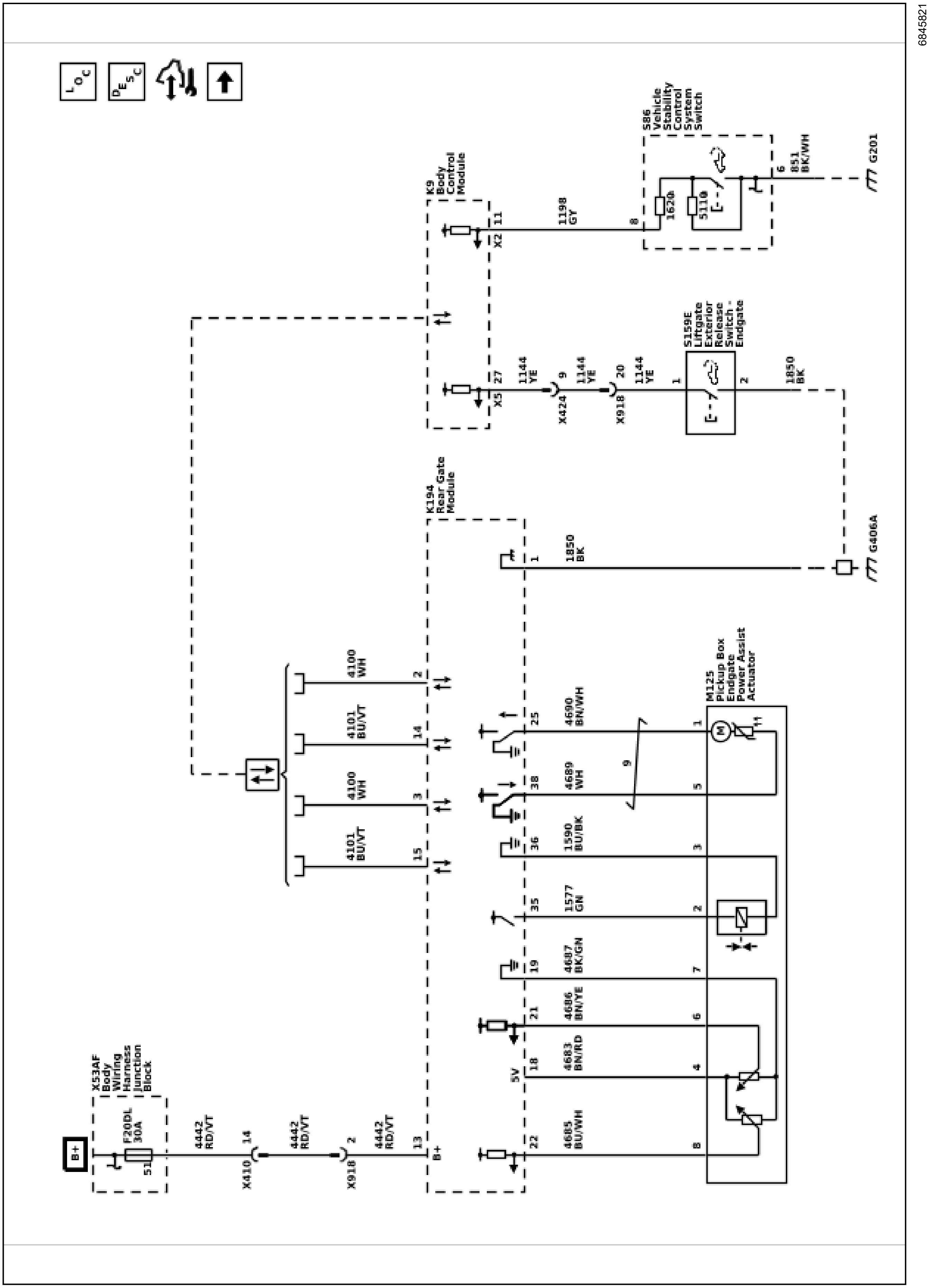
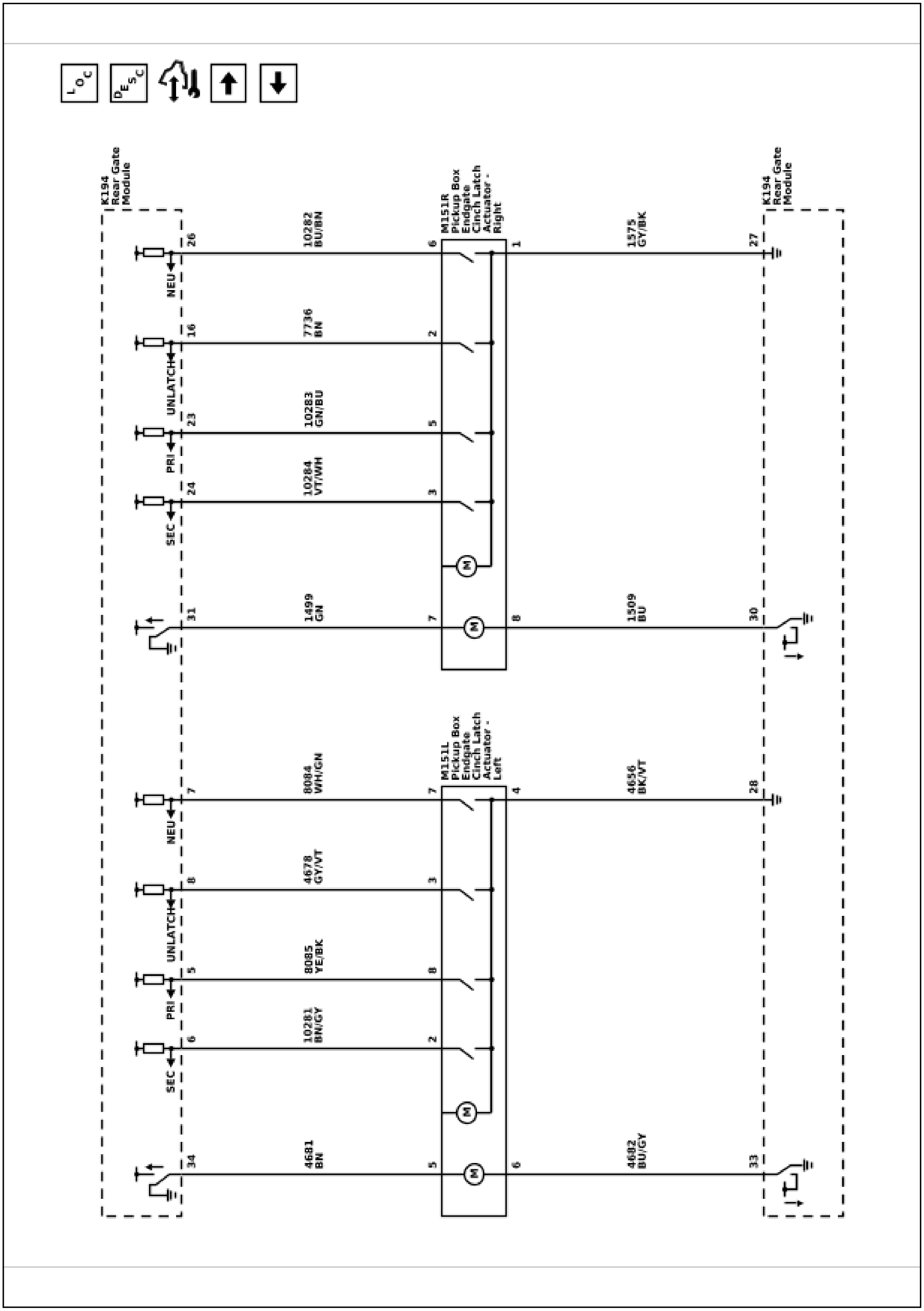
## Release Systems Schematics (Endgate Release (QT5))



## Endgate Schematics (Power Endgate Controls (QT6))

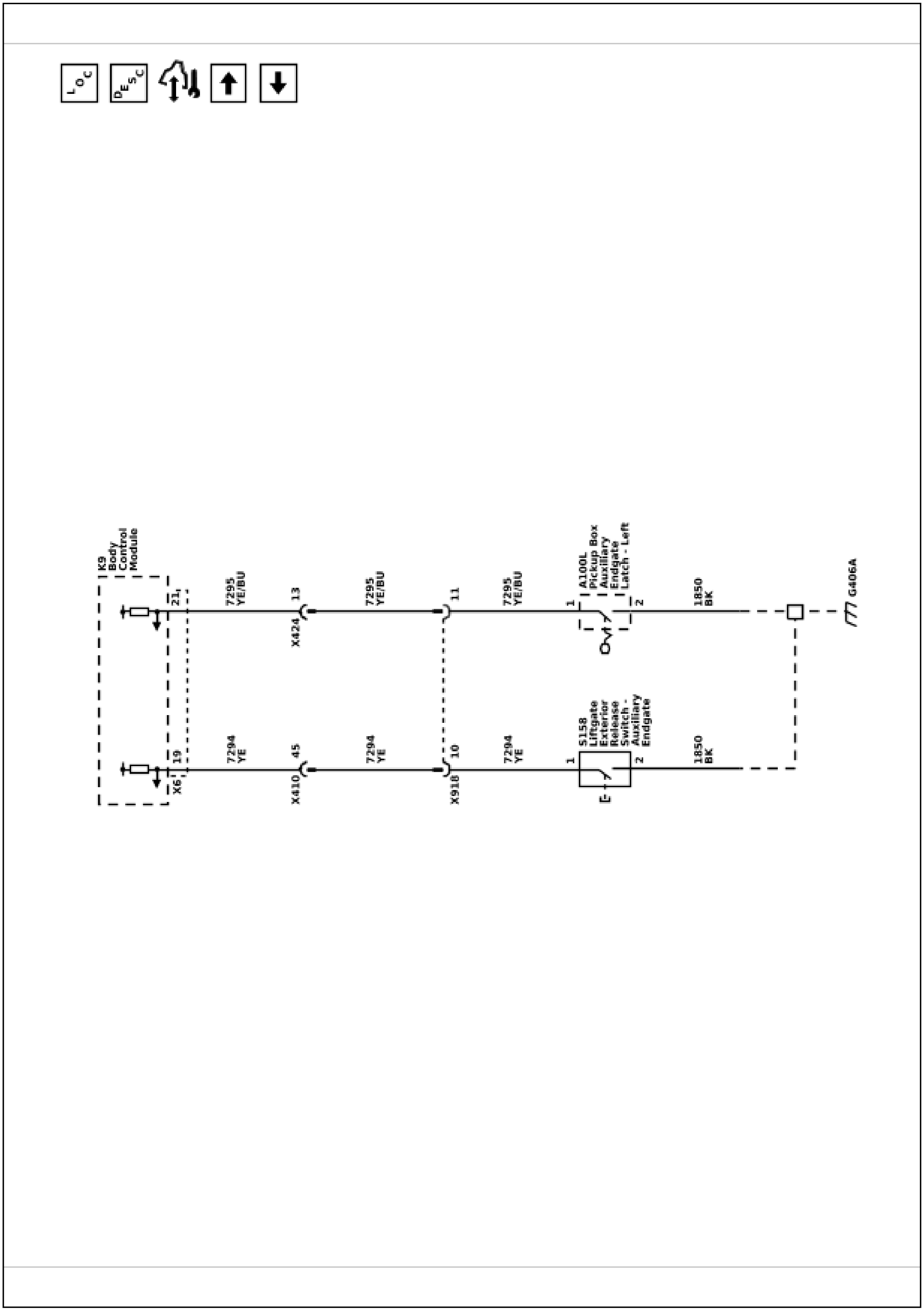


## Endgate Schematics (Power Endgate Latches (QT6))



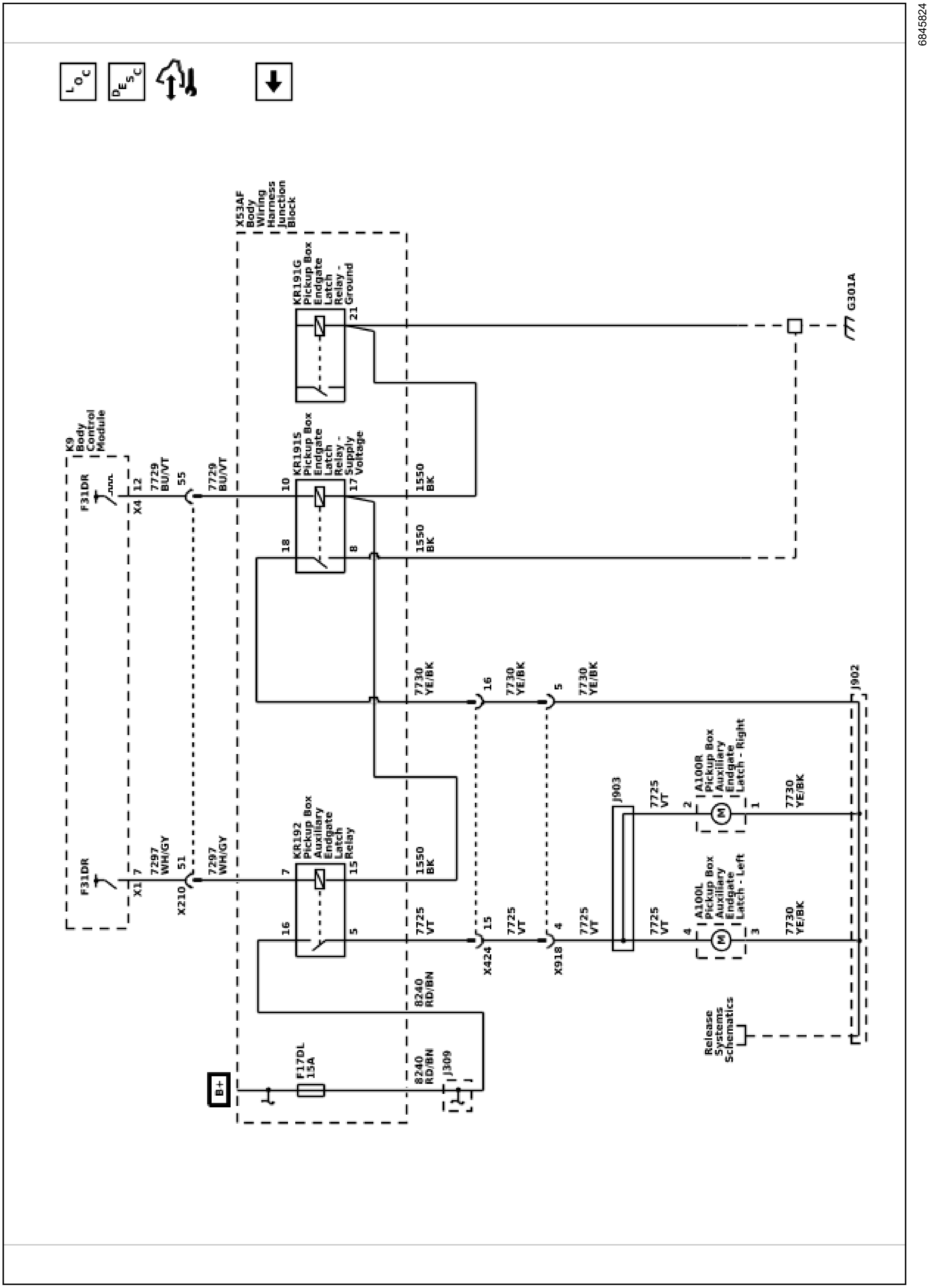

6845822

## Endgate Schematics (Auxiliary Endgate Latch Controls and Switches (QK2))

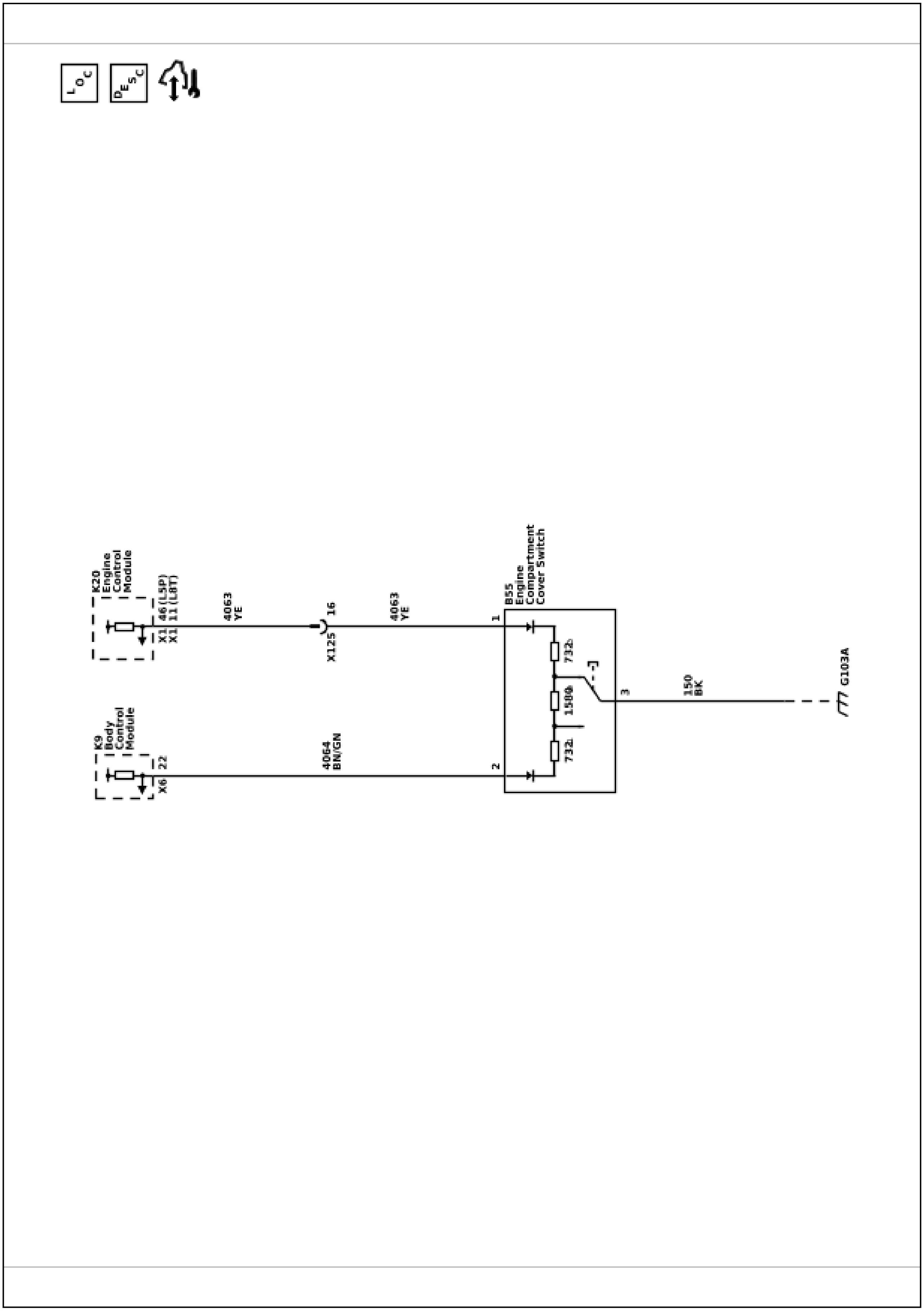



6845823

## Endgate Schematics (Auxiliary Endgate Latch Motors (QK2))



## Hood Latch Schematics (Hood Ajar Switch)



# Description and Operation

## Door Ajar Indicator Description and Operation

### Door Ajar Indicator System Components

The door ajar indicator system consists of the following components:

- Body control module (BCM)
- Instrument cluster
- Driver door latch
- Passenger door latch
- Left rear door latch
- Right rear door latch
- Driver window motor
- Passenger window motor
- Left rear side door window switch
- Right rear side door window switch

### Driver and Passenger Door Ajar

The window motor supplies a 12V signal to the door ajar switch within the door latch, when a door is open the door ajar switch closes pulling the 12V signal low. When the window motor detects the drop in the 12V signal circuit, it will then communicate this status to the BCM via local interconnect network (LIN) bus. The BCM communicates with the instrument cluster via serial data message. The instrument cluster, upon receipt of this serial data message, will illuminate the door ajar indicator and also send a serial data message to the radio to activate the door ajar audible warning when the vehicle speed is greater then 8 km/h (5 mph).

### Rear Doors Ajar

The rear side door window switches each provide a 12V signal to their respective door ajar switch signal circuits. The rear door ajar switches are integral to each rear door latch assembly. When a rear door is opened, the normally open door ajar switch closes. With the door ajar switch closed, ground is provided to the door ajar switch signal circuit and the voltage within the signal circuit drops. The rear side door window switches will detect the voltage drop and will send a serial data message to the body control module which will then send a message to the instrument cluster to command the door ajar message

## Endgate Description and Operation (QT6)

### System Description

The power endgate system consists of the following components:

- Rear gate module
- Pickup box endgate power assist actuator
- Pickup box endgate position sensor (part of the power assist actuator)
- Interior pickup box endgate control switch (Part of the Instrument panel multifunction switch)
- Exterior pickup box endgate control switch
- Right pickup box endgate latch assembly
- Left pickup box endgate latch assembly
- Keyless entry transmitter
- Remote control door lock receiver

### Operation

The power endgate can be commanded to power open by the following methods:

- Pressing the interior pickup box endgate control switch on the center stack
- Pressing the touch pad on the exterior endgate handle (vehicle doors must be unlocked)
- Pressing the endgate button on the RKE transmitter twice and holding until the endgate latches release

The power endgate can be commanded to power close by the following methods:

- Pressing and holding the interior pickup box endgate control switch on the center stack until the endgate is fully closed and latched
- Pressing the touch pad on the exterior endgate handle
- Pressing the endgate button on the RKE transmitter twice and holding until the endgate is fully closed and latched
- Lifting the tailgate at least 10 cm (4 in) above the full close position and holding momentarily

The vehicle must be in Park for any of the power tailgate functions to operate.

The rear gate module will respond to a request by commanding the left and right pickup box endgate latches to release the endgate and activate the pickup box endgate power assist actuator and lower the endgate or to raise and cinch the endgate closed.

### Power Latch

The rear gate module continuously monitors power endgate operation and calculates its location and direction of travel from an endgate position sensor (part of the power assist actuator). One input returns the position of the endgate relative to the x-axis and y-axis. The rear gate module then uses these 2 inputs together to calculate its angle relative to the endgate.

The left and right pickup box endgate latches are bi-directional motors and latch or unlatch operation is the result of the direction of the motor rotation. The rear gate module controls the left and right pickup box endgate latches through the control circuits by supplying power and ground in the appropriate polarity. The motor control circuits are monitored by the rear gate module prior to activation for a high or low condition and during motor operation for an insufficient current flow condition. The ratchet, pawl and sector switches are part of the left and right pickup box endgate latches and are used by the rear gate module to determine the state of the latch during the process of latching or unlatching. Each of the latch switch signal circuits are supplied battery voltage and monitored within the rear gate module. The latch switches share a common low reference circuit from the rear gate module and when the switch contacts close the signal circuit goes low and the rear gate module determines the switch to be active. The ratchet, pawl and unlatch switches are inactive when the endgate is closed and will transition to active as the endgate is opened. The sector switch will be inactive when the endgate is closed, during opening of the endgate the sector switch will change to active and back to inactive when the endgate is in the fully open position.

The exterior pickup box endgate control switch signal circuit is supplied battery voltage by the rear gate module. When the switch is pressed the contacts close and the signal circuit goes low, the rear gate module will detect the voltage drop and will command the endgate to release and lower or to power raise the endgate to the closed position.

For vehicles without the optional passive keyless entry, when the exterior pickup box endgate control switch is pressed, the rear gate module will check the status of the vehicle door locks by sending a serial data message to the body control module requesting the door lock status. If the vehicle doors are locked, the rear gate module will ignore the signal from the exterior pickup box endgate control switch. If the vehicle doors are unlocked, the rear gate module will permit the endgate to unlatch and power open when the exterior pickup box endgate control switch is pressed.

For vehicles with the optional passive keyless entry system, the keyless entry control module monitors the proximity of the keyless entry transmitter. If the exterior pickup box endgate control switch is pressed and the keyless entry transmitter is within range, the keyless entry control module will send a serial data message to the rear gate module indicating the presence of the keyless entry transmitter and the rear gate module will permit the endgate to unlatch and power open. If the doors are locked and the keyless entry transmitter is not within range, the rear gate module will ignore the signal from the exterior pickup box endgate control switch.

### Manual Endgate Operation

The endgate can be manually closed from the full-open position when the endgate is lifted in a continuous motion. If the endgate motion is stopped between the full-open and half-closed positions, the lift to close feature can engage and power close the endgate. If the touch pad is pressed during power operation, the endgate will stop and allow manual operation. The endgate must be held after stopping, or it will continue to open

### Tailgate Release Unavailable Driver Information Center Message

#### Power Endgate Functions Disabled Without Setting DTCs

The driver information center displays Tailgate Release Unavailable when a thermal inhibit occurs in the latch or drive unit or the position count is out of range.

The power endgate functions will be restored by performing the following actions:

- Closing the endgate which will reset the position counts
- Closing the endgate and removing the F20DL 30A fuse for greater than 5 minutes

#### Power Endgate Functions Disabled With DTCs Current

The driver information center displays Tailgate Release Unavailable when the rear gate module control module detects a malfunction in the power endgate system and the system is disabled.

## Endgate Description and Operation (QT5 Without MultiPro Tailgate)

### Endgate Release System Components

- Body control module (BCM)
- Pickup box endgate control switch-interior (Part of the instrument panel multifunction switch)
- Pickup box endgate control switch-exterior
- Pickup box endgate unlatch actuator
- Pickup box endgate unlatch relay

### Endgate Release Operation (Without MutiPro Tailgate Option)

**Interior Endgate Release Switch**
The body control module monitors the voltage level of the endgate unlatch signal circuit so that when the switch is pressed contacts within the switch closes providing a ground path for the endgate unlatch signal circuit, the voltage within the signal circuit is pulled low, the body control module will detect the voltage drop and if the passenger doors are unlocked, will energize the pickup box endgate unlatch relay.

**Exterior Endgate Release Switch**
The body control module monitors the status of the vehicle doors, if the doors are locked the body control module will ignore the request from the exterior pickup box endgate control switch. If the passenger doors have been commanded to unlock, pressing the exterior pickup box endgate control switch will close contacts within the switch and provide a ground path for the endgate unlatch signal circuit, the body control module will detect the voltage drop and will energize the pickup box endgate unlatch relay.

If the vehicle has been equipped with the passive keyless entry system and the keyless entry transmitter is within 3 feet (1 meter) of the endgate, pressing the exterior pickup box endgate control switch will also function in the same manner but without unlocking the passenger doors. Refer to *Keyless Entry System Description and Operation 9-40* for more information on the passive keyless entry system.

**Pickup Box Endgate Unlatch actuator**
When body control module receives a endgate release command from the exterior pickup box endgate control switch, the body control module applies brief pulse of voltage to the pickup box endgate unlatch relay control circuit, which energizes the coil side of the relay. The switch side of the pickup box endgate unlatch relay then momentarily closes, supplying a brief pulse of battery positive voltage to the pickup box endgate unlatch actuator. The pickup box endgate unlatch actuator is continuously grounded and when it receives the voltage pulse, it will become energized and the latch will activate releasing the endgate so that it may be manually lowered to an open position.

## Endgate Description and Operation (QT5 With MultiPro Tailgate)

### Endgate Release System Components

- Body control module (BCM)
- Pickup box endgate control switch-interior (Part of the instrument panel multifunction switch)
- Pickup box endgate control switch-exterior
- Left pickup box endgate latch
- Right pickup box endgate latch
- Left pickup box auxiliary endgate latch
- Right pickup box auxiliary endgate latch
- Left pickup box endgate latch relay
- Right pickup box endgate latch relay
- Left pickup box auxiliary endgate latch relay
- Right pickup box auxiliary endgate latch relay

### Endgate Release Operation (With MutiPro Tailgate Option)

**Key Fob Liftgate Release Switch**
x2 Press twice to open the major endgate. Refer to *Keyless Entry System Description and Operation 9-40* for more information on the passive keyless entry system.

**Interior Endgate Release Switch**
The body control module monitors the voltage level of the endgate unlatch signal circuit so that when the switch is pressed contacts within the switch closes providing a ground path for the endgate unlatch signal circuit, the voltage within the signal circuit is pulled low. The body control module will detect the voltage drop and if the passenger doors are unlocked, will energize the left pickup box endgate latch relay and right pickup box endgate latch relay which will cause the major endgate to release. When the switch is pressed the body control module will also send a serial data message to the lighting control module to pulse the tail lamps three times.

**Exterior Endgate Release Switch**
The body control module monitors the status of the vehicle doors, if the passenger doors have been commanded to unlock, pressing the appropriate exterior pickup box endgate control switch will close contacts within the switch and provide a ground path for the major or minor endgate unlatch signal circuit, the body control module will detect the voltage drop and will energize the appropriate pickup box endgate latch relays. When either switch is pressed the body control module will also send a serial data message to the lighting control module to pulse the tail lamps three times. If the vehicle doors are locked an exterior switch press will be ignored.

If the vehicle has been equipped with the passive keyless entry system and the keyless entry transmitter is within 3 feet (1 meter) of the endgate, pressing the exterior pickup box endgate control switch will also function in the same manner but without unlocking the passenger doors. If the vehicle doors are locked the first switch press will just pulse the tail lamps two times, the second switch press will release the gate and pulse the tail lamps three times. Refer to *Keyless Entry System Description and Operation 9-40* for more information on the passive keyless entry system.

**Major Pickup Box Endgate**

**Note:** The auxiliary pickup box endgate must be in the latched position before commanding the major pickup box endgate to release. The body control module will disable the major pickup box endgate release function if the auxiliary pickup box endgate is open or ajar.

When body control module receives a major endgate release command from the exterior pickup box endgate control switch, the body control module applies brief pulse of voltage to the left and right pickup box endgate latch relay control circuits, which energizes the coil side of the relays. The switch side of the left and right pickup box endgate latch relay then momentarily closes, supplying a brief pulse of battery positive voltage to the left and right pickup box endgate latches. The left and right pickup box endgate latches will become energized and the latches will activate releasing the major endgate so that it may be manually lowered to an open position.

**Minor Pickup Box Endgate**

When body control module receives a major endgate release command from the exterior pickup box endgate control switch, the body control module applies brief pulse of voltage to the left and right pickup box auxiliary endgate latch relay control circuits, which energizes the coil side of the relays. The switch side of the left and right pickup box auxiliary endgate latch relay then momentarily closes, supplying a brief pulse of battery positive voltage to the left and right pickup box auxiliary endgate latches. The left and right pickup box auxiliary endgate latches will become energized and the latches will activate releasing the minor endgate so that it may be manually lowered to an open position.

## Hood Ajar Indicator Description and Operation

### Hood Ajar Switch

**Hood Status A**

The engine control module (non electric vehicle or hybrid vehicle) or battery energy control module (electric vehicle) applies approximately 5V to the hood status A signal circuit and monitors the voltage to determine the position of the hood. The hood ajar switch contains a multiplexed resistor. When the hood is open, the switch is open and voltage is pulled low. When the hood is closed, the switch is closed and the voltage remains high.

The engine control module or battery energy control module will not allow the vehicle to shift out of park if the hood status is not closed.

**Hood Status B**

The body control module (BCM) applies approximately 5V to the hood status B signal circuit and monitors the voltage to determine the position of the hood. The hood ajar switch contains a multiplexed resistor. When the hood is open, the switch is open and voltage remains high. When the hood is closed, the switch is closed and the voltage is pulled low.

The BCM uses the hood ajar status as a content theft deterrent alarm trigger.

### Hood Ajar Indicator/Message

If either hood status signal shows the hood is ajar or if there is a fault in either hood status signal circuit a message is displayed on the DIC or the hood ajar indicator will be illuminated.

## Power Door Locks Description and Operation

### Door Lock System Components

The power door lock system consists of the following components:

- Driver door lock switch
- Passenger door lock switch
- Left rear door lock switch
- Right rear door lock switch
- Driver front side door window control switch
- Passenger front side door window switch
- Driver front side door latch
- Passenger front side door latch
- Left rear side door latch
- Right rear side door latch
- Exterior door handle switches
- Body control module
- Lighting control module

## Door Lock System Controls

The power door lock system can be controlled by any of the following:

- Power door lock switch activation
- Keyless entry lock or unlock command
- Delayed locking command
- Automatic door lock command
- When the OnStar® system is used to unlock the driver door

## Door Lock and Unlock Operation

The driver or passenger front side door window control switch will monitor the voltage of their respective door lock switches, when the driver or passenger door lock switch is activated in the lock or unlock position the signal voltage will be pulled low, the corresponding front side door window control switch will detect the voltage drop in the signal circuit and will send a serial data message to the body control module requesting the door lock or unlock command.

The lighting control module will monitor the voltage of the left rear and right rear door lock switches, when the left rear or right rear door lock switch is activated in the lock or unlock position the signal voltage will be pulled low, the lighting control module will detect the voltage drop in the signal circuit and will send a serial data message to the body control module requesting the door lock or unlock command.

The body control module powers the reversible door latch actuators by providing battery positive voltage and ground to the appropriate lock and unlock control circuits of the door latches. Transitioning of the lock actuators to the lock or unlocked position depends upon which control circuits receive voltage and which control circuits receive ground. When the interior door lock switch is pressed, the body control module disables the functions of exterior door handle unlock switches preventing the unlatching of the vehicle doors until an the interior door unlock switch has been pressed or the appropriate button has been pressed on the keyless entry transmitter.

The body control module provides the driver and left rear door latches and fuel filler door lock actuator (If equipped with RPO N08) with the Unlatch Low Reference Circuit 1.

The body control module provides the passenger and right rear door latches and the liftgate latch (If equipped with RPO TB4) with the Unlatch Low Reference Circuit 2.

Each door latch, the fuel filler door lock actuator (If equipped with RPO N08), and the liftgate latch (If equipped with RPO TB4) is provided an Unlatch Control Circuit by the body control module.

When the drivers door is commanded to unlock the body control module will pull the Unlatch Low Reference Circuit 1 low and will pull the driver door and fuel filler lock actuator Unlatch/Unlock Control Circuits will be pulled high causing the driver door latch and fuel filler lock actuator to transition to the unlocked/ unlatched state.

When all doors have been commanded to unlock the body control module will pull the Unlatch Low Reference Circuit 1 and Unlatch Low Reference Circuit 2 low and each door latch and the fuel filler lock actuator Unlatch/Unlock Control Circuits will be pulled high causing the doors and fuel filler lock actuator to transition to the unlocked/unlatched state.

When the TB4 liftgate is commanded to open the body control module, if the vehicle doors are unlocked, will pull the Unlatch Low Reference Circuit 2 low and the Rear Closure Unlatch Actuator Unlatch Control Circuit will be pulled high causing the TB4 liftgate Latch to activate and release the liftgate.

When the lock actuators are inactive the circuits are disconnected from power and ground and the circuits will have a floating voltage.

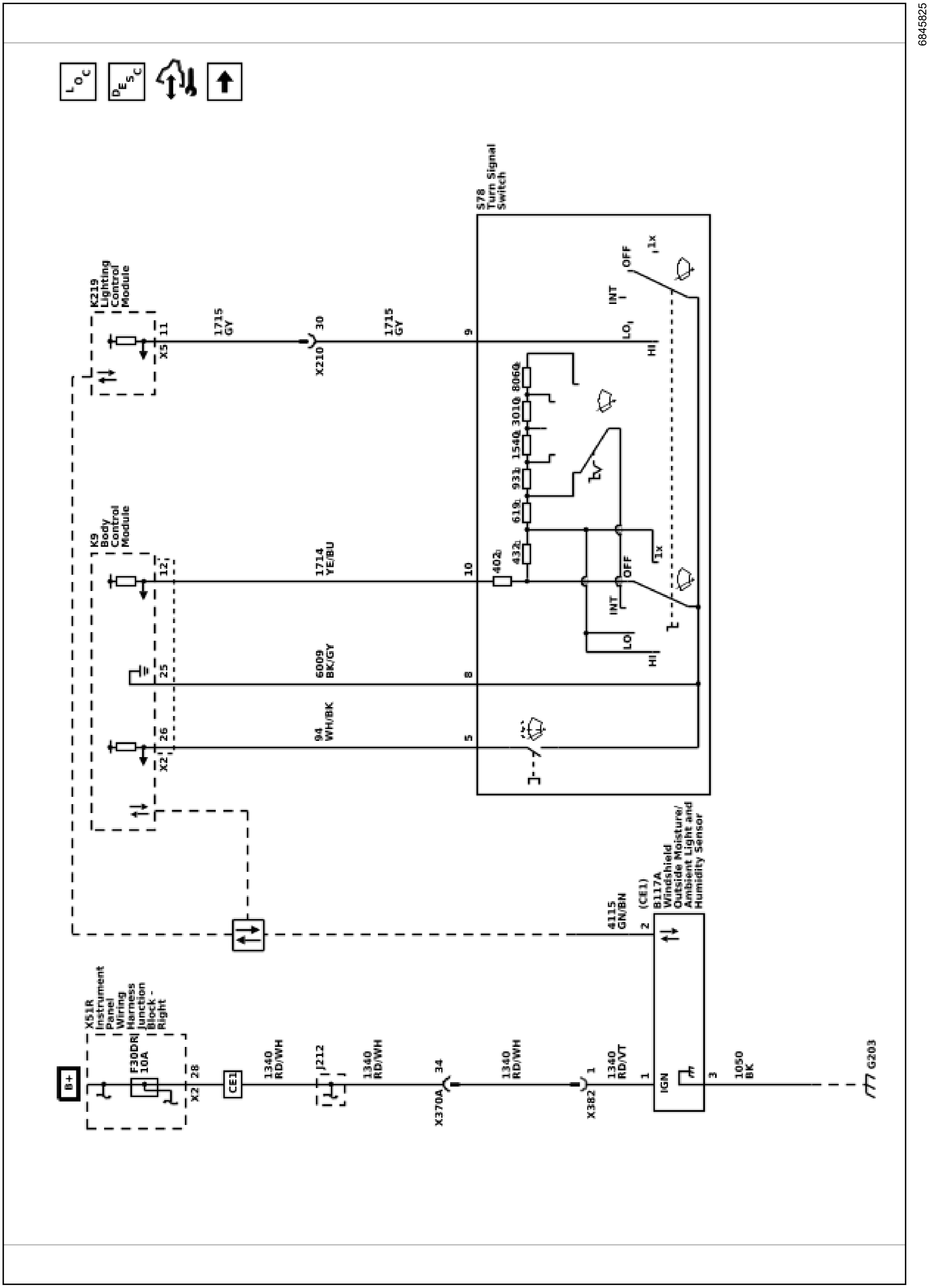
## Passive Door Lock/Unlock Operation

The exterior door handle switch signal circuits provide inputs to the body control module when the exterior door handle switches are activated. These inputs allow the body control module to detect a door lock or a door unlock request. The body control module provides a 7 V signal to each exterior door handle switch via the door handle switch signal circuits. When a door handle switch is pressed, the switch closes and the voltage signal within the signal circuit is pulled to ground. The body control module will detect the voltage drop and a low frequency antenna will transmit a challenge to the keyless entry transmitter. If the challenge is met, the keyless entry transmitter will respond, and the body control module will command the door(s) to be locked or unlocked

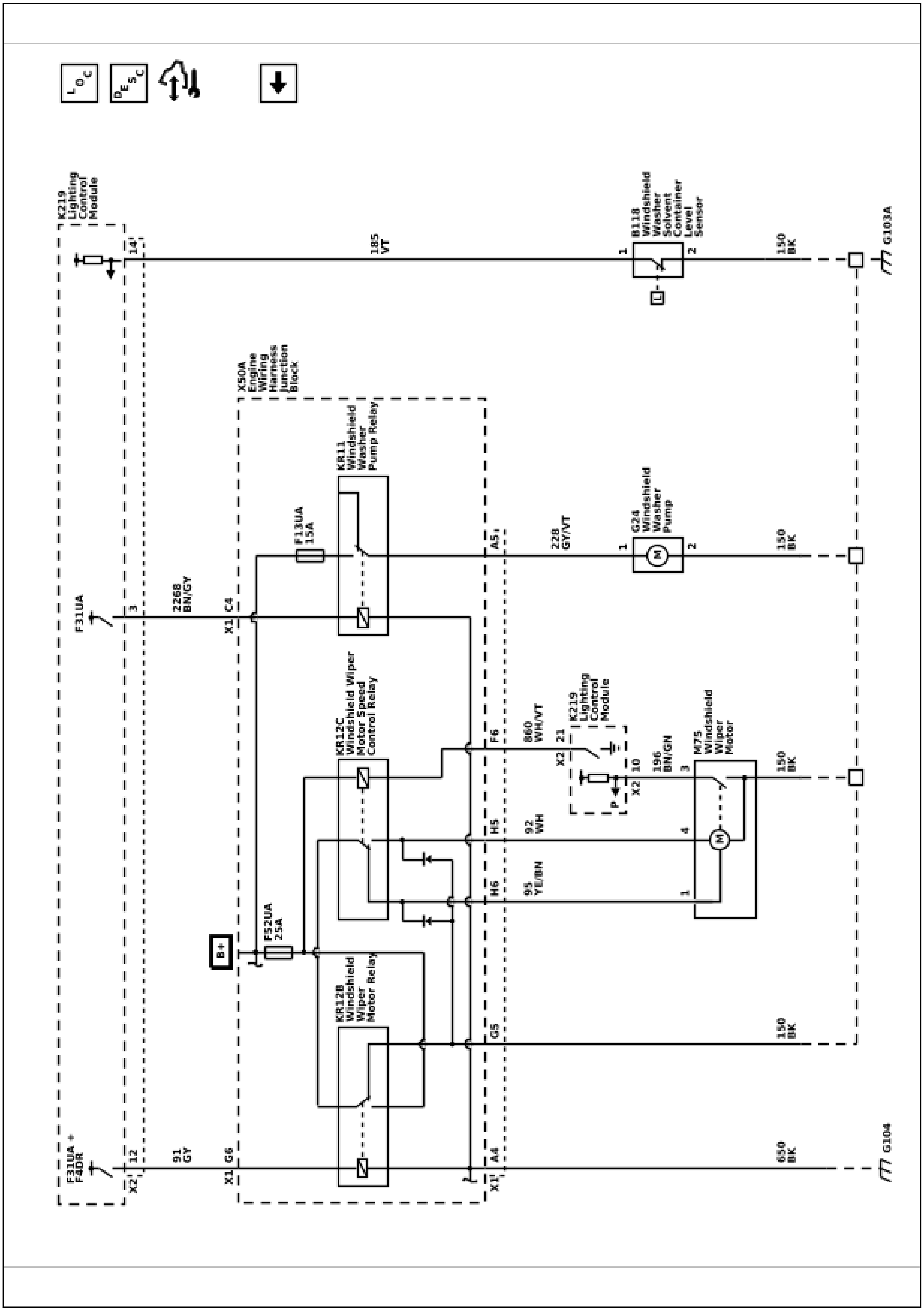
# Wipers and Washers

## Schematic and Routing Diagrams

## Wiper/Washer Schematics (Controls)



## Wiper/Washer Schematics (Wiper Motor and Washer Pump)



# Description and Operation

## Wiper/Washer System Description and Operation

### Front Windshield Wiper Operation

The windshield wipers system allows the driver to clear the vehicle's windshield using a discrete switch or through an automatic rain sensing system. The windshield wiper system functions through a primary control, but also allows redundant high speed-only operation in the event of a system fault. The wiper systems uses the S78 Turn Signal Switch as the primary means of driver control, along with the B117A Windshield Outside Moisture/Ambient Light and Humidity Sensor to modulate intermittent wiper operation. The S78 Turn Signal Switch is a discrete input to the K9 Body Control Module. The K9 Body Control Module communicates with the K219 Lighting Control Module over CAN, and with the B117A Windshield Outside Moisture/Ambient Light and Humidity Sensor over LIN, to control wiper activation.

**Low Speed Wiper Operation**
With the S78 Turn Signal Switch in the low speed position, the discrete signal circuit to the K9 Body Control Module is pulled down through two resistors in a resistor ladder to a low reference provided by the K9 Body Control Module. The K9 Body Control Module communicates with the K219 Lighting Control Module over CAN, requesting consistent low speed wiping operation. To initiate low speed operation, the K219 Lighting Control Module energizes the KR12B Windshield Wiper Relay. This allows battery voltage from the wiper fuse to be applied through the switched contacts of the KR12B Windshield Wiper Relay, through the normally closed contacts of the KR12C Windshield Wiper Speed Control Relay, to the windshield wiper low speed control circuit of the M75 Windshield Wiper Motor.

**Intermittent Wiper Operation**
With the S78 Turn Signal Switch in the intermittent position, the discrete signal circuit to the K9 Body Control Module is pulled down through a number of resistors within a resistor ladder to a low reference provided by the K9 Body Control Module. The number of resistors the signal travels through is dependent on the intermittent selection made on the S78 Turn Signal Switch. The K9 Body Control Module interprets this range of voltage pull-down as a request for intermittent wiper activation, with each pull-down voltage value equating an intermittent delay (sensitivity) level. If the rain sense is enabled the K9 Body Control Module communicates with the B117A Windshield Outside Moisture/Ambient Light and Humidity Sensor via LIN. The B117A Windshield Outside Moisture/Ambient Light and Humidity Sensor utilizes windshield optics to determine the amount of water on the windshield and will communicate this info to the K9 Body Control Module, which will vary wiping cadence based on the intermittent sensitivity selection on the S78 Turn Signal Switch and the amount of water on the windshield. If the rain sense is disabled the K9 Body Control will vary the wiping cadence based on a preset amount of time determined by the intermittent delay selection on the S78 Turn Signal Switch. To initiate wiper operation, the K219 Lighting Control Module energizes the KR12B Windshield Wiper Relay. This allows battery voltage from the wiper fuse to be applied through the switched contacts of the KR12B Windshield Wiper Relay, through the normally closed contacts of the KR12C Windshield Wiper Speed Control Relay, to the low speed control circuit of the M75 Windshield Wiper Motor.

**High Speed Wiper Operation**
With the S78 Turn Signal Switch in the high speed position, the discrete signal circuit to the K9 Body Control Module is pulled down through two resistors in a resistor ladder to a low reference provided by the K9 Body Control Module. The K9 Body Control Module interprets this specific voltage pull-down as a request for wiper activation. In addition to this pull-down signal, a second switch in the S78 Turn Signal Switch is also pulled down to low reference. This signal is a discrete input to the K219 Lighting Control Module. The K219 Lighting Control Module requests wiping operation. To initiate high speed operation, the K219 Lighting Control Module energizes the KR12B Windshield Wiper Relay and grounds the KR12C Windshield Wiper Speed Control Relay. This allows battery voltage from the wiper fuse to be applied through the switched contacts of the KR12B Windshield Wiper Relay, through the switched contacts of the KR12C Windshield Wiper Speed Control Relay, to the windshield wiper motor high speed control circuit of the M75 Windshield Wiper Motor.

**Mist (Single Wipe) Operation**
The mist (single wipe) position is a momentary switch position that will return the S78 Turn Signal Switch to the off position as soon as the switch is released. With the S78 Turn Signal Switch in the mist (single wipe) position, the discrete signal circuit to the K9 Body Control Module is pulled down through two resistors in a resistor ladder to a low reference provided by the K9 Body Control Module. The K9 Body Control Module interprets this specific voltage pull-down as a request for wiper activation. The K9 Body Control Module communicates with the K219 Lighting Control Module via CAN, requesting consistent low speed wiping operation as long as the S78 Turn Signal Switch is held in the mist (single wipe) position. If the mist (single wipe) position is only briefly selected, the K9 Body Control Module will request only a single wipe.

**Wiper Park Operation**
With the S78 Turn Signal Switch in the off position, the discrete signal circuit to the K9 Body Control Module is pulled down through one resistor in a resistor ladder to a low reference provided by the K9 Body Control Module. The K9 Body Control Module interprets this specific voltage pull-down as a request to stop wiper activation. The K9 Body Control Module communicates with the K219 Lighting Control Module via CAN, requesting wiper operation stop. At this time, the K219 Lighting Control Module will deactivate the KR12B Windshield Wiper Relay and KR12C Windshield Wiper Speed Control Relay. The relay contacts will switch back to their normally closed position and will apply ground to the wiper motor power inputs through the normally closed contacts of the wiper relays. This deactivates and dynamically brakes the wiper motor in the park position. When the wiper switch is turned to the OFF position while the wiper motor is somewhere in mid-cycle, the K219 Lighting Control Module will continue to operate the motor until the wipers reach the park position. If the ignition is turned OFF while the wipers are in mid-cycle, the wipers will stop immediately, regardless of position. The K219 Lighting Control Module will park the wipers next time the ignition is turned ON.

The windshield wiper system consists of the following electrical components:

- S78 Turn Signal Switch
- K9 Body Control Module
- K219 Lighting Control Module
- KR12B Windshield Wiper Relay
- KR12C Windshield Wiper Speed Control Relay
- B117A Windshield Outside Moisture/Ambient Light and Humidity Sensor
- M75 Windshield Wiper Motor

## Front Windshield Wiper Components

**S78 Turn Signal Switch**
The S78 Turn Signal Switch is the primary input to the K9 Body Control Module for the driver to control windshield wiper operation. The S78 Turn Signal Switch also provides discrete input to the K219 Lighting Control Module and M75 Windshield Wiper Motor during high speed wiper operation.

The S78 Turn Signal Switch contains three individual internal switch. One switch changes between mist (single wipe), off, intermittent, low speed, and high speed selection. The second switch changes with differing intermittent sensitivity selection. The third switch is only active when high speed wiper operation is selected. A resistor ladder is also used to determine switch selection and intermittent sensitivity selection. The high speed switch does not utilize the resistor ladder.

The K9 Body Control Module provides the S78 Turn Signal Switch with ground through a single low reference circuit and monitors the switch position through a single signal circuit. Voltage is applied by the K9 Body Control Module to this signal circuit and voltage drop is monitored to determine switch selection. This voltage drop will vary depending on the number of resistors in the resistor ladder, which changes depending on switch position. In the off position, current flows through a single resistor. In the mist (single wipe), low speed, and high speed position, current flows through two resistors. In the intermittent position, current flows through three or more resistors, depending on the intermittent sensitivity selected.

The S78 Turn Signal Switch provides a discrete switch input to the K219 Lighting Control Module during high speed wiper operation. Voltage is applied by the K219 Lighting Control Module to this signal circuit and voltage drop is monitored to determine switch selection. When high speed operation is selected, the signal circuit is pulled to ground (low reference).

**K9 Body Control Module**
The K9 Body Control Module will send a CAN message to the K219 Lighting Control Module to request wiper operation. The K9 Body Control Module responds to input requests from the S78 Turn Signal Switch. The K9 Body Control Module provides a constant ground for the S78 Turn Signal Switch and monitors a signal circuit to determine the requested windshield wiper position.

The K9 Body Control Module communicates with the B117A Windshield Outside Moisture/Ambient Light and Humidity Sensor via LIN. Messages are received from the B117A Windshield Outside Moisture/Ambient Light and Humidity Sensor to indicate the amount of water on the windshield.

**K219 Lighting Control Module**
The K219 Lighting Control Module controls the wiper motor via two PCB relays (KR12B Windshield Wiper Relay and KR12C Windshield Wiper Speed Control Relay). The K219 Lighting Control Module receives a message from K9 Body Control Module over CAN to determine what type of wiper operation is requested.

**KR12B Windshield Wiper Relay**
The KR12B Windshield Wiper Relay supplies B+ to the M75 Windshield Wiper Motor and is controlled by the K219 Lighting Control Module. The coil side of the relay receives a constant chassis ground and the switch side receives a constant B+. When wiper operation is requested, the K219 Lighting Control Module will provide voltage to the coil side of the relay. This will energize the relay, closing the high current contact, and

supply B+ to the M75 Windshield Wiper Motor through the KR12C Windshield Wiper Speed Control Relay, enabling wiper operation.

**KR12C Windshield Wiper Speed Control Relay**
The KR12C Windshield Wiper Speed Control Relay controls B+ to the M75 Windshield Wiper Motor and is controlled by the K219 Lighting Control Module. The coil side of the relay receives a ground controlled by the K219 Lighting Control Module. The switch side of the relay receives B+ through the KR12B Windshield Wiper Relay. When high speed wiper operation is requested, the K219 Lighting Control Module will provide ground to the coil side of the relay. This will energize the relay, closing the high current contact, and supply the B+ to the M75 Windshield Wiper Motor high speed control, enabling high speed wiper operation.

**B117A Windshield Outside Moisture/Ambient Light and Humidity Sensor**
**Note:** Due to the sensitivity of the sensor, the wipers may swipe once upon start up or rapid lighting changes.

The B117A Windshield Outside Moisture/Ambient Light and Humidity Sensor utilizes an internal infrared LED and an optic sensor to determine the amount of water on the windshield. The infrared LED bounces infrared light against the inside of the windshield. The optic sensor measures the amount of light returned after bouncing off the windshield. With a dry windshield, all light bounced off the windshield is returned to the optic sensor. As water accumulates on the windshield, the light input to the optic sensor is diffused and reduced. The amount of light reduction corresponds directly to the amount of water on the windshield. The B117A Windshield Outside Moisture/Ambient Light and Humidity Sensor interprets the amount of light returned and communicates this info to the K9 Body Control Module, which will control intermittent wiper operation based on the sensitivity selection of the S78 Turn Signal Switch and the amount of water on the windshield.

**M75 Windshield Wiper Motor**
The M75 Windshield Wiper Motor receives a constant chassis ground. B+ is controlled by the KR12B Windshield Wiper Relay and KR12C Windshield Wiper Speed Control Relay being operated by the K219 Lighting Control Module.

The M75 Windshield Wiper Motor includes a DC motor and an internal position switch to indicate the wiper park position. When wiper operation is requested, the DC motor spins. The spinning motor is directed to a wiping motion through the windshield wiper transmission. When wiper operation is no longer required, the M75 Windshield Wiper Motor will continue spinning until the internal position switch indicates it is in the park position.

## Windshield Washer Operation

The windshield washer system allows the driver to clean the vehicle's windshield using a discrete switch. The washer system uses the S78 Turn Signal Switch as the primary means of driver control. The S78 Turn Signal is a discrete input to the K9 Body Control Module. The K9 Body Control Module communicates with the K219 Lighting Control Module over CAN to control G24 Windshield Washer Pump activation. The K9 Body Control Module also communicates with the K219 Lighting Control Module to control B+ to the M75 Windshield Wiper Motor during operation.

The windshield wiper system consists of the following electrical components:

- S78 Turn Signal Switch
- K9 Body Control Module
- K219 Lighting Control Module
- KR12B Windshield Wiper Relay
- KR11 Windshield Washer Pump Relay
- G24 Windshield Washer Pump
- M75 Windshield Wiper Motor
- B118B Windshield Washer Fluid Level Switch

## Windshield Washer Components

**S78 Turn Signal Switch**
The S78 Turn Signal Switch is the primary input to the K9 Body Control Module for the driver to control windshield washer operation.

The K9 Body Control Module provides the S78 Turn Signal Switch with ground through a single low reference circuit and monitors the switch position through a single signal circuit. Voltage is applied by the K9 Body Control Module to this signal circuit and voltage drop is monitored to determine switch selection. The S78 Turn Signal Switch contains an internal switch dedicated to windshield washer operation. When the switch is closed, the signal circuit is pulled to ground, indicating washer operation is requested.

**K9 Body Control Module**
The K9 Body Control Module responds to input requests from the S78 Turn Signal Switch. The K9 Body Control Module provides a constant ground for the S78 Turn Signal Switch and monitors a signal circuit to determine the requested windshield wiper position.

When washer operation is requested, the K9 Body Control Module will send a CAN message to the K219 Lighting Control Module to enable the G24 Windshield Washer Pump, as well as supply B+ to the M75 Windshield Wiper Motor. The K9 Body Control Module communicates with the M75 Windshield Wiper Motor via LIN. When washers are requested, the K9 Body Control Module will request low speed wiper activation from the M75 Windshield Wiper Motor.

**K219 Lighting Control Module**
The K219 Lighting Control Module controls B+ to the G24 Windshield Washer Pump. When washer operation is requested from a CAN message from the K9 Body Control Module, the K219 Lighting Control Module will apply voltage via a high side driver to the KR11 Windshield Washer Pump Relay. The K219 Lighting Control Module also controls B+ to the M75 Windshield Wiper Motor. When washer operation is requested, the K219 Lighting Control Module will apply voltage via a high side driver to the KR12B Windshield Wiper Relay.

The K219 Lighting Control Module also monitors the B118B Windshield Washer Fluid Level Switch through a discrete signal circuit.

**KR12B Windshield Wiper Relay**
The KR12B Windshield Wiper Relay supplies B+ to the M75 Windshield Wiper Motor and is controlled by the K219 Lighting Control Module. The coil side of the relay receives a constant chassis ground and the switch side receives a constant B+. When wiper operation is requested, the K219 Lighting Control Module will provide voltage to the coil side of the relay. This will energize the relay, closing the high current contact, and supply B+ to the M75 Windshield Wiper Motor, enabling wiper operation.

**KR11 Windshield Washer Pump Relay**
The KR11 Windshield Washer Pump Relay supplies B+ to the G24 Windshield Washer Pump and is controlled by the K219 Lighting Control Module. The coil side of the relay receives a constant chassis ground and the switch side receives a constant B+. When wiper operation is requested, the K219 Lighting Control Module will provide voltage to the coil side of the relay. This will energize the relay, closing the high current contact, and supply B+ to the G24 Windshield Washer Pump, enabling washer pump operation.

**G24 Windshield Washer Pump**
The G24 Windshield Washer Pump receives a constant chassis ground. B+ is controlled by the KR11 Windshield Washer Pump Relay. With voltage applied, a DC motor spins, connecting and pressurizing washer fluid from the washer fluid reservoir. The pressurized washer fluid is deposited on the windshield through a series of lines and nozzles.

**M75 Windshield Wiper Motor**
The M75 Windshield Wiper Motor receives a constant chassis ground. B+ is controlled by the KR12B Windshield Wiper Relay and KR12C Windshield Wiper Speed Control Relay being operated by the K219 Lighting Control Module.

The M75 Windshield Wiper Motor includes a DC motor and an internal position switch to indicate the wiper park position. When wiper operation is requested, the DC motor spins. The spinning motor is directed to a wiping motion through the windshield wiper transmission. When wiper operation is no longer required, the M75 Windshield Wiper Motor will continue spinning until the internal position switch indicates it is in the park position.

**B118B Windshield Washer Fluid Level Switch**
The B118B Windshield Washer Fluid Level Switch receives a constant chassis ground. A signal circuit is monitored by the K219 Lighting Control Module. The K219 Lighting Control Module applies voltage to the signal circuit. When the B118B Windshield Washer Fluid Level Switch is closed, voltage on the signal circuit is pulled to ground, indicating fluid in the washer fluid reservoir.

# Section 2

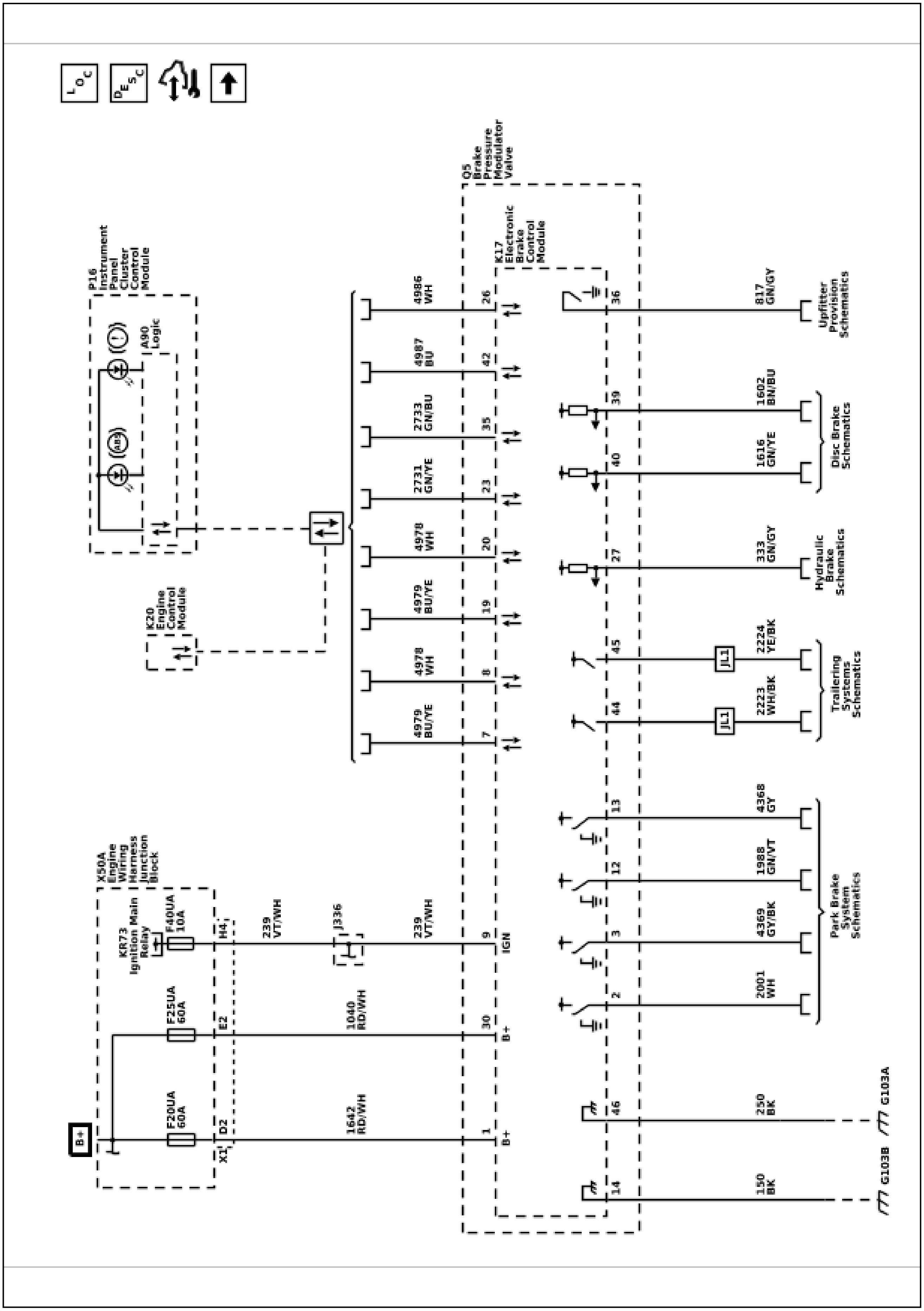
# Brakes

# Brakes

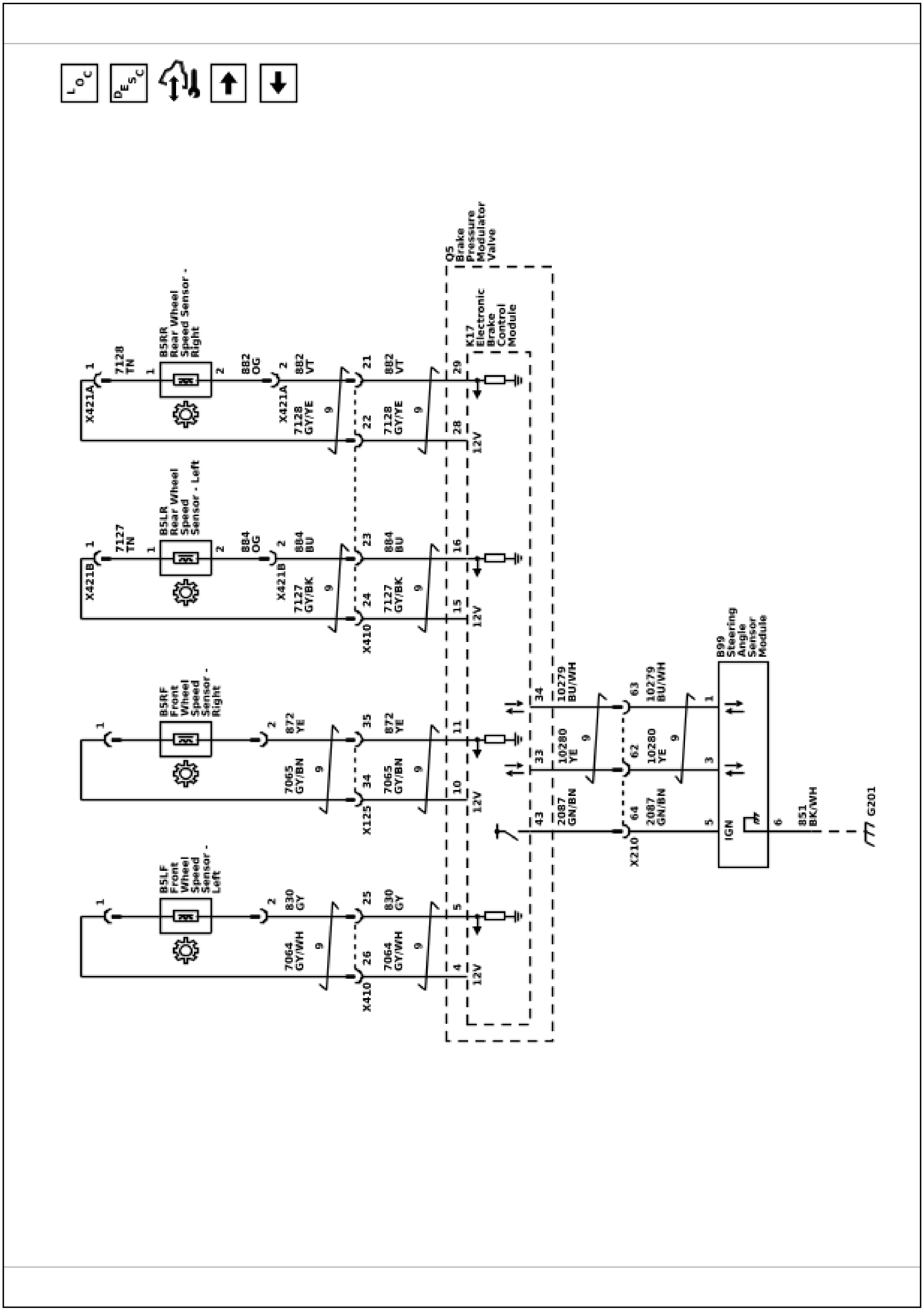
## Antilock Brake System

### Schematic and Routing Diagrams

## Antilock Brake System Schematics (Module Power, Ground, Serial Data, Subsystem References, and Indicators)



## Antilock Brake System Schematics (Steering Angle and Wheel Speed Signals)

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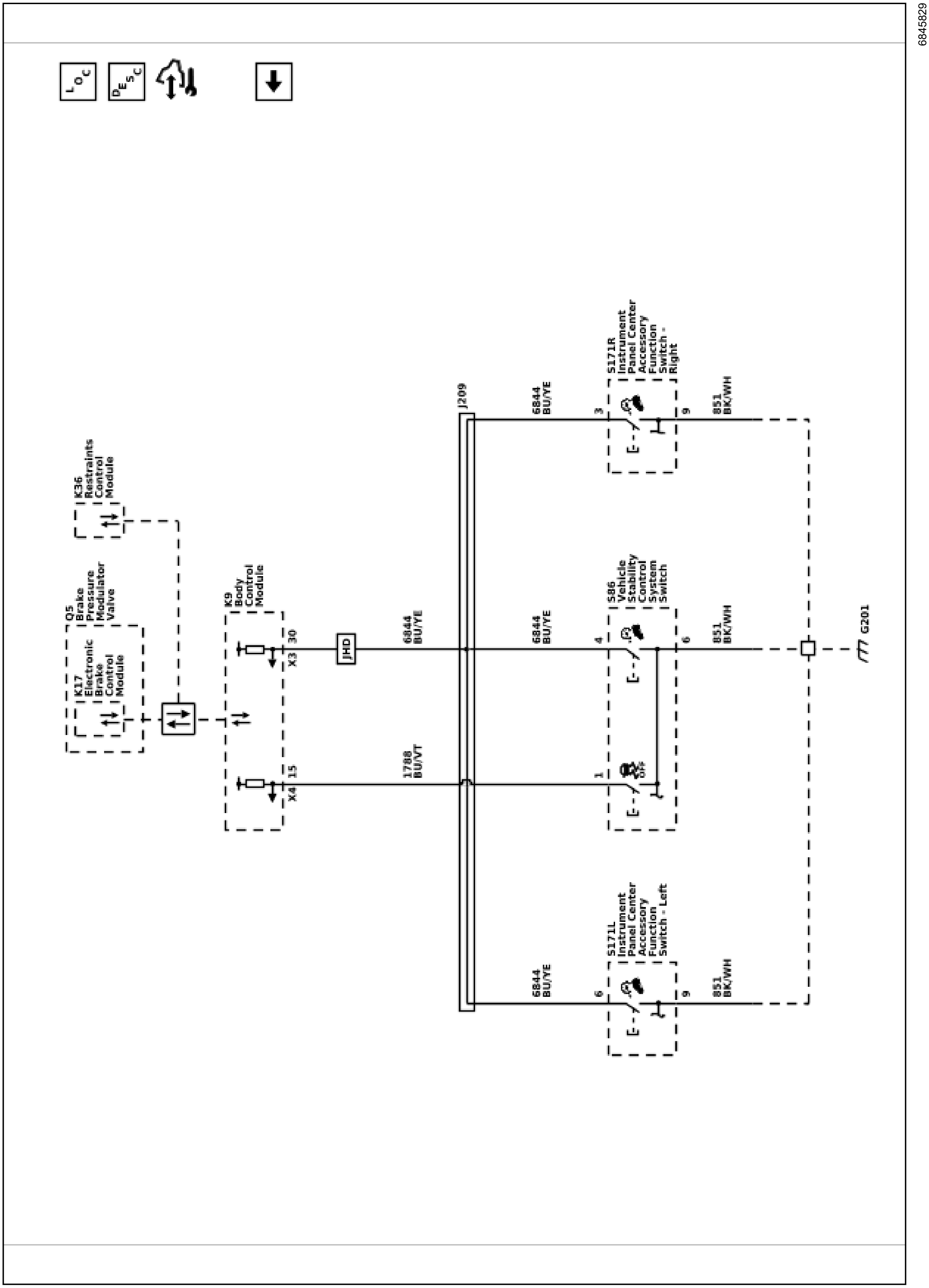
## Antilock Brake System Schematics (Vehicle Stability and Hill Descent Control)



# Description and Operation

## ABS Description and Operation

The electronic brake control module and the brake pressure modulator are serviced separately. The brake pressure modulator uses a four circuit configuration to control hydraulic pressure to each wheel independently.

Depending on options, the following vehicle performance enhancement systems are provided.

- ABS
- Traction Control
- Stability Control
- Dynamic Rear Proportioning
- Hill Descent Control System
- Hill Hold Start Assist
- Hydraulic Brake Assist
- Intelligent Brake Assist
- Trailer Brake Control System
- Trailer Sway Control

The following components listed below are involved in the operation of the brake system:

- Electronic brake control module - The electronic brake control module controls the system functions and detects failures. It supplies voltage to the solenoid valves and pump motor.
- Brake pressure modulator - The brake pressure modulator contains the following components:
  - Brake pressure sensor
  - Hydraulic pump with pump motor
  - Four isolation vales
  - Four dump valves
  - Two traction/stability control supply valves
  - Two traction/stability control isolation valves
  - High pressure accumulator
  - Low pressure accumulator
- Body control module monitors the brake pedal position sensor signal when the brake pedal is applied and sends a high speed serial data message to the electronic brake control module indicating the brake pedal position.
- Brake pressure sensor is used to sense the action of the driver application of the brake pedal. The sensor provides an analog voltage signal that will increase as the brake pedal is applied. The electronic brake control module monitors the brake pressure sensor which is integral to the brake pressure modulator.
- Instrument cluster - The instrument cluster displays the vehicle speed based on the information from the engine control module. The engine control module sends the vehicle speed information via a high speed serial data to the body control module. The body control module then sends the vehicle speed information via a low speed serial data to the instrument cluster in order to display the vehicle speed, either in kilometers or miles, based on the vehicle requirements.
- Multi-axis acceleration sensor - The yaw rate, lateral acceleration and longitudinal acceleration sensors are combined into one multi-axis acceleration sensor, internal to the inflatable restraint sensing and diagnostic module. The electronic brake control module receives serial data message inputs from the yaw rate, lateral acceleration and longitudinal acceleration sensor and activates stability control and hill hold start assist function depending on multi-axis acceleration sensor input.
- Multifunction switch - The traction control switch is a multifunction momentary switch. The body control module monitors the signal circuit from the traction control switch and sends a high speed serial data message to the electronic brake control module indicating the switch position. The traction control and stability control are manually disabled or enabled by pressing the traction control switch.
- Steering wheel angle sensor - The electronic brake control module receives serial data message inputs from the steering angle sensor. The steering wheel angle sensor signal is used to calculate the intended driving direction.
- Transmission control module - The electronic brake control module receives high speed serial data message inputs from the transmission control module indicating the gear position of the transmission for hill start assist or hill hold functions.
- Active wheel speed sensors - The electronic brake control module supplies a ignition voltage to each wheel speed sensor. As the wheel spins, the wheel speed sensor produces an alternating current square wave signal. The electronic brake control module uses the frequency of the square wave signal to calculate the wheel speed. The electronic brake control module uses the frequency of the square wave signal to calculate the wheel speed. The electronic brake control module sends the wheel speed information via high speed serial data to the engine control module.

## Power-Up-Self Test

The electronic brake control module is able to detect many malfunctions whenever the ignition is ON. However, certain failures cannot be detected unless active diagnostic tests are performed on the components. Shorted solenoid coil or motor windings, for example, cannot be detected until the components are commanded ON by the electronic brake control module. Therefore, a power-up self-test is performed to verify correct operation of system components. The electronic brake control module performs the first phase of the power-up self-test when the ignition is first turned ON. This phase consists of internal self-testing of the electronic brake control module along with electrical checks of system sensors and circuits.

## Initialization Sequence

The initialization sequence cycles each solenoid valve and the pump motor, as well as the necessary relays, for approximately forty milliseconds to check component operation. One of the checks performed is the adaptive pressure calibration that occurs when the engine is running and the brake pedal is not applied. The adaptive pressure calibration will cycle each of the six isolation valves to verify valve operation. The initialization sequence may be heard and felt while it is taking place, and is considered part of normal system operation. The active test is initiated by the electronic brake control module at the start of the ignition cycle and the speed of the fastest wheel exceeds 16 km/h (10 MPH). If a fault condition is detected the electronic brake control module sets a DTC.

## ABS

When wheel slip is detected during a brake application, an ABS event occurs. During ABS braking, hydraulic pressure in the individual wheel circuits is controlled to prevent any wheel from slipping. A separate hydraulic line and specific solenoid valves are provided for each wheel. The ABS can decrease, hold, or increase hydraulic pressure to each wheel. The ABS does not, however, increase hydraulic pressure above the amount which is transmitted by the master cylinder during braking.

During ABS braking, a series of rapid pulsations is felt in the brake pedal. These pulsations are caused by the rapid changes in position of the individual solenoid valves as the electronic brake control module responds to wheel speed sensor inputs and attempts to prevent wheel slip. These pedal pulsations are present only during ABS braking and stop when normal braking is resumed or when the vehicle comes to a stop. A ticking or popping noise may also be heard as the solenoid valves cycle rapidly. During ABS braking on dry pavement, intermittent chirping noises may be heard as the tires approach slipping. These noises and pedal pulsations are considered normal during ABS operation.

Vehicles equipped with ABS may be stopped by applying normal force to the brake pedal. Brake pedal operation during normal braking is no different than that of previous non-ABS systems. Maintaining a constant force on the brake pedal provides the shortest stopping distance while maintaining vehicle stability. The typical ABS activation sequence is as follows.

**Pressure Hold**
The electronic brake control module closes the isolation valve and keeps the dump valve closed in order to isolate the slipping wheel when wheel slip occurs. This holds the pressure steady on the brake so that the hydraulic pressure does not increase or decrease.

**Pressure Decrease**
If a pressure hold does not correct the wheel slip condition, a pressure decrease occurs. The electronic brake control module decreases the pressure to individual wheels during deceleration when wheel slip occurs. The isolation valve is closed and the dump valve is opened. The excess fluid is stored in the accumulator until the pump can return the fluid to the master cylinder or fluid reservoir.

**Pressure Increase**
After the wheel slip is corrected, a pressure increase occurs. The electronic brake control module increases the pressure to individual wheels during deceleration in order to reduce the speed of the wheel. The isolation valve is opened and the dump valve is closed. The increased pressure is delivered from the master cylinder.

### Traction Control

When drive wheel slip is noted, the electronic brake control module will enter traction control mode.

First, the electronic brake control module requests the engine control module to reduce the amount of torque to the drive wheels via a serial data message. The engine control module reduces torque to the drive wheels and reports the amount of delivered torque.

If the engine torque reduction does not reduce drive wheel slip, the electronic brake control module will actively apply the brakes on the slipping drive wheel. During traction control braking, hydraulic pressure in each drive wheel circuit is controlled to prevent the drive wheels from slipping. The electronic brake control module commands the pump motor and appropriate solenoid valves ON and OFF to apply brake pressure to the slipping wheel.

Traction control can be manually disabled or enabled by pressing the traction control switch.

### Stability Control

Stability control provides added stability during aggressive maneuvers. Yaw rate is the rate of rotation about the vehicle's vertical axis. The stability control is activated when the electronic brake control module determines that the desired yaw rate does not match the actual yaw rate as measured by the yaw rate sensor.

The desired yaw rate is calculated by the electronic brake control module using the following inputs:

- Steering wheel position
- Vehicle speed
- Lateral acceleration

The difference between the desired yaw rate and the actual yaw rate is the yaw rate error, which is a measurement of oversteer or understeer. When a yaw rate error is detected, the electronic brake control module attempts to correct the vehicle's yaw motion by applying brake pressure to one or more of the wheels. The amount of applied brake pressure varies, depending on the correction required. The engine torque may be reduced also, if it is necessary to slow the vehicle while maintaining stability.

Stability control activations generally occur in turns during aggressive driving. When braking during stability control activation, the brake pedal may pulsate.

Stability control can be manually disabled or enabled by pressing and holding the traction control switch for five seconds.

### Dynamic Rear Proportioning

The dynamic rear proportioning is a control system that replaces the mechanical proportioning valve. Under certain driving conditions the electronic brake control module will reduce the rear wheel brake pressure by commanding the appropriate solenoid valves ON and OFF.

### Hill Descent Control System

The hill descent control system allows a smooth and controlled hill descent in rough terrain without the driver needing to touch the brake pedal. The vehicle will automatically decelerate to a low speed and remain at that speed while activated. Some noise or vibration from the brake system may be apparent when the system is active. The descent control system may be activated, if equipped, by pressing the button on the console. To activate, press the button when traveling at speeds less that 50 km/h (30 MPH). To deactivate, press the button on the console, the brake pedal, or the accelerator. Descent control enables the vehicle to descend using the ABS to control each wheel's speed. If the vehicle accelerates without driver input, the system automatically applies the brakes to slow the vehicle down to the desired speed

### Hill Hold Start Assist

The hill hold start assist allows the driver to launch the vehicle without a roll back while moving the foot from the brake pedal to the accelerator pedal. The electronic brake control module calculates the brake pressure, which is needed to hold the vehicle on an incline and locks that pressure for a certain time by commanding the appropriate solenoid valves ON and OFF when the brake pedal is released. Hill hold start assist is activated when the electronic brake control module determines that the driver wishes to move the vehicle up-hill, either backwards or forwards.

The following inputs are used for hill hold start assist feature:

- Accelerator pedal position
- Brake switch
- Brake pressure
- Clutch switch, if equipped
- Engine torque
- Longitudinal acceleration
- Transmission gear information
- Vehicle speed

## Hydraulic Brake Assist

The hydraulic brake assist function is designed to support the driver in emergency braking situations.

The electronic brake control module receives inputs from the brake pressure sensor. When the electronic brake control module senses an emergency braking situation, the electronic brake control module will actively increase the brake pressure to a specific maximum.

## Intelligent Brake Assist

The intelligent brake assist function is designed to provide limited braking to help prevent front and rear low speed collisions.

The electronic brake control module receives inputs from the brake pedal position sensor, wheel speed sensors, short range radar and ultrasonic sensors to detect a collision. When the electronic brake control module senses a possible collision, it will actively increase the hydraulic brake pressure to apply the brakes.

## Trailer Brake Control System

A trailer brake control system is used to control the amount of trailer braking power that is made available to trailers with brakes that require a controlled output electrical signal for actuation. The trailer brake control system determines the trailer brake type (Electric Brake or Electric Over Hydraulic Brake) automatically.

## Trailer Sway Control

The trailer sway control will detect any vehicle yaw instability, caused by an attached trailer. When instability is detected, the electronic brake control module attempts to correct the vehicle's yaw motion by applying brake pressure to one or more of the wheels. The engine torque may be reduced also, if it is necessary to slow down the vehicle.

## Driver Information Indicators

### Brake Warning Indicator

The instrument cluster turns the brake warning indicator ON when the following occurs:

- The instrument cluster performs the bulb check.
- The body control module detects that the parking brake is engaged. The instrument cluster receives a serial data message from the body control module requesting illumination.
- The electronic brake control module detects a faulty pump motor, solenoid valves, an internal hardware failure or a too high or too low battery voltage and sends a serial data message to the instrument cluster requesting illumination.

### ABS Indicator

The instrument cluster turns the ABS indicator ON when the following occurs:

- The instrument cluster performs the bulb check.
- The electronic brake control module detects a malfunction which disables the ABS and sends a serial data message to the instrument cluster requesting illumination.

### Hill Descent Control Indicator

The instrument cluster turns the hill descent control indicator ON when the following occurs:

- The instrument cluster performs the bulb check.
- The driver manually enables or disables the hill descent control by pressing the hill descent control switch. The electronic brake control module sends a serial data message to the instrument cluster requesting illumination.

### Traction Control Off Indicator

The instrument cluster turns the traction control off indicator ON when the following occurs:

- The instrument cluster performs the bulb check.
- The driver manually disables the traction control by pressing the traction control switch. The electronic brake control module sends a serial data message to the instrument cluster requesting illumination.

### Stability Control Off Indicator

The instrument cluster turns the stability control off indicator ON when the following occurs:

- The instrument cluster performs the bulb check.
- The driver manually disables the stability control by pressing and holding the traction control switch for five seconds. The electronic brake control module sends a serial data message to the instrument cluster requesting illumination.

### Traction/Stability Control Indicator

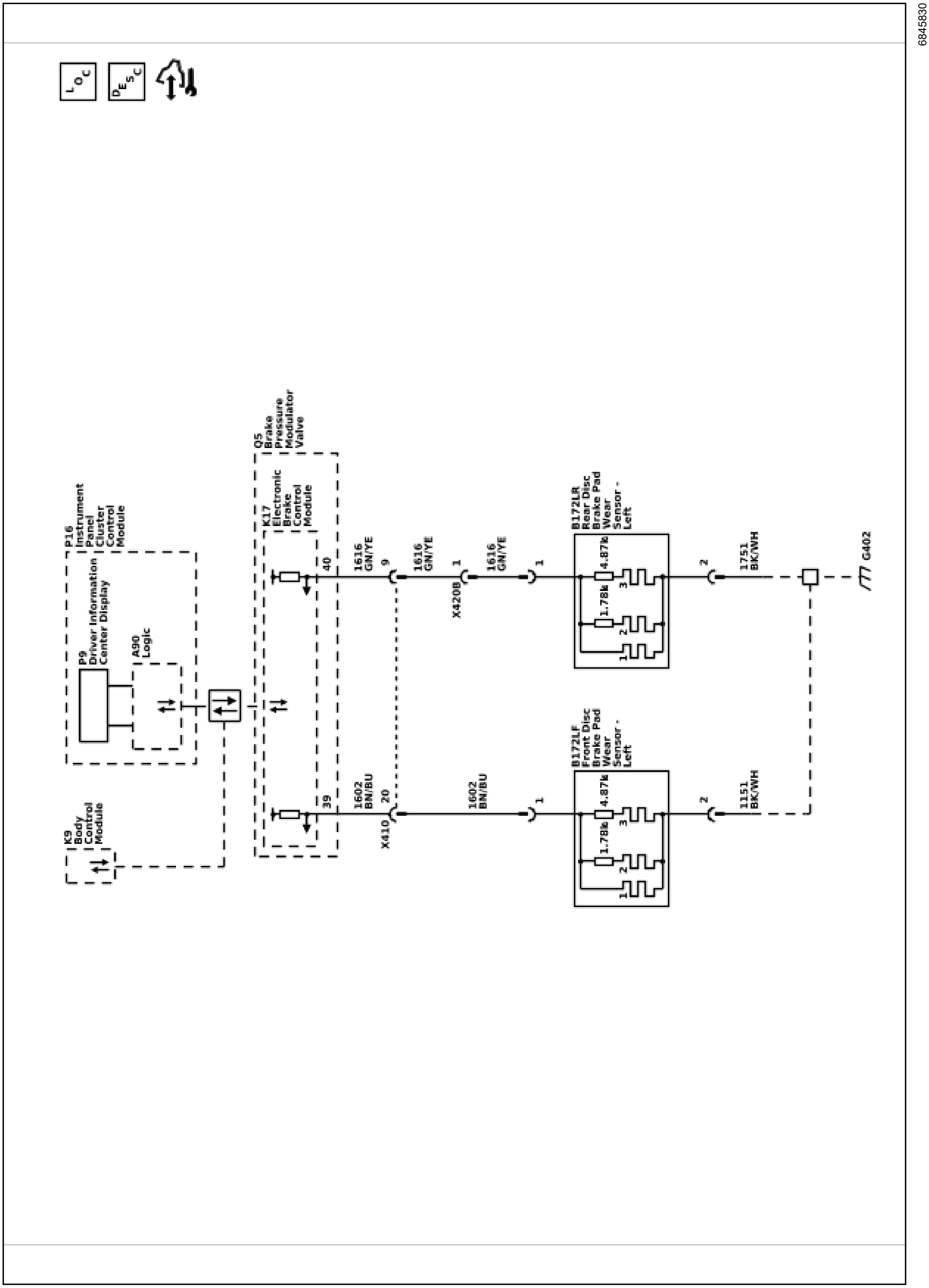
The instrument cluster turns the traction/stability control indicator ON when the following occurs:

- The instrument cluster performs the bulb check.
- The ABS system is in traction control or stability control mode.
- The electronic brake control module detects a traction/stability control disabling malfunction and sends a serial data message to the instrument cluster requesting illumination.

# Disc Brakes

## Schematic and Routing Diagrams

## Disc Brake Schematics (Brake Pad Wear Sensors)



# Description and Operation

## Brake Pad Life Monitoring Description and Operation

This vehicle has a system that estimates the remaining life of the front and rear brake pads. When the feature is active, brake pad life is displayed in the Driver Information Center (DIC), along with a percentage and distance for each axle.

When the system has determined that the brake pads need to be replaced, a message will display, which may include mileage remaining.

Customers can use this information to plan their vehicle maintenance. A prognostic indicator of life remaining, especially in distance remaining, enables customers to arrange brake pad replacement at a convenient time.

The system will display a percent pad life on the DIC at all time just like oil life monitoring. When you approach end of pad life, the messaging will change to a distance parameter (i.e. 2000 miles remaining, etc.) and it will start to actively remind the driver to take action at ignition cycle intervals.

If the feature has malfunctioned, fault messaging will be provided. The customer will be able to disable the feature display if desired, and the display will confirm this.

The Brake System Control Module has one analog input for a front axle brake pad wear sensor and one analog input for a rear axle brake pad wear sensor. The brake system control module supply voltage to the brake pad wear sensor and the sensor is grounded to the vehicle ground. The brake system control module diagnose any issues with the power supply for the sensors and set “ invalid” if there is a failure detected in the supply voltage system.

After replacing the brake pads, the Axle Brake Pad Life Monitor Reset Learn must be performed.

The brake pad life system can be turned off. This may be necessary if aftermarket brake pads without wear sensors are installed. When the system is turned off, the front and rear brake pad life percentages will not display.

## Disc Brake System Description and Operation

### System Component Description

The disc brake system consists of the following components:

**Disc Brake Pads: Applies mechanical output force from the hydraulic brake calipers to friction surfaces of brake rotors.**

**Disc Brake Rotors: Uses mechanical output force applied to friction surfaces from the disc brake pads to slow speed of tire and wheel assembly rotation.**

**Disc Brake Pad Hardware: Secures disc brake pads firmly in proper relationship to the hydraulic brake calipers. Enables a sliding motion of brake pads when mechanical output force is applied.**

**Disc Brake Caliper Hardware (Floating Caliper): Provides mounting for hydraulic brake caliper and secures the caliper firmly in proper relationship to caliper bracket. Enables a sliding motion of the brake caliper to the brake pads when mechanical output force is applied.**

### System Operation (Floating Caliper)

Mechanical output force is applied from the hydraulic brake caliper pistons to the inner brake pads. As the pistons press the inner brake pads outward, the caliper housings draw the outer brake pads inward. This allows the output force to be equally distributed. The brake pads apply the output force to the friction surfaces on both sides of the brake rotors, which slows the rotation of the tire and wheel assemblies. The correct function of both the brake pad and brake caliper hardware is essential for even distribution of braking force.

### System Operation (Fixed Caliper)

Mechanical output force is applied from the hydraulic brake caliper inboard and outboard pistons to the inner and outer brake pads. The brake calipers are a fixed, opposed-piston design, allowing the output force to be equally distributed through the distribution of the pressurized brake fluid within the caliper. The brake pads apply the output force to the friction surfaces on both sides of the brake rotors, which slows the rotation of the tire and wheel assemblies. The correct function of the brake pad hardware and of the brake caliper inboard and outboard pistons is essential for even distribution of braking force.

### System Characteristics

#### Brake Noise

Brake noise can occur and to a degree, some brake noise is normal. Variations in driving conditions such as the weather, environment, driving patterns, differences in vehicle loading, and type or style of driving, can affect brake wear. Any one of these variations can cause brake noise to become apparent. Inspect and verify that all metal-to-metal contact areas of the brake pads, brake pad guides or springs, brake caliper housing, caliper bracket and/or suspension knuckle, as applicable, are clean and free of corrosion and scale.

Brake noise is a “slip-stick” vibration of disc brake components and, if it occurs intermittently, can be considered normal. Most brake noise may be eliminated or temporarily reduced by performing 3 or 4 aggressive brake applications. If the brake noise persists or consistently recurs, application of a damping compound to the brake pad mounting plate where it contacts the caliper can lessen the vibration as the components move relative to each other. Refer to [Link target (target-id 176959-) not found] in this section for recommended compounds.

The following brake noises are characteristic of all brake systems. These noises cannot be avoided, and may not indicate improper operation of the brake system.

**Squeak/Squeal Noise**
A squeak or squeal noise can occur on vehicles with front semi-metalic brake pads during light to medium brake pedal application at low to moderate vehicle speeds. Occasionally this noise may appear from the front or rear brakes after a period of non-use such as overnight, or cold brakes and/or in high humidity conditions.

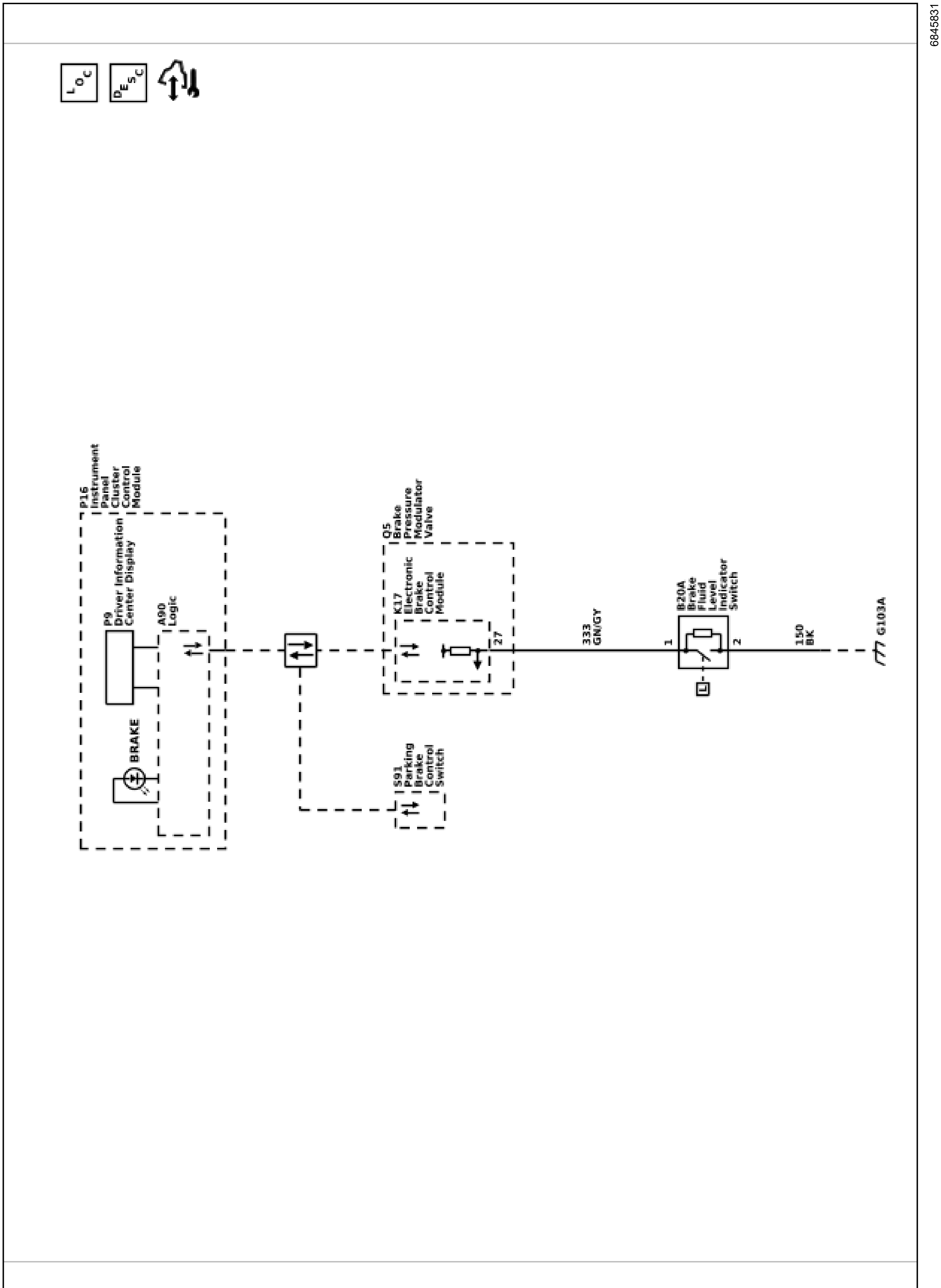
**Grinding Noise**
Common occurrence for rear brakes and some front disc brakes during initial brake applications after the vehicle has been parked overnight. Caused by light corrosion forming on the metal brake component friction surfaces during vehicle non-use. Typically disappears after the first few brake applications.

**Groan Noise**
A groan type noise may be heard during a quick stop, or when slowly moving forward from a complete stop. On vehicles equipped with antilock brake systems (ABS), a groan or moan noise may occur during heavy brake application or on road surfaces with compromised traction such as loose gravel, or on wet or icy roads. This is a normal function of ABS activation.

# Hydraulic Brakes

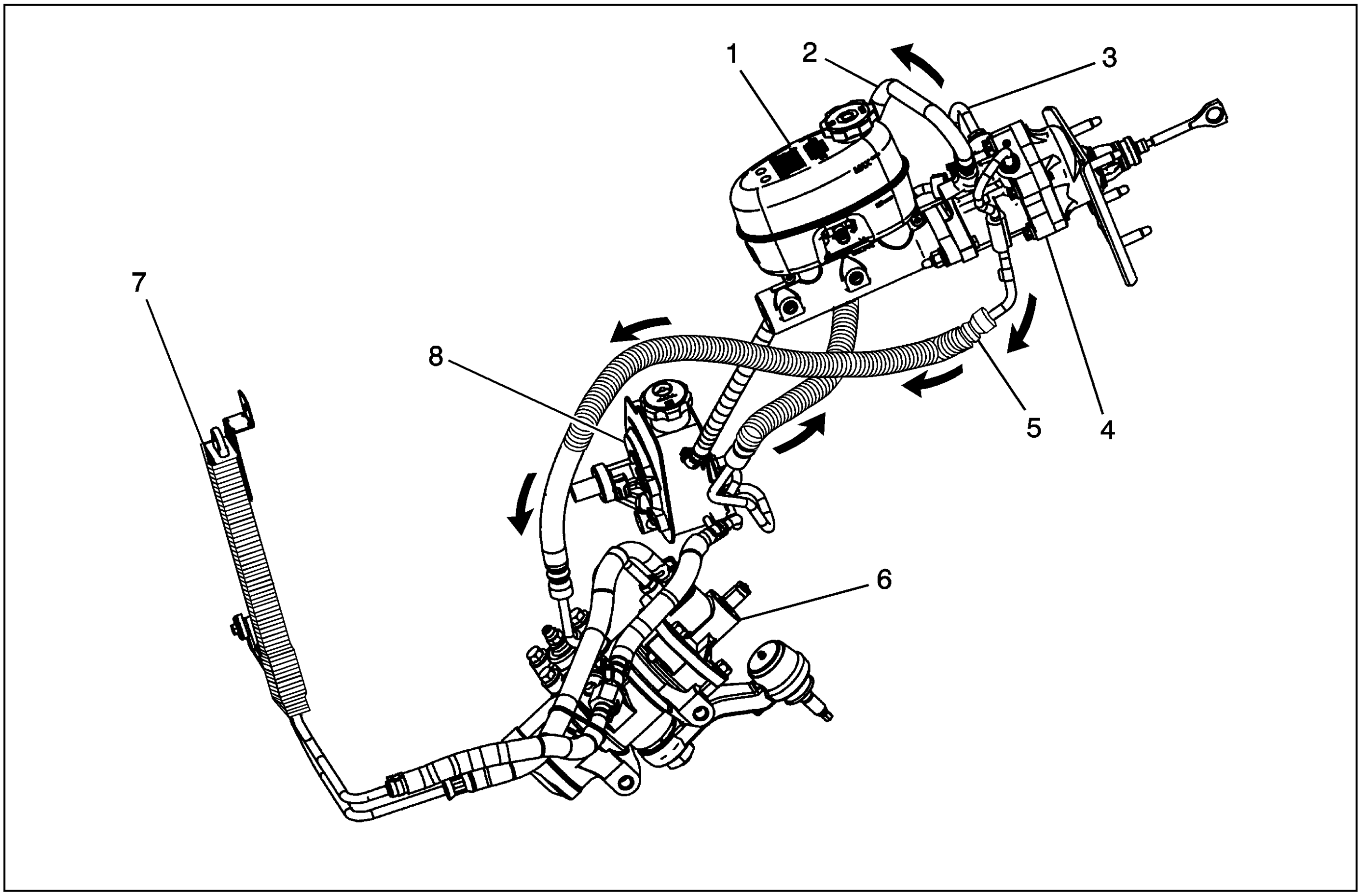
## Schematic and Routing Diagrams

## Hydraulic Brake Schematics (Hydraulic Brakes)



# Description and Operation

## Brake Assist System Description and Operation




1709751

(1) Master Cylinder
(2) Power Brake Booster Outlet Hose
(3) Power Brake Booster Inlet Pipe/Hose
(4) Hydraulic Brake Booster
(5) Power Steering Gear Inlet Pipe/Hose
(6) Steering Gear
(7) Power Steering Cooler
(8) Power Steering Pump

### System Component Description

The brake assist system consists of the following:

**Brake Pedal: Receives, multiplies and transfers brake system input force from driver.**

**Brake Pedal Pushrod: Transfers multiplied input force received from brake pedal to brake booster.**

**Hydraulic Brake Booster: Uses power steering fluid pressure to decrease effort required by driver when applying brake system input force.**

**Power Steering System: Supplies pressurized power steering fluid used by hydraulic brake booster to decrease brake pedal effort.**

### System Operation

The hydraulic brake boost system uses fluid from the power steering pump (8) through the hydraulic boost inlet hose (3) and to the brake booster assembly (4). In addition to supplying the brake system with fluid for increased apply, the power steering pump is also connected to the power steering gear (6) and cooler (7).

The steering pump (8) is a continuous flow device supplying approximately 3 GPM at 1000 RPM, at the pump shaft. The fluid flows through the booster spool valve, then the return hose (5), and then to the steering gear (6). Pressure is produced by applying the brake pedal, resulting in the spool valve being actuated, internal to the hydraulic brake booster. The spool valve produces a marginal restriction that causes pressure in the booster (4) to rise and forces the power piston and therefore the output rod forward to generate force and motion at the master cylinder (1). The brake corners are actuated by the fluid impulse generated by the master cylinder (1). Internal blow by, or pressure relief, is directed to the low pressure return hose (2) back to the power steering pump (8).

## Hydraulic Brake System Description and Operation

### System Component Description

The hydraulic brake system consists of the following:

**Hydraulic Brake Master Cylinder Fluid Reservoir: Contains supply of brake fluid for the hydraulic brake system.**

**Hydraulic Brake Master Cylinder: Converts mechanical input force into hydraulic output pressure.Hydraulic output pressure is distributed from the master cylinder through 2 hydraulic circuits, supplying front-rear opposed wheel apply circuits.**

**Hydraulic Brake Pressure Balance Control System: Regulates brake fluid pressure delivered to hydraulic brake wheel circuits, in order to control the distribution of braking force.Pressure balance control is achieved through dynamic rear proportioning (DRP), which is a function of the ABS modulator.**

**Hydraulic Brake Pipes and Flexible Brake Hoses: Carries brake fluid to and from hydraulic brake system components.**

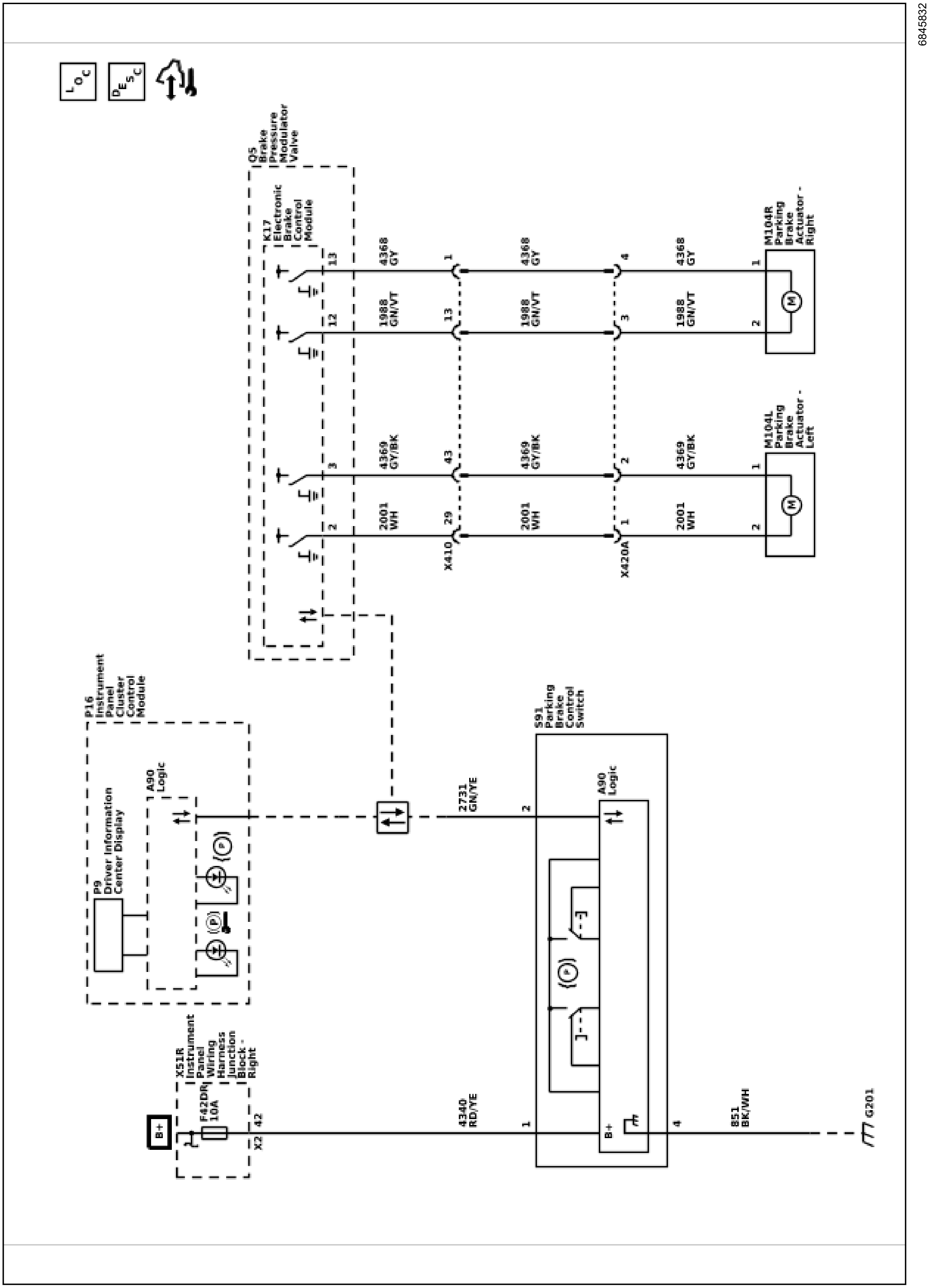
**Hydraulic Brake Wheel Apply Components: Converts hydraulic input pressure into mechanical output force.**

### System Operation

Mechanical force is converted into hydraulic pressure by the master cylinder, regulated to meet braking system demands by the pressure balance control system, and delivered to the hydraulic brake wheel circuits by the pipes and flexible hoses. The wheel apply components then convert the hydraulic pressure back into mechanical force which presses linings against rotating brake system components.

# Park Brake

## Schematic and Routing Diagrams



6845832
Park Brake System Schematics (Electric Park Brake)
Q5 Brake Pressure Modulator Valve
K17 Electronic Brake Control Module
13
12
3
2
4368 GY
1988 GN/VT
4369 GY/BK
2001 WH
1
13
43
29
X410
4
3
2
1
X420A
M104R Parking Brake Actuator - Right
M104L Parking Brake Actuator - Left
M
P16 Instrument Panel Cluster Control Module
P9 Driver Information Center Display
A90 Logic
P
X51R Instrument Panel Wiring Harness Junction Block - Right
B+
F42DR 10A
X2 42
4340 RD/YE
2731 GN/YE
S91 Parking Brake Control Switch
B+
851 BK/WH
G201

# Description and Operation

## Electronic Parking Brake Description

Vehicles with the electric parking brake have a switch in the center console or on the dash, which takes the place of the manual parking brake system, the foot pedal and release handle. In case of insufficient electrical power, the electric parking brake cannot be applied or released.

## Electronic Brake Control Module/Brake System Control Module

The parking brake function is integrated into the Electronic Brake Control Module/Brake System Control Module. The module contains the logic for applying and releasing the parking brake when commanded by the Park Brake Switch.

When the Park Brake Switch is pulled, a signal is sent to the Electronic Brake Control Module which will supply 12 V to the apply control circuits and ground to the release control circuits which will cause the left and right park brake actuators to activate causing the park brakes to engage. When the Park Brake Switch is pressed, a signal is sent to the Electronic Brake Control Module which will supply 12 V to the released control circuits and ground to the apply control circuits which will cause the left and right park brake actuators to activate causing the park brakes to release. In some vehicles, the Park Brake Switch is a push-button style switch. When the switch is pressed, the park brakes are commanded to either apply or release based off of their current position.

The Electronic Brake Control Module/Brake System Control Module will diagnose the park brake motor circuits to verify that they are functioning properly. The park brake motor circuits are used to command actuator motor operation, which will apply and release the parking brake. These circuits are used to activate the actuator, which applies or releases park brake shoes.

The Park Brake Motor Position Sensor is an internal sensor to the park brake actuator, this sensor is used to monitor the park brake motor position.

## Electric Parking Brake Apply

The electric parking brake can be applied any time the vehicle is stopped or in motion. The electric parking brake is applied by momentarily operating the park brake control switch. The red park brake light will momentarily flash while the parking brake is being applied. Once fully applied, the red park brake light will turn on. If the electric parking brake is applied while the vehicle is in motion, the vehicle will decelerate as long as the switch is being operated. If the switch is operated until the vehicle comes to a stop, the park brake will remain applied.

If the red park brake light is flashing, the electric parking brake is only partially applied or released, or there is a problem with the electric parking brake. A DIC message will display.

The vehicle may automatically apply the electric parking brake in some situations when the vehicle is not moving. This is normal, and is done to periodically check the correct operation of the electric parking brake system.

## Electric Parking Brake Release

To release the electric parking brake, turn the ignition switch to the ON or RUN position, apply and hold the brake pedal, and push down momentarily on the park brake control switch. When the electric parking brake is released the red park brake light turns off.

## Automatic Electric Parking Brake Release

The parking brake will automatically release if the vehicle is running, placed into gear, and an attempt is made to drive away. Avoid rapid acceleration when the parking brake is applied to preserve parking brake lining life.

# Section 3

# Diagnostic Overview, Starting Point, and Programming

# Diagnostic Overview, Starting Point, and Programming

## Programming and Setup

### Diagnostic Information and Procedures

#### Control Module References

##### Reference Information

- [Link target (target-id 148085-) not found]
- *Diagnostic System Check - Vehicle 3-255*
- *Diagnostic Trouble Code (DTC) List - Vehicle 3-260*
- *Symptoms - Vehicle 3-318*

**Control Module References**

| Code | Control Module/Scan Tool Information | Schematic | Repair Instruction | Programming and Setup |
|---|---|---|---|---|
| A11 | *A11 Radio: Scan Tool Information 3-56* | *Radio/Navigation System Schematics (IOR) 5-3*<br>*Radio/Navigation System Schematics (IOK) 5-8* | [Link target (target-id 46758-) not found] | *A11 Radio: Programming and Setup 3-6* |
| B174W | *B174W Frontview Camera: Scan Tool Information 3-60* | *Driver Assistance Systems Schematics 9-3* | [Link target (target-id 283748-) not found] | *B174W Frontview Camera - Windshield: Programming and Setup 3-10* |
| B218L/R | *B218L Side Object Sensor Module - Left: Scan Tool Information 3-61*<br>*B218R Side Object Sensor Module - Right: Scan Tool Information 3-62* | *Driver Assistance Systems Schematics 9-3* | [Link target (target-id 283745-) not found] | *B218L Side Object Sensor Module - Left: Programming and Setup 3-11*<br>*B218R Side Object Sensor Module - Right: Programming and Setup 3-12* |
| K4 | *K4 Assist Step Control Module: Scan Tool Information 3-62* | [Link target (target-id 145954-) not found] | [Link target (target-id 258421-) not found] | *K4 Assist Step Control Module: Programming and Setup 3-12* |
| K9 | *K9 Body Control Module: Scan Tool Information 3-63* | *Body Control System Schematics 7-23* | [Link target (target-id 148090-) not found] | *K9 Body Control Module: Programming and Setup 3-14* |
| K17 | *K17 Electronic Brake Control Module: Scan Tool Information 3-103* | *Antilock Brake System Schematics 2-3* | [Link target (target-id 183714-) not found] | *K17 Electronic Brake Control Module: Programming and Setup 3-17* |
| K20 | *K20 Engine Control Module: Scan Tool Information (L5P) 3-105*<br>*K20 Engine Control Module: Scan Tool Information (L8T) 3-153* | • [Link target (target-id 227956-) not found] – 6.6L (L8T) engine<br>• [Link target (target-id 186652-) not found] – 6.6L (L5P) Diesel engine | [Link target (target-id 227993-) not found] – 6.6L (L8T) engine<br>[Link target (target-id 186772-) not found] – 6.6L (L5P) Diesel engine | *K20 Engine Control Module: Programming and Setup 3-18* |
| K29FV | *K29FV Front Seat Heater Vent Control Module: Scan Tool Information 3-204* | *Heated/Cooled Seat Schematics 10-21* | [Link target (target-id 271038-) not found] | *K29FV Front Seat Heater Vent Control Module: Programming and Setup 3-20* |
| K36 | *K36 Restraints Control Module: Scan Tool Information 3-205* | *SIR Schematics 9-49* | [Link target (target-id 57768-) not found] | *K36 Restraints Control Module: Programming and Setup 3-20* |

| Code | Control Module/Scan Tool Information | Schematic | Repair Instruction | Programming and Setup |
|---|---|---|---|---|
| K40 | • *K40D Driver Seat Adjuster Memory Module: Scan Tool Information 3-212*<br>• *K40P Passenger Seat Adjuster Memory Module: Scan Tool Information 3-215* | • *Driver Seat Schematics 10-3*<br>• *Passenger Seat Schematics 10-9* | [Link target (target-id 265094-) not found] | • *K40D Driver Seat Adjuster Memory Module: Programming and Setup 3-22*<br>• *K40P Passenger Seat Adjuster Memory Module: Programming and Setup 3-23* |
| K43 | *K43 Power Steering Control Module: Scan Tool Information 3-217* | *Power Steering Schematics 11-3* | [Link target (target-id 168597-) not found] | *K43 Power Steering Control Module: Programming and Setup 3-23* |
| K44 | *K44 Power Take-off Control Module: Scan Tool Information 3-219* | *Power Take-Off (PTO) Schematics 13-3* | [Link target (target-id 167837-) not found] | *K44 Power Take-off Control Module: Programming and Setup 3-24* |
| K56 | Serial Data Gateway Module | *Data Communication Schematics 7-3* | [Link target (target-id 148099-) not found] | *K56 Serial Data Gateway Module: Programming and Setup 3-28* |
| K56U | Special Purpose Vehicle Module | *Data Communication Schematics 7-3* | [Link target (target-id 351765-) not found] | *K56U Special Purpose Vehicle Module: Programming and Setup 3-30* |
| K60 | *K60 Column Lock Module: Scan Tool Information 3-220* | *Column Lock Schematics 11-9* | [Link target (target-id 129581-) not found] | *K60 Column Lock Module: Programming and Setup 3-31* |
| K61 | Sunroof Control Module | *Sunroof Schematics 8-3* | [Link target (target-id 69635-) not found] | *K61 Sunroof Control Module: Programming and Setup 3-32* |
| K67 | Trailer Brake Control Module | *Trailering Systems Schematics 1-57* | [Link target (target-id 327489-) not found] | *K67 Trailer Brake Control Module: Programming and Setup 3-32* |
| K68 | *K68 Trailer Lighting Control Module: Scan Tool Information 3-220* | *Trailering Systems Schematics 1-57* | [Link target (target-id 327487-) not found] | *K68 Trailer Lighting Control Module: Programming and Setup 3-32* |
| K69 | *K69 Transfer Case Control Module: Scan Tool Information 3-221* | • *Transfer Case Control Schematics 13-10* – MP 1625/1626 (NQF) transfer case<br>• *Transfer Case Control Schematics 13-24* – MP 3023/3024 (NQH) transfer case | [Link target (target-id 162309-) not found] – MP 1625/1626 (NQF) transfer<br>[Link target (target-id 162319-) not found] – MP 3023/3024 (NQH) transfer case | *K69 Transfer Case Control Module: Programming and Setup (NQF) 3-32* *K69 Transfer Case Control Module: Programming and Setup (NQH) 3-33* |
| K71 | *K71 Transmission Control Module: Scan Tool Information (10L1000 (MGM, MGU, MKM)) 3-227* | [Link target (target-id 315149-) not found] | [Link target (target-id 315106-) not found] | *K71 Transmission Control Module: Programming and Setup (10L1000 (MGM MGU, MKM)) 3-35* |
| K73 | *K73 Telematic Control Module: Scan Tool Information 3-235* | *OnStar/Telematics Schematics 5-19* | [Link target (target-id 328020-) not found] | *K73 Telematic Control Module: Programming and Setup 3-36* |
| K85P | *K85P Restraints Occupant Classification System Module - Passenger: Scan Tool Information 3-237* | *SIR Schematics 9-49* | [Link target (target-id 188211-) not found] | *K85P Restraints Occupant Classification System Module - Passenger: Programming and Setup 3-37* |

| Code | Control Module/Scan Tool Information | Schematic | Repair Instruction | Programming and Setup |
|---|---|---|---|---|
| K111 | *K111 Fuel Pump Power Control Module Scan Tool Information 3-245* | • [Link target (target-id 227956-) not found] – 6.6L (L8T) engine<br>• [Link target (target-id 186652-) not found] – 6.6L (L5P) Diesel engine | (AKA: Fuel Pump Driver Control Module)<br>[Link target (target-id 228095-) not found] – 6.6L (L8T) engine<br>[Link target (target-id 284808-) not found] – 6.6L (L5P) Diesel engine | *K111 Fuel Pump Power Control Module: Programming and Setup 3-49* |
| K115 | Reductant Control Module | [Link target (target-id 186652-) not found] – 6.6L (L5P) Diesel engine | [Link target (target-id 284657-) not found] | *K115 Reductant Control Module: Programming and Setup 3-39* |
| K157 | Video Processing Control Module | *Image Display Camera Schematics 5-50* | [Link target (target-id 283882-) not found] | *K157 Video Processing Module: Programming and Setup 3-40* |
| K182 | *K182 Parking Assist Control Module: Scan Tool Information 3-237* | *Parking Assistance Systems Schematics 9-23* | [Link target (target-id 283577-) not found] | *K182 Parking Assist Control Module: Programming and Setup 3-41* |
| K194 | *K194 Rear Gate Module: Scan Tool Information 3-241* | *Endgate Schematics 1-82* | [Link target (target-id 162445-) not found] | *K194 Rear Gate Module: Programming and Setup 3-42* |
| K219 | *K219 Lighting Control Module: Scan Tool Information 3-201* | *Exterior Lights Schematics 1-20* | [Link target (target-id 321424-) not found] | *K219 Lighting Control Module: Programming and Setup 3-43* |
| K234 | *K234 Rear Seat Heater Vent Control Module: Scan Tool Information 3-203* | *Heated/Cooled Seat Schematics 10-21* | [Link target (target-id 149771-) not found] | *K234 Rear Seat Heater Vent Control Module: Programming and Setup 3-45* |
| P16 | *P16 Instrument Panel Cluster Control Module: Scan Tool Information 3-242* | *Instrument Cluster Schematics 5-37* | [Link target (target-id 50650-) not found] | *P16 Instrument Panel Cluster Control Module: Programming and Setup 3-45* |
| T1 | Accessory AC and DC Power Control Module | *Cigar Lighter/Power Outlet Schematics 7-759* | [Link target (target-id 121154-) not found] | *T1 Accessory AC and DC Power Control Module: Programming and Setup 3-47* |
| T3 | *T3 Audio Amplifier: Scan Tool Information 3-243* | *Radio/Navigation System Schematics (IOR) 5-3*<br>*Radio/Navigation System Schematics (IOK) 5-8* | [Link target (target-id 46705-) not found] | *T3 Audio Amplifier: Programming and Setup 3-47* |
| T22 | *T22 Wireless Accessory Charging Module: Scan Tool Information 3-244* | *Cigar Lighter/Power Outlet Schematics 7-759* | [Link target (target-id 224804-) not found] | *T22 Wireless Accessory Charging Module: Programming and Setup 3-48* |

# Repair Instructions

## A11 Radio: Programming and Setup

**Note:**

- Always verify the module has the newest software available before replacing the module.
- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. Install a battery maintainer or power supply that provides a steady and stable voltage. Do not use a battery charger, as charging voltage will often fluctuate when connected to the vehicle. This may interrupt programing. If a battery maintainer is not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply.

- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- Programming must begin with the Ignition/Vehicle OFF. Programming will direct the appropriate control module(s) to change power mode as needed during the procedure, independent of the vehicle's power mode.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to NO.

## Diagnostic Aids

- Check for Preliminary information or Technical Service bulletins before programming.
- During programming you may be required to select multiple calibrations dependent upon vehicle equipment. Have the vehicle build/RPO information available during the following procedure to ensure the correct calibrations are selected.
- If the control module calibration is only being updated, USB programming may not be required, depending on the current software level, or the release of updates. If USB programming may not be required when replacing/reprogramming the control module. If USB files for the application are not available via SPS, or have not been received from General Motors in another manner, the USB process will not need to be performed unless instructed otherwise in a service document or publication.
- Begin with the vehicle in the vehicle OFF power mode. The Service Programming System will power mode the vehicle.
- The vehicle can be moved to an alternate location when performing the USB portion of the programming steps which could allow the possibility of working on another vehicle while the USB programming event is taking place.
- When transferring a large file (>1GB) from the Techline Connect server to the PC then to a USB stick, below are some useful tips:
  - A wired connection to the network is the quickest, most stable way to download the file.
  - Wireless connections can be used, however slower connection speeds may increase the likelihood of errors to occur during file download.
  - Once the file is downloaded to the PC, it will reside in cashe unless the cashe is cleared. Any additional USB sticks made from that PC will be copied from cashe and take a much shorter time compared to downloading from the server.
  - Never take a USB stick directly to a vehicle for updating without starting a Techline Connect session for that particular VIN. If software is already on the stick, Techline Connect will take only seconds to confirm software on the stick is the latest and correct for that vehicle. Failure to perform this step will result in no warranty claim code indicating a USB programming event was completed.
  - If equipped with an SD Card slot, the SD card must be installed and functioning correctly for USB programming to be successful.

## Reference Information

### Special Tools

- USB type A or type C flash drive (whichever applicable) .
- USB 2.0 & above with FAT32 format (USB 3.0 & 3.1 is highly recommended)
- Minimum size 16GB (Most USB flash drives larger than 32GB do not support FAT32 format)
- EL-52100 Multiple Diagnostic Interface 2 (MDI 2)

For equivalent regional tools, refer to *Special Tools 3-54*.

## Reprogram Control Module

To program an existing control module, perform the following procedure:

**Note:** The vehicle must remain in PARK and the driver's door closed during the programming procedure.

1. Ignition/vehicle OFF
2. Access the Service Programming System (SPS) and follow the on-screen instructions.

**Note:** If the radio displays "calibrate device, one or more devices need to be calibrated" in SPS program the radio selecting replace and program.

3. On the SPS Supported Controllers screen, select A11 Radio – Programming and then follow the on-screen instructions.
4. Before proceeding with USB programming check for any Info Sys OTA updates under Settings>Updates on the vehicles infotainment screen. If an update is available, it is more efficient to install the OTA update if it will install successfully. If the OTA will not install and USB programming is necessary then before attempting USB programming you should first decline the update by selecting Details and then the Decline Update option, followed by confirming the Decline Update. If an Info Sys OTA update is not available, proceed with USB programming.

**Note:**

- If equipped with an SD Card slot, the SD card must be installed and functioning correctly for USB programming to be successful.
- If using a pre-configured USB drive supplied by General Motors, proceed to step 6.

5. Connect a USB drive to the computer.
6. Access the Service Programming System (SPS) and follow the on-screen instructions.
7. On the SPS Supported Controllers screen, select A11 Radio – USB Copy/ USB File Transfer.

**Note:**

- If USB programming is unavailable, or if the selected software description is the following proceed to step 6: *STOP. If you are seeing this text, the controller already has the latest software available. If you try to proceed further, SPS will generate an error.*.
- Software currently loaded on the USB Drive will be verified and if files are incorrect they will be deleted and correct files will be loaded. If files residing on the USB Drive are correct for the vehicle being serviced, the Techline terminal will not delete those files and allow the drive to be re-used.

8. Upon completion of the file transfer, remove the USB drive from the computer.
9. Connect the USB drive to the USB port in the vehicle.
10. Ignition ON, infotainment system ON.

**Note:** The Radio will not allow the installation of the same software version via USB. If the same software is detected the installation process will not start.

11. The infotainment system will recognize that update files are available. Follow the infotainment display on-screen instructions and select Update when prompted. Programming will take several minutes.

**Note:** Once the update is initiated, there is no need to monitor the progress.

**Note:** If no instructions immediately appear on the infotainment display, select the following menu options:

- Home
- Settings
- System
- Updates

12. Upon completion of programming, remove the USB drive. Follow the infotainment display on-screen instructions.
13. Clear DTCs.
14. Perform the Manufacturer Enable Counter (MEC) reset – Access the Global Diagnostic System 2 (GDS 2) and identify the vehicle
15. On the GDS 2 screen select Module Diagnostics – Radio (select appropriate RPO) – Configuration/ reset functions – Reset Manufacturer Enable Counter and follow the on–screen instructions.

**Note:** You may receive a message stating the Reset Manufacturer Enable Counter (MEC) procedure is not required if the MEC counter is already at 0.

16. Ignition OFF, Retained Accessory Power (RAP) OFF, remove the key fob from range of the vehicle, and let the vehicle sit for five minutes. Retest system operation to verify the repair.

### Replace and Program Control Module

To program a replacement control module, perform the following procedure:

**Note:** The vehicle must remain in PARK and the driver’s door closed during the programming procedure.

1. Ignition/vehicle OFF
2. Access the Service Programming System (SPS) and follow the on-screen instructions.
3. On the SPS Supported Controllers screen, select A11 Radio – Programming and then follow the on-screen instructions.

**Note:**

- If equipped with an SD Card slot, the SD card must be installed and functioning correctly for USB programming to be successful.
- If using a pre-configured USB drive supplied by General Motors, proceed to step 5.

4. Connect a USB drive to the computer.
5. Access the Service Programming System (SPS) and follow the on-screen instructions.
6. On the SPS Supported Controllers screen, select A11 Radio – USB Copy/ USB File Transfer.

**Note:**

- If USB programming is unavailable, or if the selected software description is the following proceed to step 5: *STOP. If you are seeing this text, the controller already has the latest software available. If you try to proceed further, SPS will generate an error.*.
- Software currently loaded on the USB Drive will be verified and if files are incorrect they will be deleted and correct files will be loaded. If files residing on the USB Drive are correct for the vehicle being serviced, the Techline terminal will not delete those files and allow the drive to be re-used.

7. Upon completion of the file transfer, remove the USB drive from the computer.
8. Connect the USB drive to the USB port in the vehicle.
9. Ignition ON, infotainment system ON.

**Note:** The Radio will not allow the installation of the same software version via USB. If the same software is detected the installation process will not start.

10. The infotainment system will recognize that update files are available. Follow the infotainment display on-screen instructions and select Update when prompted. Programming will take several minutes.

**Note:** Once the update is initiated, there is no need to monitor the progress.

**Note:** If no instructions immediately appear on the infotainment display, select the following menu options:

- Home
- Settings
- System
- Updates

11. Upon completion of programming, remove the USB drive. Follow the infotainment display on-screen instructions.
12. Clear DTCs.
13. Perform the Manufacturer Enable Counter (MEC) reset – Access the Global Diagnostic System 2 (GDS 2) and identify the vehicle
14. On the GDS 2 screen select Module Diagnostics – Radio (select appropriate RPO) – Configuration/ reset functions – Reset Manufacturer Enable Counter and follow the on–screen instructions.

**Note:** You may receive a message stating the Reset Manufacturer Enable Counter (MEC) procedure is not required if the MEC counter is already at 0.

15. Ignition OFF, Retained Accessory Power (RAP) OFF, remove the key fob from range of the vehicle, and let the vehicle sit for five minutes. Retest system operation to verify the repair.

## XM Activation (If Equipped)

**Important:** On the radio being replaced, record the XM ID from the radio parts label or before removal tune to XM channel 0. This will be used during the call to XM radio to deactivate the receiver that has been removed from the vehicle.

1. Turn the replacement radio ON, tune to the XM channel 0, and record the radio ID. The radio ID will be needed for activation of the receiver.
2. Contact SiriusXM Dealer Support at (800) 852–9696 to activate the new receiver.
3. Park the vehicle outside in an area with an unobstructed view of the southern sky.
4. Leave the vehicle outside with the ignition switch in the ACC position and the radio on for 30 minutes to activate XM service.
5. Once activated, the radio will receive the remaining XM channels.

## Unsuccessful Programming Recovery

**Note:**

- Ensure the *EL-52100* (MDI 2) is used when programming the vehicle. Using the EL-47955 (MDI) will result in a programming failure.
- It may be necessary to use another *EL-52100* (MDI 2) and/or cables to verify proper operation to eliminate the possibility of faulty equipment.
- If Ethernet programming fails, ensure there is no fault in the Ethernet circuits between the X84 Data Link Connector and K56 Serial Data Gateway Module. Refer to [Link target (target-id 300812-) not found] to diagnose these Ethernet circuits.

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. Exit Service Programming System (SPS) and disconnect all programming equipment from the vehicle.
2. Disconnect all battery voltage or ignition voltage sources from the control module.

**Note:** All voltage sources must be removed for a minimum of 10 min. This can be done several ways and should be completed by using the least intrusive way. This can vary depending on vehicle and control module location and can be done by one of the options listed below:

- Removing all fuses supplying battery voltage and ignition voltage to the control module.
- Disconnecting all harness connectors from the control module.
- Performing a 12 V battery disconnect by disconnecting the battery negative cable. Refer to [Link target (target-id 37733-) not found] .

3. Reconnect all battery voltage and ignition voltage sources to the control module.
4. Close down the current session of Techline Connect and reopen a new session.
5. Verify the control module, data link connector, and programming tool connections are secure and the tool software is up to date.
6. Ignition/Vehicle OFF, ensure that the key fob is inside the vehicle and not moved for the duration of the programming to prevent an inadvertent power mode change during programming.
7. Access the Service Programming System (SPS) and follow the on-screen instructions for the control module.
8. Verify the control module can be programmed.

⇒ **If the control module can not be programmed**

8.1. Ignition ON/Vehicle in Service Mode for 1 min.

8.2. Ignition/Vehicle OFF.

8.3. Access SPS and follow the on-screen instructions for the control module.

**Note:** If programming is still not successful after the second programming attempt, check the following:

- For facilities using an internet firewall, ensure firewall settings are not blocking file downloads and/or require elevated rights.
- For United States and Canada GM dealers, the appropriate firewall settings can be found in the GM DEALER INFRASTRUCTURE & SECURITY GUIDELINES (DISG) section 2.d.vii.

8.4. Verify the control module can be programmed.

⇒ If the control module can not be programmed, replace the control module.

⇓ If the control module can be programmed

8.5. Clear DTCs.

⇓ **If the control module can be programmed**

9. Clear DTCs.

### Repair Instructions

Perform the *Diagnostic Repair Verification 3-319* after completing the repair.

*Control Module References 3-4* for control module replacement, programming, and setup.

## A26 Heater and Air Conditioning User Interface Control - Front: Programming and Setup

### Diagnostic Instructions

- Perform the Diagnostic System Check prior to using this diagnostic procedure: *Diagnostic System Check - Vehicle 3-255*
- Review the description of Strategy Based Diagnosis: *Strategy Based Diagnosis 3-245*

**Note:**

- Always verify the module has the newest software available before replacing the module.
- Verify the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required, install a battery maintainer or power supply that provides a steady and stable voltage. Do not use a battery charger, as charging voltage will often fluctuate when connected to the vehicle. This may interrupt programming. If a battery maintainer is not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply.
- Turn Off or disable systems that may put a load on the vehicle's battery. For example, interior lights, daytime running lights, HVAC, and radio.
- During the programming procedure, follow the Service Programming System (SPS) prompts for the correct ignition switch position.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to No.

### Programming an Existing or New Control Module

This control module does not require SPS programming or any setup procedures.

### Repair Instructions

Perform the Diagnostic Repair Verification after completing the repair: *Diagnostic Repair Verification 3-319*

For control module replacement, programming, and setup refer to: *Control Module References 3-4*

## B174W Frontview Camera - Windshield: Programming and Setup

**Note:**

- Always verify the module has the newest software available before replacing the module.
- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required install the *EL-49642* SPS Programming Support Tool to maintain system voltage. If not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply. DO NOT connect a battery charger.
- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- During the programming procedure, follow the SPS prompts for the correct ignition switch position.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to NO.

- Anytime the B174W Frontview Camera – Windshield is removed from its mount, the [Link target (target-id 283712-) not found] procedure must be performed.

### Following Replacement of Windshield

The B174W Frontview Camera – Windshield must be calibrated, refer to [Link target (target-id 283712-) not found] .

### Programing an Existing or New Control Module

To program a replacement or an existing B174W Frontview Camera – Windshield, perform the following procedure:

1. Access the Service Programming System (SPS) and follow the on-screen instructions.
2. On the SPS Supported Controllers screen, select B174W Frontview Camera – Windshield Programming and follow the on-screen instructions.
3. Clear DTCs

**Note:** After programming, a current DTC may be set in the B174W Frontview Camera – Windshield that is unable to be cleared. This is normal and an indicator that the B174W Frontview Camera – Windshield is in learn mode.

4. Following B174W Frontview Camera – Windshield replacement and/or reprogramming, the module must be calibrated. Refer to [Link target (target-id 283712-) not found] .

### Unsuccessful Programming Recovery

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. DO NOT turn the ignition OFF. Ensure that all B174W Frontview Camera – Windshield, DLC and programming tool connections are secure and the TIS terminal operating software is up to date.
2. Attempt to reprogram the B174W Frontview Camera – Windshield.
3. If the B174W Frontview Camera – Windshield can still not be programmed, turn the ignition OFF for at least one minute.
4. Turn the ignition ON and attempt to reprogram the B174W Frontview Camera – Windshield. The B174W Frontview Camera – Windshield should program.
   ⇒ If the B174W Frontview Camera – Windshield still cannot be programmed, replace the B174W Frontview Camera – Windshield.

### B218L Side Object Sensor Module - Left: Programming and Setup

**Note:**

- DO NOT program a control module unless directed to by a service procedure or a service bulletin. If the ECU is not properly configured with the correct calibration software, the ECU will not control all of the vehicle features properly.
- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or ECU damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. Install the *EL-49642* SPS Programming Support Tool to maintain system voltage. If not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply.
- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- During the programming procedure, follow the SPS prompts for the correct ignition switch position.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to NO.

### Replace and Program ECU or Reprogram ECU

To program a replacement or an existing ECU, perform the following procedure:

**Note:**

- Due to continuous improvements, the on screen selections may vary from instructions below.
- It is required to program both the B218L Side Object Sensor Module - Left and B218R Side Object Sensor Module - Right when a programming event is required.

1. Access the Service Programming System (SPS) and follow the on-screen instructions.
2. On the SPS Supported Controllers screen, select B218L Side Object Sensor Module - Left.
3. On the SPS Select Function / Sequence screen, select Programming
4. Clear DTCs.
5. On the SPS Supported Controllers screen, select B218R Side Object Sensor Module - Right.
6. On the SPS Select Function / Sequence screen, select Programming

7. Clear DTCs.

### Unsuccessful Programming Recovery

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. DO NOT turn the ignition OFF. Ensure that all ECU, DLC and programming tool connections are secure and the TIS terminal operating software is up to date.
2. Attempt to reprogram the ECU.
3. If the ECU can still not be programmed, turn the ignition OFF for at least one minute.
4. Turn the ignition ON and attempt to reprogram the ECU. The ECU should program.
   ⇒ If the ECU still cannot be programmed, replace the ECU.

### Repair Instructions

Perform the *Diagnostic Repair Verification 3-319* after completing the repair.

*Control Module References 3-4* for control module replacement, programming, and setup

### B218R Side Object Sensor Module - Right: Programming and Setup

**Note:**
- DO NOT program a control module unless directed to by a service procedure or a service bulletin. If the ECU is not properly configured with the correct calibration software, the ECU will not control all of the vehicle features properly.
- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or ECU damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. Install the *EL-49642* SPS Programming Support Tool to maintain system voltage. If not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply.
- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- During the programming procedure, follow the SPS prompts for the correct ignition switch position.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to NO.

### Replace and Program ECU or Reprogram ECU

To program a replacement or an existing ECU, perform the following procedure:

**Note:**
- Due to continuous improvements, the on screen selections may vary from instructions below.
- It is required to program both the B218L Side Object Sensor Module - Left and B218R Side Object Sensor Module - Right when a programming event is required.

1. Access the Service Programming System (SPS) and follow the on-screen instructions.
2. On the SPS Supported Controllers screen, select B218L Side Object Sensor Module - Left.
3. On the SPS Select Function / Sequence screen, select Programming
4. Clear DTCs.
5. On the SPS Supported Controllers screen, select B218R Side Object Sensor Module - Right.
6. On the SPS Select Function / Sequence screen, select Programming
7. Clear DTCs.

### Unsuccessful Programming Recovery

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. DO NOT turn the ignition OFF. Ensure that all ECU, DLC and programming tool connections are secure and the TIS terminal operating software is up to date.
2. Attempt to reprogram the ECU.
3. If the ECU can still not be programmed, turn the ignition OFF for at least one minute.
4. Turn the ignition ON and attempt to reprogram the ECU. The ECU should program.
   ⇒ If the ECU still cannot be programmed, replace the ECU.

### Repair Instructions

Perform the *Diagnostic Repair Verification 3-319* after completing the repair.

*Control Module References 3-4* for control module replacement, programming, and setup

### K4 Assist Step Control Module: Programming and Setup

**Note:**
- DO NOT program a control module unless directed to by a service procedure or a service bulletin. If the ECU is not properly configured with the correct

calibration software, the ECU will not control all of the vehicle features properly.

- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or ECU damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required, install a battery maintainer or power supply that provides a steady and stable voltage. Do not use a battery charger, as charging voltage will often fluctuate when connected to the vehicle. This may interrupt programing. If a battery maintainer is not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply.
- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), HVAC, , etc.
- During the programming procedure, follow the SPS prompts for the correct ignition switch position.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to NO.

### Assist Step Learn

If service was performed in which the assist steps were put into the service position, it is necessary to perform the Self Test learn. Refer to: [Link target (target-id 328895-) not found]

### Programming a New Control Module

1. Ignition/Vehicle OFF. Ensure that the key fob is inside the vehicle an not moved for the duration of the programming to prevent an inadvertent power mode change during programming. If the key fob is not inside the vehicle, the serial data authentication configuration procedure which runs automatically at the end of the programming step will fail even though the programming appears to run successfully. If the serial data authentication configuration procedure fails, DTC U1962 will set and / or the setup step will fail or be incomplete.
   1.1. Disconnect Wi-Fi dongle from MDI 2. Install EL-52100 (MDI 2) using wired USB Connection from MDI 2 to computer / laptop. Using the EL-49755 (MDI) will result in a programming failure.
   1.2. Install an approved battery maintainer or power supply that provides a steady and stable voltage to support the 12V system during SPS programming events.
2. Access the Service Programming System (SPS) and follow the on-screen instructions.
3. On the SPS Supported Controllers screen, under Select Controller, select K4 Assist Step Control Module.
4. On the SPS Supported Controllers screen, under Select Function / Sequence, select Programming and follow the on-screen instructions.

**Note:** If the Setup step fails and DTC U1962 sets in the K4 Assist Step Control Module, perform the Serial Data Authentication Configuration procedure and then repeat the Setup step again. Refer to: *Serial Data Authentication Configuration 3-49*

5. On the SPS Supported Controllers screen, under Select Function / Sequence, select Setup and follow the on-screen instructions.
6. At the end of programming, choose the “Clear DTCs” function on the SPS screen.

### Programming an Existing Control Module

To program an existing K4 Assist Step Control Module, perform the following procedure.

1. Ignition/Vehicle OFF. Ensure that the key fob is inside the vehicle an not moved for the duration of the programming to prevent an inadvertent power mode change during programming. If the key fob is not inside the vehicle, the serial data authentication configuration procedure which runs automatically at the end of the programming step will fail even though the programming appears to run successfully. If the serial data authentication configuration procedure fails, DTC U1962 will set and / or the setup step will fail or be incomplete.
   1.1. Disconnect Wi-Fi dongle from MDI 2. Install EL-52100 (MDI 2) using wired USB Connection from MDI 2 to computer / laptop. Using the EL-49755 (MDI) will result in a programming failure.
   1.2. Install an approved battery maintainer or power supply that provides a steady and stable voltage to support the 12V system during SPS programming events.
2. Access the Service Programming System (SPS) and follow the on-screen instructions.
3. On the SPS Supported Controllers screen, under Select Controller, select K4 Assist Step Control Module.
4. On the SPS Supported Controllers screen, under Select Function / Sequence, select Programming and follow the on-screen instructions.
5. At the end of programming, choose the “Clear DTCs” function on the SPS screen.

### Unsuccessful Programming Recovery

**Note:**

- Ensure the *EL-52100* (MDI 2) is used when programming the vehicle. Using the EL-47955 (MDI) will result in a programming failure.
- It may be necessary to use another *EL-52100* (MDI 2) and/or cables to verify proper operation to eliminate the possibility of faulty equipment.
- If Ethernet programming fails, ensure there is no fault in the Ethernet circuits between the X84 Data Link Connector and K56 Serial Data Gateway Module.

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. Exit Service Programming System (SPS) and disconnect all programming equipment from the vehicle.
2. Disconnect all battery voltage or ignition voltage sources from the K4 Assist Step Control Module. All voltage sources must be removed for a minimum of 10 min. This can be done several ways and should be completed by using the least intrusive way. This can vary depending on vehicle and control module location and can be done by one of the options listed below:
   - Removing all fuses supplying battery voltage and ignition voltage to the control module.
   - Disconnecting all harness connectors from the control module.
   - Performing a 12 V battery disconnect by disconnecting the battery negative cable. Refer to [Link target (target-id 37733-) not found] .
3. Reconnect all battery voltage and ignition voltage sources to the K4 Assist Step Control Module.
4. Close down the current session of Techline Connect and reopen a new session.
5. Verify the K4 Assist Step Control Module, X84 Data Link Connector, and programming tool connections are secure and the tool software is up to date.
6. Ignition/Vehicle OFF, ensure that the key fob is inside the vehicle and not moved for the duration of the programming to prevent an inadvertent power mode change during programming.
7. Access the Service Programming System (SPS) and follow the on-screen instructions for the K4 Assist Step Control Module.
8. Verify the K4 Assist Step Control Module can be programmed.

⇒ **If the control module cannot be reprogrammed**

8.1. Ignition OFF for one minute, ignition ON.

8.2. Ignition ON/Vehicle OFF.

8.3. Access SPS and follow the on-screen instructions for the K4 Assist Step Control Module.

**Note:** If programming is still not successful after the second programming attempt, check the following:

- For facilities using an internet firewall, ensure firewall settings are not blocking file downloads and/or require elevated rights.
- For United States and Canada GM dealers, the appropriate firewall settings can be found in the GM DEALER INFRASTRUCTURE & SECURITY GUIDELINES (DISG) section 2.d.vii.
- For optimal consistency during the reprogramming session, we recommend connecting the computer/ laptop to a hardwired Ethernet cable, as the large software file size may affect stability.

8.5. Verify the K4 Assist Step Control Module can be reprogrammed.

⇒ If the control module cannot be reprogrammed, replace the K4 Assist Step Control Module.

⇓ If the K4 Assist Step Control Module can be reprogrammed

8.6. At the end of programming, choose the “Clear DTCs” function on the SPS screen.

⇓ **If the control module can be reprogrammed**

9. At the end of programming, choose the “Clear DTCs” function on the SPS screen.

### K9 Body Control Module: Programming and Setup

**Note:**

- Always verify the module has the newest software available before replacing the module.
- Verify the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required, install a battery maintainer or power supply that provides a steady and stable voltage. Do not use a battery charger, as charging voltage will often fluctuate when connected to the vehicle. This may interrupt programming. If a battery maintainer is not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply.
- Turn OFF or disable systems that may put a load on the vehicle's battery such as interior lights,

exterior lights (including daytime running lights), HVAC, radio, etc.

- Programming must begin with the Ignition/Vehicle OFF. Programming will direct the appropriate control module(s) to change power mode as needed during the procedure, independent of the vehicle's power mode.
- To prevent programming failure due to unintended wireless drops, it is recommended that a wired MDI 2 connection be used when programming the control module.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to No.

## Reference Information

### Special Tools

- *EL-52545*
  Tire Pressure Monitor Sensor and RF Diagnostic Tool or *EL-50448*
  Tire Pressure Monitor Sensor Activation Tool
- *EL-52100* Multiple Diagnostic Interface 2 (MDI 2)

For equivalent regional tools, refer to *Special Tools 3-54*.

## Programming a New Control Module

To program a replacement K9 Body Control Module (BCM), perform the following procedure:

**Note:**

- Verify all control modules are connected and communicating before attempting to program the control module.
- Begin with the vehicle in vehicle OFF power mode. The Service Programming System will power mode the vehicle.

1. Ignition/Vehicle OFF, ensure that the key fob is inside the vehicle and not moved for the duration of the programming to prevent an inadvertent power mode change during programming. If the key fob is not inside the vehicle, the serial data authentication configuration procedure which runs automatically at the end of the programming step will fail even though the programming appears to run successfully. If the serial data authentication configuration procedure fails, DTC U1962 will set and/or the setup step will fail or be incomplete.
2. Disconnect Wi-Fi dongle if it is currently connected to *EL-52100* Multiple Diagnostic Interface 2 (MDI 2). Install EL-52100 (MDI 2) using wired USB Connection from MDI 2 to computer and verify it is working properly. Using the EL-47955 (MDI) will result in a programming failure.
3. Install an approved battery maintainer or power supply that provides a steady and stable voltage to support the 12V system during SPS programming events.
4. Access the Service Programming System (SPS) and follow the on-screen instructions.

**Note:** If unable to power mode vehicle for Brake Pedal Position Learn procedure during programming process, the driver door must be opened/closed continuously until the vehicle enters power mode.

5. On the SPS Supported Controllers screen, select K9 Body Control Module - Programming and follow the on-screen instructions.
6. Place the keyless entry transmitter in the programming pocket prior to proceeding with the next step. All additional transmitters must be at least 3 m (9.8 ft) away from the vehicle. Refer to the Remote Keyless Entry (RKE) System Operation document in the owner manual for the exact pocket location. This document is located in the Keys, Doors, and Windows > Keys and Locks category.

**Note:**

- To prevent errors or immobilizer learn failure, the vehicle must be in Park (for automatic transmission) or Neutral with park brake applied (for manual transmission).
- If DTC B1987 set immediately after programming a replacement K9 Body Control Module, the Immobilizer Learn procedure was not properly completed. The Immobilizer Learn procedure needs to be performed again.
- The Immobilizer Learn process may take between 10-12 min and progress will appear to have stopped during this process. This is a normal security timer response and a restart should not be performed.

7. On the SPS Supported Controllers screen, select Z1 Immobilizer Learn. On the next screen, select Body Control Module IMMO Learn with Existing Transponder or Remote Key and follow the on-screen instructions. When Immobilizer Learn is complete, press the Unlock button on the keyless entry transmitter to allow the keyless entry transmitter to exit the Immobilizer Learn mode.

**Note:**

- When performing the Tire Pressure Monitor Sensor Learn during K9 Body Control Module setup, the *EL-52545*
  Tire Pressure Monitor Sensor and RF Diagnostic Tool must be used to activate each tire pressure sensor.

- If the Setup step fails and DTC U1962 is set in the K9 Body Control Module, perform the Serial Data Authentication Configuration procedure and then repeat the Setup step again. Refer to: *Serial Data Authentication Configuration 3-49*.

8. On the SPS Supported Controllers screen, select K9 Body Control Module - Setup and follow the on-screen instructions.
9. Check the driver information center display for additional messages regarding further calibration instructions. If there are no additional driver information center instructions present, programming is complete.
10. Clear DTCs.

### Programming an Existing Control Module

To program an existing K9 Body Control Module, perform the following procedure:

**Note:**

- Verify all control modules are connected and communicating before attempting to program the control module.
- Begin with the vehicle in vehicle OFF power mode. The Service Programming System will power mode the vehicle.

1. Ignition/Vehicle OFF, ensure that the key fob is inside the vehicle and not moved for the duration of the programming to prevent an inadvertent power mode change during programming.
2. Disconnect Wi-Fi dongle if it is currently connected to *EL-52100* Multiple Diagnostic Interface 2 (MDI 2). Install EL-52100 (MDI 2) using wired USB Connection from MDI 2 to computer and verify it is working properly. Using the EL-47955 (MDI) will result in a programming failure.
3. Install an approved battery maintainer or power supply that provides a steady and stable voltage to support the 12V system during SPS programming events.
4. Access the Service Programming System (SPS) and follow the on-screen instructions.
5. On the SPS Supported Controllers screen, select K9 Body Control Module - Programming and follow the on-screen instructions.
6. Check the driver information center display for additional messages regarding further calibration instructions. If there are no additional driver information center instructions present, programming is complete.
7. Clear DTCs.

### Unsuccessful Programming Recovery

**Note:**

- Ensure the *EL-52100* (MDI 2) is used when programming the vehicle. Using the EL-47955 (MDI) will result in a programming failure.
- It may be necessary to use another *EL-52100* (MDI 2) and/or cables to verify proper operation to eliminate the possibility of faulty equipment.
- If Ethernet programming fails, ensure there is no fault in the Ethernet circuits between the X84 Data Link Connector and K56 Serial Data Gateway Module.

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. Exit Service Programming System (SPS) and disconnect all programming equipment from the vehicle.
2. Disconnect all battery voltage or ignition voltage sources from the K9 Body Control Module.
   All voltage sources must be removed for a minimum of 10 min. This can be done several ways and should be completed by using the least intrusive way. This can vary depending on vehicle and control module location and can be done by one of the options listed below:
   - Removing all fuses supplying battery voltage and ignition voltage to the control module.
   - Disconnecting all harness connectors from the control module.
   - Performing a 12 V battery disconnect by disconnecting the battery negative cable. Refer to [Link target (target-id 37733-) not found] .
3. Reconnect all battery voltage and ignition voltage sources to the K9 Body Control Module.
4. Close down the current session of Techline Connect and reopen a new session.
5. Verify the K9 Body Control Module, X84 Data Link Connector, and programming tool connections are secure and the tool software is up to date.
6. Ignition/Vehicle OFF, ensure that the key fob is inside the vehicle and not moved for the duration of the programming to prevent an inadvertent power mode change during programming.
7. Access the Service Programming System (SPS) and follow the on-screen instructions for the K9 Body Control Module.
8. Verify the K9 Body Control Module can be programmed.

⇒ **If the K9 Body Control Module can not be programmed**

   8.1. Ignition ON/Vehicle in Service Mode for 1 min.

   8.2. Ignition/Vehicle OFF.

8.3. Access SPS and follow the on-screen instructions for the K9 Body Control Module.

**Note:** If programming is still not successful after the second programming attempt, check the following:

- For facilities using an internet firewall, ensure firewall settings are not blocking file downloads and/or require elevated rights.
- For United States and Canada GM dealers, the appropriate firewall settings can be found in the GM DEALER INFRASTRUCTURE & SECURITY GUIDELINES (DISG) section 2.d.vii.
- For optimal consistency during the reprogramming session, we recommend connecting the computer/laptop to a hardwired Ethernet cable, as the large software file size may affect stability.

8.4. Verify the K9 Body Control Module can be programmed.

⇒ If the K9 Body Control Module can not be programmed, replace the K9 Body Control Module.

⇓ If the K9 Body Control Module can be programmed

8.5. Clear DTCs.

⇓ **If the K9 Body Control Module can be programmed**

9. Clear DTCs.

### Repair Instructions

Perform the Diagnostic Repair Verification after completing the repair: *Diagnostic Repair Verification 3-319*.

For control module replacement, programming, and setup, refer to: *Control Module References 3-4*.

### K17 Electronic Brake Control Module: Programming and Setup

**Note:**

- Always verify the module has the newest software available before replacing the module.
- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required, install a battery maintainer or power supply that provides a steady and stable voltage. Do not use a battery charger, as charging voltage will often fluctuate when connected to the vehicle. This may interrupt programing. If a battery maintainer is not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply.
- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- During the programming procedure, follow the SPS prompts for the correct ignition switch position.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/Maintenance (I/M) system status indicators to NO.

### Replace and Program Control Module

To program a replacement or an existing control module, perform the following procedure:

1. Access the Service Programming System (SPS) and follow the on-screen instructions.
2. On the SPS Supported Controllers screen, select K17 Electronic Brake Control Module - Prepare Control Module for Removal and follow the on-screen instructions.
3. On the SPS Supported Controllers screen, select K17 Electronic Brake Control Module - Programming and follow the on-screen instructions.
4. On the SPS Supported Controllers screen, select K17 Electronic Brake Control Module - Configuration and Setup while following the on-screen instructions.
5. Clear DTCs

### Reprogram Control Module

To reprogram an existing control module, perform the following procedure:

1. Access the Service Programming System (SPS) and follow the on-screen instructions.
2. On the SPS Supported Controllers screen, select K17 Electronic Brake Control Module - Programming and follow the on-screen instructions.
3. Clear DTCs

### Unsuccessful Programming Recovery

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. Ignition ON. Ensure the control module, DLC and programming tool connections are secure and the SPS software is up to date.
2. Verify the control module can be reprogrammed.

⇒ **If the control module cannot be reprogrammed**

2.1. Ignition OFF for one minute, ignition ON.

2.2. Verify the control module can be reprogrammed.

⇒ If the control module cannot be reprogrammed, replace the control module.

⇓ If the control module can be reprogrammed.

2.3. All OK.

⇓ **If the control module can be reprogrammed**

3. All OK.

## Repair Instructions

Perform the *Diagnostic Repair Verification 3-319* after completing the repair.

*Control Module References 3-4* for Control Module replacement, programming and setup

## K20 Engine Control Module: Programming and Setup

**Note:**

- Always verify the module has the newest software available before replacing the module.
- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector (DLC). If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required, install a battery maintainer or power supply that provides a steady and stable voltage. Do not use a battery charger, as charging voltage will often fluctuate when connected to the vehicle. This may interrupt programing. If a battery maintainer is not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply.
- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- During the programming procedure, follow the SPS prompts for the correct ignition switch position.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to Incomplete.
- Note the engine oil life remaining percentage.
- If over 14k GVW, program the engine serial number with the scan tool.
- If unable to complete programming or have questions contact Techlline 1–800–828–6860

## Replace and Program Control Module

**Note:**

- The Prepare Control Module for Removal function can only be performed when communication with the old control module is still possible.
- Instances may occur where data is not transferred during the Prepare Control Module for Removal Function

1. Ignition » On / Vehicle » In Service Mode
2. Perform the scan tool function: Create Report
   - Air Cleaner Life Remaining— If equipped
   - Engine Oil Life Remaining
   - Fuel Filter Life Remaining— If applicable
   - Fuel Injector Flow Characteristic Identification — If applicable
3. Access the Service Programming System and follow the on-screen instructions for the control module: K20 Engine Control Module
4. Select— Prepare Control Module for Removal— If applicable
5. Ignition/Vehicle & All vehicle systems » Off
6. Replace the component: K20 Engine Control Module
7. Ignition » On / Vehicle » In Service Mode

**Note:**

- If both controller options below are listed, select K20 Engine and K71 Transmission Control Modules.
- Refer to: *Control Module References 3-4*— K71 Control Module Programing
- If the programming is not successful Refer to: *Control Module References 3-4*— K56 Control Module Programing

8. Perform the SPS function:
   - K20 Engine and K71 Transmission Control Modules — Follow the on-screen instructions.
   - K20 Engine Control Module— Follow the on-screen instructions.
9. Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to No.
10. Perform the SPS function: Immobilizer Learn— If equipped .

    Refer to: *Immobilizer System Component Programming 9-18*

**Note:** If both controller options below are listed, select K20 Engine Control Module.

11. Perform the SPS function: K20 Engine Control ModuleSetup— Configuration

    Perform any adjustment, programming or setup procedures that are required when a component or module is removed or replaced. Follow the on-screen instructions.

12. Perform the scan tool learn/reset function:
    - Air Cleaner Monitor Setup— If equipped
    - Barometric Pressure Sensor Reset— If equipped
    - Engine Oil Life Remaining
    - Fuel Filter Life Remaining— If applicable
    - Fuel Pressure Regulator Learn— If applicable
    - Fuel Rail Pressure Relief Valve Learned Values Reset— If applicable
    - Fuel Injector Flow Characteristic Identification — If equipped
    - Intake System Learned Values Reset— If equipped
    - Throttle Body Idle Air Flow Compensation Reset
    - Turbocharger Wastegate Learn— If equipped
    - Turbocharger/Supercharger Boost Control Initial Position Learn— If applicable
13. Perform the scan tool function: Clear DTCs
14. Ignition/Vehicle & All vehicle systems » Off
15. Ignition » On / Vehicle » In Service Mode
16. Select: K71 Transmission Control Module
17. Perform the scan tool configuration/reset function: Transmission Service Fast Learn— If available
18. Perform the scan tool function: Clear DTCs
19. Ignition/Vehicle & All vehicle systems » Off
20. Operate the vehicle within the conditions of the customer's concern.

### Reprogram Control Module

1. Access the Service Programming System and follow the on-screen instructions for the control module: K20 Engine Control Module
2. Ignition » On / Vehicle » In Service Mode

**Note:**
- If both controller options below are listed, select K20 Engine and K71 Transmission Control Modules.
- Refer to: *Control Module References 3-4*— K71 Control Module Programing

3. Perform the SPS function:
    - K20 Engine and K71 Transmission Control Modules — Follow the on-screen instructions.
    - K20 Engine Control Module— Follow the on-screen instructions.
4. Perform the scan tool function: Clear DTCs
5. Perform the scan tool learn/reset function:
    - Barometric Pressure Sensor Reset— If equipped
    - Fuel Pressure Regulator Learn— If equipped
    - Fuel Rail Pressure Relief Valve Learned Values Reset— If equipped
    - Intake System Learned Values Reset— If equipped
    - Throttle Body Idle Air Flow Compensation Reset
    - Turbocharger Wastegate Learn— If equipped
    - Turbocharger/Supercharger Boost Control Initial Position Learn— If equipped
6. Perform the scan tool function: Clear DTCs
7. Ignition/Vehicle & All vehicle systems » Off
8. Ignition » On / Vehicle » In Service Mode
9. Select: K71 Transmission Control Module
10. Perform the scan tool configuration/reset function: Transmission Service Fast Learn— If available
11. Perform the scan tool function: Clear DTCs
12. Ignition/Vehicle & All vehicle systems » Off
13. Operate the vehicle within the conditions of the customer's concern.

### Unsuccessful Programming Recovery

If programming a control module is not successful, perform the following procedure:

1. Verify the control module, data link connector and programming tool connections are secure and the tool software is up to date.
2. Ignition » On / Vehicle » In Service Mode
3. Access the Service Programming System and follow the on-screen instructions for the control module: K20 Engine Control Module

**Note:** If both controller options below are listed, select K20 Engine and K71 Transmission Control Modules.

4. Perform the SPS function:
    - K20 Engine and K71 Transmission Control Modules — Follow the on-screen instructions.
    - K20 Engine Control Module— Follow the on-screen instructions.
5. Perform the scan tool function: Clear DTCs
6. Ignition/Vehicle » Off — For greater than 1 min
7. Ignition » On / Vehicle » In Service Mode
8. Verify the control module programming is successful.

⇒ **If the programming is not successful**

8.1. Ignition/Vehicle » Off — For greater than 1 min

8.2. Ignition » On / Vehicle » In Service Mode

**Note:** If both controller options below are listed, select K20 Engine and K71 Transmission Control Modules.

8.3. Perform the SPS function:

- K20 Engine and K71 Transmission Control Modules — Follow the on-screen instructions.
- K20 Engine Control Module— Follow the on-screen instructions.

⇒ If the programming is not successful Replace the appropriate component: K20 Engine Control Module orK71 Transmission Control Module

⇓ If the programming is successful

8.4. All OK.

⇓ **If the programming is successful**

9. All OK.

## Repair Instructions

Perform the *Diagnostic Repair Verification 3-319* after completing the repair.

*Control Module References 3-4* for control module replacement, programming and setup.

## K29FV Front Seat Heater Vent Control Module: Programming and Setup

This device does not require programming or setup.

## K36 Restraints Control Module: Programming and Setup

### Diagnostic Instructions

- Perform the *Diagnostic System Check - Vehicle 3-255* prior to using this diagnostic procedure.
- Review the description of *Strategy Based Diagnosis 3-245*

**Note:**

- Always verify the module has the newest software available before replacing the module.
- Verify the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required, install a battery maintainer or power supply that provides a steady and stable voltage. Do not use a battery charger, as charging voltage will often fluctuate when connected to the vehicle. This may interrupt programming. If a battery maintainer is not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply.
- Turn OFF or disable systems that may put a load on the vehicle's battery such as interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- Programming must begin with the Ignition/Vehicle OFF. Programming will direct the appropriate control module(s) to change power mode as needed during the procedure, independent of the vehicle’s power mode.
- To prevent programming failure due to unintended wireless drops, it is recommended that a wired MDI 2 connection be used when programming the control module.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to No.

### Reference Information

**Special Tools**
*EL-52100* Multiple Diagnostic Interface 2 (MDI 2)

### Programming an Existing or New Control Module

To program an existing or new control module, perform the following procedure:

**Note:**

- Ensure the *EL-52100* (MDI 2) is used when programming the vehicle and verify it is working properly. Using the EL-47955 (MDI) will result in a programming failure.
- Verify all control modules are connected and communicating before attempting to program the K36 Restraints Control Module.
- Verify the key fob is inside the vehicle. If the key fob is not inside the vehicle, the serial data authentication configuration procedure which runs automatically at the end of the programming step will fail even though the programming appears to run successfully. If the serial data authentication configuration procedure fails, DTC U1962 will set and/or the setup step will fail or be incomplete.

1. Place the vehicle on level ground (the vehicle must be level or the IMU setup may fail)
2. Ignition/Vehicle OFF, ensure that the key fob is inside the vehicle and not moved for the duration of the programming to prevent an inadvertent power mode change during programming.
3. Access the Service Programming System (SPS) and follow the on-screen instructions for the K36 Restraints Control Module.
4. Perform the SPS function: **Programming** and follow the on-screen instructions.
5. Perform the SPS function: **Setup** and follow the on-screen instructions.

6. Clear DTCs.

### Unsuccessful Programming Recovery

**Note:**
- Ensure the *EL-52100* (MDI 2) is used when programming the vehicle. Using the EL-47955 (MDI) will result in a programming failure.
- It may be necessary to use another *EL-52100* (MDI 2) and/or cables to verify proper operation to eliminate the possibility of faulty equipment.
- If Ethernet programming fails, ensure there is no fault in the Ethernet circuits between the X84 Data Link Connector and K56 Serial Data Gateway Module. Refer to [Link target (target-id 300812-) not found] to diagnose these Ethernet circuits.

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. Exit Service Programming System (SPS) and disconnect all programming equipment from the vehicle.
2. Disconnect all battery voltage or ignition voltage sources from the control module.

**Note:** All voltage sources must be removed for a minimum of 10 min. This can be done several ways and should be completed by using the least intrusive way. This can vary depending on vehicle and control module location and can be done by one of the options listed below:
- Removing all fuses supplying battery voltage and ignition voltage to the control module.
- Disconnecting all harness connectors from the control module.
- Performing a 12 V battery disconnect by disconnecting the battery negative cable. Refer to [Link target (target-id 37733-) not found] .

3. Reconnect all battery voltage and ignition voltage sources to the control module.
4. Close down the current session of Techline Connect and reopen a new session.
5. Verify the control module, data link connector, and programming tool connections are secure and the tool software is up to date.
6. Ignition/Vehicle OFF, ensure that the key fob is inside the vehicle and not moved for the duration of the programming to prevent an inadvertent power mode change during programming.
7. Access the Service Programming System (SPS) and follow the on-screen instructions for the control module.
8. Verify the control module can be programmed.

⇒ **If the control module can not be programmed**

8.1. Ignition ON/Vehicle in Service Mode for 1 min.

8.2. Ignition/Vehicle OFF.

8.3. Access SPS and follow the on-screen instructions for the control module.

**Note:** If programming is still not successful after the second programming attempt, check the following:
- For facilities using an internet firewall, ensure firewall settings are not blocking file downloads and/or require elevated rights.
- For United States and Canada GM dealers, the appropriate firewall settings can be found in the GM DEALER INFRASTRUCTURE & SECURITY GUIDELINES (DISG) section 2.d.vii.

8.4. Verify the control module can be programmed.

⇒ If the control module can not be programmed, replace the control module.

⇓ If the control module can be programmed

8.5. Clear DTCs.

⇓ **If the control module can be programmed**

9. Clear DTCs.

### Repair Instructions

Perform the *Diagnostic Repair Verification 3-319* after completing the repair.

*Control Module References 3-4* for control module replacement, programming, and setup.

### K38A Chassis Control Module - Auxiliary: Programming and Setup

**Note:**
- Always verify the module has the newest software available before replacing the module.
- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required, install a battery maintainer or power supply that provides a steady and stable voltage. Do not use a battery charger, as charging voltage will often fluctuate when connected to the vehicle. This may interrupt programming. If a battery maintainer is not available, connect a fully charged 12 V jumper or booster pack disconnected form the AC voltage supply.

- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- During the programming procedure, follow the SPS prompts for the correct ignition switch position.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to NO.

### Replace and Program Control Module or Reprogram Control Module

To program a replacement or an existing control module, perform the following procedure:

1. Access the Service Programming System (SPS) and follow the on-screen instructions.
2. On the SPS Supported Controllers screen, select K38A Chassis Control Module-Auxiliary - Programming and follow the on-screen instructions.
3. Clear DTCs.
4. With a scan tool, perform the Suspension Sensor Trim Height Calibration, if applicable.

### Unsuccessful Programming Recovery

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. Ignition ON. Ensure the control module, DLC and programming tool connections are secure and the SPS software is up to date.
2. Verify the control module can be reprogrammed.

⇒ **If the control module cannot be reprogrammed**

2.1. Ignition OFF for one minute, ignition ON.

2.2. Verify the control module can be reprogrammed.

⇒ If the control module cannot be reprogrammed, replace the control module.

⇓ If the control module can be reprogrammed.

2.3. All OK.

⇓ **If the control module can be reprogrammed**

3. All OK.

### Repair Instructions

Perform the *Diagnostic Repair Verification 3-319* after completing the repair.

*Control Module References 3-4* for control module replacement, programming and setup.

### K40D Driver Seat Adjuster Memory Module: Programming and Setup

**Note:**

- Always verify the module has the newest software available before replacing the module.
- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required, install a battery maintainer or power supply that provides a steady and stable voltage. Do not use a battery charger, as charging voltage will often fluctuate when connected to the vehicle. This may interrupt programing. If a battery maintainer is not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply.
- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- During the programming procedure, follow the SPS prompts for the correct ignition switch position.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to NO.

### Replace and Program Control Module or Reprogram Control Module

To program a replacement or an existing control module, perform the following procedure:

1. Access the Service Programming System (SPS) and follow the on-screen instructions.
2. On the SPS Supported Controllers screen, select K40D Driver Seat Adjuster Memory Module - Programming and follow the on-screen instructions.
3. Clear DTCs.
4. Move the seat to a central, middle range position, then perform the memory store operation for memory “1”, “2”, and “Exit” or “3” if equipped. Refer to the Owner Manual for storing memory seat positions.

### Unsuccessful Programming Recovery

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. Ensure the control module, DLC and programming tool connections are secure and the SPS software is up to date.
2. Verify the control module can be reprogrammed.

⇒ **If the control module cannot be reprogrammed**

2.1. Disconnect the battery.

2.2. Wait 1 minute, reconnect the battery.

2.3. Verify the control module can be reprogrammed.

⇒ If the control module cannot be reprogrammed, replace the control module.

⇓ If the control module can be reprogrammed.

2.4. All OK.

⇓ **If the control module can be reprogrammed**

3. All OK.

### Repair Instructions

Perform the *Diagnostic Repair Verification 3-319* after completing the repair.

*Control Module References 3-4* for Control Module replacement, programming and setup

### K40P Passenger Seat Adjuster Memory Module: Programming and Setup

**Note:**

- Always verify the module has the newest software available before replacing the module.
- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required, install a battery maintainer or power supply that provides a steady and stable voltage. Do not use a battery charger, as charging voltage will often fluctuate when connected to the vehicle. This may interrupt programing. If a battery maintainer is not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply.
- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- During the programming procedure, follow the SPS prompts for the correct ignition switch position.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to NO.

### Replace and Program Control Module or Reprogram Control Module

To program a replacement or an existing control module, perform the following procedure:

1. Access the Service Programming System (SPS) and follow the on-screen instructions.
2. On the SPS Supported Controllers screen, select K40P Passenger Seat Adjuster Memory Module - Programming and follow the on-screen instructions.
3. Clear DTCs.
4. Move the seat to a central, middle range position, then perform the memory store operation for memory “1”, “2”, and “Exit” or “3” if equipped. Refer to the Owner Manual for storing memory seat positions.

### Unsuccessful Programming Recovery

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. Ensure the control module, DLC and programming tool connections are secure and the SPS software is up to date.
2. Verify the control module can be reprogrammed.

⇒ **If the control module cannot be reprogrammed**

2.1. Disconnect the battery.

2.2. Wait 1 minute, reconnect the battery.

2.3. Verify the control module can be reprogrammed.

⇒ If the control module cannot be reprogrammed, replace the control module.

⇓ If the control module can be reprogrammed.

2.4. All OK.

⇓ **If the control module can be reprogrammed**

3. All OK.

### Repair Instructions

Perform the *Diagnostic Repair Verification 3-319* after completing the repair.

*Control Module References 3-4* for Control Module replacement, programming and setup

### K43 Power Steering Control Module: Programming and Setup

**Note:**

- Always verify the module has the newest software available before replacing the module.
- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption

during programming, programming failure or control module damage may occur.

- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required, install a battery maintainer or power supply that provides a steady and stable voltage. Do not use a battery charger, as charging voltage will often fluctuate when connected to the vehicle. This may interrupt programing. If a battery maintainer is not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply.
- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- During the programming procedure, follow the SPS prompts for the correct ignition switch position.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to NO.

### Replace and Program Control Module

To program a replacement power steering control module, perform the following procedure:

1. Ignition OFF.
2. Access the Service Programming System (SPS) and follow the on-screen instructions.
3. On the SPS Supported Controllers screen, select K43 Power Steering Control Module - Programming and follow the on-screen instructions.
4. Clear DTCs.
5. On the SPS Supported Controllers screen, select K43 Power Steering Control Module - Setup and follow the on-screen instructions.
6. Clear DTCs.

### Reprogram Control Module

To program an existing power steering control module, perform the following procedure:

1. Ignition OFF.
2. Access the Service Programming System (SPS) and follow the on-screen instructions.
3. On the SPS Supported Controllers screen, select K43 Power Steering Control Module - Programming and follow the on-screen instructions.
4. Clear DTCs.

### Unsuccessful Programming Recovery

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. Ignition OFF. Ensure the control module, DLC and programming tool connections are secure and the SPS software is up to date.
2. Verify the control module can be reprogrammed.

⇒ **If the control module cannot be reprogrammed**

2.1. Ignition OFF for one minute, ignition ON.

2.2. Verify the control module can be reprogrammed.

⇒ If the control module cannot be reprogrammed, replace the control module.

⇓ If the control module can be reprogrammed.

2.3. All OK.

⇓ **If the control module can be reprogrammed**

3. All OK.

### Repair Instructions

Perform the *Diagnostic Repair Verification 3-319* after completing the repair.

*Control Module References 3-4* for control module replacement, programming and setup.

### K44 Power Take-off Control Module: Programming and Setup

### Copy and Restore

**Copy:**
When replacing the Power Take-Off module (PTOM) prior to disconnecting any electrical connections it is recommended that the Copy portion of the PTOM Copy and Restore procedure is run using the GDS2 Scan Tool. This application is available under Module Diagnostics>(K44) Power Take-Off Module>Configuration/Reset Functions>PTO Operation Mode>Copy and Restore. Follow the steps for copying the PTO settings. Once the Copy function is complete the PTOM can now be disconnected and replaced.

**Restore:**
Once the PTOM has been replaced and all electrical connections have been made, the Restore portion of the procedure can be performed. This portion restores any settings that may have been set in the removed PTO module and may have been unique for the vehicle's usage and/or application.

**Note:**
If communications by GDS2 with the to be replaced PTO module cannot be established, the settings, beyond the factory defaults, will need to be reconfigured to the customers requirements for proper PTO operation. This may be accomplished as noted in the Module Setup section below.

## Programming

The power take-off module (PTOM) requires no programming or setup. When the PTOM is replaced, all programmable parameters will be defaulted back to factory settings.

## Module Setup

The power take-off module requires that several parameters be setup according to customer requirements. Refer to the table below for available parameters and recommended setting. Refer to the GM Upfitter Integration website, <www.gmupfitter.com>, for the latest Power Take Off (PTO) Operating Description and Application Guide bulletin, which has extensive information about the power take-off system.

**Note:** When programming the PTO control module be sure to verify the ECM PTO options (stationary, variable or mobile) are synchronized with the PTOM. Example, if the PTOM is set to stationary mode then the ECM must also be set to stationary mode. If the two modules are not synchronized no PTO idle up will occur. The critical parameters are listed below:

- Remote engine shutdown
- Maximum PTO engine speed

**Power Take-Off Module Programmable Parameters**

| Parameter | Available In Mode | | | Factory Default Setting |
|---|---|---|---|---|
| | Stationary Preset | Stationary Variable | Mobile | |
| PTO Mode | X | X | X | Preset |
| PTO In-Cab Control | Y | Y | Y | Enabled |
| PTO Remote Control | Y | Y | N | Disabled |
| Type Of (Exterior) Set Switch Operation | Y | Y | N | Momentary |
| Press “ON” Then Go To Preset 1 Speed | Y | N | N | Disabled |
| PTO Standby RPM | Y | Y | Y | 850 RPM |
| PTO Preset 1 Speed | Y | Y | Y | 1250 RPM |
| PTO Preset 2 Speed | Y | Y | Y | 1700 RPM |
| Maximum PTO Operating Speed | Y | Y | Y | 2100 RPM |
| Tap Step | N | Y | Y | 100 RPM |
| Ramp Rate | Y | Y | Y | 200 RPM/Sec |
| Maximum Vehicle Speed | N | N | Y | 129 KPH (80 MPH) |
| Minimum Remote Accelerator Voltage | Y | Y | N | 0.25 V |
| Maximum Remote Accelerator Voltage | Y | Y | N | 4.75 V |
| Action When Remote Set Switch Transitions To Low Voltage (<1.66 V) | Y | N | N | Go to Set Speed 1 |
| Remote Set Switch Transition To Open State (Between >1.66 V And <3.33 V) | Y | N | N | Go to Standby Speed |
| Remote Set Switch Transition To High Voltage (>3.33 V) | Y | N | N | Go to Set Speed 2 |
| Remote Engine Start | Y | Y | N | Disabled |
| Remote Engine Shutdown | Y | Y | N | Disabled |
| Load Feedback | Y | Y | Y | Disabled |

| Parameter | Available In Mode | | | Factory Default Setting |
|---|---|---|---|---|
| | Stationary Preset | Stationary Variable | Mobile | |
| Engage Relay | Y | Y | Y | Disabled |
| Keep Relay Engaged During Braking | N | N | Y | Disabled |
| Action After Brake Is Released | N | N | Y | RETURN TO BASE IDLE RPM |
| Auto Engine Shutdown Timer | Y | Y | N | Disabled |
| Engine Shutdown Due To Critical Engine Condition | Y | Y | N | Disabled |
| Engine Shutdown Warning | Y | Y | N | Disabled |
| Set Low Fuel Level For Engine | Y | Y | N | Disabled |
| Maximum PTO Engine Speed | Y | Y | Y | 1800 RPM |
| Maximum PTO Engage Speed | Y | Y | Y | 1500 RPM |

## Recommended Settings For PTOM Parameters

| Programmable Parameter | Preset | Variable | Mobile | Range | Notes |
|---|---|---|---|---|---|
| PTO Mode | Default | Available | Available | — | — |
| PTO In-Cab Control | Enable/Disable | Enable/Disable | Enable/Disable | — | — |
| PTO Remote Control | Enable/Disable | Enable/Disable | Enable/Disable | — | — |
| Type Of (Exterior) Set Switch Operation | Momentary/ Latching | Momentary/ Latching | Momentary/ Latching | — | — |
| Press “ON” Then Go to Preset 1 Speed | Disabled | Enable/Disable | N/A | N/A | In cab ON switch. Remote enable after arming. |
| PTO Standby RPM | Within Range | Within Range | Within Range | Base Idle-3100 RPM | Base idle overrides if higher. |
| PTO Preset 1 Speed | Within Range | RPM Capture Or Tap Down | RPM Capture Or Tap Down | Above Standby–3100 RPM | Set (-) switch internal.<br>Set switch external-disabled in mobile.<br>Both can be enabled simultane-ously. |
| PTO Preset 2 Speed | Within Range | Resume Or Tap Up | Resume Or Tap Up | Above Standby–3100 RPM | Set (+) switch internal.<br>Set switch external-disabled in mobile.<br>Both can be enabled simultane-ously. |
| Maximum PTO Operating Speed | Within Range | Within Range | Within Range | Base Idle-3100 RPM | — |
| Tap Step | Within Range | Within Range | Within Range | 4–500 RPM | — |

| Programmable Parameter | Preset | Variable | Mobile | Range | Notes |
|---|---|---|---|---|---|
| Ramp Rate | Within Range | Within Range | Within Range | 4–1000 RPM/ Second | Setting applies to remote switch inputs and remote throttle (Potentiometer) inputs. |
| Maximum Vehicle Speed | N/A | N/A | Within Range | 30 KPH (19 MPH) to 129 KPH (80 MPH) | Applies to mobile only. |
| Minimum Remote Accelerator Voltage | N/A | Within Range | N/A | 0–2.5 V | Remote throttle must be enabled for parameter to apply. |
| Maximum Remote Accelerator Voltage | N/A | Within Range | N/A | 2.5–5.0 V | Remote throttle must be enabled for parameter to apply. |
| Action When Remote Set Switch Transitions To Low Voltage (<1.66 V) | See Range | N/A | N/A | Go To Standby, Set 1 Or Set 2 | Defines PTO system action when remote set switch input goes low. |
| Remote Set Switch Transition To Open State (Between >1.66 V And <3.33 V) | See Range | N/A | N/A | Go To Standby, Set 1 Or Set 2 | Defines PTO system action when remote set switch input goes to open state. |
| Remote Set Switch Transition To High Voltage (>3.33 V) | See Range | N/A | N/A | Go To Standby, Set 1 Or Set 2 | Defines PTO system action when remote set switch input goes to +5 V reference. |
| Remote Engine Start | Enable/Disable | Enable/Disable | N/A | — | Requires remote switches. |
| Remote Engine Shutdown | Enable/Disable | Enable/Disable | N/A | — | Requires remote Switches. |
| Load Feedback | Enable/Disable | Enable/Disable | Enable/Disable | — | Requires remote wiring. |
| Engage Relay | Enable/Disable | Enable/Disable | Enable/Disable | — | Requires remote relay. |
| Keep Relay Engaged During Braking | N/A | N/A | Enable/Disable | — | — |
| Action After Brake Is Released | N/A | N/A | Return to base idle RPM — Return to standby RPM | — | — |
| Auto Engine Shutdown Timer | Enable/Disable | Enable/Disable | N/A | 4 minutes — 7 hours | — |
| Engine Shutdown Due To Critical Engine Condition | Enable/Disable | Enable/Disable | N/A | — | Oil Pressure, Hot Engine, Hot Transmission, Low Oil, Low Fuel, Diesel Particulate Filter Regeneration Required |

| Programmable Parameter | Preset | Variable | Mobile | Range | Notes |
|---|---|---|---|---|---|
| Engine Shutdown Warning | Enable/Disable | Enable/Disable | N/A | 7 minutes | If PTO operation is continued when critical engine conditions are present, a horn chirp warning will occur after 2 to 5 minutes. The engine will be shutdown 2 minutes after the horn warning. |
| Set Low Fuel Level For Engine | N/A | Enable/Disable | N/A | 15–25 % Fuel Level | — |
| Maximum PTO Engine Speed | Within Range | Within Range | Within Range | 950–3100 RPM | — |
| Maximum PTO Engage Speed | — | — | — | Base Idle-1800 RPM | — |

## K56 Serial Data Gateway Module: Programming and Setup

**Note:**

- Always verify the module has the newest software available before replacing the module.
- Verify the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required, install a battery maintainer or power supply that provides a steady and stable voltage. Do not use a battery charger, as charging voltage will often fluctuate when connected to the vehicle. This may interrupt programming. If a battery maintainer is not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply.
- Turn OFF or disable systems that may put a load on the vehicle's battery such as interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- Programming must begin with the Ignition/Vehicle OFF. Programming will direct the appropriate control module(s) to change power mode as needed during the procedure, independent of the vehicle’s power mode.
- To prevent programming failure due to unintended wireless drops, it is recommended that a wired MDI 2 connection be used when programming the control module.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to No.

### Reference Information

**Special Tools**

*EL-52100* Multiple Diagnostic Interface 2 (MDI 2)

### Programming a New Control Module

To program a replacement K56 Serial Data Gateway Module, perform the following procedure:

**Note:**

- Verify all control modules are connected and communicating before attempting to program the K56 Serial Data Gateway Module.
- Verify the key fob is inside the vehicle. If the key fob is not inside the vehicle, the serial data authentication configuration procedure which runs automatically at the end of the programming step will fail even though the programming appears to run successfully. If the serial data authentication configuration procedure fails, DTC U1962 will set and/or the setup step will fail or be incomplete.
- Begin with the vehicle in vehicle OFF power mode. The Service Programming System will power mode the vehicle.

1. Ignition/Vehicle OFF, ensure that the key fob is inside the vehicle and not moved for the duration of the programming to prevent an inadvertent power mode change during programming.
2. Disconnect Wi-Fi dongle if it is currently connected to *EL-52100* Multiple Diagnostic Interface 2 (MDI 2). Install EL-52100 (MDI 2) using wired USB Connection from MDI 2 to computer and verify it is working properly. Using the EL-47955 (MDI) will result in a programming failure.

3. Install an approved battery maintainer or power supply that provides a steady and stable voltage to support the 12V system during SPS programming events.
4. Access the Service Programming System (SPS) and follow the on-screen instructions.
5. On the SPS Supported Controllers screen, select K56 Serial Data Gateway Module - Programming and follow the on-screen instructions.

**Note:** If the Setup step fails and DTC U1962 is set in the K56 Serial Data Gateway Module, perform the Serial Data Authentication Configuration procedure and then repeat the Setup step again. Refer to: *Serial Data Authentication Configuration 3-49*.

6. On the SPS Supported Controllers screen, select K56 Serial Data Gateway Module - Setup and follow the on-screen instructions.

**Note:** If an error message indicates that a module is missing after the Setup procedure is complete, diagnose that module to make sure that it's connected and communicating and then perform the Programming and Setup procedures again.

7. Clear DTCs.

### Programming an Existing Control Module

To program an existing K56 Serial Data Gateway Module, perform the following procedure:

**Note:**
- Verify all control modules are connected and communicating before attempting to program the K56 Serial Data Gateway Module.
- Begin with the vehicle in vehicle OFF power mode. The Service Programming System will power mode the vehicle.

1. Ignition/Vehicle OFF, ensure that the key fob is inside the vehicle and not moved for the duration of the programming to prevent an inadvertent power mode change during programming.
2. Disconnect Wi-Fi dongle if it is currently connected to *EL-52100* Multiple Diagnostic Interface 2 (MDI 2). Install EL-52100 (MDI 2) using wired USB Connection from MDI 2 to computer and verify it is working properly. Using the EL-47955 (MDI) will result in a programming failure.
3. Install an approved battery maintainer or power supply that provides a steady and stable voltage to support the 12V system during SPS programming events.
4. Access the Service Programming System (SPS) and follow the on-screen instructions.
5. On the SPS Supported Controllers screen, select K56 Serial Data Gateway Module - Programming and follow the on-screen instructions.
6. Clear DTCs.

### Unsuccessful Programming Recovery

**Note:**
- Ensure the *EL-52100* (MDI 2) is used when programming the vehicle. Using the EL-47955 (MDI) will result in a programming failure.
- It may be necessary to use another *EL-52100* (MDI 2) and/or cables to verify proper operation to eliminate the possibility of faulty equipment.
- If Ethernet programming fails, ensure there is no fault in the Ethernet circuits between the X84 Data Link Connector and K56 Serial Data Gateway Module. Refer to [Link target (target-id 300812-) not found] to diagnose these Ethernet circuits.

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. Exit Service Programming System (SPS) and disconnect all programming equipment from the vehicle.
2. Disconnect all battery voltage or ignition voltage sources from the K56 Serial Data Gateway Module. All voltage sources must be removed for a minimum of 10 min. This can be done several ways and should be completed by using the least intrusive way. This can vary depending on vehicle and control module location and can be done by one of the options listed below:
   - Removing all fuses supplying battery voltage and ignition voltage to the control module.
   - Disconnecting all harness connectors from the control module.
   - Performing a 12 V battery disconnect by disconnecting the battery negative cable. Refer to [Link target (target-id 37733-) not found] .
3. Reconnect all battery voltage and ignition voltage sources to the K56 Serial Data Gateway Module.
4. Close down the current session of Techline Connect and reopen a new session.
5. Verify the K56 Serial Data Gateway Module, X84 Data Link Connector, and programming tool connections are secure and the tool software is up to date.
6. Ignition/Vehicle OFF, ensure that the key fob is inside the vehicle and not moved for the duration of the programming to prevent an inadvertent power mode change during programming.
7. Access the Service Programming System (SPS) and follow the on-screen instructions for the K56 Serial Data Gateway Module.
8. Verify the K56 Serial Data Gateway Module can be programmed.

⇒ **If the K56 Serial Data Gateway Module can not be programmed**

8.1. Ignition ON/Vehicle in Service Mode for 1 min.

8.2. Ignition/Vehicle OFF.

8.3. Access SPS and follow the on-screen instructions for the K56 Serial Data Gateway Module.

**Note:** If programming is still not successful after the second programming attempt, check the following:

- For facilities using an internet firewall, ensure firewall settings are not blocking file downloads and/or require elevated rights.
- For United States and Canada GM dealers, the appropriate firewall settings can be found in the GM DEALER INFRASTRUCTURE & SECURITY GUIDELINES (DISG) section 2.d.vii.

8.4. Verify the K56 Serial Data Gateway Module can be programmed.

⇒ If the K56 Serial Data Gateway Module can not be programmed, replace the K56 Serial Data Gateway Module.

⇓ If the K56 Serial Data Gateway Module can be programmed

8.5. Clear DTCs.

⇓ **If the K56 Serial Data Gateway Module can be programmed**

9. Clear DTCs.

### Repair Instructions

Perform the Diagnostic Repair Verification after completing the repair: *Diagnostic Repair Verification 3-319*.

For control module replacement, programming, and setup, refer to: *Control Module References 3-4*.

### K56U Special Purpose Vehicle Module: Programming and Setup

**Note:**

- Always verify the module has the newest software available before replacing the module.
- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required, install a battery maintainer or power supply that provides a steady and stable voltage. Do not use a battery charger, as charging voltage will often fluctuate when connected to the vehicle. This may interrupt programming. If a battery maintainer is not available, connect a fully charged 12 V jumper or booster pack disconnected form the AC voltage supply.
- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- During the programming procedure, follow the SPS prompts for the correct ignition switch position.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to NO.

### Replace and Program Control Module or Reprogram Control Module

To program a replacement or an existing control module, Refer to*https://www.gmupfitter.com/*Then proceed to the following procedures:

1. Access the Service Programming System (SPS) and follow the on-screen instructions.
2. On the SPS Supported Controllers screen, select K56U Special Vehicle Purpose Module - Programming and follow the on-screen instructions.
3. Clear DTCs.

### Unsuccessful Programming Recovery

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. Ignition ON. Ensure the control module, DLC and programming tool connections are secure and the SPS software is up to date.
2. Verify the control module can be reprogrammed.

⇒ **If the control module cannot be reprogrammed**

2.1. Ignition OFF for one minute, ignition ON.

2.2. Verify the control module can be reprogrammed.

⇒ If the control module cannot be reprogrammed, replace the control module.

⇓ If the control module can be reprogrammed.

2.3. All OK.

⇓ **If the control module can be reprogrammed**

3. All OK.

### Repair Instructions

Perform the *Diagnostic Repair Verification 3-319* after completing the repair.

*Control Module References 3-4* for control module replacement, programming and setup.

## K60 Column Lock Module: Programming and Setup

**Note:**

- DO NOT program a control module unless directed to by a service procedure or a service bulletin. If the control module is not properly configured with the correct calibration software, the control module will not control all of the vehicle features properly.
- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required, install a battery maintainer or power supply that provides a steady and stable voltage. Do not use a battery charger, as charging voltage will often fluctuate when connected to the vehicle. This may interrupt programing. If a battery maintainer is not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply.
- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- During the programming procedure, follow the SPS prompts for the correct ignition switch position.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to NO.

### Replace and Program Column Lock Control Module

To program a replacement column lock control module, perform the following procedure:

**Note:** Before reprogramming, to ensure that the column lock password from the BCM is learned: turn ignition ON and then OFF, close all doors, and wait 5 minutes.

1. Ignition ON.
2. Access the Service Programming System (SPS) and follow the on-screen instructions.
3. If available, on the SPS Supported Controllers screen, select K60 Column Lock Control Module – Prepare Control Module For Removal and follow the on-screen instructions.

**Note:** The Prepare Control Module for Removal function can only be performed when communication with the old control module is still possible

4. Replace the Column Lock Module. Refer to: *Control Module References 3-4*
5. Ignition ON for 10 seconds, ignition OFF.
6. Close all doors and wait 5 minutes.
7. Ignition ON.
8. On the SPS Supported Controllers screen, select K60 Column Lock Control Module – Programming and follow the on-screen instructions.
9. Clear DTCs.

### Reprogram Column Lock Control Module

**Note:** Before reprogramming, to ensure that the steering column lock password from the BCM is learned: turn ignition ON and then OFF, close all doors, and wait 5 minutes.

To reprogram an existing column lock control module, perform the following procedure:

1. Ignition ON for 10 seconds, ignition OFF.
2. Close all doors and wait 5 minutes.
3. Ignition ON.
4. Access the Service Programming System (SPS) and follow the on-screen instructions.
5. On the SPS Supported Controllers screen, select K60 Column Lock Control Module – Programming and follow the on-screen instructions.
6. Clear DTCs.

### Unsuccessful Programming Recovery

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. Ignition ON. Ensure the control module, DLC and programming tool connections are secure and the SPS software is up to date.
2. Verify the control module can be reprogrammed.

⇒ **If the control module cannot be reprogrammed**

   2.1. Ignition OFF for one minute, ignition ON.

   2.2. Verify the control module can be reprog-rammed.

⇒ If the control module cannot be reprogrammed, replace the control module.

⇓ If the control module can be reprogrammed.

   2.3. All OK.

⇓ **If the control module can be reprogrammed**

3. All OK.

### Repair Instructions

Perform the *Diagnostic Repair Verification 3-319* after completing the repair.

*Control Module References 3-4* for control module replacement, programming and setup

## K61 Sunroof Control Module: Programming and Setup

### Diagnostic Instructions

- Perform the *Diagnostic System Check - Vehicle 3-255* prior to using this diagnostic procedure.
- Review the description of *Strategy Based Diagnosis 3-245*

**Note:**

- Always verify the module has the newest software available before replacing the module.
- Verify the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required, install a battery maintainer or power supply that provides a steady and stable voltage. Do not use a battery charger, as charging voltage will often fluctuate when connected to the vehicle. This may interrupt programming. If a battery maintainer is not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply.
- Turn OFF or disable systems that may put a load on the vehicle's battery such as interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- Programming must begin with the Ignition/Vehicle OFF. Programming will direct the appropriate control module(s) to change power mode as needed during the procedure, independent of the vehicle's power mode.
- To prevent programming failure due to unintended wireless drops, it is recommended that a wired MDI 2 connection be used when programming the control module.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to No.

### Reference Information

**Special Tools**

*EL-52100* Multiple Diagnostic Interface 2 (MDI 2)

### Programming an Existing or New Control Module

This control module does not require SPS programming or any setup procedures.

Please refer to: [Link target (target-id 130156-) not found] for programming and setup.

### Repair Instructions

Perform the *Diagnostic Repair Verification 3-319* after completing the repair.

*Control Module References 3-4* for control module replacement, programming, and setup.

## K67 Trailer Brake Control Module: Programming and Setup

### Replace and Program ECU or Reprogram ECU

This ECU does not require SPS programming or any setup procedures.

## K68 Trailer Lighting Control Module: Programming and Setup

The K68 Trailer Lamp Control Module does not require programming, but does require serial data authentication. Refer to: *Serial Data Authentication Configuration 3-49*.

## K69 Transfer Case Control Module: Programming and Setup (NQF)

### Diagnostic Instructions

- Perform the Diagnostic System Check prior to using this diagnostic procedure: *Diagnostic System Check - Vehicle 3-255*
- Review the description of Strategy Based Diagnosis: *Strategy Based Diagnosis 3-245*

**Note:**

- Always verify the module has the newest software available before replacing the module.
- Verify the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required, install a battery maintainer or power supply that provides a steady and stable voltage. Do not use a battery charger, as charging voltage will often fluctuate when connected to the vehicle. This may interrupt programming. If a battery maintainer is not available, connect a fully charged 12 V jumper or

booster pack disconnected from the AC voltage supply.

- Turn Off or disable systems that may put a load on the vehicle's battery. For example, interior lights, daytime running lights, HVAC, and radio.
- During the programming procedure, follow the Service Programming System (SPS) prompts for the correct ignition switch position.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to No.

### Programming an Existing or New Control Module

To program an existing or new control module, perform the following procedure:

1. Ignition » On / Vehicle » In Service Mode
2. Access SPS and follow the on-screen instructions for the control module: K69 Transfer Case Control Module
3. Perform the SPS function: K69 Transfer Case Control Module — Programming
4. Perform the SPS function: K69 Transfer Case Control Module — Setup
5. Clear DTCs.
6. Perform the scan tool Transfer Case Range Actuator Dual End Stop Learn.

   Refer to: [Link target (target-id 319950-) not found]

### Unsuccessful Programming Recovery

If programming a control module is not successful, perform the following procedure:

1. Verify the control module, data link connector and programming tool connections are secure and the tool software is up to date.
2. Ignition » On / Vehicle » In Service Mode
3. Perform the SPS function: K69 Transfer Case Control Module — Programming

   Verify the control module programming is successful.

⇒ **If the programming is not successful**

3.1. Ignition/Vehicle » Off — For greater than 1 min

3.2. Ignition » On / Vehicle » In Service Mode

3.3. Perform the SPS function: K69 Transfer Case Control Module — Programming

⇒ If the programming is not successful » Replace the component: K69 Transfer Case Control Module

3.3.1. Replace the component: K69 Transfer Case Control Module

3.3.2. Perform the SPS function: K69 Transfer Case Control Module — Setup

⇓ If the programming is successful

3.4. Perform the SPS function: K69 Transfer Case Control Module — Setup

⇒ If the procedure was not successful

3.4.1. Replace the component: A16 Transfer Case Motor

3.4.2. Perform the SPS function: K69 Transfer Case Control Module — Setup

⇓ If the procedure was successful

3.5. Perform the scan tool Transfer Case Range Actuator Dual End Stop Learn.

Refer to: [Link target (target-id 319950-) not found]

3.6. All OK.

⇓ **If the programming is successful**

4. Perform the SPS function: K69 Transfer Case Control Module — Setup
5. Clear DTCs.
6. Perform the scan tool Transfer Case Range Actuator Dual End Stop Learn.

   Refer to: [Link target (target-id 319950-) not found]
7. All OK.

### Repair Instructions

Perform the Diagnostic Repair Verification after completing the repair: *Diagnostic Repair Verification 3-319*

For control module replacement, programming, and setup refer to: *Control Module References 3-4*

## K69 Transfer Case Control Module: Programming and Setup (NQH)

### Diagnostic Instructions

- Perform the Diagnostic System Check prior to using this diagnostic procedure: *Diagnostic System Check - Vehicle 3-255*
- Review the description of Strategy Based Diagnosis: *Strategy Based Diagnosis 3-245*

**Note:**

- Always verify the module has the newest software available before replacing the module.
- Verify the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.

- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required, install a battery maintainer or power supply that provides a steady and stable voltage. Do not use a battery charger, as charging voltage will often fluctuate when connected to the vehicle. This may interrupt programming. If a battery maintainer is not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply.
- Turn Off or disable systems that may put a load on the vehicle's battery. For example, interior lights, daytime running lights, HVAC, and radio.
- During the programming procedure, follow the Service Programming System (SPS) prompts for the correct ignition switch position.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to No.

### Programming an Existing Control Module

1. Ignition » On / Vehicle » In Service Mode
2. Access SPS and follow the on-screen instructions for the control module: K69 Transfer Case Control Module
3. Perform the SPS function: K69 Transfer Case Control Module — Prepare Control Module for Removal
4. Perform the SPS function: K69 Transfer Case Control Module — Programming
5. Perform the SPS function: K69 Transfer Case Control Module — Setup

   Verify the Transfer Case Clutch Identifieris auto populated correctly, if incorrect enter the correct Transfer Case Clutch Identifier.

   Refer to: [Link target (target-id 163394-) not found]
6. Clear DTCs.
7. Perform the scan tool Transfer Case Range Actuator Learn.

   Refer to: [Link target (target-id 319036-) not found]

### Programming a New Control Module — Old Module Communicates

1. Ignition » On / Vehicle » In Service Mode
2. Access SPS and follow the on-screen instructions for the control module: K69 Transfer Case Control Module
3. Perform the SPS function: K69 Transfer Case Control Module — Prepare Control Module for Removal
4. Replace the component: K69 Transfer Case Control Module
5. Perform the SPS function: K69 Transfer Case Control Module — Programming
6. Perform the SPS function: K69 Transfer Case Control Module — Setup

   Verify the Transfer Case Clutch Identifieris auto populated correctly, if incorrect enter the correct Transfer Case Clutch Identifier.

   Refer to: [Link target (target-id 163394-) not found]
7. Clear DTCs.
8. Perform the scan tool Transfer Case Range Actuator Learn.

   Refer to: [Link target (target-id 319036-) not found]

### Programming a New Control Module — Old Module Does Not Communicate

1. Replace the component: K69 Transfer Case Control Module
2. Ignition » On / Vehicle » In Service Mode
3. Access SPS and follow the on-screen instructions for the control module: K69 Transfer Case Control Module
4. Perform the SPS function: K69 Transfer Case Control Module — Programming
5. Perform the SPS function: K69 Transfer Case Control Module — Setup

   Enter the Transfer Case Clutch Identifier

   Refer to: [Link target (target-id 163394-) not found]
6. Clear DTCs.
7. Perform the scan tool Transfer Case Range Actuator Learn.

   Refer to: [Link target (target-id 319036-) not found]

### Unsuccessful Programming Recovery

If programming a control module is not successful, perform the following procedure:

1. Verify the control module, data link connector and programming tool connections are secure and the tool software is up to date.
2. Ignition » On / Vehicle » In Service Mode
3. Perform the SPS function: K69 Transfer Case Control Module — Programming

   Verify the control module programming is successful.

⇒ **If the programming is not successful**

   3.1. Ignition/Vehicle » Off — For greater than 1 min

   3.2. Ignition » On / Vehicle » In Service Mode

3.3. Perform the SPS function: K69 Transfer Case Control Module — Programming

⇒ If the programming is not successful » Replace the component: K69 Transfer Case Control Module

⇓ If the programming is successful

3.4. Perform the SPS function: K69 Transfer Case Control Module — Setup

Enter the Transfer Case Clutch Identifier

3.5. Clear DTCs.

3.6. Perform the scan tool Transfer Case Range Actuator Learn.

Refer to: [Link target (target-id 319036-) not found]

3.7. All OK.

⇓ **If the programming is successful**

4. Perform the SPS function: K69 Transfer Case Control Module — Setup
5. Clear DTCs.
6. Perform the scan tool Transfer Case Range Actuator Learn.

   Refer to: [Link target (target-id 319036-) not found]
7. All OK.

### Repair Instructions

Perform the Diagnostic Repair Verification after completing the repair: *Diagnostic Repair Verification 3-319*

For control module replacement, programming, and setup refer to: *Control Module References 3-4*

## K71 Transmission Control Module: Programming and Setup (10L1000 (MGM MGU, MKM))

### Diagnostic Instructions

- Perform the Diagnostic System Check prior to using this diagnostic procedure: *Diagnostic System Check - Vehicle 3-255*
- Review the description of Strategy Based Diagnosis: *Strategy Based Diagnosis 3-245*

**Note:**
- Always verify the module has the newest software available before replacing the module.
- Verify the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required, install a battery maintainer or power supply that provides a steady and stable voltage. Do not use a battery charger, as charging voltage will often fluctuate when connected to the vehicle. This may interrupt programming. If a battery maintainer is not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply.
- Turn Off or disable systems that may put a load on the vehicle's battery. For example, interior lights, daytime running lights, HVAC, and radio.
- During the programming procedure, follow the Service Programming System (SPS) prompts for the correct ignition switch position.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to No.

### Programming an Existing or New Control Module

1. Ignition » On / Vehicle » In Service Mode

**Note:**
- If both controller options below are listed, select K20/K71 Engine and Transmission Control Modules.
- If the programming is not successful Refer to: *Control Module References 3-4*— K56 Control Module Programing

2. Perform the SPS function:
   - K20/K71 Engine and Transmission Control Modules and follow the on-screen instructions.
   - K71 Transmission Control Module and follow on-screen instructions.

   2.1. Select» Programming

   2.2. Select» MCVM Operations— If applicable

   2.3. Ignition/Vehicle » Off — For greater than 2 min

   2.4. Select» Setup— Follow the on-screen instructions.
3. Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to No.
4. Perform the scan tool configuration/reset function: Transmission Service Fast Learn— If available
5. All OK.

### Unsuccessful Programming Recovery

**Note:**
- If programming is still not successful after the second programming attempt, check the following:

- For facilities using an internet firewall, ensure firewall settings are not blocking file downloads and/or require elevated rights.
- For United States and Canada GM dealers, the appropriate firewall settings can be found in the GM DEALER INFRASTRUCTURE & SECURITY GUIDELINES (DISG) section 2.d.vii.

1. Verify the control module, data link connector and programming tool connections are secure and the tool software is up to date.
2. Ignition » On / Vehicle » In Service Mode
3. Perform one of the following SPS Programming functions:

**Note:** If both controller options below are listed, select K20/K71 Engine and Transmission Control Modules.

  - K20/K71 Engine and Transmission Control Modules and follow the on-screen instructions.
  - K71 Transmission Control Module and follow on-screen instructions.

4. Verify the control module programming is successful.

⇒ If the programming is not successful » Replace the component: K71 Transmission Control Module

⇓ If the programming is successful

  4.1. Select» MCVM Operations— If applicable

  4.2. Ignition/Vehicle » Off — For greater than 2 min

  4.3. Select» Setup— Follow the on-screen instructions.

  If setup is not an available option — Perform the appropriate learn/reset procedure with the scan tool

⇓ **If the programming is successful**

5. Select» MCVM Operations— If applicable
6. Ignition/Vehicle » Off — For greater than 2 min
7. Select» Setup— Follow the on-screen instructions.

   If setup is not an available option — Perform the appropriate learn/reset procedure with the scan tool
8. Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to No.
9. Perform the scan tool configuration/reset function: Transmission Service Fast Learn— If available
10. All OK.

### Repair Instructions

Perform the Diagnostic Repair Verification after completing the repair: *Diagnostic Repair Verification 3-319*

For control module replacement, programming, and setup refer to: *Control Module References 3-4*

### K73 Telematic Control Module: Programming and Setup

**Note:**

- DO NOT reprogram a control module due to “UNKNOWN” displayed in “Current # “ on the programming screen. “UNKNOWN” will be displayed due to only a utility file being programmed and will not display a current part number.
- Always verify the module has the newest software available before replacing the module.
- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required, install a battery maintainer or power supply that provides a steady and stable voltage. Do not use a battery charger, as charging voltage will often fluctuate when connected to the vehicle. This may interrupt programing. If a battery maintainer is not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply.
- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- Programming must begin with the Ignition/Vehicle OFF. Programming will direct the appropriate control module(s) to change power mode as needed during the procedure, independent of the vehicle’s power mode.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to NO.

### Diagnostic Aids

- It is critical to use the service replacement K73 Telematic Control Module only in the vehicle for which it was ordered.
- Failure to perform the following procedures will result in a red LED, DTC(s) being set, and limited or incomplete OnStar® services.

- An OnStar® button press to the OnStar® call center is required to complete the module replacement procedure.
- To fully activate an OnStar® module, both the setup and activation request procedures must be completed on all vehicles with and without an active OnStar® subscription to insure the unit has been setup properly for the vehicle it has been installed into and also to update the OnStar® with the correct unit information.
- To initialize the Turn-by-Turn feature (if equipped), the vehicle must first be driven In open sky condition at speeds greater than 10 mph (16 kph) or more for a minimum of 5 miles (8 km), and perform at least 2 left and 2 right 90 degree turns coming to complete stops prior to each turn.
- On vehicles up fitted with TTY capabilities, it is necessary to perform a power cycle of the OnStar® Interface Module (OTIM) and toggle the TTY mode after completing the Communication Interface Module installation and setup procedures.

### Reference Information

**Special Tools**

- EL-52100 Multiple Diagnostic Interface 2 (MDI 2)

For equivalent regional tools, refer to *Special Tools 3-54*.

### Replace and Program Control Module

To program a replacement control module, perform the following procedure:

**Note:** Begin with the vehicle in the vehicle OFF power mode. The Service Programming System will power mode the vehicle.

1. Ignition/Vehicle OFF
2. Access the Service Programming System (SPS) and follow the on-screen instructions.
3. In the SPS Supported Controllers screen, select K73 Telematic Control Module Programming and Service Activation and follow the on-screen instructions.
4. Clear DTCs.
5. Inform the customer to press the OnStar® Blue Button to call OnStar® and inform the advisor the module has been replaced and the system needs to be activated if subscription is active.

### Unsuccessful Programming Recovery

In the event of an interrupted or unsuccessful programming event, perform the following steps:

**Note:** Begin with the vehicle in the vehicle OFF power mode. The Service Programming System will power mode the vehicle.

1. Ignition/Vehicle OFF
2. Ensure the control module, DLC and programming tool connections are secure and the SPS software is up to date.
3. Verify the control module can be reprogrammed.

⇒ **If the control module cannot be reprogrammed**

3.1. Ignition OFF for one minute.

3.2. Verify the control module can be reprogrammed.

⇒ If the control module cannot be reprogrammed, replace the control module.

⇓ If the control module can be reprogrammed.

3.3. All OK.

⇓ **If the control module can be reprogrammed**

4. All OK.

## K85P Restraints Occupant Classification System Module - Passenger: Programming and Setup

### Diagnostic Instructions

- Perform the *Diagnostic System Check - Vehicle 3-255* prior to using this diagnostic procedure.
- Review the description of *Strategy Based Diagnosis 3-245*

**Note:**

- Always verify the module has the newest software available before replacing the module.
- Verify the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required, install a battery maintainer or power supply that provides a steady and stable voltage. Do not use a battery charger, as charging voltage will often fluctuate when connected to the vehicle. This may interrupt programming. If a battery maintainer is not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply.

- Turn OFF or disable systems that may put a load on the vehicle's battery such as interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- Programming must begin with the Ignition/Vehicle OFF. Programming will direct the appropriate control module(s) to change power mode as needed during the procedure, independent of the vehicle's power mode.
- To prevent programming failure due to unintended wireless drops, it is recommended that a wired MDI 2 connection be used when programming the control module.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to No.

### Reference Information

**Special Tools**
*EL-52100* Multiple Diagnostic Interface 2 (MDI 2)

### Programming an Existing or New Control Module

To program an existing or new control module, perform the following procedure:

**Note:**
- Ensure the *EL-52100* (MDI 2) is used when programming the vehicle and verify it is working properly. Using the EL-47955 (MDI) will result in a programming failure.
- Verify all control modules are connected and communicating before attempting to program the K85P Restraints Occupant Classification System Module.
- Verify the key fob is inside the vehicle. If the key fob is not inside the vehicle, the serial data authentication configuration procedure which runs automatically at the end of the programming step will fail even though the programming appears to run successfully. If the serial data authentication configuration procedure fails, DTC U1962 will set and/or the setup step will fail or be incomplete.
- Before ROCSM Programing and Setup can be conducted, the front passenger seat must be completely empty of all items. The presence of any liquid or items on the front passenger seat will affect the calibration and operation of the ROCSM.
- DTC U3000.99 will set if the re-zero system test is performed with:
  - An aftermarket seat heater located too close to the sensor mat
  - A scan tool, laptop or other electronic device is in the seat.
  - The seat is damp or wet
  - An object or person is in the seat

1. Ignition/Vehicle OFF, ensure that the key fob is inside the vehicle and not moved for the duration of the programming to prevent an inadvertent power mode change during programming.
2. Verify that the temperature is between 32°F (0°C) to 100°F (38 °C).
3. Verify the seat is completely dry.
4. Empty the front outboard passenger seat.
5. Verify that all SIR and ROCSM components, connectors, and connector position assurances are properly connected and mounted.
6. Access the Service Programming System (SPS) and follow the on-screen instructions for the K85P Restraints Occupant Classification System Module.
7. Perform the SPS function: **Programming** and follow the on-screen instructions.
8. Perform the SPS function: **Setup** and follow the on-screen instructions.
9. Clear DTCs.

### Unsuccessful Programming Recovery

**Note:**
- Ensure the *EL-52100* (MDI 2) is used when programming the vehicle. Using the EL-47955 (MDI) will result in a programming failure.
- It may be necessary to use another *EL-52100* (MDI 2) and/or cables to verify proper operation to eliminate the possibility of faulty equipment.
- If Ethernet programming fails, ensure there is no fault in the Ethernet circuits between the X84 Data Link Connector and K56 Serial Data Gateway Module. Refer to [Link target (target-id 300812-) not found] to diagnose these Ethernet circuits.

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. Exit Service Programming System (SPS) and disconnect all programming equipment from the vehicle.
2. Disconnect all battery voltage or ignition voltage sources from the control module.

**Note:** All voltage sources must be removed for a minimum of 10 min. This can be done several ways and should be completed by using the least intrusive way. This can vary depending on vehicle and control module location and can be done by one of the options listed below:

- Removing all fuses supplying battery voltage and ignition voltage to the control module.
- Disconnecting all harness connectors from the control module.
- Performing a 12 V battery disconnect by disconnecting the battery negative cable. Refer to [Link target (target-id 37733-) not found] .

3. Reconnect all battery voltage and ignition voltage sources to the control module.
4. Close down the current session of Techline Connect and reopen a new session.
5. Verify the control module, data link connector, and programming tool connections are secure and the tool software is up to date.
6. Ignition/Vehicle OFF, ensure that the key fob is inside the vehicle and not moved for the duration of the programming to prevent an inadvertent power mode change during programming.
7. Access the Service Programming System (SPS) and follow the on-screen instructions for the control module.
8. Verify the control module can be programmed.

⇒ **If the control module can not be programmed**

8.1. Ignition ON/Vehicle in Service Mode for 1 min.

8.2. Ignition/Vehicle OFF.

8.3. Access SPS and follow the on-screen instructions for the control module.

**Note:** If programming is still not successful after the second programming attempt, check the following:

- For facilities using an internet firewall, ensure firewall settings are not blocking file downloads and/or require elevated rights.
- For United States and Canada GM dealers, the appropriate firewall settings can be found in the GM DEALER INFRASTRUCTURE & SECURITY GUIDELINES (DISG) section 2.d.vii.

8.4. Verify the control module can be programmed.

⇒ If the control module can not be programmed, replace the control module.

⇓ If the control module can be programmed

8.5. Clear DTCs.

⇓ **If the control module can be programmed**

9. Clear DTCs.

### Repair Instructions

For module replacement, refer to: [Link target (target-id 188211-) not found]

## K115 Reductant Control Module: Programming and Setup

### Diagnostic Instructions

- Perform the Diagnostic System Check prior to using this diagnostic procedure: *Diagnostic System Check - Vehicle 3-255*
- Review the description of Strategy Based Diagnosis: *Strategy Based Diagnosis 3-245*

**Note:**

- Always verify the module has the newest software available before replacing the module.
- Verify the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required, install a battery maintainer or power supply that provides a steady and stable voltage. Do not use a battery charger, as charging voltage will often fluctuate when connected to the vehicle. This may interrupt programming. If a battery maintainer is not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply.
- Turn Off or disable systems that may put a load on the vehicle's battery. For example, interior lights, daytime running lights, HVAC, and radio.
- During the programming procedure, follow the Service Programming System (SPS) prompts for the correct ignition switch position.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/Maintenance (I/M) system status indicators to No.

### Programming an Existing or New Control Module

To program an existing or new control module, perform the following procedure:

1. Ignition » On / Vehicle » In Service Mode
2. Access SPS and follow the on-screen instructions for the control module: K115 Reductant Control Module

### Unsuccessful Programming Recovery

If programming a control module is not successful, perform the following procedure:

1. Verify the control module, data link connector and programming tool connections are secure and the tool software is up to date.

2. Ignition » On / Vehicle » In Service Mode
3. Access SPS and follow the on-screen instructions for the control module: K115 Reductant Control Module

   Verify the control module programming is successful.

⇒ **If the programming is not successful**

   3.1. Ignition/Vehicle » Off — For greater than 1 min

   3.2. Ignition » On / Vehicle » In Service Mode

   3.3. Access SPS and follow the on-screen instructions for the control module: K115 Reductant Control Module

⇒ If the programming is not successful » Replace the component: K115 Reductant Control Module

⇓ If the programming is successful

   3.4. All OK.

⇓ **If the programming is successful**

4. All OK.

### Repair Instructions

Perform the Diagnostic Repair Verification after completing the repair: *Diagnostic Repair Verification 3-319*

For control module replacement, programming, and setup refer to: *Control Module References 3-4*

### K157 Video Processing Module: Programming and Setup

**Note:**

- Always verify the module has the newest software available before replacing the module.
- Verify the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required, install a battery maintainer or power supply that provides a steady and stable voltage. DO NOT use a battery charger, as charging voltage will often fluctuate when connected to the vehicle. This may interrupt programing. If a battery maintainer is not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply.
- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- Programming must begin with the Ignition/Vehicle OFF. Programming will direct the appropriate control module(s) to change power mode as needed during the procedure, independent of the vehicle’s power mode.
- During programming, it may be necessary to remove specific fuse(s). To prevent programming failure, ensure SPS on-screen instructions are followed for proper fuse removal when necessary.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to NO.
- To prevent programming failure due to unintended wireless drops, it is recommended that a wired MDI connection be used when programming the control module.

### Reference Information

**Special Tools**

*EL-52100* Multiple Diagnostic Interface 2 (MDI 2)

### Replace and Program Control Module

To program a replacement or an existing control module, perform the following procedure:

1. Ignition/Vehicle OFF.
2. Access the Service Programming System (SPS) and follow the on-screen instructions.
3. On the SPS Supported Controllers screen, select K157 Video Processing Control Module - Programming and follow the on-screen instructions.
4. Clear DTCs.
5. Calibrate Vehicle Processing Control Module. Refer to: [Link target (target-id 327188-) not found]

### Reprogram Control Module

To program a replacement or an existing control module, perform the following procedure:

1. Ignition/Vehicle OFF.
2. Access the Service Programming System (SPS) and follow the on-screen instructions.
3. On the SPS Supported Controllers screen, select K157 Video Processing Control Module - Programming and follow the on-screen instructions.
4. Clear DTCs.
5. Calibrate Vehicle Processing Control Module. Refer to: [Link target (target-id 327188-) not found]

### Unsuccessful Programming Recovery

**Note:**

- Ensure the *EL-52100* (MDI 2) is used when programming the vehicle. Using the EL-47955 (MDI) will result in a programming failure.
- It may be necessary to use another *EL-52100* (MDI 2) and/or cables to verify proper operation to eliminate the possibility of faulty equipment.
- If Ethernet programming fails, ensure there is no fault in the Ethernet circuits between the X84 Data Link Connector and K56 Serial Data Gateway Module. Refer to [Link target (target-id 300812-) not found] to diagnose these Ethernet circuits.

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. Exit Service Programming System (SPS) and disconnect all programming equipment from the vehicle.
2. Disconnect all battery voltage or ignition voltage sources from the control module. All voltage sources must be removed for a minimum of 10 min. This can be done several ways and should be completed by using the least intrusive way. This can vary depending on vehicle and control module location and can be done by one of the options listed below:
   - Removing all fuses supplying battery voltage and ignition voltage to the control module.
   - Disconnecting all harness connectors from the control module.

***Warning: Always ensure the Battery Maintenance Mode is inactive before disconnecting the low voltage 12 volt battery (or batteries). This mode can be active with the ignition off, regardless of whether the vehicle charging cord is plugged in or not. When this mode is active, the on-board high voltage battery charger(s) will energize the 12 volt battery cables and charge the 12 volt battery (or batteries). Disconnecting any battery cables while this mode is active may result in an electrical shock or a burn from hot battery cable leads.***

   - Check the 12 volt battery voltage with a digital multimeter before disconnecting any battery cables leads. If the voltage is 13.5 volts or above, the Battery Maintenance Mode is active. The technician must wait for the T18 battery charger to deactivate before disconnecting the battery negative cable. For more information refer to [Link target (target-id 37815-) not found] . With Battery Maintenance Mode inactive, perform a 12 V battery disconnect by disconnecting the battery negative cable. Refer to [Link target (target-id 37733-) not found] .
3. Reconnect all battery voltage and ignition voltage sources to the control module.
4. Close down the current session of Techline Connect and reopen a new session.
5. Verify the control module, data link connector, and programming tool connections are secure and the tool software is up to date.
6. Ignition/Vehicle OFF, ensure that the key fob is inside the vehicle and not moved for the duration of the programming to prevent an inadvertent power mode change during programming.
7. Access the Service Programming System (SPS) and follow the on-screen instructions for the control module.
8. Verify the control module can be programmed.

⇒ **If the control module can not be programmed**

   8.1. Ignition ON/Vehicle in Service Mode for 1 min.

   8.2. Ignition/Vehicle OFF.

   8.3. Access SPS and follow the on-screen instructions for the control module.

**Note:** If programming is still not successful after the second programming attempt, check the following:

- For facilities using an internet firewall, ensure firewall settings are not blocking file downloads and/or require elevated rights.
- For United States and Canada GM dealers, the appropriate firewall settings can be found in the GM DEALER INFRASTRUCTURE & SECURITY GUIDELINES (DISG) section 2.d.vii.

   8.4. Verify the control module can be programmed.

⇒ If the control module can not be programmed, replace the control module.

⇓ If the control module can be programmed

   8.5. Clear DTCs.

⇓ **If the control module can be programmed**

9. Clear DTCs.

### Repair Instructions

Perform the *Diagnostic Repair Verification 3-319* after completing the repair.

*Control Module References 3-4* for control module replacement, programming and setup

### K182 Parking Assist Control Module: Programming and Setup

**Note:**

- DO NOT program a control module unless directed to by a service procedure or a service bulletin. If the control module is not properly configured with the correct calibration software, the control module will not control all of the vehicle features properly.

- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required install the *EL-49642* SPS Programming Support Tool to maintain system voltage. If not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply. DO NOT connect a battery charger.
- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- During the programming procedure, follow the SPS prompts for the correct ignition switch position.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to NO.

### Replace and Program Control Module

To program a replacement control module, perform the following procedure:

1. Access the Service Programming System (SPS) and follow the on-screen instructions.
2. On the SPS Supported Controllers screen, select K182 Parking Assist Control Module - Programming and follow the on-screen instructions.
3. On the SPS Supported Controllers screen, select K182 Parking Assist Control Module - Configuration and follow the on-screen instructions.
4. Clear DTCs.

### Reprogram Control Module

Do not reprogram the parking assist control module, unless directed by a service procedure, or a service bulletin.

To reprogram an existing control module, perform the following procedure:

1. Access the Service Programming System (SPS) and follow the on-screen instructions.
2. On the SPS Supported Controllers screen, select K182 Parking Assist Control Module - Programming and follow the on-screen instructions.
3. Clear DTCs.

### Unsuccessful Programming Recovery

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. Ignition ON. Ensure the K182 Parking Assist Control Module, DLC and programming tool connections are secure and the SPS software is up to date.
2. Verify the parking assist control module can be reprogrammed.

⇒ **If the K182 Parking Assist Control Module cannot be reprogrammed**

  2.1. Ignition OFF for one minute, ignition ON.

  2.2. Verify the parking assist control module can be reprogrammed.

⇒ If the K182 Parking Assist Control Module cannot be reprogrammed, replace the parking assist control module.

⇓ If the K182 Parking Assist Control Module can be reprogrammed.

  2.3. All OK.

⇓ **If the K182 Parking Assist Control Module can be reprogrammed**

3. All OK.

### Repair Instructions

Perform the *Diagnostic Repair Verification 3-319* after completing the repair.

*Control Module References 3-4* for control module replacement, programming and setup

### K194 Rear Gate Module: Programming and Setup

**Note:**

- Always verify the module has the newest software available before replacing the module.
- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required, install a battery maintainer or power supply that provides a steady and stable voltage. Do not use a battery charger, as charging voltage will often fluctuate when connected to the vehicle. This may interrupt programing. If a battery maintainer is not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply.

- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- During the programming procedure, follow the SPS prompts for the correct ignition switch position.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to NO.

### Replace and Program Control Module

**Note:** The endgate must be completely closed and latched, if the endgate is open or ajar during programming, the power endgate system may become inoperative without any DTCs indicated

To program a replacement control module, perform the following procedure:

1. Access the Service Programming System (SPS) and follow the on-screen instructions.
2. On the SPS Supported Controllers screen, select K194 Rear Gate Module - Programming and follow the on-screen instructions.
3. At the end of programming, choose the “Clear All DTCs” function on the SPS screen.

### Reprogram Control Module

**Note:** The endgate must be completely closed and latched, if the endgate is open or ajar during programming, the power endgate system may become inoperative without any DTCs indicated

To reprogram an existing control module, perform the following procedure:

1. Access the Service Programming System (SPS) and follow the on-screen instructions.
2. On the SPS Supported Controllers screen, select K194 Rear Gate Module - Programming and follow the on-screen instructions.
3. At the end of programming, choose the “Clear All DTCs” function on the SPS screen.

### Repair Instructions

Perform the *Diagnostic Repair Verification 3-319* after completing the repair.

*Control Module References 3-4* for rear gate module replacement, programming and setup

### K219 Lighting Control Module: Programming and Setup

**Note:**

- Always verify the module has the newest software available before replacing the module.
- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required install the *EL-49642* SPS Programming Support Tool to maintain system voltage. If not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply. DO NOT connect a battery charger.
- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- During the programming procedure, follow the SPS prompts for the correct ignition switch position.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to NO.

### Replace and Program Control Module

To program a replacement control module, perform the following procedure:

1. Access the Service Programming System (SPS) and follow the on-screen instructions.
2. On the SPS Supported Controllers screen, under Select Controller, select K219 Lighting Control Module.
3. On the SPS Supported Controllers screen, under Select Function / Sequence, select Programming and follow on screen instructions.
4. On the SPS Supported Controllers screen, under Select Function / Sequence, select Setup and follow the on-screen instructions.
5. Clear All DTCs.

## Reprogram Control Module

Do not reprogram the lighting control module, unless directed by a service procedure, or a service bulletin.

To reprogram an existing control module, perform the following procedure:

1. Access the Service Programming System (SPS) and follow the on-screen instructions.
2. On the SPS Supported Controllers screen, under Select Controller, select K219 Lighting Control Module.
3. On the SPS Supported Controllers screen, under Select Function / Sequence, select Programming and follow on screen instructions.
4. Clear All DTCs.

## Unsuccessful Programming Recovery

**Note:**

- Ensure the *EL-52100* (MDI 2) is used when programming the vehicle. Using the EL-47955 (MDI) will result in a programming failure.
- It may be necessary to use another *EL-52100* (MDI 2) and/or cables to verify proper operation to eliminate the possibility of faulty equipment.
- If Ethernet programming fails, ensure there is no fault in the Ethernet circuits between the X84 Data Link Connector and K56 Serial Data Gateway Module. Refer to [Link target (target-id 300812-) not found] to diagnose these Ethernet circuits.

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. Exit Service Programming Systems and disconnect all programming equipment from the vehicle.
2. Disconnect all battery voltage or ignition voltage sources from the control module. All voltage sources must be removed for a minimum of 10 min. This can be done several ways and should be completed by using the least intrusive way. This can vary depending on vehicle and control module location and can be done by one of the options listed below:
   - Removing all fuses supplying battery voltage and ignition voltage to the control module.
   - Disconnecting all harness connectors from the control module.

***Warning: Always ensure the Battery Maintenance Mode is inactive before disconnecting the low voltage 12 volt battery (or batteries). This mode can be active with the ignition off, regardless of whether the vehicle charging cord is plugged in or not. When this mode is active, the on-board high voltage battery charger(s) will energize the 12 volt battery cables and charge the 12 volt battery (or batteries). Disconnecting any battery cables while this mode is active may result in an electrical shock or a burn from hot battery cable leads.***

   - Check the 12 V battery voltage with a digital multimeter before disconnecting any battery cables leads. If the voltage is 13.5 V or above, the Battery Maintenance Mode is active. The technician must wait for the T18 Battery Charger to deactivate before disconnecting the battery negative cable. For more information, refer to [Link target (target-id 37815-) not found] . With Battery Maintenance Mode inactive, perform a 12 V battery disconnect by disconnecting the battery negative cable. Refer to [Link target (target-id 37733-) not found] .

3. Reconnect all Battery voltage and Ignition voltage sources to the Control Module.
4. Close down the current session of Techline Connect and reopen a new session.
5. Verify the control module, data link connector, and programming tool connections are secure and the tool software is up to date.
6. Ignition/Vehicle OFF, ensure that the key fob is inside the vehicle and not moved for the duration of the programming to prevent an inadvertent power mode change during programming.
7. Access the Service Programming System (SPS) and follow the on-screen instructions for the K219 Lighting Control Module.
8. Verify the control module can be programmed.

⇒ **If the control module can not be programmed**

8.1. Ignition ON/Vehicle in Service Mode for 1 min.

8.2. Ignition/Vehicle OFF.

8.3. Access SPS and follow the on-screen instructions for the K219 Lighting Control Module.

**Note:** If programming is still not successful after the second programming attempt, check the following:

- For facilities using an internet firewall, ensure firewall settings are not blocking file downloads and/or require elevated rights.
- For United States and Canada GM dealers, the appropriate firewall settings can be found in the GM DEALER INFRASTRUCTURE & SECURITY GUIDELINES (DISG) section 2.d.vii.

8.4. Verify the control module can be programmed.

⇒ If the control module can not be programmed, replace the K219 Lighting Control Module.

⇓ If the control module can be programmed

8.5. Clear DTCs.

⇓ **If the control module can be programmed**

9. Clear DTCs.

### Repair Instructions

Perform the *Diagnostic Repair Verification 3-319* after completing the repair.

*Control Module References 3-4* for control module replacement, programming and setup

## K234 Rear Seat Heater Vent Control Module: Programming and Setup

This device does not require programming or setup.

## P16 Instrument Panel Cluster Control Module: Programming and Setup

**Note:**

- Always verify the module has the newest software available before replacing the module.
- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or Control Module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required, install a battery maintainer or power supply that provides a steady and stable voltage. Do not use a battery charger, as charging voltage will often fluctuate when connected to the vehicle. This may interrupt programing. If a battery maintainer is not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply.
- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), and HVAC.
- During the programming procedure, follow the SPS prompts for the correct ignition switch position.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to NO.
- To prevent programming failure due to unintended wireless drops, It is recommended that a wired MDI connection be used when reprogramming the Instrument Cluster.

### Reference Information

**Special Tools**

*EL-52100* Multiple Diagnostic Interface 2 (MDI 2)

### Diagnostic Aids

The programming steps in the Service Programming System (SPS) screens may not be in functional order. Be sure to follow the programming steps in the order listed below.

A successful Serial Data Authentication Configuration must occur prior to proceeding with the P16 Instrument Cluster – Setup, proceeding without a successful Serial Data Authentication Configuration will corrupt the P16 Instrument Cluster – Setup.

### Replace and Program Control Module (UDC or UDD)

To program a replacement or an existing Control Module, perform the following procedure:

1. Ignition ON/Vehicle in Service Mode.
2. Disconnect Wi-Fi dongle from MDI 2.
   Install *EL-52100* (MDI 2) using wired USB Connection from MDI 2 to PC.
3. Install an approved battery maintainer or power supply that provides a steady and stable voltage to support the 12 V system during SPS programming events.
4. Access the Service Programming System (SPS) and follow the on-screen instructions.
5. Ignition/Vehicle OFF.
6. On the SPS Supported Controllers screen, select P16 Instrument Cluster – Programming and follow the on-screen instructions.

**Note:** If the Setup step fails and the Programming step is successful, perform the Serial Data Authentication Configuration procedure and then repeat the Setup step. Refer to: *Serial Data Authentication Configuration 3-49*

7. On the SPS Supported Controllers screen, select P16 Instrument Cluster – Setup and follow the on-screen instructions.
8. Clear DTCs.

### Replace and Program Control Module (UDV or UHS)

To program a replacement or an existing Control Module, perform the following procedure:

1. Ignition ON/Vehicle in Service Mode.

**Note:** Ensure programming of this module is performed using the EL-52100 (MDI 2). Using the EL-47955 (MDI) will result in a programming failure.

2. Disconnect Wi-Fi dongle from MDI 2.
   Install *EL-52100* (MDI 2) using wired USB Connection from MDI 2 to PC.

3. Install an approved battery maintainer or power supply that provides a steady and stable voltage to support the 12 V system during SPS programming events.
4. Access the Service Programming System (SPS) and follow the on-screen instructions.
5. Ignition/Vehicle OFF.

**Note:** In the event that an SPS selection screen appears and selecting Hardware ID is required, this refers to the new Instrument Panel Cluster Control Module hardware Bootloader part number which can be viewed in GDS2

6. On the SPS Supported Controllers screen, select P16 Instrument Cluster – Graphics Programming and follow the on-screen instructions.
7. On the SPS Supported Controllers screen, select P16 Instrument Cluster – Programming and follow the on-screen instructions.

**Note:** If the Setup step fails and the Programming step is successful, perform the Serial Data Authentication Configuration procedure and then repeat the Setup step. Refer to: *Serial Data Authentication Configuration 3-49*

8. On the SPS Supported Controllers screen, select P16 Instrument Cluster – Setup and follow the on-screen instructions.

**Note:** If Ethernet programming fails, ensure Instrument Cluster is communicating over Ethernet properly. Refer to [Link target (target-id 300812-) not found]

9. Clear DTCs.

## Reprogram Control Module (UDC or UDD)

To program a replacement or an existing Control Module, perform the following procedure:

1. Ignition ON/Vehicle in Service Mode.

**Note:** Ensure programming of this module is performed using the EL-52100 (MDI 2). Using the EL-47955 (MDI) will result in a programming failure.

2. Disconnect Wi-Fi dongle from MDI 2.
   Install *EL-52100* (MDI 2) using wired USB Connection from MDI 2 to PC.
3. Install an approved battery maintainer or power supply that provides a steady and stable voltage to support the 12 V system during SPS programming events.
4. Access the Service Programming System (SPS) and follow the on-screen instructions.
5. Ignition/Vehicle OFF.
6. On the SPS Supported Controllers screen, select P16 Instrument Cluster – Programming and follow the on-screen instructions.
7. Clear DTCs.

## Reprogram Control Module (UDV or UHS)

To program a replacement or an existing Control Module, perform the following procedure:

1. Ignition ON/Vehicle in Service Mode.

**Note:** Ensure programming of this module is performed using the EL-52100 (MDI 2). Using the EL-47955 (MDI) will result in a programming failure.

2. Disconnect Wi-Fi dongle from MDI 2.
   Install *EL-52100* (MDI 2) using wired USB Connection from MDI 2 to PC.
3. Install an approved battery maintainer or power supply that provides a steady and stable voltage to support the 12 V system during SPS programming events.
4. Access the Service Programming System (SPS) and follow the on-screen instructions.
5. Ignition/Vehicle OFF.
6. On the SPS Supported Controllers screen, select P16 Instrument Cluster – Graphics Programming and follow the on-screen instructions.
7. On the SPS Supported Controllers screen, select P16 Instrument Cluster – Programming and follow the on-screen instructions.

**Note:** If Ethernet programming fails, ensure Instrument Cluster is communicating over Ethernet properly. Refer to [Link target (target-id 300812-) not found]

8. Clear DTCs.

## Unsuccessful Programming Recovery

**Note:**

- Ensure the *EL-52100* (MDI 2) is used when programming the vehicle. Using the EL-47955 (MDI) will result in a programming failure.
- It may be necessary to use another *EL-52100* (MDI 2) and/or cables to verify proper operation to eliminate the possibility of faulty equipment.
- If Ethernet programming fails, ensure there is no fault in the Ethernet circuits between the X84 Data Link Connector and K56 Serial Data Gateway Module. Refer to [Link target (target-id 300812-) not found] to diagnose these Ethernet circuits.

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. Exit Service Programming System (SPS) and disconnect all programming equipment from the vehicle.
2. Disconnect all battery voltage or ignition voltage sources from the control module. All voltage sources must be removed for a minimum of 10 min. This can be done several ways and should be completed by using the least intrusive way. This

can vary depending on vehicle and control module location and can be done by one of the options listed below:

- Removing all fuses supplying battery voltage and ignition voltage to the control module.
- Disconnecting all harness connectors from the control module.

***Warning: Always ensure the Battery Maintenance Mode is inactive before disconnecting the low voltage 12 volt battery (or batteries). This mode can be active with the ignition off, regardless of whether the vehicle charging cord is plugged in or not. When this mode is active, the on-board high voltage battery charger(s) will energize the 12 volt battery cables and charge the 12 volt battery (or batteries). Disconnecting any battery cables while this mode is active may result in an electrical shock or a burn from hot battery cable leads.***

- Check the 12 volt battery voltage with a digital multimeter before disconnecting any battery cables leads. If the voltage is 13.5 volts or above, the Battery Maintenance Mode is active. The technician must wait for the T18 battery charger to deactivate before disconnecting the battery negative cable. For more information refer to [Link target (target-id 37815-) not found] . With Battery Maintenance Mode inactive, perform a 12 V battery disconnect by disconnecting the battery negative cable. Refer to [Link target (target-id 37733-) not found] .

3. Reconnect all battery voltage and ignition voltage sources to the control module.
4. Close down the current session of Techline Connect and reopen a new session.
5. Verify the control module, data link connector, and programming tool connections are secure and the tool software is up to date.
6. Ignition/Vehicle OFF, ensure that the key fob is inside the vehicle and not moved for the duration of the programming to prevent an inadvertent power mode change during programming.
7. Access the Service Programming System (SPS) and follow the on-screen instructions for the control module.
8. Verify the control module can be programmed.

⇒ **If the control module can not be programmed**

8.1. Ignition ON/Vehicle in Service Mode for 1 min.

8.2. Ignition/Vehicle OFF.

8.3. Access SPS and follow the on-screen instructions for the control module.

**Note:** If programming is still not successful after the second programming attempt, check the following:

- For facilities using an internet firewall, ensure firewall settings are not blocking file downloads and/or require elevated rights.
- For United States and Canada GM dealers, the appropriate firewall settings can be found in the GM DEALER INFRASTRUCTURE & SECURITY GUIDELINES (DISG) section 2.d.vii.
- For optimal consistency during the reprogramming session, we recommend connecting the PC to a hardwired Ethernet cable, as the large software file size may affect stability.

8.4. Verify the control module can be programmed.

⇒ If the control module can not be programmed, replace the control module.

⇓ If the control module can be programmed

8.5. Clear DTCs.

⇓ **If the control module can be programmed**

9. Clear DTCs.

## T1 Accessory AC and DC Power Control Module: Programming and Setup

This device does not require programming or setup.

## T3 Audio Amplifier: Programming and Setup

**Note:**

- DO NOT program a control module unless directed to by a service procedure or a service bulletin. If the ECU is not properly configured with the correct calibration software, the ECU will not control all of the vehicle features properly.
- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or ECU damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required, install a battery maintainer or power supply that provides a steady and stable voltage. Do not use a battery charger, as charging voltage will often fluctuate when connected to the vehicle. This may interrupt programing. If a battery maintainer is not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply.
- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), HVAC, , etc.

- During the programming procedure, follow the SPS prompts for the correct ignition switch position.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to NO.

### Diagnostic Aids

During programming you may be required to select multiple calibrations dependent upon vehicle equipment. Have the vehicle build/RPO information available during the following procedure to ensure the correct calibrations are selected.

### Replace and Program Control Module or Reprogram Control Module

To program a replacement or an existing control module, perform the following procedure:

1. Ignition OFF, Vehicle OFF
2. Access the Service Programming System (SPS) and follow the on-screen instructions.
3. On the SPS Supported Controllers screen, select T3 Audio Amplifier – Programming and follow the on-screen instructions.
4. Clear DTCs.

### Unsuccessful Programming Recovery

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. Ignition ON. Ensure the control module, DLC and programming tool connections are secure and the SPS software is up to date.
2. Verify the control module can be reprogrammed.

⇒ **If the control module cannot be reprogrammed**

2.1. Ignition OFF for one minute, ignition ON.

2.2. Verify the control module can be reprog-rammed.

⇒ If the control module cannot be reprogrammed, replace the control module.

⇓ If the control module can be reprogrammed.

2.3. All OK.

⇓ **If the control module can be reprogrammed**

3. All OK.

## T22 Wireless Accessory Charging Module: Programming and Setup

**Note:**

- Always verify the module has the newest software available before replacing the module.
- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required, install a battery maintainer or power supply that provides a steady and stable voltage. Do not use a battery charger, as charging voltage will often fluctuate when connected to the vehicle. This may interrupt programing. If a battery maintainer is not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply.
- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- During the programming procedure, follow the SPS prompts for the correct ignition switch position.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to NO.

### Replace and Program Control Module

1. Access the Service Programming System (SPS) and follow the on-screen instructions.
2. On the SPS Supported Controllers screen, select T22 Wireless Accessory Charging Module - Programming and follow the on-screen instruc-tions.
3. Clear DTCs.

### Reprogram Control Module

1. Access the Service Programming System (SPS) and follow the on-screen instructions.
2. On the SPS Supported Controllers screen, select T22 Wireless Accessory Charging Module - Programming and follow the on-screen instruc-tions.
3. Clear DTCs.

### Unsuccessful Programming Recovery

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. Ignition ON. Ensure the control module, DLC and programming tool connections are secure and the SPS software is up to date.
2. Verify the control module can be reprogrammed.

⇒ **If the control module cannot be reprogrammed**

2.1. Ignition OFF for one minute, ignition ON.

2.2. Verify the control module can be reprog-rammed.

⇒ If the control module cannot be reprogrammed, replace the control module.

⇓ If the control module can be reprogrammed.

2.3. All OK.

⇓ **If the control module can be reprogrammed**

3. All OK.

### Repair Instructions

Perform the *Diagnostic Repair Verification 3-319* after completing the repair.

*Control Module References 3-4* for Control Module replacement, programming and setup

## K111 Fuel Pump Power Control Module: Programming and Setup

This control module does not require SPS programming but does require the following setup procedures after a new control module is installed:

### Setup for Component Replacement — Fuel Pump Driver Control Module Configuration/ Fuel Pump Power Control Module Configuration

1. Ignition » On / Vehicle » In Service Mode — For 2 min
2. Ignition/Vehicle » Off — For 2 min
3. Ignition » On / Vehicle » In Service Mode
4. Perform the following action: Clear the DTCs.
5. Start Engine
6. Verify DTC P1005 is not set

⇒ **If the DTC sets**

6.1. Perform the following action: Clear the DTCs.

6.2. Ignition/Vehicle » Off — For 2 min

6.3. Start Engine

6.4. Verify the DTC does not set.

⇒ If the DTC sets» Repeat the procedure starting at step 1

⇒ If the DTC is not set » Configuration— Complete

⇓ **If the DTC is not set**

7. Configuration— Complete

## Serial Data Authentication Configuration

### General Information

Serial Data Authentication Configuration ensures secure communication between control modules over different channels by encrypting sensitive data. Secret keys are written to the control modules, allowing messages on the bus to be encrypted.

- During the process, control module data is retrieved from the vehicle to generate unique cryptographic keys.
- These keys are then written to each control module, allowing secure communication between control modules.
- In the case of control module replacement, re-running the configuration is required to introduce the new control module to the network; otherwise, communication will fail due to unrecognized messages.

### Reference Information

**Special Tools**
*EL-52100* Multiple Diagnostic Interface 2 (MDI 2)

### Serial Data Authentication Configuration

**Note:** Before attempting to perform the Serial Data Authentication Configuration procedure,

- Make sure all CAN control modules are connected and communicating.
- Diagnose the following communication DTCs first: DTC U0073-U007E, U0100-U02FF, U1100-U12FF, U1600-U17FF, U1977, U1978, U2200-U23FF, and U2400-U25FF.
- Diagnose the following programming DTCs: U3000 51, U3000 52, U3000 53, U3000 56, and U3000 57.
- If DTC U1962 is stored only as a history DTC and not retrieved as a current DTC, do not perform the Serial Data Authentication Configuration procedure.
- DO NOT perform the Serial Data Authentication Configuration procedure unless directed to by a service procedure or a service bulletin.
- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. Check the 12 V battery with a digital multimeter and ensure the voltage is above 12.5 V. When required, install a battery maintainer or

power supply that provides a steady and stable voltage. DO NOT use a battery charger, as charging voltage will often fluctuate when connected to the vehicle. This may interrupt programing. If a battery maintainer is not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply.

1. Ignition/Vehicle OFF, keep the key inside the vehicle.
2. Access the Service Programming System (SPS) and follow the on-screen instructions.

**Note:** The Serial Data Authentication Configuration button is located in the lower right corner of the SPS Supported Controllers screen in the Techline Connect system.

3. On the SPS Supported Controllers screen, select Serial Data Authentication Configuration button and follow the on-screen instructions.
4. Ignition/Vehicle OFF, disconnect the scan tool from the vehicle, all access doors closed, all vehicle systems OFF, and all keys at least 3 m (9.8 ft) away from vehicle. Allow the vehicle to go into sleep mode.
5. Ignition ON/Vehicle In Service Mode.
6. Using a scan tool, clear DTCs.

### Troubleshooting

Serial Data Authentication Configuration can fail for several reasons. After confirming all control modules are fully programmed and that no underlying issues exist, follow these steps to attempt a successful configuration:

1. Verify X84 Data Link Connector (DLC) Connection: Ensure the X84 Data Link Connector is securely attached to the vehicle.
2. Use a Direct MDI 2 Connection: Connect the scan tool directly to the computer via a wired connection instead of using wireless connection (Techline Connect may need to be reset to change the connection type).
3. Disconnect the 12 V Battery: Reset the vehicle systems by disconnecting the 12 V battery negative cable for 1 min. For electric vehicles, check the 12 V battery voltage with a digital multimeter before disconnecting any battery cables leads. If the voltage is 13.5 V or above, the Battery Maintenance Mode is active. The technician must wait for the T18 Battery Charger to deactivate before disconnecting the battery negative cable. Follow the appropriate steps in the Battery Negative Cable Disconnection and Connection procedure located under the Starting, Charging, and Low Voltage Energy Storage category.
4. Perform the Serial Data Authentication Configuration procedure. If the procedure still fails, inspect the X84 Data Link Connector for contamination, corrosion, and terminal tension and inspect the wiring between the X84 Data Link Connector and K56 Serial Data Gateway Module for any faults.

In the case of a Serial Data Authentication Configuration failure, the SPS error window should point to which control module is failing:

- Function: “Key Provisioning” refers to Serial Data Authentication Configuration.
- Sub Function: refers to which step in the process failed.
- ECU: refers to the failing control module if that is the case.

If the Sub Function column in SPS error window points to a “Configure Link” error, run through the trouble shooting steps 1-4 above.

If no SPS error window is displayed, but the SPS screen indicates that Serial Data Authentication Configuration has Failed, run through the trouble shooting steps 1-4 above.

### Service Programming System (SPS)

For step-by-step control module programming instructions, please refer to the techline information system (TIS) terminal.

Review the information below to ensure proper programming protocol.

**Note:**

- DO NOT program a control module unless you are directed by a service procedure or you are directed by a General Motors service bulletin. Programming a control module at any other time will not permanently correct a customers concern.
- It is essential that the TIS terminal, MDI/MDI2, and/or Scan Tool, is equipped with the latest software before performing service programming.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required, install a battery maintainer or power supply that provides a steady and stable voltage. Do not use a battery charger, as charging voltage will often fluctuate when connected to the vehicle. This may interrupt programing. If a battery maintainer is not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply.
- Some modules will require additional programming/setup events to be performed before or after programming.

- Some vehicles may require the use of a CANDi or MDI/MDI2 module for programming.
- Review the appropriate service information for these procedures.
- DTCs may set during programming. Clear DTCs after programming is complete.
- Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to NO.

Ensure the following conditions are met before programming a control module:

1. Vehicle system voltage:
   - There is not a charging system concern. All charging system concerns must be repaired before programming a control module.
   - Battery voltage is greater than 12 volts but less than 16 volts. The battery must be fully charged before programming the control module.
   - Turn OFF or disable any system that may put a load on the vehicles battery, such as the following components:
     - Interior lights
     - Exterior lights including daytime running lights (DRL)—Applying the parking brake, on most vehicles, disables the DRL system
     - Heating, ventilation, and air conditioning (HVAC) systems
     - Engine cooling fans
     - Radio, etc.
2. The ignition switch must be in the proper position. SPS prompts you to turn ON the ignition, with the engine OFF. DO NOT change the position of the ignition switch during the programming procedure, unless instructed to do so.
3. Make certain all tool connections are secure, including the following components and circuits:
   - Scan Tool
     - The RS-232 communication cable port
     - The connection at the data link connector (DLC)
     - The voltage supply circuits
   - MDI/MDI2
     - The USB, Ethernet or Wireless communication port
     - The connection at the data link connector (DLC)
4. DO NOT disturb the tool harnesses while programming. If an interruption occurs during the programming procedure, programming failure or control module damage may occur.

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. DO NOT turn the ignition OFF. Ensure that all control module and DLC connections are secure and the TIS terminal operating software is up to date.
2. Attempt to reprogram the control module.
3. If the control module can still not be programmed, turn the ignition OFF for at least one minute.
4. Turn the ignition ON and attempt to reprogram the control module. The control module should program.
   ⇒ If the control module still cannot be programmed, replace the control module.

After successfully programming the control module, ensure that all post programming procedures are performed; refer to *Control Module References 3-4* for the appropriate control module Programming and Setup document for any required procedures.

## Q77 Transmission Control Solenoid Valve Characterization Programming

The solenoids in this transmission require unique performance characteristic data in order to function at maximum efficiency. This data is programmed and stored in the vehicle’s transmission control module (TCM). When a transmission assembly, TCM, or solenoids are replaced during service, the performance characteristic data for the solenoids must be retrieved from a web server “cloud” repository and reprogrammed into the TCM.

Reprogramming also ensures that the characteristic data relationship is properly matched between the solenoids, valve body, and transmission.

Solenoid characterization reprogramming is performed using the TIS2Web Service Programming System (SPS).

## Solenoid Reprogramming Procedure

Perform solenoid characterization reprogramming after one of the following service procedures:

**Note:** Select “Replace Transmission” at the MCVM Characterization selection screen.

- Replace transmission assembly

**Note:** Select “Replace Control Valve Solenoid Body” at the MCVM Characterization selection screen.

- Replace control valve solenoid body

**Note:** Select “Replace Solenoid” at the MCVM Characterization selection screen.

- Replace solenoid (currently not an available Service Procedure)

**Note:** Select “Refresh Characterization Data” at the MCVM Characterization selection screen.

- Replace TCM

**Note:** Select “Refresh Characterization Data” at the MCVM Characterization selection screen.

- Solenoid characterization may also be performed to “refresh” characterization data.

To perform solenoid characterization after a transmission component replacement:

1. Document the new Transmission Unique Number (TUN). The TUN location may be found here: [Link target (target-id 315221-) not found] . Since the TUN can be difficult to access when the transmission is installed in the vehicle, ensure you document the 16-digit TUN prior to installing the transmission in the vehicle.
2. Use a generically available QR Code/data matrix scanner to obtain the Part Unique Number (PUN). The PUN location may be found here: [Link target (target-id 315238-) not found] . Before installing the control valve solenoid body onto the transmission, document the 22-digit PUN. If the control valve solenoid body PUN has not been saved for reference, it may be necessary to disassemble the control valve solenoid body from the transmission to clearly read the control valve solenoid body PUN.
3. Log into TIS2Web/SPS.
4. Type the vehicle identification number (VIN).
5. Perform the SPS Transmission Control Module programming event.
   - Select “Transmission Control Module - Programming” to update TCM calibrations and Solenoid Characterization data.

     OR
   - Select “Transmission Control Module - MCVM Operations” to update Solenoid Characterization data only.

**Note:** TUN/PUN is case sensitive. Letters should be entered in all capitals.

6. From the “MCVM (Mechanical Characterization and Virtual Matching) Operation Selection” screen, select the applicable service procedure to be performed. You will be prompted to provide the necessary Transmission Unique Number (TUN) when replacing a transmission part.

At this point, the system will read the VIN from the engine control module (ECM) using the multiple diagnostic interface (MDI) and then retrieve the applicable genealogy data tree from the cloud. This data tree accesses the original characterization data so that it may be updated with the new component information. The system acquires characterization data for the given TUN/PUN via the cloud and updates the genealogy tree. The TCM is updated with the correct solenoid characterization data, and the cloud is updated with the new genealogy relationship.

## Description and Operation

### Over The Air Description and Operation

Each item in the list below represents topics covered in detail below.

- Over The Air (OTA) Description
- OTA Software Download
- Installing an Update
- Deferring or Declining an Update
- Unable to Complete
- Proper Battery Charging

### Over The Air (OTA) Description

The Over The Air (OTA) feature was designed to install vehicle software updates remotely. Remote software update is an in-vehicle feature that enables the installation of a software package to update certain modules without requiring service test equipment to be physically connected to the vehicle. Remote software updates will utilize a long range or short range connection from the host module to a remote IT system. There must be an active 4G LTE or WiFi connection to download and install vehicle software updates. The customer does not need an active OnStar subscription but they do need to accept the vehicle Terms and Conditions to be eligible to receive OTA vehicle software updates.

**Note:** Fleet vehicles must be activated as a Fleet account (not a business account) and require a separate Terms and Conditions agreement to be completed. Please see your fleet administrator for assistance with completing this agreement.

OTA software updates that are pushed to vehicles remotely continue to expand in frequency and use on GM models. Vehicles using the Global A electrical architecture can support three modules for OTA updates, such as the radio, OnStar, and Serial Data Gateway modules.

The new Vehicle Intelligence Platform (VIP) electrical architecture, introduced on some 2020 vehicles and beyond, powers a new electronic system that is capable of managing up to 4.5 terabytes of data processing power per hour, which is a fivefold increase in capability over the previous Global A electrical architecture. On vehicles using the VIP architecture, virtually all modules can support OTA updates, which means that the OTA software is not only for the infotainment system.

When an OTA update has been downloaded to a vehicle and is available to be installed, a message is displayed on the infotainment screen notifying the driver of the impending update. The message to accept and install an OTA update will not appear until the minimum values for the battery State of Charge (SOC) and Outside Ambient Temperature (OAT) are met.

### OTA Software Download

An OTA update can be pushed to a vehicle while the vehicle is parked or being driven. There is an option for notification to the driver that the software update is being downloaded to the vehicle, the default setting is set to off. Battery SOC and OAT values are not checked before a download. These checks are only performed once the software update is downloaded and ready to be installed.

The OTA software download can occur in increments. Download will not be paused while the vehicle is being driven, it continues in the background. If the vehicle is turned off the download will continue for a maximum of 10 minutes. If the download did not complete it will continue on the next ignition cycle from where it stopped.

### Installing an Update

Once the OTA software is downloaded, a message on the infotainment screen will display a prompt to accept the installation. The customer does not need to remain in the vehicle during the installation of the software. However, the vehicle cannot be driven during the installation and certain vehicle features may not be available. It's not required for the ignition to be ON for the installation to begin.

Installation time will vary based on the size of the update. The average installation will take approximately 15 minutes. Depending on the module, it may take longer to complete. The “Accept” message on the infotainment screen will provide an estimation of the approximate installation time. The customer may also comment that the radio appears to stay on after exiting the vehicle.

### Deferring or Declining an Update

When an OTA update is downloaded, customers have the option to defer or decline the installation. The standard policy for OTA software updates is to set the customer notifications to 30 ignitions cycles. If the customer does not act upon the prompts within this counter, the update package is removed from the vehicle.

If a customer ignores the notification, the ignition cycle counter decreases by one immediately.

If the customer defers the installation by selecting the “Remind Me Later” option, the ignition cycle counter decreases by one, but it will not decrease again until after the customer-selected “Remind Me Later” period, regardless of the number of ignition cycles that occur during that period. For example, if 24 hours is selected for the next remind me time frame and 20 ignition cycles occurred, those 20 ignition cycles do not decrease the ignition cycle counter.

**Note:** For customer use case, standard operating procedure for campaign is to set the notifications to 30 ignitions cycles. If the Customer does not act upon the prompts within this counter, the package / invite is removed from the vehicle. In this scenario, we will wait 2 weeks and re-enroll back into the campaign.  FYI: this counter can be selected from 1 to 999 ignition cycles when setting up the campaign.

If the OTA update installation is deferred by the customer, it can be installed at a later date through the Vehicle Software menu under Settings > System on the infotainment screen.

If the customer selects the “Decline Update” option, the update package is immediately removed from the vehicle. In this case, the vehicle will not be re-enrolled to receive the OTA update at a later date, unless the update is a Field Action. OTA updates will not be installed in a vehicle without a customer's consent. One exception with Constraint Consent use case there is a “May day” counter set in the vehicle, typically 10 ignition cycles. The Customer has that many ignition cycles to complete the update.  Upon using all notifications, the installation will take place once this counter has expired. This use case is only for Cyber Critical recall Field Actions and requires Global Safety Field Investigations approval to utilize this use case.  To date, this use case has not been used for any field actions.

### Unable to Complete

There are a number of criteria that must be met in order to successfully complete the software update installation on a vehicle. The most common cause of being unable to complete an installation is the State of Charge (SOC) of the 12V battery. If the 12V battery does not meet the minimum SOC requirement of 70 percent or greater along with an Outside Ambient Temperature (OAT) greater than 14°F (-10°C), the OTA update installation will not occur. The colder the ambient air temperature is, the higher the target SOC becomes. To determine the battery SOC for VIP vehicles, go to BCM/12V Battery/Battery Sensor Module – State of Charge in GDS 2.

There may be other conditions that will affect an OTA update installation. If any of these conditions are present, a “Vehicle Conditions Not Ideal” message may display on the infotainment screen stating that conditions are not ideal to proceed with the update installation. These conditions do not indicate a failure; only that the vehicle does not meet all the criteria necessary to complete the OTA update installation.

Some customers may comment that the radio appears to stay on or is backlit after exiting the vehicle. If this occurs, it’s a telltale sign that an OTA update is in progress.

If an OTA fails to update ensure there is no 3rd party dongle connected to the DLC of the vehicle. This could block an OTA from completing.

### Proper Battery Charging

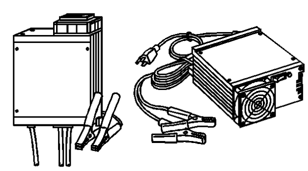
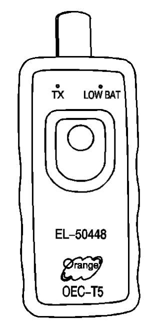
If a low battery SOC is preventing the OTA update installation, the 12V battery should be charged to meet the target SOC of 70 percent.

On some GM models, connecting the battery charger directly to the 12V battery posts will bypass the Battery Sensor Module, resulting in a default SOC value of 65 percent and a “Conditions Not Met” message.

**Note:** The Battery Sensor Module is attached directly to the battery negative terminal. It determines the battery condition by calculating the battery SOC, functions, and state of health, which is used to help determine if the 12V Stop/Start system will allow an Auto Stop when the vehicle has come to a stop. To properly charge the battery, the negative lead of the charger must be connected to chassis ground, and not directly to the negative battery post. Connecting to chassis ground allows current to flow through the Battery Sensor Module during charging as well as be monitored. The current cannot be monitored by the Battery Sensor Module if the negative lead of the charger is directly connected to the negative battery post.If a battery is improperly charged, the Battery Sensor Learn will be required to calibrate the Battery Sensor Module. With the ignition off, let the vehicle rest for a minimum of four hours without any interruptions (opening a door, using the key fob, etc.). Verify if the battery SOC is 70 percent or greater using GDS 2 before attempting to continue with an OTA update.

## Special Tools and Equipment

### Special Tools

| Illustration | Tool Number/ Description |
|---|---|
| <br>2223727 | EL 49642<br>SPS Programming Support Tool |
| <br>2563769 | EL 50448<br>Tire Pressure Monitor Sensor Activation Tool |
| <br>5443144 | EL 52100<br>Multi Diagnostic Interface 2 (MDI 2) |

| Illustration | Tool Number/ Description |
|---|---|
|  5331982 | EL 52545<br>Tire Pressure Monitor Sensor and RF Diagnostic Tool |
|  5608151 | EL 52800<br>Battery Charger/Tester |

# Vehicle Diagnostic Information

## Specifications

### A11 Radio: Scan Tool Information

**A11 Radio: Scan Tool Information**

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| **Operating Conditions:** Ignition ON | | | |
| **Data Display** | | | |
| • Infotainment System Status | — | Run | Indicates the status of the infotainment system. |
| • Rearview Camera Supply Current | — | Varies | Indicates the rearview camera supply current |
| • Rearview Camera Supply Voltage | — | 10V | Indicates the rearview camera supply voltage.. |
| • Control Module Temperature Sensor 1 | — | Varies | This displays the temperature reading of the control module temperature sensor 1. |
| • Control Module Temperature Sensor 2 | — | Varies | This displays the temperature reading of the control module temperature sensor 2. |
| • Control Module Operation Mode | — | Run | This displays the current operational mode of the control module. |
| • Battery Saver Mode | — | On/Off | Indicates if battery saver mode is active. |
| **Ethernet Bus Data** | | | |
| • Ethernet Bus Master Clock | — | Yes/No | Ethernet Bus Master Clock |
| • Rear Seat Infotainment Module to Radio Ethernet Data Received | — | Yes/No | Indicates if the radio has received data from the rear seat infotainment module. |
| • Telematics Control Module to Radio Ethernet Data Ready To Transmit | — | Yes/No | Indicates if the telematics control module ethernet data is ready to transmit to the radio. |
| • Ethernet Port 0 Receive Failure Count | — | Varies | Displays failures in counts (Rear Seat Infotainment) |
| • Ethernet Port 0 Transmit Failure Count | — | Varies | Displays failures in counts (Rear Seat Infotainment) |
| • Ethernet Port 1 Receive Failure Count | — | Varies | Displays failures in counts (Audio Amplifier) |
| • Ethernet Port 1 Transmit Failure Count | — | Varies | Displays failures in counts (Audio Amplifier) |
| • Ethernet Port 2 Receive Failure Count | — | Varies | Displays failures in counts (Central Gateway Module) |
| • Ethernet Port 2 Transmit Failure Count | — | Varies | Displays failures in counts (Central Gateway Module) |
| • Ethernet Port 3 Receive Failure Count | — | Varies | Displays failures in counts (Telematics Control Module) |
| • Ethernet Port 3 Transmit Failure Count | — | Varies | Displays failures in counts (Telematics Control Module) |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| • Ethernet Port 4 Receive Failure Count | — | Varies | Displays failures in counts |
| • Ethernet Port 4 Transmit Failure Count | — | Varies | Displays failures in counts |
| • Ethernet Port 5 Receive Failure Count | — | Varies | Displays failures in counts |
| • Ethernet Port 5 Transmit Failure Count | — | Varies | Displays failures in counts |
| • Ethernet Port 6 Receive Failure Count | — | Varies | Displays failures in counts |
| • Ethernet Port 6 Transmit Failure Count | — | Varies | Displays failures in counts |
| • Ethernet Port 0 IP Address | — | Varies | Displays ethernet IP address |
| • Ethernet Port 1 IP Address | — | Varies | Displays ethernet IP address |
| • Ethernet Port 2 IP Address | — | Varies | Displays ethernet IP address |
| • Ethernet Port 3 IP Address | — | Varies | Displays ethernet IP address |
| • Ethernet Port 4 IP Address | — | Varies | Displays ethernet IP address |
| • Ethernet Port 5 IP Address | — | Varies | Displays ethernet IP address |
| • Ethernet Port 6 IP Address | — | Varies | Displays ethernet IP address |
| **Configuration Data** | | | |
| • Manufacturer Enable Counter | — | Varies | Displays in counts |
| **Bluetooth Data** | | | |
| • Number of Bluetooth Devices Connected | — | Varies 1–10 | Indicates the number of Bluetooth paired to the vehicle. |
| • Bluetooth Device 1: Connection Status | — | Varies | Indicates the device status. (0) Unconnected, (1) Connected / Idle, (2) Call active, (3) 3-way calling active |
| • Bluetooth Device 1: Friendly Name | — | Varies | The scan tool displays a decimal value between 0 and 255. |
| • Bluetooth Device 2: Connection Status | — | Varies | Indicates the device status. (0) Unconnected, (1) Connected / Idle, (2) Call active, (3) 3-way calling active |
| • Bluetooth Device 2: Friendly Name | — | Varies | Displays the bluetooth phone to telematics communication interface control module status. |
| • Bluetooth Device 3: Connection Status | — | Varies | Indicates the device status. (0) Unconnected, (1) Connected / Idle, (2) Call active, (3) 3-way calling active |
| • Bluetooth Device 3: Friendly Name | — | Varies | Indicates the name given to the paired device |
| • Bluetooth Device 4: Connection Status | — | Varies | Indicates the device status. (0) Unconnected, (1) Connected / Idle, (2) Call active, (3) 3-way calling active |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| • Bluetooth Device 4: Friendly Name | — | Varies | Indicates the name given to the paired device |
| • Bluetooth Device 5: Connection Status | — | Varies | Indicates the device status. (0) Unconnected, (1) Connected / Idle, (2) Call active, (3) 3-way calling active |
| • Bluetooth Device 5: Friendly Name | — | Varies | Indicates the name given to the paired device |
| • Bluetooth Device 6: Connection Status | — | Varies | Indicates the device status. (0) Unconnected, (1) Connected / Idle, (2) Call active, (3) 3-way calling active |
| • Bluetooth Device 6: Friendly Name | — | Varies | Indicates the name given to the paired device |
| • Bluetooth Device 7: Connection Status | — | Varies | Indicates the device status. (0) Unconnected, (1) Connected / Idle, (2) Call active, (3) 3-way calling active |
| • Bluetooth Device 7: Friendly Name | — | Varies | Indicates the name given to the paired device |
| • Bluetooth Device 8: Connection Status | — | Varies | Indicates the device status. (0) Unconnected, (1) Connected / Idle, (2) Call active, (3) 3-way calling active |
| • Bluetooth Device 8: Friendly Name | — | Varies | Indicates the name given to the paired device |
| • Bluetooth Device 9: Connection Status | — | Varies | Indicates the device status. (0) Unconnected, (1) Connected / Idle, (2) Call active, (3) 3-way calling active |
| • Bluetooth Device 9: Friendly Name | — | Varies | Indicates the name given to the paired device |
| • Bluetooth Device 10: Connection Status | — | Varies | Indicates the device status. (0) Unconnected, (1) Connected / Idle, (2) Call active, (3) 3-way calling active |
| • Bluetooth Device 10: Friendly Name | — | Varies | Indicates the name given to the paired device |
| **GPS Data** | | | |
| Longitude at Last GPS Fix | — | Varies | Indicates the longitude coordinates at the last GPS signal reveived |
| Latitude at Last GPS Fix | — | Varies | Indicates the latitude coordinates at the last GPS signal reveived |
| **Audio Data** | | | |
| Left Rear Audio Output | — | Active/Not Active | Indicates the status of the audio output |
| Right Front Audio Output | — | Active/Not Active | Indicates the status of the audio output |
| Left Front Audio Output | — | Active/Not Active | Indicates the status of the audio output |
| Right Rear Audio Output | — | Active/Not Active | Indicates the status of the audio output |
| Current AM Frequency | — | Varies | Indicates the current frequency the radio is set to |
| Current FM Frequency | — | Varies | Indicates the current frequency the radio is set to |
| **Auxiliary Input Data** | | | |
| Infotainment Control Switch, Switch 1 | — | Yes/No | Indicates if the switch is pressed |
| Infotainment Control Switch, Switch 2 | — | Yes/No | Indicates if the switch is pressed |
| Infotainment Control Switch, Switch 3 | — | Yes/No | Indicates if the switch is pressed |
| Infotainment Control Switch, Switch 4 | — | Yes/No | Indicates if the switch is pressed |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Infotainment Control Switch, Switch 5 | — | Yes/No | Indicates if the switch is pressed |
| Infotainment Control Switch, Switch 6 | — | Yes/No | Indicates if the switch is pressed |
| Infotainment Control Switch, Switch 7 | — | Yes/No | Indicates if the switch is pressed |
| Infotainment Control Switch, Switch 8 | — | Yes/No | Indicates if the switch is pressed |
| Infotainment Control Switch, Knob 1 Push Switch | — | Yes/No | Indicates if the switch is pressed |
| Infotainment Control Switch, Knob 1 Rotary Position | — | Varies | Displays the counts when the knob is turned |
| Infotainment Control Switch, Knob 2 Push Switch | — | Yes/No | Indicates if the switch is pressed |
| Infotainment Control Switch, Knob 2 Rotary Position | — | Varies | Displays the counts when the knob is turned |

### A11 Radio: Scan Tool Output Controls

| Output Control | Description |
|---|---|
| **Display Check** | |
| Info Display Dimming | Allows control of the info display dimming |
| Backlight Dimming | Allows control of the backlight dimming |
| Rearview Camera Display | Allows the rearview camera to be turned on and off |
| **Radio Controls** | |
| Radio Tuner AM Frequency | Allows control of the AM tuner frequency |
| Radio Tuner FM Frequency | Allows control of the FM tuner frequency |

## A26 Heater and Air Conditioning User Interface Control - Front: Scan Tool Information

### A26 Heater and Air Conditioning User Interface Control– Front Scan Tool Data Parameters

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| **Operating Conditions:** Ignition ON/ Vehicle in Service Mode | | | |
| Base Model Part Number | — | Varies | The 8– Digit Base Model Part Number is the part number for the hardware without software and calibrations. |
| Base Model Part Number – Alpha Code | — | Varies | The scan tool displays the Base Model Alpha Code |
| Boot Software Number | — | Varies | The scan tool displays the 8– Digit Boot Software Part Number |
| Communication Channel Status – CAN | — | Varies | The scan tool displays the status of the CAN Bus |
| Diagnostic Data Identifier | — | Varies | The scan tool displays the 4 character alphanumeric device ID. |
| End Model Part Number | — | Varies | The 8– Digit End Model Part Number is the part number for the hardware of the control module with software and calibrations. |
| End Model Part Number – Alpha Code | — | Varies | The scan tool displays the End Model Alpha Code |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Power Mode | — | Run | The scan tool displays the current vehicle power mode. |
| Vehicle Identification Number (VIN) | — | Varies | The scan tool displays the learned VIN |

## B174W Frontview Camera: Scan Tool Information

**Note:** Due to software and hardware variations, not all information may be applicable.

### Front View Camera Module Scan Tool Data Parameters

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| **Operating Conditions:** Ignition ON/Engine OFF/Lane Departure Warning ON | | | |
| System Voltage | — | Varies | The scan tool displays the system voltage depending of the current battery voltage. |
| System Power Mode | — | Run | The scan tool displays Off, Accessory, Run, Cranking or Undefined. This is the state of the ignition switch. |
| Power Mode Controlled by Backup Device | — | Run | The scan tool displays Off, Accessory, Running or Cranking depending of the current power mode. |
| Frontview Camera System Status | — | On | The scan tool displays Normal, Malfunction or Undefined depending on the state of the Frontview Camera System. |
| Frontview Camera Calibration Status | — | Learn Successful | The scan tool displays Not Calibrated, Calibrated, Dynamically Calibrated or Undefined. This is the current state of the calibration. |
| Frontview Camera Learn Mode Status | — | Yes | The scan tool displays percentage between 0–100% depending on the state of the frontview camera learn mode. |
| Distance to Object | — | Varies | The scan tool displays meters between 0–255 depending on the distance from a detectable object to the vehicle. |
| Lane Departure Warning Status | — | Varies | The scan tool displays Off, Disabled, Not Ready to Assist, Ready to Assist, Malfunction, Unknown or Undefined depending on the state of the lane departure warning system. |
| Lane Keep Assist Status | — | Varies | The scan tool displays Off, Disabled, Not Ready to Assist, Ready to Assist, Malfunction, Unknown or Undefined depending on the state of the lane keep assist system. |
| Lane Departure Warning Switch Status | — | Open | The scan tool displays Open or Closed, depending on the state of the lane departure warning switch. |
| Lane Keep Assist Switch Status | — | Open | The scan tool displays Open or Closed, depending on the state of the lane keep assist switch. |
| Lane Departure Warning Indicator Status | — | Off | The scan tool displays Off, On, Malfunction, Unknown or Undefined depending on the state of the lane departure warning system. |
| Forward Collision Alert Function Status | — | Off | The scan tool displays Off, On, Malfunction, Unknown or Undefined depending on the state of the lane departure warning system. |
| Automatic High Beam Activation Status | — | Enabled | The scan tool displays Disabled, Enabled or Undefined depending on the state of the automatic high beam assist system. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Frontview Camera Disable History 1–4 | — | Varies | The scan tool displays Empty, Lane Departure Warning Indicator Malfunction, Lane Departure Warning Switch Malfunction, Sensors Obstructed, Accelerator Pedal Position Out of Range, Driven Wheel Speed Signal Invalid, Non-Driven Wheel Speed Invalid, Brake Pedal Moderate Travel Signal Invalid, Brake Pedal Initial Travel Position Achieved, Lost Communication with Steering Wheel Angle Sensor Module, Invalid Data Received From Steering Wheel Angle Sensor Module, Forward Collision Alert Switch Malfunction, Clutch Pedal Position (CPP) Sensor Performance, Transmission Gear Engaged, Acceleration Sensor Longitudinal Signal, Invalid Data Received From Yaw Rate Sensor Module, Power Mode Controlled by Backup Device, System Power Mode, Overvoltage, Undervoltage or Undefined depending on the history data of the frontview camera disable history. |
| Glare Free High Beam Assist | — | Varies | The scan tool displays Off, Disabled, Malfunction, Enabled, Unknown, or Undefined. |
| Following Distance Indicator Status | — | Varies | The scan tool displays Disabled, Not Ready to Assist, Ready to Assist, or Undefined. |
| Low Beam Decision Reason | — | Varies | The scan tool displays Tail Lights, On Coming Lights, Low Speed, City, Bright Scene, Fog, High Yaw, or Adverse weather |
| FCA Vehicle Type | — | Varies | The scan tool displays Unknown, Truck, Car, MotorBike, Bicycle, Pedestrian, or Undecided. This is the Forward Collision Alert type. |
| FCA Number of Vehicle Detected | — | Varies | The scan tool displays the number of vehicles detected between 0–255 depending on the number of vehicles detected. |

**Note:** Due to software and hardware variations, not all information may be applicable.

### Front View Camera Module Scan Tool Output Controls

| Output Control | Description |
|---|---|
| Clear Disable History Data | The frontview camera control module clears all disable history buffers when commanded from the scan tool. |
| Forward Collision Alert Switch | The frontview camera control module switches the forward collision alert system to Near, Medium or Far when commanded from the scan tool. |
| High Beams | The frontview camera control module switches the high beams On or Off when commanded from the scan tool. |
| Lane Departure Warning Indicator | The frontview camera control module switches the lane departure warning indicator On or Off when commanded from the scan tool. |
| Lane Departure Warning Switch | The frontview camera control module switches the lane departure warning system On or Off when commanded from the scan tool. |
| Vehicle Direction Camera Learn | The frontview camera control module initializes the service point calibration of the frontview camera and switches into the learn mode when commanded from the scan tool. |

## B218L Side Object Sensor Module - Left: Scan Tool Information

### Scan Tool Output Controls

| Output Control | Description |
|---|---|
| Object Detection Alert Indicators | When commanded by the scan tool, the module will provide power to illuminate the side blind zone indicators in appropriate outside rear view mirror. The outside rear view mirror indicator will illuminate. |
| Rear Cross Traffic Audible Alert | When commanded by the scan tool, the module will send a signal to the audio system to turn on the rear cross traffic audible alert signal. The audio system will beep. |
| Rear Cross Traffic Haptic Alert | When commanded by the scan tool, the module will send a signal to the memory seat module to turn on the rear cross traffic haptic alert. The driver’s seat will vibrate. |
| Rear Cross Traffic Visual Alert | When commanded by the scan tool, the module will turn on the rear cross traffic alert indicators on infotainment display. The infotainment display will illuminate with the appropriate rear cross traffic alert. |

## B218R Side Object Sensor Module - Right: Scan Tool Information

### Scan Tool Output Controls

| Output Control | Description |
|---|---|
| Object Detection Alert Indicators | When commanded by the scan tool, the module will provide power to illuminate the side blind zone indicators in appropriate outside rear view mirror. The outside rear view mirror indicator will illuminate. |
| Rear Cross Traffic Audible Alert | When commanded by the scan tool, the module will send a signal to the audio system to turn on the rear cross traffic audible alert signal. The audio system will beep. |
| Rear Cross Traffic Haptic Alert | When commanded by the scan tool, the module will send a signal to the memory seat module to turn on the rear cross traffic haptic alert. The driver’s seat will vibrate. |
| Rear Cross Traffic Visual Alert | When commanded by the scan tool, the module will turn on the rear cross traffic alert indicators on infotainment display. The infotainment display will illuminate with the appropriate rear cross traffic alert. |

## K4 Assist Step Control Module: Scan Tool Information

### Scan Tool Data Parameters

| Parameter | Expected Value | Description |
|---|---|---|
| **Operating Conditions:** Ignition ON | | |
| Manual Deploy Status | Normal | Scan tool displays Unknown, Off, Extend to Passenger Position - Left and Right, or Extend to Cargo Position - Left and Right. |
| Left Assist Step Motor Current | 0 A | Scan tool displays the current amperage of the left assist step motor. |
| Left Assist Step Position | Retracted Position - Left | Scan tool displays Retracted Position - Left, Extend to Passenger Position - Left, Extend to Cargo Position - Left, or Extend to Service Position - Left. |
| Left Assist Step Position | Count Value | Scan tool displays the current left step position count. |
| Left Assist Step System Status | Retracted Position - Left | Scan tool displays Retracted Position - Left, Extend to Passenger Position - Left, Extend to Cargo Position - Left, or Extend to Service Position - Left. |
| Left Assist Step Learn Status | Yes | Scan tool displays Learned if the left step learn has been completed. |
| Left Front Door Ajar Switch | Inactive | Scan tool displays Inactive if the door is shut, and Active if the door is open. |
| Left Rear Door Ajar Switch | Inactive | Scan tool displays Inactive if the door is shut, and Active if the door is open. |
| Right Assist Step Motor Current | 0 A | Scan tool displays the current amperage of the right assist step motor. |

| Parameter | Expected Value | Description |
|---|---|---|
| Right Assist Step Position | Retracted Position - Right | Scan tool displays Retracted Position - Right, Extend to Passenger Position - Right, Extend to Cargo Position - Right, or Extend to Service Position - Right. |
| Right Assist Step Position | Count Value | Scan tool displays the current right step position count. |
| Right Assist Step System Status | Retracted Position - Right | Scan tool displays Retracted Position - Right, Extend to Passenger Position - Right, Extend to Cargo Position - Right, or Extend to Service Position - Right. |
| Right Assist Step Learn Status | Yes | Scan tool displays Learned if the right step learn has been completed. |
| Right Front Door Ajar Switch | Inactive | Scan tool displays Inactive if the door is shut, and Active if the door is open. |
| Right Rear Door Ajar Switch | Inactive | Scan tool displays Inactive if the door is shut, and Active if the door is open. |
| Headlamp Switch Signal | Off | Scan tool displays Unknown, Off, Auto, Park Lamps, Headlamp. |
| Exterior Lighting | Inactive | Scan tool displays Inactive or Active |
| System Power Mode | Varies | Scan tool displays Off, Accessory, Run, Start Request, or Propulsion Active. |
| Battery Voltage | Varies | Current voltage of battery. |

### Scan Tool Output Controls

| Output Control | Description |
|---|---|
| Assist Step Courtesy Lamp | Turns the assist step courtesy lamp ON and OFF. |
| Extend to Passenger Position - Right | Commands the right assist step to the deployed position. |
| Extend to Service Position - Right | Commands the right assist step to the fully extended service position. |
| Retracted Position - Right | Commands the right assist step to the retracted position. |
| Extend to Passenger Position - Left | Commands the Left assist step to the deployed position. |
| Extend to Service Position - Left | Commands the Left assist step to the fully extended service position. |
| Retracted Position - Left | Commands the Left assist step to the retracted position. |

## K9 Body Control Module: Scan Tool Information

### Body Control Module — 12V Battery Data — Scan Tool Data Parameters

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| **Operating Conditions:** Ignition ON/Vehicle in Service Mode, Vehicle in Park, All Doors Closed | | | |
| Battery Capacity | — | Varies | The scan tool displays Ah (Amp hr). Ah/20 is the amount of current a battery can supply for 20hrs until the voltage drops to 10.5V. |
| Battery Current | — | Varies | The scan tool displays Amps. This is the current flowing through the Battery Sensor Module. |
| Battery Current During Autostop | — | Varies | The scan tool displays Amps. This is the amperage flowing out of battery to maintain vehicle systems during an autostop. |
| Battery Sensor Internal Temperature Sensor | — | Varies | The scan tool displays temper-ature in Celsius. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Battery Sensor Module - Battery Nominal Resistance | — | Varies | The scan tool displays mOhm. This is the internal impedance of the 12V battery as measured by the Battery Sensor Module. |
| Battery Sensor Module - Battery Voltage | — | Varies | The scan tool displays Volts. This is the actual 12V battery voltage as measured by the Battery Sensor Module. |
| Battery Sensor Module - Data Received | — | Yes | The scan tool displays Yes or No. This value indicates that information has been received by the Body Control Module from the Battery Sensor Module. |
| Battery Sensor Module - Ignition Off Minimum Battery State of Charge | — | Varies | The scan tool displays percentage (%). |
| Battery Sensor Module - Ignition Off Minimum Battery Voltage | — | Varies | The scan tool displays battery voltage in volts (V). This is the lowest 12V battery voltage recorded during key off. |
| Battery Sensor Module - Maximum Cranking Current | — | Varies | The scan tool displays maximum cranking current in amperes (A). This is the actual peak value of amps measured by the Battery Sensor Module on the previous engine crank event. |
| Battery Sensor Module - Minimum Cranking Voltage | — | Varies | The scan tool displays minimum cranking voltage in volts (V). This is the actual lowest voltage measured by the Battery Sensor Module on the previous engine crank event. |
| Battery Sensor Module - Open Circuit Voltage | — | Varies | The scan tool displays Volts. |
| Battery Sensor Module - Predicted Minimum Crank Voltage | — | Varies | The scan tool displays Volts. This is a value calculated by the Battery Sensor Module that predicts the minimum voltage during the next engine crank event. |
| Battery Sensor Module - State of Charge | — | Varies | The scan tool displays percentage (%). This is a measurement of the charge level compared to a fully charged 12V battery as measured by the Battery Sensor Module. |
| Battery Sensor Module State of Charge Error | — | Varies | The scan tool displays percentage (%). |
| Battery Sensor Module - State of Charge Status OK | — | — | — |
| Battery Sensor Module - State of Charge Variance | — | Varies | The scan tool displays percentage (%). |
| Battery Sulfation Protection Mode | — | — | — |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Battery Type | — | Default | The scan tool displays Default, Flooded Battery, AGM Battery, Enhanced Flooded Battery, or Lithium Battery. |
| Battery Voltage Too Low | — | No | The scan tool displays Yes or No. |
| Charge Recovery Mode Active - Battery Saver Mode | — | 0 | The scan tool displays a numeric value. This indicates the level that battery saver mode is operating at. This provides an indication of what actions are being taken. |
| Charge Recovery Mode Active - Battery Disconnected | — | — | — |
| Charge Recovery Mode Active - Charge Efficiency Off | — | — | — |
| Charge Recovery Mode Active - Service Tool Request | — | — | — |
| Charge Recovery Mode Active - State of Charge Loss | — | — | — |
| Charge Recovery Mode Active - Vehicle Inactive Too Long | — | — | — |
| Low-Voltage Battery Previous State of Charge | — | Varies | The scan tool displays percentage (%). |
| Low-Voltage Battery State of Charge | — | Varies | The scan tool displays percentage (%). |
| Low-Voltage Battery Temperature | — | Varies | The scan tool displays temperature in Celsius (°C). |
| Net Battery Amp Hours | — | Varies | The scan tool displays Ah. This is the sum of Amp per hour as measured through the Battery Sensor Module. |
| Net Battery Amp Hours Charged | — | Varies | The scan tool displays Ah. |
| Net Battery Amp Hours Discharged | — | Varies | The scan tool displays Ah. |
| Parasitic Current Greater than 0mA Counter | — | Varies | The scan tool displays min. This is a counter that tracks if the current during ignition off is within a particular range. |
| Parasitic Current -5.0A to -10.0A Counter | — | Varies | The scan tool displays min. This is a counter that tracks if the current during ignition off is within a particular range. |
| Parasitic Current 0mA to -10mA Counter | — | Varies | The scan tool displays min. This is a counter that tracks if the current during ignition off is within a particular range. |
| Parasitic Current -1.25A to -2.5A Counter | — | Varies | The scan tool displays min. This is a counter that tracks if the current during ignition off is within a particular range. |
| Parasitic Current -10mA to -20mA Counter | — | Varies | The scan tool displays min. This is a counter that tracks if the current during ignition off is within a particular range. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Parasitic Current -40mA to -80mA Counter | — | Varies | The scan tool displays min. This is a counter that tracks if the current during ignition off is within a particular range. |
| Parasitic Current -20mA to -40mA Counter | — | Varies | The scan tool displays min. This is a counter that tracks if the current during ignition off is within a particular range. |
| Parasitic Current -80mA to -160mA Counter | — | Varies | The scan tool displays min. This is a counter that tracks if the current during ignition off is within a particular range. |
| Parasitic Current -10.0A or less Counter | — | Varies | The scan tool displays min. This is a counter that tracks if the current during ignition off is within a particular range. |
| Parasitic Current -2.5A to -5.0A Counter | — | Varies | The scan tool displays min. This is a counter that tracks if the current during ignition off is within a particular range. |
| Parasitic Current -640mA to -1.25A Counter | — | Varies | The scan tool displays min. This is a counter that tracks if the current during ignition off is within a particular range. |
| Parasitic Current -160mA to -320mA Counter | — | Varies | The scan tool displays min. This is a counter that tracks if the current during ignition off is within a particular range. |
| Parasitic Current -320mA to -640mA Counter | — | Varies | The scan tool displays min. This is a counter that tracks if the current during ignition off is within a particular range. |
| Stop/Start Mode | — | — | — |
| Voltage Drop During Autostop | — | Varies | The scan tool displays Volts. This is a measurement of the amount that the battery voltage has dropped during an autostop. |

### Body Control Module — Brake Pedal Position Data — Scan Tool Data Parameters

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| **Operating Conditions:** Ignition ON/Vehicle in Service Mode, Vehicle in Park, All Doors Closed | | | |
| Brake Pedal Position Sensor Fully Released Learn Status | — | Yes | The scan tool displays Yes or No. |
| Brake Pedal Initial Travel Position Achieved | — | No | The scan tool displays Yes or No. |
| Brake Pedal Position Switch Circuit Signal | — | — | — |
| Extended Travel Brake Pedal Position Signal | — | — | — |
| Extended Travel Brake Pedal Position Switch | — | Inactive | The scan tool displays Active or Inactive. |
| Torque Converter Clutch/ Cruise Control Brake Pedal Position Switch | — | Inactive | The scan tool displays Active or Inactive. |

## Body Control Module — Chassis Control Data — Scan Tool Data Parameters

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| **Operating Conditions:** Ignition ON/Vehicle in Service Mode, Vehicle in Park, All Doors Closed | | | |
| Drive Mode Select Switch 1 | — | Inactive | The scan tool displays Inactive, Switch 1, Switch 2, Switch 3, Switch 4, Switch 5, Switch 6, Switch 7, Switch 8, Open/Short to Battery, Short to Ground, or Invalid. This is the primary bank of switches which the vehicle operator interfaces with for different selectable vehicle operating modes such as Sport Mode, Fuel Economy Mode... |
| Drive Mode Select Digital Switch 1 | — | Inactive | The scan tool displays Active or Inactive. This is a discrete switch the vehicle operator interfaces with to select vehicle operating modes such as Sport Mode, Fuel Economy Mode... |
| Driver Shift Control Mode Switch | — | Inactive | The scan tool displays Upshift, Downshift, Inactive, or Invalid. |
| Hill Descent Control Switch | — | Inactive | The scan tool displays Active or Inactive. |
| Traction Control Switch | — | Inactive | The scan tool displays Active or Inactive. This indicates the state of the input that enables or disables the traction control system, which is a system designed to prevent loss of traction (and therefore the control of the vehicle) when excessive throttle or steering is applied by the driver. |

## Body Control Module — Content Theft Deterrent Alarm Trigger — Scan Tool Data Parameters

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| **Operating Conditions:** Ignition ON/Vehicle in Service Mode, Vehicle in Park, All Doors Closed | | | |
| Content Theft Deterrent Alarm Status | — | Has Not Alarmed - No Alarm | The scan tool displays Has Not Alarmed - No Alarm, Alarming - Alarm, or Has Alarmed - Alarm Active. This indicates if the vehicle content theft deterrent system is in alarm mode or not. |
| Content Theft Deterrent Indicator | — | Off | The scan tool displays Off, On, Flashing Slow, or Flashing Fast. This is the illuminating lamp on the instrument cluster that indicates if the vehicle security system is active or not. |
| Current Content Theft Deterrent Trigger | — | No Information/None | This indicates what factor led to the activation of the content theft deterrent system. |
| Content Theft Deterrent Trigger History 1 | — | No Information/None | This indicates the factor that led to the first history reason for activation of the content theft deterrent system. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Content Theft Deterrent Trigger History 2 | — | No Information/None | This indicates the factor that led to the second history reason for activation of the content theft deterrent system. |
| Content Theft Deterrent Trigger History 3 | — | No Information/None | This indicates the factor that led to the third history reason for activation of the content theft deterrent system. |
| Glass Breakage | — | Not Detected | The scan tool displays Not Detected or Detected. This parameter indicates the damage to glass as a result to breaking. Glass divides into pieces as a result of a sudden or violent action. |
| Horn Relay Command | — | Inactive | The scan tool displays Active or Inactive. This refers to a request to initiate the sound for a vehicle's loud warning signal. This is used to display whether the Body Control Module is commanding the horn relay to be on or off. |
| Liftglass | — | Inactive | The scan tool displays Active or Inactive. The liftglass ajar warning light will be illuminated when the liftglass is not properly closed. This parameter indicates if the liftglass active or inactive. |
| Power Sounder Content Theft Deterrent Alarm Module Command | — | No Alarm | The scan tool displays No Alarm or Alarm Active. The power sounder is part of the vehicle's theft deterrent system. This parameter shows if the power sounder is commanded active (monitoring for vehicle theft attempt) or not. |
| Power Sounder Content Theft Deterrent Alarm Module Internal Battery State of Charge | — | OK | The scan tool displays OK or Not OK. This parameter describes the internal battery state of charge in the Power Sounder Content Theft Deterrent Alarm Module. |
| Rear Closure Unlock Command | — | Inactive | The scan tool displays Active or Inactive. This parameter for the rear closure unlock relay or unlock actuator will display On/Off upon the door being commanded to unlock. Commanded ON is when the Body Control Module energizes the rear closure unlock relay/actuator to unlock the door. |
| Security Indicator Command | — | Inactive | The scan tool displays Active or Inactive. Security Indicator Command refers to the command that is sent out by the module to turn the lamp (symbolic icon) on which acts as an indicator for the active state of the security system. |

| Parameter | System State | Expected Value | Description |
| --- | --- | --- | --- |
| Security Siren Command | — | Not Requested | The scan tool displays Not Requested or Disarmed. This is the serial data command to activate the output circuit for the alarm siren. Alarm siren is like a horn, but will activate during a theft event to warn away intruders. |
| Ultrasonic Intrusion Sensor | — | Disarmed | The scan tool displays Armed or Disarmed. The rear integration module supplies a low side drive output interface to the Intrusion and Inclination Sensor. |
| Ultrasonic Intrusion Sensor Disable Switch Signal | — | Inactive | The scan tool displays Active or Inactive. This is the switch which enables/disables the Ultrasonic Intrusion Sensor of the vehicle. |
| Ultrasonic Intrusion Sensor Malfunction | — | No | The scan tool displays Yes or No. This sensor detects an unauthorized opening of the vehicle's cabin by sending and receiving ultrasonic waves. This indicates the state of the sensor to fail to operate normally. |

## Body Control Module — Electric Power Management Data — Scan Tool Data Parameters

| Parameter | System State | Expected Value | Description |
| --- | --- | --- | --- |
| **Operating Conditions:** Ignition ON/Vehicle in Service Mode, Vehicle in Park, All Doors Closed | | | |
| Battery Current | — | Varies | The scan tool displays Amps. This is the current flowing through the Battery Sensor Module. |
| Battery Saver Mode | — | Off | The scan tool displays Off, Assembly Plant Mode, Transport Mode, or Storage Mode. |
| Battery Saver Mode Ignition Off - Battery Voltage less than 11.6V | — | False | The scan tool displays True or False. This will set with key off if battery voltage drops below 11.6V |
| Battery Saver Mode Ignition Off - Battery Voltage less than 12.0V | — | False | The scan tool displays True or False. This will set with key off if battery voltage drops below 12.0V. |
| Battery Saver Mode Ignition Off - Parasitic Current 100mA or greater | — | False | The scan tool displays True or False. This will set with key off if parasitic current is greater than 100mA. |
| Battery Saver Mode Ignition Off - Parasitic Current 1A or greater | — | False | The scan tool displays True or False. This will set with key off if parasitic current is greater than 1A. |
| Fuel Economy Mode | — | Active | The scan tool displays Active or Inactive. |
| Generator Regulator Setpoint | — | — | The scan tool displays Volts. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Load Shed Reason | — | Varies | The scan tool displays Amp Hour Demand Too High, Regulated Voltage Control, Hybrid/EV Battery State of Charge Low, Low Voltage, Service Tool Request, Battery Save Mode, or None. This provides indication of what is causing vehicle loads to be turned off in an attempt to prolong 12V battery life. |
| Load Shed Requested | — | — | — |
| Low-Voltage Battery Previous State of Charge | — | Varies | The scan tool displays percentage (%). |
| Low-Voltage Battery State of Charge | — | Varies | The scan tool displays percentage (%). |
| Low-Voltage Battery Temperature | — | Varies | The scan tool displays temperature in Celsius (°C). |
| Requested Idle Boost Level | — | Varies | The scan tool displays Assembly Plant Mode, Low Temperature, Ah, HVAC Request, Low Voltage, Remote Start, Service Tool Request, or None. |
| Regulated Voltage Control Mode | — | Varies | The scan tool displays Remote Start, Fuel Economy Mode, Normal, Charge Recovery Mode, Assembly Plant Mode, or Ignition and Start Switch Start. |
| Stop/Start Mode | — | — | — |

## Body Control Module — Front Exterior Lighting Data — Scan Tool Data Parameters

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| **Operating Conditions:** Ignition ON/Vehicle in Service Mode, Vehicle in Park, All Doors Closed | | | |
| Headlamp Leveling Function | — | Inactive | The scan tool displays Active or Inactive. |
| Headlamp Leveling Sensor Learn | — | Learn Not Enabled | The scan tool displays Learn Not Enabled, Learning, Learn Successful, or Learn Failed. This parameter indicates the headlamp learns suspension trim position. |
| Left Headlamp Vertical Motor Command | — | Inactive | This scan tool displays Active or Inactive. |
| Right Headlamp Vertical Motor Command | — | Inactive | This scan tool displays Active or Inactive. |
| Left Auxiliary Daytime Running Lamps | — | Off | The scan tool displays On or Off. |
| Right Auxiliary Daytime Running Lamps | — | Off | The scan tool displays On or Off. |
| Left Daytime Running Lamps | — | Off | The scan tool displays On or Off. |
| Right Daytime Running Lamps | — | Off | The scan tool displays On or Off. |
| Left Front Auxiliary Park Lamp Command | — | Off | The scan tool displays On or Off. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Right Front Auxiliary Park Lamp Command | — | Off | The scan tool displays On or Off. |
| Left Low Beam Command | — | Inactive | The scan tool displays Active or Inactive. |
| Right Low Beam Command | — | Inactive | The scan tool displays Active or Inactive. |
| Left Front Turn Signal Lamp Command | — | Off | The scan tool displays On or Off. |
| Right Front Turn Signal Lamp Command | — | Off | The scan tool displays On or Off. |
| Left Front Fog Lamp Command | — | Off | The scan tool displays On or Off. |
| Right Front Fog Lamp Command | — | Off | The scan tool displays On or Off. |
| Left Park Lamps Command | — | Off | The scan tool displays On or Off. |
| Right Park Lamps Command | — | Off | The scan tool displays On or Off. |
| Left Turn Signal Repeater Lamp Command | — | Off | The scan tool displays On or Off. |
| Right Turn Signal Repeater Lamp Command | — | Off | The scan tool displays On or Off. |
| Surround View Exterior Courtesy Lamps Command | — | Off | The scan tool displays On or Off. |

## Body Control Module — Heated Steering Wheel Data — Scan Tool Data Parameters

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| **Operating Conditions:** Ignition ON/Vehicle in Service Mode, Vehicle in Park, All Doors Closed | | | |
| Heated Steering Wheel Indicator | — | Off | The scan tool displays Off, Low, Medium, or High. |
| Heated Steering Wheel Request Source | — | Switch | The scan tool displays Switch or Remote Vehicle Start. |
| Heated Steering Wheel Command | — | Off | The scan tool displays Off, Low, Medium, or High. |
| Heated Steering Wheel Relay | — | Inactive | The scan tool displays Active or Inactive. |
| Heated Steering Wheel Switch | — | Inactive | The scan tool displays Active or Inactive. |
| Service Heated Steering Wheel Indicator | — | Inactive | The scan tool displays Active or Inactive. |
| Heated Steering Wheel Load Reduction | — | Inactive | The scan tool displays Active or Inactive. |
| Heated Steering Wheel Mode | — | Off | The scan tool displays Off, Remote Vehicle Start, Automatic, or Switch. |
| Heated Steering Wheel Diagnostic Fault Active - Stuck Switch | — | Inactive | The scan tool displays Active or Inactive. |
| Heated Steering Wheel | — | Inactive | The scan tool displays Active or Inactive. |
| Heated Steering Wheel Internal Temperature | — | Off | The scan tool displays Off, Low, Medium, or High. |

## Body Control Module — HVAC Sensor Data — Scan Tool Data Parameters

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| **Operating Conditions:** Ignition ON/Vehicle in Service Mode, Vehicle in Park, All Doors Closed | | | |
| A/C Evaporator Temperature | — | Varies | The scan tool displays temperature in Celsius (°C) or Fahrenheit (°F). This parameter refers to the sensor used to determine the temperature of the air conditioning system's evaporator. The temperature is displayed with a low level of detail. |
| A/C Evaporator Temperature | — | Varies | The scan tool displays temperature in Celsius (°C) or Fahrenheit (°F). This parameter indicates the temperature (degrees of heat) of the air conditioning system's evaporator. |
| Ambient Air Temperature | — | Varies | The scan tool displays temperature in Celsius (°C) or Fahrenheit (°F). This parameter indicates the temperature of the air surrounding the vehicle. |
| Humidity Level at the Windshield | — | Varies | The scan tool displays percentage (%). This is the measurement of the amount of moisture near the windshield that is used by the heating, ventilation, air conditioning (HVAC) system to prevent fogging. |
| Left Front HVAC Mode Status | — | Not Determined | The scan tool displays Not Determined, Off, Auto, Floor, Floor and Vent, Vent, Vent and Windshield, Windshield, Floor and Windshield, or Floor and Vent and Windshield, or Max Defrost. This parameter describes what state the heating, ventilation, air conditioning system is in for the front left area of the vehicle cabin. |
| Left Front Passenger Compartment Air Temperature | — | Varies | The scan tool displays the amount of heat in the air in the left front area of the interior cabin of the vehicle in Celsius (°C) or Fahrenheit (°F). |
| Left Rear HVAC Mode Status | — | Not Determined | The scan tool displays Not Determined, Off, Auto, Floor, Floor and Vent, Vent, Vent and Roof, Roof, Roof and Floor, or Floor and Vent and Roof. This parameter describes what state the heating, ventilation, air conditioning system is in for the rear left area of the vehicle cabin. |
| Passenger Compartment Air Temperature Sensor Voltage | — | Varies | The scan tool displays the voltage of the passenger compartment air temperature sensor in mV. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Passenger Compartment Humidity | — | Varies | The scan tool displays percentage (%). The parameter indicates the amount of water in the air in the passenger compartment. |
| Rear Lower Duct Air Temperature Sensor Voltage | — | Varies | The scan tool displays Volts. This is a temperature sensor used to monitor the air temperature from the rear floor ducts. |
| Right Front HVAC Mode Status | — | Not Determined | The scan tool displays Not Determined, Off, Auto, Floor, Floor and Vent, Vent, Vent and Windshield, Windshield, Floor and Windshield, or Floor and Vent and Windshield, or Max Defrost. This parameter describes what state the heating, ventilation, air conditioning system is in for the front right area of the vehicle cabin. |
| Right Front Passenger Compartment Air Temperature | — | Varies | The scan tool displays the amount of heat in the air in the right front area of the interior cabin of the vehicle in Celsius (°C) or Fahrenheit (°F). |
| Right Rear HVAC Mode Status | — | Not Determined | The scan tool displays Not Determined, Off, Auto, Floor, Floor and Vent, Vent, Vent and Roof, Roof, Roof and Floor, or Floor and Vent and Roof. This parameter describes what state the heating, ventilation, air conditioning system is in for the rear right area of the vehicle cabin. |
| Sunload Sensor Voltage | — | Varies | The scan tool displays Volts. This is a sensor that detects how warm the sun is shining. |
| Windshield Temperature | — | Varies | The scan tool displays temper-ature in Celsius (°C) or Fahrenheit (°F). This parameter detects the temperature of the front window (windshield). |

## Body Control Module — HVAC System Data — Scan Tool Data Parameters

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| **Operating Conditions:** Ignition ON/Vehicle in Service Mode, Vehicle in Park, All Doors Closed | | | |
| A/C Compressor Refrigerant Solenoid Valve Command | — | Varies | The scan tool displays percentage (%). |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| A/C Compressor Displacement | — | Ready | The scan tool displays Ready, Ramp up, Running, or Ramp down. A variable displacement air conditioning compressor has the ability to change the amount of refrigerant that is pumped into the system (output) while it is running by way of a pulse width modulated (PWM) solenoid. A PWM solenoid will vary the compressor output by using a DC supply voltage that is switched on and off at a given frequency for a modulated period of time (duty cycle). The duty cycle is the “on” time of the voltage and is expressed as a percentage of the time period. This parameter describes the condition in which a variable displacement air conditioning compressor is increasing displacement, holding steady, or decreasing displacement. |
| A/C Switch | — | Compressor Off | The scan tool displays Compressor Off, Compressor On, or Compressor In Econ. This parameter is used to indicate the status of the signal being sent to the Engine Control Module to turn the A/C on. |
| Air Quality Sensor | — | Varies | The scan tool displays percentage (%). This is a sensor that measures the amount of contamination, pollution, dirt, odor in the ambient air. |
| Air Quality Recirculation Control | — | Inactive | The scan tool displays Active or Inactive. The recirculation door in an air conditioning system has the ability to either allow fresh air into the vehicle or to pass the existing cabin air back through the air conditioning system. The recirculation door will be closed if the Air Quality Sensor detects oxidizing, reducing, or ammonia gasses and reopens the door when these gasses are no longer detected. |
| Auxiliary Blower Motor Speed Command | — | Varies | This parameter shows the value (counts) being sent to command the rear blower from the Auxiliary Blower switch on the front panel. This describes the rear blower motor for the HVAC system. This is supplemental to the primary blower fan. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Auxiliary Coolant Pump | — | Inactive | The scan tool displays Active or Inactive. The Auxiliary Coolant Pump refers to a second engine cooling pump that may be devoted to a different function other than for purposes of engine cooling. |
| Auxiliary Coolant Pump Dry | — | Inactive | The scan tool displays Active or Inactive. This parameter contains the fault information that is communicated by the Electric Auxiliary Coolant Pump over Local Interconnect Network (LIN) to the engine controller. An electric coolant pump circulates engine coolant. This indicates whether the pump was operated without coolant. |
| Auxiliary Coolant Pump Internal Status | — | Inactive | The scan tool displays Active or Inactive. This parameter contains the fault information that is communicated by the Electric Auxiliary Coolant Pump over Local Interconnect Network (LIN) to the engine controller. An electric coolant pump circulates engine coolant. This indicates whether the pump indicates an internal error. |
| Auxiliary Coolant Pump Motor Stalled | — | Inactive | The scan tool displays Active or Inactive. This parameter contains the fault information that is communicated by the Electric Auxiliary Coolant Pump over Local Interconnect Network (LIN) to the engine controller. An electric coolant pump circulates engine coolant. This indicates whether the pump has stopped running. |
| Auxiliary Heater Enable Signal | — | Inactive | The scan tool displays Active or Inactive. |
| Blower Motor Feedback Signal | — | Varies | The scan tool displays percentage (%). The Blower Motor passes air through the heater core and circulates air throughout the passenger compartment. The Blower Motor is controlled by a module. This parameter indicates the Blower Motor operation Feedback Signal received by the module. |
| Blower Motor Speed | — | Varies | This parameter indicates the commanded HVAC Blower Motor Speed, displayed in percent, that the blower is turning. The blower motor is a motor with a cage attached to force the air through ducts such as heater, ventilation and defrost ducts. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Blower Motor Speed Command | — | Varies | This parameter indicates the commanded HVAC Blower Motor Speed, displayed in percent, that the blower is turning. The blower motor is a motor with a cage attached to force the air through ducts such as heater, ventilation and defrost ducts. |
| Blower Motor Speed Feedback Signal | — | Normal Function | The scan tool displays Out of Range Low, Stall, Partial Stall, Voltage Out of Range, Normal Function, Motor Over Temperature, Not Used, Mechanical Malfunction, or Out of Range High. The Blower Motor passes air through the heater core and circulates air throughout the passenger compartment. The Blower Motor is controlled by a module. This parameter indicates the Blower Motor operation Feedback Signal received by the module. |
| Blower Motor Speed Request | — | — | This parameter shows the current state of the switch that turns on the front blower (device that produces a current of air). |
| Calculated A/C Evaporator Air Temperature | — | Varies | The scan tool displays temperature in Celsius (°C). This parameter indicates the calculated temperature (degrees of heat) of the air that is flowing through the evaporator. The temperature is calculated by the HVAC controller using parameters such as outside air temperature, evaporator temperature and compressor status. An evaporator is a device in a process used to turn the liquid form of a chemical substance into its gaseous-form/vapor. |
| Coolant Heater Control Module Inlet Coolant Temperature | — | Varies | The scan tool displays this parameter Identifier as a value between -40°C and 150°C approximately to reflect Inlet Coolant Temperature into Coolant Heater Control Module, reported by Coolant Heater Control Module. |
| Coolant Heater Control Module LIN Bus | — | True | The scan tool displays this parameter identifier as False or True. This parameter identifier is indicative of a Signal State of Coolant Heater Operation Enable from Electronic Climate Control to Coolant Heater Control Module on Local Interconnect Network Bus that allows Coolant Heater to Start Diagnostics whether or not Heating is commanded. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Coolant Heater Control Module Status | — | Normal Function | The scan tool displays Normal Function, Temporarily Limited, Recoverable Malfunction, or Non-Recoverable Malfunction. This parameter is used to determine whether the Coolant Heater Control Module is operating normally (Normal Operation) or if there is a problem with a) the Coolant Heater Control Module (scan tool displays only Limited Operation) or b) there is a blockage or restriction in coolant flow (scan tool switches between Normal Running and Limited Operation). |
| Coolant Heater Control Module Temperature | — | Varies | The scan tool displays temperature in Celsius (°C). This is the temperature inside the coolant heater control module. |
| Coolant Heater Current | — | Varies | The scan tool displays the present electric current flow value of the coolant heater in amps. |
| Desired Engine Coolant Bypass Valve Position | — | Not Requested | The scan tool displays Not Requested, Bypass, or Connected. This parameter displays the requested target position of the Coolant Bypass Valve. |
| Engine Coolant Heater Command | — | Varies | The scan tool displays in kW. This is the serial data command to control the device to heat up the coolant in case the engine does not produce enough heat. |
| Front Blower Motor State | — | Varies | The scan tool displays Not Determined, Off, Auto, Manual, or Manual Max. This parameter indicates the current mode or condition of the front blower motor. |
| Heater Pump Speed | — | Varies | The scan tool displays the heater pump speed in RPM. This is a coolant pump which circulates heat through the heater core to maintain cabin temperature. While the vehicle is in Autostop, the pump can interrupt the Autosop timing, if the cabin temperature is too low. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| HVAC Afterblow | — | Inactive | The scan tool displays Active or Inactive. This parameter displays whether the afterblow function is in a functioning state or not. The afterblow function temporarily turns on the fan after the vehicle is off to dry the evaporator core which will reduce microbial growth and odors. An evaporator is a device in a process used to turn the liquid form of a chemical substance into its gaseous-form/vapor. |
| HVAC Afterblow - Blower Motor Speed | — | Varies | This parameter displays how fast the fan is running while in an afterblow condition. The fan speed is displayed as steps from 0 to 12 with 0 being off and 12 being the fastest speed. The afterblow function temporarily turns on the fan after the vehicle is off to dry the evaporator core which will reduce microbial growth and odors. An evaporator is a device in a process used to turn the liquid form of a chemical substance into its gaseous-form/vapor. |
| HVAC Afterblow Configuration | — | — | — |
| HVAC System Heater Core Coolant Flow Rate Feedback | — | Varies | The scan tool displays the coolant flowing rate in L/min. The HVAC System Heater Core contains coolant that flows though the core to heat the vehicle passenger compartment. The system is controlled by a module. This parameter indicates the coolant flow rate through the heater core requested by the module. |
| HVAC System Heater Core Coolant Flow Rate Request | — | Varies | The scan tool displays the coolant flowing rate in L/s. The HVAC System Heater Core contains coolant that flows though the core to heat the vehicle passenger compartment. The system is controlled by a module. This parameter indicates the coolant flow rate through the heater core requested by the module. |
| Rear Defogger Activated by Automatic | — | Yes | The Auto Rear Defogger (heating wires in the glass) can automatically activate if the ambient temperature is below 5°C. This parameter has the states Yes/No. |
| Rear Defogger Command | — | — | — |
| Rear Defogger Deactivation Reason | — | — | — |
| Rear Defogger Indicator | — | — | — |
| Rear Defogger Mode | — | — | — |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Rear Defogger On Time Remaining | — | — | — |
| Rear Defogger Relay Command | — | — | — |
| Rear Defogger Status | — | — | — |
| Rear Defogger Switch | — | — | — |
| Sun Azimuth | — | — | — |
| Sun Elevation | — | — | — |

### Body Control Module — HVAC Door Position Data 1 — Scan Tool Data Parameters

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| **Operating Conditions:** Ignition ON/Vehicle in Service Mode, Vehicle in Park, All Doors Closed | | | |
| Air Recirculation Door Actuator Command | — | Varies | This is the serial data command to move the flap of the Recirculation Door, in counts or pulses, for a HVAC system door. Recirculation is using inside air for the HVAC system, instead of outside fresh air. |
| Left Temperature Door Position Command | — | Varies | The scan tool displays percentage (%). This is the serial data command to control the actual position (angle) of the flap that controls the air flow (and therefore the air temperature) through the left heater core. |
| Low Speed Pollution Taking Recirc Action | — | — | — |

### Body Control Module — HVAC Door Position Data 2 — Scan Tool Data Parameters

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| **Operating Conditions:** Ignition ON/Vehicle in Service Mode, Vehicle in Park, All Doors Closed | | | |
| Right Temperature Door Position Command | — | Varies | The scan tool displays percentage (%). This is the serial data command to move the position (angle) of the flap that controls the air flow (and therefore the air temperature) through the right heater core. |

### Body Control Module — HVAC Faceplate Data — Scan Tool Data Parameters

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| **Operating Conditions:** Ignition ON/Vehicle in Service Mode, Vehicle in Park, All Doors Closed | | | |
| Air Recirculation Door Position | — | Varies | The scan tool displays the command status of the HVAC control module recirculation switch: Not Determined, Auto, Fresh Air, or Recirc. The mode of recirculation means the air inside the vehicle is recirculated rather than drawn from outside. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Air Quality Sensor Switch | — | Off | The scan tool displays Off, Low Sensitivity, or Hi Sensitivity. This parameter describes the switch state of the Air Quality Sensor on the HVAC Faceplate. |
| Auxiliary Blower Motor Switch | — | Off | The scan tool displays Not Determined, Off, Auto, Manual, or Manual Max. This parameter reflects the current state of the switch in the rear of the vehicle that controls the rear blower. This describes the rear blower motor for the HVAC system. This is supplemental to the primary blower fan. |
| Desired Left Temperature | — | Varies | The scan tool displays Temp Set Off, Temp Set Normal, Temp Set Low, or Temp Set Hi. This parameter displays the setting of left temperature. |
| Desired Right Temperature | — | Varies | The scan tool displays Temp Set Off, Temp Set Normal, Temp Set Low, or Temp Set Hi. This parameter displays the setting of right temperature. |

### Body Control Module — Hybrid/EV Data — Scan Tool Data Parameters

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| **Operating Conditions:** Ignition ON/Vehicle in Service Mode, Vehicle in Park, All Doors Closed | | | |
| Coolant Heater Control Module Temperature | — | Varies | The scan tool displays temper-ature in Celsius (°C). This is the temperature inside the coolant heater control module. |

### Body Control Module — Indicator Data — Scan Tool Data Parameters

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| **Operating Conditions:** Ignition ON/Vehicle in Service Mode, Vehicle in Park, All Doors Closed | | | |
| Child Security Lock Indicator command | — | Off | The scan tool displays On or Off. |
| Lane Departure Warning Indicator Status | — | Off | The scan tool displays On or Off. |
| Security Indicator Command | — | Off | The scan tool displays On or Off. |

### Body Control Module — Interior Lighting Data — Scan Tool Data Parameters

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| **Operating Conditions:** Ignition ON/Vehicle in Service Mode, Vehicle in Park, All Doors Closed | | | |
| Cargo Lamp Command | — | Inactive | The scan tool displays Active or Inactive. |
| Cargo Lamp Indicator | — | Inactive | The scan tool displays Active or Inactive. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Cargo Mirror Lamp | — | Inactive | The scan tool displays Active or Inactive. |
| Dome Lamp Command | — | Off | The scan tool displays On or Off. |
| Door Ambient Lighting Command | — | Off | The scan tool displays On or Off. |
| Front Courtesy Lamps | — | Inactive | The scan tool displays Active or Inactive. |
| Front Footwell Ambient Lighting Command | — | Off | The scan tool displays On or Off. |
| Instrument Panel Ambient Lighting Command | — | Off | The scan tool displays On or Off. |
| Interior Courtesy Lamps Command | — | Inactive | The scan tool displays Active or Inactive. |
| Left Turn Signal Switch | — | Inactive | The scan tool displays Active or Inactive. |
| Right Turn Signal Switch | — | Inactive | The scan tool displays Active or Inactive. |
| Overhead Ambient Lighting Command | — | Off | The scan tool displays On or Off. |
| Park Lamps Indicator | — | Inactive | The scan tool displays Active or Inactive. |
| Rear Footwell Ambient Lighting Command | — | Off | The scan tool displays On or Off. |
| Welcome Lighting | — | Off | The scan tool displays On or Off. |

## Body Control Module — Keyless Entry Data — Scan Tool Data Parameters

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| **Operating Conditions:** Ignition ON/Vehicle in Service Mode, Vehicle in Park, All Doors Closed | | | |
| Current Number of Key Fobs Programmed | — | Varies | This parameter indicates how many transmitters have been learned to the Body Control Module currently. |
| Key Fob Identifier | — | Varies | This parameter refers to the part number of key fob or transmitter being placed in the backup pocket location that uses the radio transmitter inside a vehicle key used to control the central door locking via button presses. |
| Key Fob 1 Malfunction | — | No | The scan tool displays Yes or No. This parameter indicates a fault in transmitter # 1. |
| Key Fob 2 Malfunction | — | No | The scan tool displays Yes or No. This parameter indicates a fault in transmitter # 2. |
| Key Fob 3 Malfunction | — | No | The scan tool displays Yes or No. This parameter indicates a fault in transmitter # 3. |
| Key Fob 4 Malfunction | — | No | The scan tool displays Yes or No. This parameter indicates a fault in transmitter # 4. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Key Fob 5 Malfunction | — | No | The scan tool displays Yes or No. This parameter indicates a fault in transmitter # 5. |
| Key Fob 6 Malfunction | — | No | The scan tool displays Yes or No. This parameter indicates a fault in transmitter # 6. |
| Key Fob 7 Malfunction | — | No | The scan tool displays Yes or No. This parameter indicates a fault in transmitter # 7. |
| Key Fob 8 Malfunction | — | No | The scan tool displays Yes or No. This parameter indicates a fault in transmitter # 8. |
| Number of Key Fobs Learned | — | Varies | This parameter indicates how many transmitters have been programmed to the Keyless Entry Control Module. |
| Total Key Fobs Erased | — | Off | This parameter indicates the number of transmitters erased from the Body Control Module memory. |
| Passive Entry Disabled Due to Lack of Motion Counter | — | Varies | This parameter indicates the count value of the passive entry inhibited due to no key fob or transmitter movement. |
| Passive Start Disabled Due to Excessive Motion Counter | — | Varies | This parameter indicates the count value of the passive start inhibited due to large key fob or transmitter movement. |
| Passive Start Diabled Due to Lack of Motion Counter | — | Varies | This parameter indicates the count value of the passive start inhibited due to no key fob or transmitter movement. |

## Body Control Module — Outside Rear View Mirror Data — Scan Tool Data Parameters

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| **Operating Conditions:** Ignition ON/Vehicle in Service Mode, Vehicle in Park, All Doors Closed | | | |
| Mirror Folding | — | Inactive | The scan tool displays Inactive, Fold, or Unfold. |
| Mirror Select Switch | — | Not Active | The scan tool displays Active or Inactive. |

## Body Control Module — Power Mode Data — Scan Tool Data Parameters

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| **Operating Conditions:** Ignition ON/Vehicle in Service Mode, Vehicle in Park, All Doors Closed | | | |
| Accessory/Retained Accessory Power Relay Command | — | Inactive | The scan tool displays Active or Inactive. |
| Backup Run/Crank Relay Command | — | Inactive | The scan tool displays Active or Inactive. |
| Backup System Power Mode | — | Off | The scan tool displays Off, Accessory, Run, Start, or Propulsion Active. This parameter indicates Power Mode determined by Serial Data Gateway Module. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Battery Saver Mode | — | Off | The scan tool displays Off, Assembly Plant Mode, Transport Mode, or Storage Mode. |
| Ignition Switch Status | — | Varies | The scan tool displays Short to Ground, Active, Inactive, or Open/Short to Battery. |
| Power Mode | — | Varies | The scan tool displays Off, Accessory, Run, Start, or Propulsion Active. This parameter indicates the current power mode of the module. |
| Power Mode Timeout | — | Disable | The scan tool displays Enable or Disable. This parameter disables or enables the power mode timeout function (not whether timer is active or inactive) and indicates whether or not the power mode timeout function has been disabled allowing to stay in power mode indefinitely (not whether timer is active or inactive). |
| Run/Crank Relay Command | — | Inactive | The scan tool displays Active or Inactive. |
| Run Relay Command | — | Inactive | The scan tool displays Active or Inactive. |

## Body Control Module — Rear Exterior Lighting Data — Scan Tool Data Parameters

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| **Operating Conditions:** Ignition ON/Vehicle in Service Mode, Vehicle in Park, All Doors Closed | | | |
| Backup Lamps | — | Off | The scan tool displays On or Off. |
| Center High Mounted Stop Lamp | — | Off | The scan tool displays On or Off. |
| Hands-Free Liftgate Sensor Lamp | — | Off | The scan tool displays On or Off. |
| Left Stop Lamp Command | — | Off | The scan tool displays On or Off. |
| Right Stop Lamp Command | — | Off | The scan tool displays On or Off. |
| Left Tail Lamp | — | Off | The scan tool displays On or Off. |
| Right Tail Lamp | — | Off | The scan tool displays On or Off. |
| Left Auxiliary Tail Lamp | — | Off | The scan tool displays On or Off. |
| Right Auxiliary Tail Lamp | — | Off | The scan tool displays On or Off. |
| Left Rear Turn Signal Lamp Command | — | Off | The scan tool displays On or Off. |
| Right Rear Turn Signal Lamp Command | — | Off | The scan tool displays On or Off. |
| Left Trailer Turn Signal/Stop Lamp Command | — | Off | The scan tool displays On or Off. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Right Trailer Turn Signal/Stop Lamp Command | — | Off | The scan tool displays On or Off. |
| License Plate Lamps Command | — | Off | The scan tool displays On or Off. |
| Rear Fog Lamp Command | — | Off | The scan tool displays On or Off. |
| Tail Lamps | — | Off | The scan tool displays On or Off. |
| Trailer Backup Lamps Command | — | Off | The scan tool displays On or Off. |

### Body Control Module — Rear HVAC Data — Scan Tool Data Parameters

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| **Operating Conditions:** Ignition ON/Vehicle in Service Mode, Vehicle in Park, All Doors Closed | | | |
| Lower Rear Duct Temperature | — | Varies | The scan tool displays temperature in Celsius (°C). This is the temperature reading in the HVAC air routing system. |
| Upper Rear Duct Temperature | — | Varies | The scan tool displays temperature in Celsius (°C). This is the temperature reading in the HVAC air routing system. |

### Body Control Module — Remote Vehicle Start Data — Scan Tool Data Parameters

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| **Operating Conditions:** Ignition ON/Vehicle in Service Mode, Vehicle in Park, All Doors Closed | | | |
| Engine Stalled During Remote Vehicle Start Mode | — | Varies | This parameter indicates the number of times the engine was stalled or unexpectedly stops running. This is part of the Remote Vehicle Start subsystem that disables remote start. |
| Park Lamps Request | — | No | The scan tool displays Yes or No. This parameter refers to the state (on or off) of the electronic request to illuminate the lamps located on the exterior four corners of the vehicle. |
| Remote Vehicle Start Disabled By Driver | — | Varies | This parameter determines if remote vehicle start was turned off by the driver. Remote start is activated by pressing a button on the key fob which allows the engine to start when the key fob is several yards from the vehicle. |
| Remote Vehicle Start Request | — | No | The scan tool displays Yes or No. This parameter displays the On / Off position or status for the remote start functionality. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Remote Vehicle Start Source | — | None | The scan tool displays None, Key Fob 1, Key Fob 2, Key Fob 3, Enhanced Services, or Virtual Key. This parameter indicates which key fob was used for Remote Vehicle Start such as husband, wife, child, Onstar, bluetooth, etc... |
| Remote Vehicle Start Status | — | Inactive | The scan tool displays Yes or No. This parameter indicates the state of remote start which is activated by pressing a button on the key fob which allows the engine to start when the key fob is several yards from the vehicle. States are active or inactive. |
| Remote Vehicle Start Timer | — | Varies | This parameter indicates the amount of time the engine will run after a remote start request. One additional request is allowed which will reset the timer once. The scan tool displays time remaining in seconds. |
| Run/Crank Relay Command | — | None | The scan tool displays None, Active, or Deactive. This parameter indicates the state (off or on) of command for an ignition relay control circuit. "Run" means engine is started and keeps going, and "crank" engages the starter when the key in the ignition switch turns making engine turn over. |
| Turn Signal Lamps Request | — | No | The scan tool displays Yes or No. This parameter indicates the request for the turn signal lamps to flash during a remote start request and remain on for visual confirmation the remote start is functioning. |

## Body Control Module — Remote Vehicle Start Disable History Data — Scan Tool Data Parameters

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| **Operating Conditions:** Ignition ON/Vehicle in Service Mode, Vehicle in Park, All Doors Closed | | | |
| Remote Vehicle Start Disable History 1 | — | Varies | The scan tool displays Valet Mode, Run Abort, Ignition Switch Status, Hood Open Switch Signal Invalid, Hood Open Switch, Hazard Lamps Switch, Key Fob in Vehicle, Crank Abort, Brake Transmission Shift Interlock Solenoid Actuator, Content Theft Deterrent Mode, Power Mode Incorrect, Battery Volt-age, Remote Vehicle Start Crank Time, or Folding Top Position. This parameter indicates one of the last eight reasons the powertrain has disabled the remote vehicle start. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Remote Vehicle Start Disable History 2 | — | Varies | The scan tool displays Valet Mode, Run Abort, Ignition Switch Status, Hood Open Switch Signal Invalid, Hood Open Switch, Hazard Lamps Switch, Key Fob in Vehicle, Crank Abort, Brake Transmission Shift Interlock Solenoid Actuator, Content Theft Deterrent Mode, Power Mode Incorrect, Battery Voltage, Remote Vehicle Start Crank Time, or Folding Top Position. This parameter indicates one of the last eight reasons the powertrain has disabled the remote vehicle start. |
| Remote Vehicle Start Disable History 3 | — | Varies | The scan tool displays Valet Mode, Run Abort, Ignition Switch Status, Hood Open Switch Signal Invalid, Hood Open Switch, Hazard Lamps Switch, Key Fob in Vehicle, Crank Abort, Brake Transmission Shift Interlock Solenoid Actuator, Content Theft Deterrent Mode, Power Mode Incorrect, Battery Voltage, Remote Vehicle Start Crank Time, or Folding Top Position. This parameter indicates one of the last eight reasons the powertrain has disabled the remote vehicle start. |

## Body Control Module — Seat Heating/Venting/Cooling Data — Scan Tool Data Parameters

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| **Operating Conditions:** Ignition ON/Vehicle in Service Mode, Vehicle in Park, All Doors Closed | | | |
| Seat Heating/Venting/Cooling Load Shed | — | Inactive | The scan tool displays Active or Inactive. When this parameter is active, it indicates the Heating/Venting/Cooling system is shutdown to reduce strain on the vehicle electrical system which is experiencing too high of a current draw. |
| Left Front Seat Heating/Venting/Cooling Operating Conditions | — | Varies | The scan tool displays Remote Vehicle Start, Automatic, Manual, or Autostop Request. The functional behavior of heated seats is dependent on its determined operational state. This parameter indicates the defined state which it is operating in. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Left Front Seat Heating/ Venting/Cooling Requested Mode | — | Varies | The scan tool displays Off, Seat Back Heating, Seat Back and Cushion Heating, or Seat Venting/Cooling. This parameter indicates the type of Heated/Vented Seat function being requested, as determined by the Body Control Module tracking various inputs. |
| Left Front Seat Heating/ Venting/Cooling Requested Level | — | Varies | The scan tool displays Off, High, Medium, or Low. This parameter indicates the type of Heated/Vented Seat level of intensity being requested as determined by the Body Control Module tracking various inputs. |
| Left Front Seat Heating/ Venting/Cooling Mode | — | Varies | The scan tool displays Off, Seat Back Heating, Seat Back and Cushion Heating, or Seat Venting/Cooling. This parameter indicates the type of Heated/Vented Seat function being applied as commanded by the Body Control Module software based on a number of factors. |
| Left Front Seat Heating/ Venting/Cooling Level | — | Varies | The scan tool displays Off, High, Medium, or Low. This parameter indicates the type of Heated/Vented Seat level of intensity being applied as commanded by the Body Control Module software based on a number of factors. |
| Left Front Seat Blower Command | — | Inactive | The scan tool displays Active or Inactive. This parameter can be used for setting various blower speeds but service tool will only turn on high to verify module outputs and fan operation. |
| Right Front Seat Heating/ Venting/Cooling Operating Conditions | — | Varies | The scan tool displays Remote Vehicle Start, Automatic, Manual, or Autostop Request. The functional behavior of heated seats is dependent on its determined operational state. This parameter indicates the defined state which it is operating in. |
| Right Front Seat Heating/ Venting/Cooling Requested Mode | — | Varies | The scan tool displays Off, Seat Back Heating, Seat Back and Cushion Heating, or Seat Venting/Cooling. This parameter indicates the type of Heated/Vented Seat function being requested, as determined by the Body Control Module tracking various inputs. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Right Front Seat Heating/ Venting/Cooling Requested Level | — | Varies | The scan tool displays Off, High, Medium, or Low. This parameter indicates the type of Heated/Vented Seat level of intensity being requested as determined by the Body Control Module tracking various inputs. |
| Right Front Seat Heating/ Venting/Cooling Mode | — | Varies | The scan tool displays Off, Seat Back Heating, Seat Back and Cushion Heating, or Seat Venting/Cooling. This parameter indicates the type of Heated/Vented Seat function being applied as commanded by the Body Control Module software based on a number of factors. |
| Right Front Seat Heating/ Venting/Cooling Level | — | Varies | The scan tool displays Off, High, Medium, or Low. This parameter indicates the type of Heated/Vented Seat level of intensity being applied as commanded by the Body Control Module software based on a number of factors. |
| Right Front Seat Blower Command | — | Inactive | The scan tool displays Active or Inactive. This parameter can be used for setting various blower speeds but service tool will only turn on high to verify module outputs and fan operation. |

## Body Control Module — Sunroof Data — Scan Tool Data Parameters

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| **Operating Conditions:** Ignition ON/Vehicle in Service Mode, Vehicle in Park, All Doors Closed | | | |
| Sunroof Closed | — | Yes | The scan tool displays Yes or No. This parameter indicates that sunroof is not open. The sunroof is a fixed or operable opening in an automobile roof which allows light and/or fresh air to enter the passenger compartment. |
| Sunroof Open | — | Yes | The scan tool displays Yes or No. This parameter indicates the sunroof state that it is not closed. The sunroof is a fixed or operable opening in an automobile roof which allows light and/or fresh air to enter the passenger compartment. |
| Sunroof Switch | — | Varies | The scan tool displays Inactive, Open, Close, or Stop. This is the switch to move the sunroof. |
| Sunroof Switch Fault | — | Varies | The scan tool displays Short to Ground, Short to Battery, Stuck, or None. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Sunroof Not Learned | — | No | The scan tool displays Yes or No. This parameter indicates that the control module has not learned the sunroof (the glass) home position. |
| Sunroof Motor Overtemperature | — | No | The scan tool displays Yes or No. This parameter indicates that the motor that operates the sunroof motor is too hot to operate properly. |
| Sunroof Obstruction | — | No | The scan tool displays Yes or No. This parameter indicates that an obstruction is detected which prevents the movement of the sunroof. |
| Sunroof System Voltage Low | — | No | The scan tool displays Yes or No. This parameter indicates the sunroof performance is degraded due to voltage being below a certain threshold. |
| Sunroof Vent | — | No | The scan tool displays Yes or No. This parameter indicates the sunroof is partially open. |
| Sunshade Closed | — | Yes | The scan tool displays Yes or No. |
| Sunshade Open | — | Yes | The scan tool displays Yes or No. |
| Sunshade Switch | — | Varies | The scan tool displays Inactive, Open, Close, or Stop. This is the switch to move the sunshade (the non-transparent cover below the sunroof). |
| Sunshade Switch Fault | — | Varies | The scan tool displays Short to Ground, Short to Battery, Stuck, or None. |
| Sunshade Not Learned | — | No | The scan tool displays Yes or No. This parameter indicates that the sunshade position is not learned. |
| Sunshade Motor Overtemperature | — | Inactive | The scan tool displays Active or Inactive. This parameter indicates that the motor that operates the sunshade is too hot to operate properly. |
| Sunshade Obstruction | — | No | The scan tool displays Yes or No. This parameter indicates that an obstruction is detected which prevents the movement of the sunshade. |
| Sunshade System Voltage Low | — | No | The scan tool displays Yes or No. This parameter indicates that the sunshade performance is degraded due to voltage being below a certain threshold. |

## Body Control Module — Tire Pressure Monitoring Sensor Data — Scan Tool Data Parameters

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| **Operating Conditions:** Ignition ON/Vehicle in Service Mode, Vehicle in Park, All Doors Closed | | | |
| Left Front Tire Pressure Sensor Identification | — | Varies | This parameter refers to the part number of the electronic device that measures the force of air on the interior surface of the left, front tire. |
| Left Front Tire Pressure Sensor Battery Status | — | Normal | The scan tool displays Normal or Low Pressure. This parameter displays the state of the power supply (battery) for the left front tire pressure sensor which is an electronic device that measures the force of air on the interior surface of the tire. |
| Left Front Tire Pressure Sensor Status | — | Varies | This parameter will display different types of sensor faults. The tire pressure sensors are mounted inside a tire assembly on valve stems or wheel rims. |
| Left Front Tire Pressure Sensor Signal Strength | — | Varies | The tire pressure monitoring system detects a pressure loss at the tires. Each wheel is equipped with a pressure sensor to measure the pressure and temperature. This parameter displays the signal strength of the sensor. |
| Left Front Tire Pressure Signal Frame Count | — | Varies | This is the number of data frames the tire pressure sensor is transmitting while driving. |
| Left Front Tire Pressure Signal Packet Count | — | Varies | This is the number of packet counts the tire pressure sensor is transmitting while driving. |
| Left Rear Tire Pressure Sensor Identification | — | Varies | This parameter refers to the part number of the electronic device that measures the force of air on the interior surface of the left, rear tire. |
| Left Rear Tire Pressure Sensor Battery Status | — | Normal | The scan tool displays Normal or Low Pressure. This parameter displays the state of the power supply (battery) for the left rear tire pressure sensor which is an electronic device that measures the force of air on the interior surface of the tire. |
| Left Rear Tire Pressure Sensor Status | — | Varies | This parameter will display different types of sensor faults. The tire pressure sensors are mounted inside a tire assembly on valve stems or wheel rims. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Left Rear Tire Pressure Sensor Signal Strength | — | Varies | The tire pressure monitoring system detects a pressure loss at the tires. Each wheel is equipped with a pressure sensor to measure the pressure and temperature. This parameter displays the signal strength of the sensor. |
| Left Rear Tire Pressure Signal Frame Count | — | Varies | This is the number of data frames the tire pressure sensor is transmitting while driving. |
| Left Rear Tire Pressure Signal Packet Count | — | Varies | This is the number of packet counts the tire pressure sensor is transmitting while driving. |
| Right Front Tire Pressure Sensor Identification | — | Varies | This parameter will display the six digit identification number of the sensor indicated which is an electronic device that measures the force of air on the interior surface of the tire. |
| Right Front Tire Pressure Sensor Battery Status | — | Normal | The scan tool displays Normal or Low Pressure. This parameter displays the state of the power supply (battery) for the right front tire pressure sensor which is an electronic device that measures the force of air on the interior surface of the tire. |
| Right Front Tire Pressure Sensor Status | — | Varies | This parameter will display different types of sensor faults. The tire pressure sensors are mounted inside a tire assembly on valve stems or wheel rims. |
| Right Front Tire Pressure Sensor Signal Strength | — | Varies | The tire pressure monitoring system detects a pressure loss at the tires. Each wheel is equipped with a pressure sensor to measure the pressure and temperature. This parameter displays the signal strength of the sensor. |
| Right Front Tire Pressure Signal Frame Count | — | Varies | This is the number of data frames the tire pressure sensor is transmitting while driving. |
| Right Front Tire Pressure Signal Packet Count | — | Varies | This is the number of packet counts the tire pressure sensor is transmitting while driving. |
| Right Rear Tire Pressure Sensor Identification | — | Varies | This parameter will display the six digit identification number of the sensor indicated which is an electronic device that measures the force of air on the interior surface of the tire. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Right Rear Tire Pressure Sensor Battery Status | — | Normal | The scan tool displays Normal or Low Pressure. This parameter displays the state of the power supply (battery) for the right rear tire pressure sensor which is an electronic device that measures the force of air on the interior surface of the tire. |
| Right Rear Tire Pressure Sensor Status | — | Varies | This parameter will display different types of sensor faults. The tire pressure sensors are mounted inside a tire assembly on valve stems or wheel rims. |
| Right Rear Tire Pressure Sensor Signal Strength | — | Varies | The tire pressure monitoring system detects a pressure loss at the tires. Each wheel is equipped with a pressure sensor to measure the pressure and temperature. This parameter displays the signal strength of the sensor. |
| Right Rear Tire Pressure Signal Frame Count | — | Varies | This is the number of data frames the tire pressure sensor is transmitting while driving. |
| Right Rear Tire Pressure Signal Packet Count | — | Varies | This is the number of packet counts the tire pressure sensor is transmitting while driving. |

### Body Control Module — Tire Pressure Monitoring System Data — Scan Tool Data Parameters

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| **Operating Conditions:** Ignition ON/Vehicle in Service Mode, Vehicle in Park, All Doors Closed | | | |
| Left Front Tire Pressure | — | Varies | Tire pressure is a measure of the amount of air in a vehicle's tires, in pounds per square inch (PSI). This parameter is the amount of pressure present in the front of the vehicle on the left side. |
| Left Front Tire Pressure Sensor Mode | — | Varies | The scan tool displays Learn Mode - Remotely Triggered, Undefined, Re-Measure, Drive Mode, Power Down, Wake-Up, or Learn Mode - Pressure Triggered. This parameter refers to the operational level of the electronic device that measures the force of air on the interior surface of the left front tire. |
| Left Front Tire Pressure Status | — | Varies | The scan tool displays Unknown, Nominal, Very Low Pressure, Low, Weak Signal, or High. This parameter indicates the state of the tire based on tire pressure. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Left Front Tire Temperature | — | Varies | The tire pressure monitoring system detects a pressure loss at the tires. Each wheel is equipped with a pressure sensor to measure the pressure and temperature. This parameter displays the temperature of the tire. |
| Left Rear Tire Pressure | — | Varies | Tire pressure is a measure of the amount of air in a vehicle's tires, in pounds per square inch (PSI). This parameter is the amount of pressure present in the rear of the vehicle on the left side. |
| Left Rear Tire Pressure Sensor Mode | — | Varies | The scan tool displays Learn Mode - Remotely Triggered, Undefined, Re-Measure, Drive Mode, Power Down, Wake-Up, or Learn Mode - Pressure Triggered. This parameter refers to the operational level of the electronic device that measures the force of air on the interior surface of the left rear tire. |
| Left Rear Tire Pressure Status | — | Varies | The scan tool displays Unknown, Nominal, Very Low Pressure, Low, Weak Signal, or High. This parameter identifies status of left rear tire pressure. |
| Left Rear Tire Temperature | — | Varies | The tire pressure monitoring system detects a pressure loss at the tires. Each wheel is equipped with a pressure sensor to measure the pressure and temperature. This parameter displays the temperature of the tire. |
| Right Front Tire Pressure | — | Varies | Tire pressure is a measure of the amount of air in a vehicle's tires, in pounds per square inch (PSI). This parameter is the amount of pressure present in the front of the vehicle on the right side. |
| Right Front Tire Pressure Sensor Mode | — | Varies | The scan tool displays Learn Mode - Remotely Triggered, Undefined, Re-Measure, Drive Mode, Power Down, Wake-Up, or Learn Mode - Pressure Triggered. This parameter refers to the operational level of the electronic device that measures the force of air on the interior surface of the right front tire. |
| Right Front Tire Pressure Status | — | Varies | The scan tool displays Unknown, Nominal, Very Low Pressure, Low, Weak Signal, or High. This parameter indicates the state of the tire based on tire pressure. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Right Front Tire Temperature | — | Varies | The tire pressure monitoring system detects a pressure loss at the tires. Each wheel is equipped with a pressure sensor to measure the pressure and temperature. This parameter displays the temperature of the tire. |
| Right Rear Tire Pressure | — | Varies | Tire pressure is a measure of the amount of air in a vehicle's tires, in pounds per square inch (PSI). This parameter is the amount of pressure present in the rear of the vehicle on the right side. |
| Right Rear Tire Pressure Sensor Mode | — | Varies | The scan tool displays Learn Mode - Remotely Triggered, Undefined, Re-Measure, Drive Mode, Power Down, Wake-Up, or Learn Mode - Pressure Triggered. This parameter refers to the operational level of the electronic device that measures the force of air on the interior surface of the right rear tire. |
| Right Rear Tire Pressure Status | — | Varies | The scan tool displays Unknown, Nominal, Very Low Pressure, Low, Weak Signal, or High. This parameter indicates the state of the tire based on tire pressure. |
| Right Rear Tire Temperature | — | Varies | The tire pressure monitoring system detects a pressure loss at the tires. Each wheel is equipped with a pressure sensor to measure the pressure and temperature. This parameter displays the temperature of the tire. |
| Last Tire Fill Alert Notification | — | Varies | The scan tool displays Left Rear Inner, Left Rear Outer, Right Rear Outer, Left Front, Right Rear Inner, Spare, Unknown, or Right Front. Tire Fill Alert is a software feature that indicates when a predetermined pressure level is reached performed on the last tire. |
| Tire Fill Alert System State - Current | — | Varies | The scan tool displays Non Monitor, Monitoring, Active, or Achieved. Tire Fill Alert is software feature in the Tire Pressure Module system. Basically, the Tire Pressure Module system enables the High Pressure Warnings when the air pressure level goes higher than target pressure level. This parameter indicates the immediate status of the system in the present power cycle. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Tire Fill Alert System State - Previous | — | Varies | The scan tool displays Non Monitor, Monitoring, Active, or Achieved. Tire Fill Alert is software feature in the Tire Pressure Module System. Basically, the Tire Pressure Module system enables the High Pressure Warnings when the air pressure level goes higher than target pressure level. This parameter indicates the status in the former power cycle. |
| Self Auto Learn Status - Left Front Sensor | — | Inactive | The scan tool displays Active or Inactive. For vehicles with Self Auto Learn capable sensors, this parameter is used to define transmission during rolling Self Auto Learn state. A value of 1 means Self Auto Learn rolling state is Active and a value of 0 sets for all other non Self Auto Learn transmissions. |
| Self Auto Learn Status - Left Rear Sensor | — | Inactive | The scan tool displays Active or Inactive. For vehicles with Self Auto Learn capable sensors, this parameter is used to define transmission during rolling Self Auto Learn state. A value of 1 means Self Auto Learn rolling state is Active and a value of 0 sets for all other non Self Auto Learn transmissions. |
| Self Auto Learn Status - Right Front Sensor | — | Inactive | The scan tool displays Active or Inactive. For vehicles with Self Auto Learn capable sensors, this parameter is used to define transmission during rolling Self Auto Learn state. A value of 1 means Self Auto Learn rolling state is Active and a value of 0 sets for all other non Self Auto Learn transmissions. |
| Self Auto Learn Status - Right Rear Sensor | — | Inactive | The scan tool displays Active or Inactive. For vehicles with Self Auto Learn capable sensors, this parameter is used to define transmission during rolling Self Auto Learn state. A value of 1 means Self Auto Learn rolling state is Active and a value of 0 sets for all other non Self Auto Learn transmissions. |

## Body Control Module — Windows Data — Scan Tool Data Parameters

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| **Operating Conditions:** Ignition ON/Vehicle in Service Mode, Vehicle in Park, All Doors Closed | | | |
| All Windows Up/Down | — | Close | The scan tool displays Open or Close. |
| Driver Window Learned | — | Yes | The scan tool displays Yes or No. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Driver Window Motor Relay Fault Status | — | OK | This scan tool displays OK or Malfunction. |
| Left Front Window Express Down | — | Inactive | The scan tool displays Active or Inactive. |
| Left Front Window Express Up | — | Inactive | The scan tool displays Active or Inactive. |
| Left Front Window Learned Indicator | — | Not Active | The scan tool displays Active or Not Active. |
| Left Front Window Lockout Status | — | Inactive | The scan tool displays Active or Inactive. |
| Left Front Window Motor Current | — | Varies | The scan tool displays left front window motor current in amperes (A). |
| Left Front Window Switch | — | Inactive | The scan tool displays Inactive, Up, Express Up, Down, Express Down, or Stop. |
| Left Rear Window Express Up | — | Inactive | The scan tool displays Active or Inactive. |
| Left Rear Window Express Down | — | Inactive | The scan tool displays Active or Inactive. |
| Left Rear Window Learned | — | Yes | The scan tool displays Yes or No. |
| Left Rear Window Learned Indicator | — | Not Active | The scan tool displays Active or Not Active. |
| Left Rear Window Lockout Status | — | Inactive | The scan tool displays Active or Not Active. |
| Left Rear Window Motor Current | — | Varies | The scan tool displays left rear window motor current in amperes (A). |
| Left Rear Window Motor Relay Fault Status | — | OK | This scan tool displays OK or Malfunction. |
| Left Rear Window Switch | — | Inactive | The scan tool displays Inactive, Up, Express Up, Down, Express Down, or Stop. |
| Passenger Window Learned | — | Yes | The scan tool displays Yes or No. |
| Passenger Window Motor Relay Fault Status | — | OK | This scan tool displays OK or Malfunction. |
| Right Front Window Express Up | — | Inactive | The scan tool displays Active or Inactive. |
| Right Front Window Express Down | — | Inactive | The scan tool displays Active or Inactive. |
| Right Front Window Learned Indicator | — | Not Active | The scan tool displays Active or Not Active. |
| Right Front Window Lockout Status | — | Inactive | The scan tool displays Active or Inactive. |
| Right Front Window Motor Current | — | Varies | The scan tool displays right front window motor current in amperes (A). |
| Right Front Window Switch | — | Inactive | The scan tool displays Inactive, Up, Express Up, Down, Express Down, or Stop. |
| Right Rear Window Express Up | — | Inactive | The scan tool displays Active or Inactive. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Right Rear Window Express Down | — | Inactive | The scan tool displays Active or Inactive. |
| Right Rear Window Learned | — | Yes | The scan tool displays Yes or No. |
| Right Rear Window Learned Indicator | — | Not Active | The scan tool displays Active or Not Active. |
| Right Rear Window Lockout Status | — | Inactive | The scan tool displays Active or Inactive. |
| Right Rear Window Motor Current | — | Varies | The scan tool displays right rear window motor current in amperes (A). |
| Right Rear Window Motor Relay Fault Status | — | OK | This scan tool displays OK or Malfunction. |
| Right Rear Window Switch | — | Inactive | The scan tool displays Inactive, Up, Express Up, Down, Express Down, or Stop. |
| Window Lockout Indicator | — | Inactive | The scan tool displays Active or Inactive. |

### Body Control Module — Wiper/Washer Data — Scan Tool Data Parameters

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| **Operating Conditions:** Ignition ON/Vehicle in Service Mode, Vehicle in Park, All Doors Closed | | | |
| Windshield Washer Switch | — | Off | This parameter is used to display the state of the windshield washer switch. The states are On or Off. This is the electrical connection that controls the input to the motor that causes washer fluid to be dispensed on the front windshield. |
| Windshield Wiper Switch | — | Off | The scan tool displays Off, Sensitivity 1, Sensitivity 2, Sensitivity 3, Sensitivity 4, Sensitivity 5, Low, or High. This is the electrical connection that controls the input to the motor that causes movement of the wiper arm to clear the front windshield. |
| Windshield Wiper Mode | — | Varies | The scan tool displays Low, High, Delay 1, Delay 2, Delay 3, Delay 4, Delay 5, Suspended Due to Engine Crank, Parked, Service Park, Depressed Park, or Winter Park. This parameter displays the windshield wiper mode status. |
| Windshield Wiper Auto Mode Switch | — | — | — |
| Windshield Wiper Motor Protection Mode | — | — | — |

## Body Control Module — Tire Pressure Monitoring System Data – Front — Scan Tool Data Parameters

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| **Operating Conditions:** Ignition ON/Vehicle in Service Mode, Vehicle in Park, All Doors Closed | | | |
| Selected Front Tire Type | — | Standard Load | The scan tool displays No Tire Type, Standard Load, Extra Load, Load Range C, Load Range D, or Load Range E. This parameter displays the front tire type. |
| Front Tire Pressure on Placard | — | Varies | This parameter reads the tire pressures selected for the front of the vehicle during programming / vehicle setup. Placard is the label printed on the driver side door. The recommended tire inflation pressures are listed on that label. The purpose of this parameter is to monitor for vehicles which have for some reason cleared the placard values to zero. |
| Front Tire Pressure on Placard (Eco) | — | Varies | This parameter shows the tire pressure printed on the label (placard) in the driver side door. There are 3 pressures given on the label for Comfort, Eco, Fully Loaded. |
| Front Tire Pressure on Placard (Comfort) | — | Varies | This parameter shows the tire pressure printed on the label (placard) in the driver side door. There are 3 pressures given on the label for Comfort, Eco, Fully Loaded. |
| Front Tire Pressure on Placard (Fully Loaded) | — | Varies | This parameter shows the tire pressure printed on the label (placard) in the driver side door. There are 3 pressures given on the label for Comfort, Eco, Fully Loaded. |
| Tire Pressure Monitoring System Regulation Type | — | Varies | The scan tool displays FMVSS, China, ECER64, or None. The Tire Pressure Monitoring System can be built to follow different legal standards. This parameter shows the name of the regulation (law giving entity), like Federal Motor Vehicle Safety Standards or Economic Comission for Europe. |

### Body Control Module — Tire Pressure Monitoring System Data – Rear — Scan Tool Data Parameters

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| **Operating Conditions:** Ignition ON/Vehicle in Service Mode, Vehicle in Park, All Doors Closed | | | |
| Selected Rear Tire Type | — | Standard Load | The scan tool displays No Tire Type, Standard Load, Extra Load, Load Range C, Load Range D, or Load Range E. This parameter is used to display the type of tire selected (Load Range) for rear of the vehicle. The load range of the tire is generally how much weight or load the tire is capable performing. |
| Rear Tire Pressure on Placard | — | Varies | This parameter reads the tire pressures selected for the rear of the vehicle during programming / vehicle setup. Placard is the label printed on the driver side door. The recommended tire inflation pressures are listed on that label. The purpose of this parameter is to monitor for vehicles which have for some reason cleared the placard values to zero. |
| Rear Tire Pressure on Placard (Eco) | — | Varies | This parameter shows the tire pressure printed on the label (placard) in the driver side door. There are 3 pressures given on the label for Comfort, Eco, Fully Loaded. |
| Rear Tire Pressure on Placard (Comfort) | — | Varies | This parameter shows the tire pressure printed on the label (placard) in the driver side door. There are 3 pressures given on the label for Comfort, Eco, Fully Loaded. |
| Rear Tire Pressure on Placard (Fully Loaded) | — | Varies | This parameter shows the tire pressure printed on the label (placard) in the driver side door. There are 3 pressures given on the label for Comfort, Eco, Fully Loaded. |
| Tire Pressure Monitoring System Regulation Type | — | Varies | The scan tool displays FMVSS, China, ECER64, or None. The Tire Pressure Monitoring System can be built to follow different legal standards. This parameter shows the name of the regulation (law giving entity), like Federal Motor Vehicle Safety Standards or Economic Comission for Europe. |

### Body Control Module — Vehicle Access Data — Scan Tool Data Parameters

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| **Operating Conditions:** Ignition ON/Vehicle in Service Mode, Vehicle in Park, All Doors Closed | | | |
| Child Security Lock - Lock Command | — | Inactive | The scan tool displays Inactive or Lock. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Child Security Lock - Unlock Command | — | Inactive | The scan tool displays Inactive or Unlock. |
| Driver Door Open Switch | — | Inactive | This scan tool displays Active or Inactive. |
| Fuel Fill Door Lock | — | Inactive | The scan tool displays Inactive or Lock. |
| Fuel Fill Door Unlock | — | Inactive | The scan tool displays Inactive or Unlock. |
| Glove Box Unlatch Switch | — | Locked | The scan tool displays Locked or Unlocked. |
| Left Front Door Ajar Switch | — | Inactive | The scan tool displays Active or Inactive. |
| Left Front Door Lock Command | — | Inactive | The scan tool displays Inactive or Lock. |
| Left Front Door Lock Indicator Command | — | Off | The scan tool displays On or Off. |
| Left Front Door Lock Switch | — | Inactive | The scan tool displays Active or Inactive. |
| Left Front Door Unlock Command | — | Inactive | The scan tool displays Inactive or Unlock. |
| Left Rear Door Ajar Switch | — | Inactive | The scan tool displays Active or Inactive. |
| Left Rear Door Lock Command | — | Inactive | The scan tool displays Inactive or Lock. |
| Left Rear Door Lock Indicator Command | — | Off | The scan tool displays On or Off. |
| Left Rear Door Unlock Command | — | Inactive | The scan tool displays Inactive or Unlock. |
| Passenger Door Open Switch | — | Inactive | The scan tool displays Active or Inactive. |
| Right Front Door Ajar Switch | — | Inactive | The scan tool displays Active or Inactive. |
| Right Front Door Lock Command | — | Inactive | The scan tool displays Inactive or Lock. |
| Right Front Door Lock Indicator Command | — | Off | The scan tool displays On or Off. |
| Right Front Door Unlock Command | — | Inactive | The scan tool displays Inactive or Unlock. |
| Right Rear Door Ajar Switch | — | Inactive | The scan tool displays Active or Inactive. |
| Right Rear Door Lock Command | — | Inactive | The scan tool displays Inactive or Lock. |
| Right Rear Door Lock Indicator Command | — | Off | The scan tool displays On or Off. |
| Rear Door Unlock Indicator Command | — | Off | The scan tool displays On or Off. |
| Right Rear Door Unlock Command | — | Inactive | The scan tool displays Inactive or Unlock. |
| Rear Closure Release | — | Inactive | The scan tool displays Inactive or Unlock. |
| Rear Closure Lock Command | — | Inactive | The scan tool displays Inactive or Lock. |
| Rear Closure Unlock Command | — | Inactive | The scan tool displays Inactive or Unlock. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Theft Deterrent Lock Command | — | Inactive | The scan tool displays Inactive or Lock. |
| Theft Deterrent Unlock Command | — | Inactive | The scan tool displays Inactive or Unlock. |

### Body Control Module — Content Theft Deterrent Alarm Trigger — Scan Tool Output Controls

| Output Control | Description |
|---|---|
| Horn Relay Command | This output control refers to a request to initiate the sound for a vehicle's loud warning signal. This output control is used to command the horn relay on and off. |

### Body Control Module — Exterior Lighting — Scan Tool Output Controls

| Output Control | Description |
|---|---|
| Center High Mounted Stop Lamp | This output control is used to activate the center high mounted stop lamp when selecting On. The center high mounted stop lamp should illuminate until commanded Off. |
| Left Stop Lamp | This output control is used to activate the left stop lamp when selecting On. The left stop lamp should illuminate until commanded Off. |
| Right Stop Lamp | This output control is used to activate the right stop lamp when selecting On. The right stop lamp should illuminate until commanded Off. |
| License Plate Lamps | This output control is used to activate the license plate lamps when selecting On. The license plate lamps should illuminate until commanded Off. |
| Backup Lamps | This output control is used to activate the backup lamps when selecting On. The backup lamps should illuminate until commanded Off. |
| Left Park Lamps | This output control is used to activate the left park lamps when selecting On. The left park lamps should illuminate until commanded Off. |
| Right Park Lamps | This output control is used to activate the right park lamps when selecting On. The right park lamps should illuminate until commanded Off. |
| Left Daytime Running Lamps | This output control is used to activate the left daytime running lamps when selecting On. The left daytime running lamps should illuminate until commanded Off. |
| Right Daytime Running Lamps | This output control is used to activate the right daytime running lamps when selecting On. The right daytime running lamps should illuminate until commanded Off. |
| Left Auxiliary Daytime Running Lamps | This output control is used to activate the left auxiliary daytime running lamps when selecting On. The left auxiliary daytime running lamps should illuminate until commanded Off. |
| Right Auxiliary Daytime Running Lamps | This output control is used to activate the right auxiliary daytime running lamps when selecting On. The right auxiliary daytime running lamps should illuminate until commanded Off. |
| Left Front Auxiliary Park Lamp Command | This output control is used to activate the left front auxiliary park lamp when selecting On. The left front auxiliary park lamp should illuminate until commanded Off. |
| Right Front Auxiliary Park Lamp Command | This output control is used to activate the right front auxiliary park lamp when selecting On. The right front auxiliary park lamp should illuminate until commanded Off. |
| Left Front Turn Signal Lamp Command | This output control is used to activate the left front turn signal lamp when selecting On. The left front turn signal lamp should illuminate until commanded Off. |
| Right Front Turn Signal Lamp Command | This output control is used to activate the right front turn signal lamp when selecting On. The right front turn signal lamp should illuminate until commanded Off. |
| Left Turn Signal Repeater Lamp Command | This output control is used to activate the left turn signal repeater lamp when selecting On. The left turn signal repeater lamp should illuminate until commanded Off. |
| Right Turn Signal Repeater Lamp Command | This output control is used to activate the right turn signal repeater lamp when selecting On. The right turn signal repeater lamp should illuminate until commanded Off. |
| Rear Fog Lamp(s) | This output control is used to activate the rear fog lamp(s) when selecting On. The rear fog lamp(s) should illuminate until commanded Off. |

### Body Control Module — HVAC Controls — Scan Tool Output Controls

| Output Control | Description |
|---|---|
| Blower Motor | This output control commands the HVAC blower motor speed, displayed in percent. The blower should be turning. The blower motor is a motor with a cage attached to force the air through ducts such as heater, ventilation and defrost ducts. |

### Body Control Module — Interior Lighting — Scan Tool Output Controls

| Output Control | Description |
|---|---|
| Child Security Lock Indicator | This output control is used to activate the child security lock indicator when selecting On. The child security lock indicator should illuminate until commanded Off. |
| Dome/Reading Lamps Front Overhead Console | This output control is used to activate the dome/reading lamps when selecting On. The dome/reading lamps should illuminate until commanded Off. |
| Lane Departure Warning Indicator | This output control is used to activate the lane departure warning indicator when selecting On. The lane departure warning indicator should illuminate until commanded Off. |
| Security Indicator | This output control is used to activate the security indicator when selecting On. The security indicator should illuminate until commanded Off. |

### Body Control Module — Power Mode — Scan Tool Output Controls

| Output Control | Description |
|---|---|
| Run/Crank Relay Command | This output control is used to command run/crank relay active or inactive. |
| Accessory/Retained Accessory Power Relay Command | This output control is used to command accessory/retained accessory power relay active or inactive. |
| Run Relay Command | This output control is used to command run relay active or inactive. |
| Power Mode Timeout | This output control is used to disable or enable the power mode timeout function (not whether timer is active or inactive). |
| Battery Saver Mode | This output control is used to enable or disable the transport mode state. |

### Body Control Module — Seat Heating/Venting/Cooling — Scan Tool Output Controls

| Output Control | Description |
|---|---|
| Left Front Seat Heating | This output control is used to turn on/off all outputs for heating elements for the left front seat. |
| Right Front Seat Heating | This output control is used to turn on/off all outputs for heating elements for the right front seat. |
| Driver Seat Blower | This output control can be used for setting various blower speeds, but service tool will only turn on high to verify module outputs and fan operation. |
| Passenger Seat Blower | This output control can be used for setting various blower speeds, but service tool will only turn on high to verify module outputs and fan operation. |

### Body Control Module — Configuration/Reset Functions — Scan Tool Output Controls

| Output Control | Description |
|---|---|
| **Brake Pedal Position Sensor Learn** | |
| Brake Pedal Position Sensor Learn | This output control is used to activate the brake pedal position sensor learn when selecting Learn. The brake pedal position sensor learn procedure should start. |
| **HVAC Actuators Learn** | |
| HVAC Actuators Learn | This output control is used to activate the HVAC actuators learn when selecting Learn. The HVAC actuators learn procedure should start. |

## K17 Electronic Brake Control Module: Scan Tool Information

The Electronic Brake Control Module (EBCM) scan tool data parameters list contains all ABS related parameters that are available on the scan tool. The list is arranged in alphabetical order. A given parameter may appear in any one of the data lists.

### Electronic Brake Control Module Scan Tool Data Parameters

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| **Operating Conditions:** Ignition ON | | | |
| ABS Pump Motor Voltage | — | 0 V | The scan tool displays the commanded pump motor voltage. |
| Acceleration Sensor Longitudinal Signal | — | Varies | The scan tool displays 0–5 V depending on the vehicle's longitudinal acceleration. |
| Antilock Braking System | — | OK | The scan tool displays OK or Malfunction. Malfunction is displayed if there is an ABS malfunction. |
| Brake Booster Vacuum Sensor | — | Varies | The scan tool displays kPa (psi) This is the current vacuum. |
| Brake Booster Vacuum Sensor Supply | — | 0 V | The scan tool displays 0–5 V depending on the brake booster vacuum sensor supply voltage. |
| Brake Fluid Level Sensor | — | OK | The scan tool displays OK when the brake fluid is at correct level and Low when the brake fluid is low. |
| Brake Pedal Position Sensor | Brake pedal released | Inactive | The scan tool displays Inactive or Active depending on the state of the brake pedal. |
| | Brake pedal applied | Active | |
| Brake Pressure Sensor | Brake pedal released | 0–1 V | The scan tool displays 0–5 V depending on the applied hydraulic brake pressure. |
| | Brake pedal applied | 1–5 V | |
| Brake Pressure Sensor | Brake pedal released | 2000–3000 kPa | The scan tool displays the actual pressure applied to the brake pedal. |
| Delivered Torque | — | Varies | The scan tool displays 0–100% depending on the how much torque the engine is delivering. |
| Dynamic Rear Proportioning Status | — | OK | The scan tool displays OK or Malfunction. Malfunction is displayed if the EBCM disables the dynamic rear proportioning due to a fault. |
| Lateral Acceleration Signal | — | Varies | The scan tool displays 0–5 V depending on the vehicle's lateral acceleration. |
| Left Front Inlet Solenoid Valve Feedback | — | Inactive | The scan tool displays Inactive or Active. Active is displayed when the left front inlet solenoid valve is commanded ON. |
| Left Front Outlet Solenoid Valve Feedback | — | Inactive | The scan tool displays Inactive or Active. Active is displayed when the left front outlet solenoid valve is commanded ON. |
| Left Front Wheel Speed Sensor | — | 0 km/h (0 MPH) | The scan tool displays km/h (MPH) depending on the current speed of the left front wheel speed sensor. |
| Left Rear Inlet Solenoid Valve Feedback | — | Inactive | The scan tool displays Inactive or Active. Active is displayed when the left rear inlet solenoid valve is commanded ON. |
| Left Rear Outlet Solenoid Valve Feedback | — | Inactive | The scan tool displays Inactive or Active. Active is displayed when the left rear outlet solenoid valve is commanded ON. |
| Left Rear Wheel Speed Sensor | — | 0 km/h (0 MPH) | The scan tool displays km/h (MPH) depending on the current speed of the left rear wheel speed sensor. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Panic Brake Assist Status | — | OK | The scan tool displays OK or Malfunction. Malfunction is displayed if the EBCM disables the panic brake assist due to a fault. |
| Pump Motor Relay Feedback | — | Inactive | The scan tool displays Inactive or Active. Active is displayed when the pump motor is commanded ON. |
| Primary Isolation Solenoid Valve Feedback | — | Inactive | The scan tool displays Inactive or Active. Active is displayed when the isolation solenoid valve is commanded ON. |
| Primary Prime Solenoid Valve Feedback | — | Inactive | The scan tool displays Inactive or Active. Active is displayed when the prime solenoid valve is commanded ON. |
| Requested Torque | — | Varies | The scan tool displays 0–100% depending on the how much torque is requested. |
| Right Front Inlet Solenoid Valve Feedback | — | Inactive | The scan tool displays Inactive or Active. Active is displayed when the right front inlet solenoid valve is commanded ON. |
| Right Front Outlet Solenoid Valve Feedback | — | Inactive | The scan tool displays Inactive or Active. Active is displayed when the right front outlet solenoid valve is commanded ON. |
| Right Front Wheel Speed Sensor | — | 0 km/h (0 MPH) | The scan tool displays km/h (MPH) depending on the current speed of the right front wheel speed sensor. |
| Right Rear Inlet Solenoid Valve Feedback | — | Inactive | The scan tool displays Inactive or Active. Active is displayed when the right rear inlet solenoid valve is commanded ON. |
| Right Rear Outlet Solenoid Valve Feedback | — | Inactive | The scan tool displays Inactive or Active. Active is displayed when the right rear outlet solenoid valve is commanded ON. |
| Right Rear Wheel Speed Sensor | — | 0 km/h (0 MPH) | The scan tool displays km/h (MPH) depending on the current speed of the right rear wheel speed sensor. |
| Secondary Isolation Solenoid Valve Feedback | — | Inactive | The scan tool displays Inactive or Active. Active is displayed when the isolation solenoid valve is commanded ON. |
| Secondary Prime Solenoid Valve Feedback | — | Inactive | The scan tool displays Inactive or Active. Active is displayed when the prime solenoid valve is commanded ON. |
| Steering Column Position | Steering wheel in straight position | −5 to +5° | The scan tool displays °. This is the current position of the steering angle sensor. |
| | Steering wheel turned left until stop | 450–550° | |
| | Steering wheel turned right until stop | −550 to −450° | |
| System Voltage | — | 11–14 V | The scan tool displays V. This is the current battery voltage. |
| Traction Control Switch | Traction control switch released | Inactive | The scan tool displays Inactive or Active depending on the traction control switch status. |
| | Traction control switch pressed | Active | |
| Traction Control System | — | OK | The scan tool displays OK or Malfunction. Malfunction is displayed if there is a traction control malfunction. |
| Vehicle Stability System | — | OK | The scan tool displays OK or Malfunction. Malfunction is displayed if there is a stability control malfunction. |
| Vehicle Stability Enhancement System Relay Feedback | — | Active | The scan tool displays Inactive or Active. Inactive is displayed when stability control is disabled. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Vehicle Stability Enhancement System Switch | Traction control switch released | Inactive | The scan tool displays Inactive or Active depending on the traction control switch status. |
| | Traction control switch pressed | Active | |
| Yaw Rate Signal | — | Varies | The scan tool displays 0–5 V depending on the vehicle's yaw rate. |

### Electronic Brake Control Module Scan Tool Output Controls

| Output Control | Description |
|---|---|
| ABS Left Front Solenoid Valves | Commands the solenoid valves ON or OFF. |
| ABS Left Rear Solenoid Valves | Commands the solenoid valves ON or OFF. |
| ABS Pump Motor | Commands the ABS pump motor Increase or Decrease. |
| ABS Right Front Solenoid Valves | Commands the solenoid valves ON or OFF. |
| ABS Right Rear Solenoid Valves | Commands the solenoid valves ON or OFF. |
| Automated Brake Bleed | This is used in order to bleed ABS hydraulics. |
| Brake Booster Electric Vacuum Pump | Commands the brake booster electric vacuum pump motor ON or OFF. |
| Traction Control Left Front Solenoid Valves | Commands the solenoid valves ON or OFF. |
| Traction Control Left Rear Solenoid Valves | Commands the solenoid valves ON or OFF. |
| Traction Control Right Front Solenoid Valves | Commands the solenoid valves ON or OFF. |
| Traction Control Right Rear Solenoid Valves | Commands the solenoid valves ON or OFF. |

## K20 Engine Control Module: Scan Tool Information (L5P)

### Engine Control Module Scan Tool Data

| Parameter | Value | Description |
|---|---|---|
| This is a comprehensive list. Not all parameters listed are available for all applications. **Base Operating Conditions:** Engine Idling/Radiator Hose Hot/Park or Neutral/Closed Loop/Accessories OFF | | |
| 4WD Low Signal | Enabled, Disabled, Invalid | This parameter contains several signals associated with the status of the four wheel drive system. |
| A/C Compressor Clutch Relay Command | On | This parameter displays the commanded state of the air conditioning (A/C) compressor output. |
| A/C Compressor Clutch Relay Control Circuit High Voltage Test Status | OK / Okay, Malfunction, Not Run | This parameter displays the state of the air conditioning (A/C) clutch relay control circuit. It can display OK / Okay, Malfunction or Not Run. The parameter displays Malfunction if the A/C clutch relay control circuit is shorted to voltage. |
| A/C Compressor Clutch Relay Control Circuit Low Voltage Test Status | OK / Okay, Malfunction, Not Run | This parameter displays the state of the air conditioning (A/C) clutch relay control circuit. It can display OK / Okay, Malfunction or Not Run. The parameter displays Malfunction if the A/C clutch relay control circuit is shorted to ground. |

| Parameter | Value | Description |
|---|---|---|
| A/C Compressor Clutch Relay Control Circuit Open Test Status | OK / Okay, Malfunction, Not Run | This parameter displays the state of the air conditioning (A/C) clutch relay control circuit. It can display OK / Okay, Malfunction or Not Run. The parameter displays Malfunction if the A/C clutch relay control circuit is opened. |
| A/C Disable – A/C Pressure Out of Range | No | This parameter indicates if the A/C compressor was disengaged due to pressure out of range. |
| A/C Disengage History 1–8 | Varies | This parameter indicates the last 8 A/C disengage history reasons. These events might include:<br>• Refrigerant Pressure Too High<br>• Engine Speed<br>• Battery Voltage Out of Range<br>• Engine Stall Prevention<br>• Engine Speed Unstable<br>• Wide Open Throttle<br>• Vehicle Launch Acceleration<br>• Engine Coolant Temperature Too High<br>• Driver Motor Control Module Coolant<br>• Temperature Too High<br>• Transmission Fluid Temperature Too High<br>• Maximum Accelerator Pedal Position<br>• Air Bag Deployed<br>• Hybrid Battery Pack State of Charge Too Low<br>• Air Conditioning Relay Malfunction |
| A/C High Side Pressure Sensor | Volts | The scan tool displays 0–5 volts. The voltage applied to the ECM input for the A/C refrigerant pressure sensor. |
| A/C High Side Pressure Sensor | kPa (psi) | The scan tool displays 0–3450 kPa (0–500 psi). The voltage applied to the ECM input from the A/C refrigerant pressure sensor is converted to a pressure value. |
| A/C OFF for WOT | No<br>Yes | The scan tool displays Yes/No. The state of the A/C request related to wide open throttle. |
| A/C Request Signal | Yes<br>No | The scan tool displays Yes/No. The HVAC module receives an input request when the HVAC module is turned On. |
| Accelerator Pedal Position | % | This parameter displays the angle of the accelerator pedal as calculated by the control module using the signals from the accelerator pedal position sensors. The accelerator pedal position (APP) indicated angle is a range of values indicating a low percentage when the accelerator pedal is not depressed to a high percentage when the accelerator pedal is fully depressed. |
| Accelerator Pedal Position When Engine Overspeed Detected | % | This parameter displays the accelerator pedal position (APP) observed upon initial detection of an overspeed condition. This value will be updated upon each overspeed condition. |

| Parameter | Value | Description |
|---|---|---|
| Ambient Air Temperature | Varies | Outside temperature at any given altitude expressed in degrees |
| Ambient Humidity | Varies | Outside humidity at any given altitude expressed in a percentage. |
| APP Sensor 1 | Volts | This parameter displays the voltage signal sent to the control module from APP sensor 1 of the APP sensor assembly. APP sensor 1 is a range of values indicating a low voltage when the accelerator pedal is not depressed to a high voltage when the accelerator pedal is fully depressed. |
| APP Sensor 1 and 2 | Agree | This parameter displays Disagree if the control module detects the signal voltage from APP sensor 1 is not in correct relationship to APP sensor 2. The scan tool displays Agree under the normal operating conditions. |
| APP Sensor 1 Circuit Status | OK / Okay | APP Sensor 1 Out of Range indicates that the sensed accelerator pedal position 1 sensor value is currently out of range or that a Malfunction has been detected based upon the sensed accelerator pedal position 1 sensor value being out of range |
| APP Sensor 1 Learned Released Position | Volts | This Parameter indicates the accelerator pedal sensor 1 signal at its minimum learned position (pedal released) as a percentage of its reference voltage. (The minimum learned position is automatically updated periodically as determined by the engine control module (ECM). |
| APP Sensor 1 Position | % | This parameter displays the angle of the APP sensor 1 as calculated by the control module using the signal from the APP sensor 1. APP sensor 1 is a range of values indicating a low percentage when the accelerator pedal is not depressed to a high percentage when the accelerator pedal is fully depressed. |
| APP Sensor 2 | Volts | This parameter displays the voltage signal sent to the control module from APP sensor 2 of the APP sensor assembly. APP sensor 2 is a range of values indicating a low voltage when the accelerator pedal is not depressed to a high voltage when the accelerator pedal is fully depressed. |
| APP Sensor 2 Circuit Status | OK / Okay | APP Sensor 2 Out of Range indicates that the sensed accelerator pedal position 2 sensor value is currently out of range or that a malfunction has been detected based upon the sensed accelerator pedal position 2 sensor value being out of range |
| APP Sensor 2 Learned Released Position | Volts | This Parameter indicates the accelerator pedal sensor 2 signal at its minimum learned position (pedal released) as a percentage of its reference voltage. (The minimum learned position is automatically updated periodically as determined by the engine control module (ECM). |

| Parameter | Value | Description |
|---|---|---|
| APP Sensor 2 Position | % | This parameter displays the angle of the APP sensor 2 as calculated by the control module using the signal from the APP sensor 2. APP sensor 2 is a range of values indicating a low percentage when the accelerator pedal is not depressed to a high percentage when the accelerator pedal is fully depressed. |
| APP Sensors | % | This Parameter contains the accelerator pedal position resulting directly from the settling of differences of the accelerator pedal position sensors (prior to any compensation to determine driver intent). |
| Average Reductant Consumption | g/km | This parameter displays the average reductant consumption in gallons per kilometer. |
| Average DPF Regeneration Duration | hh:mm:ss | This parameter contains the mean duration of the diesel particulate filter regenerations. The value in this parameter shall be updated after every diesel particulate filter regeneration attempt. |
| Average DPF Inlet Temperature During Regeneration | ºC (ºF) | This parameter contains the mean diesel particulate filter inlet temperature, during the diesel particulate filter regenerations. |
| BARO Sensor 1-2 | Varies with altitude | This parameter displays the barometric pressure in kPa. |
| BARO Sensor 1-2 | Varies with altitude | This parameter displays the barometric pressure in volts. |
| Base Injector Fuel Rate | Varies | This parameter displays the base calculated rate fuel delivered. The rate is calculated in cubic millimeters. |
| Battery Type | N/A | This parameter displays the battery type. |
| Battery Voltage | Volts | This parameter displays the battery volt-age. |
| Battery Voltage High Resolution | Volts | This parameter displays the high resolution battery voltage value. |
| Boost System Monitor Complete | Yes | The scan tool displays Yes when the Boost System Monitor is Complete. If the scan tool displays No this could indicate a malfunction in the Boost System Monitor circuit. |
| Boost System Monitor Complete This Ignition Cycle | Yes/No | The scan tool displays Yes when the Boost System Monitor Complete This Ignition Cycle is completed. |
| Boost System Monitor Enabled | Yes | The scan tool displays Yes when the Boost System Monitor is Enabled. If the scan tool displays No this could indicate a malfunction in the Boost System Monitor circuit. |
| Boost System Monitor Enabled This Ignition Cycle | Yes/No | The scan tool displays Yes when the Boost System Monitor is Enabled during an ignition cycle. |
| Brake Pedal Position Circuit Signal | Applied/Released | This parameter displays the status of the brake pedal position circuit. |
| Brake Pedal Position Sensor | Volts | This parameter displays the brake pedal position sensor in volts. |
| Brake Pedal Position Sensor | % | This parameter displays the brake pedal position sensor in percentage applied. |

| Parameter | Value | Description |
|---|---|---|
| Brake Pedal Position Sensor Learned Released Position | Volts | This parameter displays the brake pedal learned released position in volts. |
| Brake Pedal Position Sensor Signal | Applied / Released | This parameter displays the status of the brake pedal as determined by the ECM. |
| Calculated Catalyst Temperature | °C (°F) | The parameter displays the calculated catalyst temperature in both Celsius and Fahrenheit. |
| Calculated NOx Catalyst Efficiency | % | This parameter contains the estimated average efficiency determined by the SCR (Selective Catalyst Reduction) efficiency monitor. |
| Calculated DPF Flow | kPa/(liter/s) | This parameter displays the filtered flow resistance of the DPF. |
| Calculated Particulate Filter Soot Accumulation | % | This parameter contains the most reliable estimation of the soot mass trapped in the diesel particulate filter. |
| Calculated Soot Mass Causing DPF Pressure Differential | g | This parameter displays the calculated soot mass causing a DPF pressure differential. |
| Calibration History Buffer | Locked/Unlocked | This parameter displays when the calibration buffer has been locked against further updates due to detection of a non-production calibration. |
| Calibration Verification Number History 1 – 10 | # | This parameter displays the history of calibration verification from 1–10. |
| Camshaft Position Active Counter | Counts | This parameter displays an incrementing counter when the control module receives a signal from the camshaft position sensor. |
| Camshaft Position Sensor | RPM | This parameter displays the speed of the engine as calculated by the signal from a camshaft position (CMP) sensor. This parameter will always display 0 unless a condition with the CKP sensor or CKP reluctor exists. If a CKP condition exists the control module will use a valid CMP sensor signal to determine engine speed and crank/camshaft position. |
| Camshaft Position Signal Output Circuit High Voltage Test Status | OK / Okay, Malfunction | This parameter displays the state of the Camshaft Position Signal Output Circuit. The parameter displays Malfunction if the Camshaft Position Signal Output Circuit is shorted to voltage. |
| Camshaft Position Signal Output Circuit Low Voltage Test Status | OK / Okay, Malfunction | This parameter displays the state of the Camshaft Position Signal Output Circuit. The parameter displays Malfunction if the Camshaft Position Signal Output Circuit is shorted to ground. |
| Camshaft Position Signal Output Circuit Open Test Status | OK / Okay, Malfunction | This parameter displays the state of the Camshaft Position Signal Output Circuit. The parameter displays Malfunction if the Camshaft Position Signal Output Circuit is open. |
| Catalyst Monitor Complete | Yes | This parameter indicates the status of the Catalyst. The scan tool displays Yes when the diagnostic is complete. And No if the diagnostic has Not ran or a malfunction is detected in the Catalyst. |

| Parameter | Value | Description |
|---|---|---|
| Catalyst Monitor Complete This Ignition Cycle | Yes/No | This parameter indicates the status of the catalyst monitor diagnostic. Catalyst Monitor Test Running indicates Yes or No when the catalyst monitor diagnostic is actively running a test |
| Catalyst Monitor Enabled | Yes/No | The scan tool displays Yes when the Catalyst Monitor is Enabled. If the scan tool displays No this could indicate a malfunction in the Catalyst Monitor circuit. |
| Catalyst Monitor Enabled This Ignition Cycle | Yes/No | This parameter indicates the status of the catalyst monitor diagnostic. Catalyst Monitor Test Running indicates Yes or No when the catalyst monitor diagnostic is actively running a test |
| Change Engine Oil Indicator Command | Off | Engine Oil Change Indication On indicates that the change engine oil indication is being requested On in order to inform the driver that the engine oil needs to be changed. |
| Charge Air Cooler Temperature | Varies | This parameter displays the charge air cooler temperature measured by a sensor located first in the charge air cooler stream. |
| Charge Air Cooler Inlet Temperature | ºC (ºF) | This parameter contains the undefaulted charge air cooler temperature measured by a sensor located first in the charge air cooler stream in relationship to any other charge air cooler temperature sensors in the system. |
| Charge Air Cooler Outlet Temperature | ºC (ºF) | This parameter contains the undefaulted charge air cooler temperature measured by a sensor located second in the charge air cooler stream in relationship to any other charge air cooler temperature sensors in the system. |
| { If equipped } Clutch Pedal Starter Inhibit Switch | On | This parameter displays ON when the clutch pedal is released. |
| { If equipped } Clutch Pedal Switch | Released | This parameter displays the state of the clutch pedal as determined by the control module from the clutch pedal switch. |
| Component Monitor Complete | Yes/No | This parameter displays Yes when the Component Monitor is Complete. The engine control module looks at many input and output components to make this determination. If a malfunction is detected the scan tool will display No. |
| Component Monitor Enabled | Yes/No | This parameter displays Yes when Component Monitor is Enabled. And No when it is not Enabled. |
| Compression Test | Not Running | This parameter displays the status of the engine compression test. |
| Control Module Voltage Signal | B+ | This parameter displays the voltage of the power input to the engine control module. Since battery voltage is not directly measured by engine control module, switched battery voltage from the Run/ Crank input to the engine control module is displayed. |
| Cooling Fan Command | % | This parameter displays the cooling fan duty cycle. |

| Parameter | Value | Description |
|---|---|---|
| Cooling Fan Control Circuit 1–2 High Voltage Test Status | OK / Okay, Malfunction | This parameter displays the state of the cooling fan control circuit. The parameter displays Malfunction if the cooling fan control circuit is shorted to voltage. |
| Cooling Fan Control Circuit 1–2 Low Voltage Test Status | OK / Okay, Malfunction | This parameter displays the state of the cooling fan control circuit. The parameter displays Malfunction if the cooling fan control circuit is shorted to ground. |
| Cooling Fan Control Circuit 1–2 Open Test Status | OK / Okay, Malfunction | This parameter displays the state of the cooling fan control circuit. The parameter displays Malfunction if the cooling fan control circuit is opened. |
| Cooling Fan Speed | Varies | This parameter displays the current state of the cooling fan speed. (For example OFF, Low, Medium, or High) rather than rotational speed. |
| Cooling Motor Fan Command | % | This parameter displays the cooling fan duty cycle. |
| Crank Request Signal | Yes | This parameter displays the state of the crank request input to the control module from the ignition switch. The scan tool will display Yes when the ignition switch is in the Crank position. The scan tool will display No when the ignition switch is in any other position. |
| Crankshaft Position Active Counter | Counts | This parameter displays an incrementing counter when the control module receives a signal from the crankshaft position sensor (CKP). |
| Crankshaft Position Sensor | RPM | This parameter displays engine speed. |
| Crankshaft Position Sensor | Volts | This parameter displays the displacement of the clutch pedal (corrected and normalized based upon its learned released and fully applied positions), where 0% corresponds to the clutch pedal being released and 100% corresponds to the clutch pedal being fully applied. |
| Crankshaft Position Sensor | % | This parameter displays the clutch pedal position sensor analog input as a percentage of its reference voltage. |
| Crankshaft Position Variation Learn | Not Learned | This parameter displays if the crank angle learned this key cycle. |
| Crankshaft Position Variation Learn Status Engine Speed Range 1 | Not Learned | This parameter displays the progress for the crank wheel adaption learning at 900–1450 rpm. |
| Crankshaft Position Variation Learn Status | Complete | This parameter displays the status of the crank angle sensing error (CASE) learn algorithm. |
| Crankshaft Position Variation Learn Status Engine Speed Range 2 | Not Learned | This parameter displays the progress for the crank wheel adaption learning at 1451–1900 rpm. |
| Cruise Control | Inactive | This parameter displays the status of the cruise control system as determined by the control module. The scan tool will display Active when the cruise control system is in control of vehicle speed. The scan tool will display Inactive when the cruise control system is not operating. |

| Parameter | Value | Description |
|---|---|---|
| Cruise Control | Disabled | This parameter displays the status of the cruise control system as determined by the control module. The scan tool will display Enabled when the cruise control system is in control of vehicle speed. The scan tool will display Disabled when the cruise control system is not operating. |
| Cruise Control Cancel Switch | Inactive | This parameter displays the status of the cruise control cancel switch |
| Cruise Control Inhibit Reason | None | The parameter displays the reason the cruise control system cannot engage. |
| Cruise Control On/Off Switch | Off | This parameter displays the state of the On/Off switch input to the control module . The scan tool will display On when the cruise On/Off switch is ON. The scan tool will display Off when the cruise ON/OFF switch is OFF. |
| Cruise Control Resume/Acceleration Switch | Inactive | This parameter displays the state of the Resume/Accel switch input to the control module When the cruise control switch is in the On position and the Resume/ Accel switch is activated, the scan tool displays On. When the Resume/Accel switch is released the scan tool displays Off. |
| Cruise Control Set/Coast Switch | Inactive | This parameter displays the state of the Set/Coast switch input to the control module from the cruise control system. When the cruise control switch is in the on position and the Set/Coast switch is activated, the scan tool displays Active. When the Set/Coast switch is released the scan tool displays Inactive. |
| Cruise Control Disengage 1–8 History | Reason for Cruise Disengagement | These parameters indicate the last 8 reasons the ECM disengaged the cruise control. Reason 1 contains the most recent reason. The reasons may include the following: Brake Pedal Initialize, Cancel, Clutch, Coast Disengage, Coast Speed Low, TAC Inhibit, Accel Rate, Decel Rate, High Speed, Illegal Mode, Low Speed, None, Cruise Sw OFF, Over Set Speed, S/C On Speed Hi, ECM Inhibit, Simul S/C-R/A, TCS, Under Set Speed, DLC Override, Memory DTC, Eng Run Time, Engine Speed, DTC Set, RPM Limit, First Gear, APP Override, Low Voltage, D Whl Spd Low, D Whl Spd Hi, Cruise S/S, Cruise Sw Data, ECT Overtemp, VSES, Trans. DTC, BPP Data, BPP DTC, Park Brake, ACC Inhibit, ACC Brake DTC, ACC Option, ACC Brake Inop, PTO Active. |
| Cylinder 1, 2, 3, 4, 5, 6, 7 or 8 Balancing Rate | Varies | These parameters display the adjustment in fuel volume for each cylinder as calculated by the control module. The scan tool will display a negative balancing rate if the fuel volume is lowered. The scan tool will display a positive balancing rate if the fuel volume is increased. |

| Parameter | Value | Description |
|---|---|---|
| Cylinder 1, 2, 3, 4, 5, 6, 7 or 8 Compression Test Time After TDC | Varies | This parameter displays the captured time it takes for the crankshaft to travel from Top Dead Center (TDC) to a calculated distance in degrees. The ECM stores the value from the latest performed engine compression test. A longer travel time indicates a bad cylinder. |
| Cylinder 1, 2, 3, 4, 5, 6, 7 or 8 Compression Test Time Before TDC | Varies | This parameter displays the captured time it takes for the crankshaft to travel a calculated distance in degrees before it reaches Top Dead Center (TDC). The ECM stores the value from the latest performed engine compression test. A shorter travel time indicates a bad cylinder. |
| Cylinder 1, 2, 3, 4, 5, 6, 7 or 8 Current Misfire Counter | Counts | This parameter displays the number of misfires detected for cylinder's 1–8 within the current 100 engine cycle test interval. The set of misfire counters for the individual cylinders are maintained such that if a single misfire is detected over an engine cycle. |
| Cylinder 1, 2, 3, 4, 5, 6, 7 or 8 History Misfire Counter | Count | This parameter displays the number of misfires detected for cylinder's 1–8 since a misfire failure has been reported. |
| Cylinder 1, 2, 3, 4, 5, 6, 7 or 8 Injection Timing | ° | This parameter displays the start point of the main injection in degrees crank shaft (°CS) relative to Top Dead Center (TDC) of cylinder's 1–8. |
| Cylinder 1, 2, 3, 4, 5, 6, 7 or 8 Injector Command | ms | This parameter displays the total injection time of cylinder's 1–8. Total injection time includes all pilot injections, main injections and post injections. |
| Cylinder 1, 2, 3, 4, 5, 6, 7 or 8 Injector Control Circuit Status | OK / Okay | This parameter displays the status of the fuel injector's 1–8 output malfunction for Short circuit from injector high side to ground or system voltage, Short circuit from injector low side to injector low side, Short circuit from injector low side to ground or system voltage, Short circuit from injector high side to low side and Injector open circuit. |
| Cylinder 1, 2, 3, 4, 5, 6, 7 or 8 Injector Control Circuit High Voltage Test Status | OK / Okay | This parameter displays the state of the injector control circuit. The parameter displays Malfunction if the injector control circuit is shorted to voltage. |
| Cylinder 1, 2, 3, 4, 5, 6, 7 or 8 Injector Control Circuit Low Voltage Test Status | OK / Okay | This parameter displays the state of the injector control circuit. The parameter displays Malfunction if the injector control circuit is shorted to ground. |
| Cylinder 1, 2, 3, 4, 5, 6, 7 or 8 Injector Control Circuit Open Test Status | OK / Okay | This parameter displays the state of the injector control circuit. The parameter displays Malfunction if the injector control circuit is open. |
| Cylinder 1, 2, 3, 4, 5, 6, 7 or 8 Injector Flow Identifier | Varies | This parameter is used to correct the injected quantity of each injector<br>When injectors are replaced or exchanged, the Injector Quantity adjustment values of the replaced or exchanged injectors have to be entered into the ECM to ensure acceptable engine performance regarding emissions |
| Cylinder 1, 2, 3, 4, 5, 6, 7 or 8 Pilot Injection Command | On/Off | This parameter displays the pilot injection status information for the injectors. |

| Parameter | Value | Description |
|---|---|---|
| Cylinder 1, 2, 3, 4, 5, 6, 7 or 8 Post Injection Command | ms | This parameter displays the 2nd fuel injection time for Cylinder's 1–8. |
| Cylinder Head Temperature Sensor | °C (°F) | This parameter displays the cylinder head temperature in °C (°F). |
| Deceleration Fuel Cut-Off | Inactive | Decel Fuel Cut Off Active indicates that the conditions to enable deceleration fuel cut-off (DFCO) are active and that torque is being reduced by turning off one or more fuel injectors |
| Desired Boost Pressure | Varies | This parameter displays the Turbocharger Boost pressure as commanded by the control module. This parameter shows the turbocharger boost pressure in kPa. |
| Desired Cooling Fan Speed | RPM | This parameter displays the desired fan speed for engine driven fan systems. |
| Desired EGR Position | % | This parameter displays the position of the exhaust gas recirculation (EGR) valve commanded by the control module. The scan tool will display 0 percent when the control module is commanding the EGR valve closed. The scan tool will display a higher percentage when the EGR valve is commanded open. |
| Desired EGR Cooler Bypass Valve Position | % | This parameter contains the desired exhaust gas recirculation (EGR) cooler bypass valve displacement (corrected based upon its learned minimum position). |
| Desired Fuel Pressure Regulator 1 Current | mA | This parameter displays the desired current for the fuel pressure control metering unit |
| Desired Fuel Pressure | kPa (psi) | This parameter displays the desired fuel supply pressure. |
| Desired Fuel Rail Pressure | MPa (psi) | This parameter displays the desired fuel rail pressure as calculated by the control module. This value is calculated based on engine speed, engine load, and sensor inputs. The scan tool will display a higher value at higher engine speeds and loads, and a lower value at idle. |
| Desired Idle Speed | RPM | This parameter displays the engine idle speed in RPM as commanded by the control module. The control module compensates for various engine loads in order to maintain the desired engine speed at idle. This parameter is not valid unless the engine is running. |
| Desired Intake Air Flow Valve Position | % | This parameter will display the position of the intake air flow valve as a percentage. |
| Desired NOx Catalyst Reductant Load | — | This parameter contains the NH3 (Ammonia) storage setpoint value for the SCR (Selective Catalyst Reduction) system in terms of gram. |
| Desired Reductant Injector Command | ms | This parameter contains the desired injection time of the reductant dosing valve. |
| Desired Reductant Pressure | kPa (psi) | This parameter contains the desired reductant system pressure. |
| Desired Reductant Pump Speed | RPM | This parameter contains the desired reductant pump motor speed. |

| Parameter | Value | Description |
|---|---|---|
| Desired Turbocharger Vane Position | Varies | This parameter displays the position of the turbocharger vane position sensor as the turbocharger vane position is commanded by the control module. The scan tool will display 0 percent when the control module is commanding the vanes open. The scan tool will display a higher percentage when the vanes are commanded closed. |
| Diesel Particulate Filter Pressure | kPa (psi) | This parameter contains the diesel particulate filter pressure calculated as the difference between ambient air pressure (barometric pressure) and the exhaust gas pressure |
| Distance Since DTC Cleared | km/miles | This parameter displays the distance accumulated since an emission diagnostic trouble code was cleared. The scan tool will display increasing distance as the vehicle is driven. |
| Distance Since First Malfunction | km/miles | This parameter displays the distance accumulated since first malfunction was captured. This parameter is only meaningful within the context of a failure record or freeze frame. |
| Distance Since Last DPF Regeneration | Varies | This parameter will display the amount of vehicle travel after a DPF regeneration. This parameter will be displayed in km/ miles. |
| Distance Since Last Malfunction | km/miles | This parameter displays the distance accumulated since last malfunction was captured. This parameter is only meaningful within the context of a failure record or freeze frame. |
| Distance This Driving Cycle | km/miles | This parameter displays the distance a vehicle has traveled in the current driving cycle. |
| Distance Traveled | km/miles | This parameter displays the distance driven since the last electrically erasable programmable read only memory (EEPROM) initialization. |
| DPF Differential Pressure | kPa | This parameter displays the pressure difference between the first and second DPF pressure sensors. |
| DPF Differential Pressure (Corrected) | kPa | This parameter displays the adapted value of the DPF differential pressure sensor. |
| DPF Differential Pressure Sensor | Volts | This parameter will display the voltage differential between the front and rear pressures at the DPF as calculated by the ECM. This will be displayed in volts. As the DPF becomes restricted the differential pressure increases and the voltage will get higher. |
| DPF Indicator Command | Off | This parameter will display the status of the IPC mounted DPF status light. This parameter will display On/Off. |
| DPF Monitor Complete | Yes | This parameter displays the status of the DPF monitor, the parameter displays Yes when the monitor is complete. |
| DPF Monitor Complete This Ignition Cycle | Yes | This parameter displays Yes if completion status during the current driving / monitoring cycle of the DPF Monitor is complete. |

| Parameter | Value | Description |
|---|---|---|
| DPF Monitor Enabled | Yes | This parameter displays Yes if the enabling conditions are complete. |
| DPF Monitor Enabled This Ignition Cycle | Yes | This parameter displays Yes if the enabled status during the current driving / monitoring cycle of the DPF Monitor is complete. |
| DPF Pressure Differential Due to Soot | kPa | This parameter will display the difference between the front and rear pressures at the DPF as calculated by the ECM due to soot. |
| DPF Regeneration Inhibit Reason | None | This parameter displays the regeneration interruption reason for normal regeneration. |
| DPF Regeneration Reason | None | This parameter displays the regeneration demand and completion status. |
| DPF Regeneration Status | Inactive/Active | This parameter displays the status of the Diesel Particulate regeneration activity. |
| DPF Regenerations Completed | Counts | This parameter displays the number of successful regenerations. |
| DPF Soot Accumulation | g | This parameter displays the mass of soot in the Diesel Particle Filter measured in grams |
| DPF Soot Mass Correction | g | This parameter contains the total correction to the soot mass caused by CRT (Continuous Regeneration Trap) effect. |
| Drag control Status | Active/Inactive | EDC Active (Drag Active) control mode is indicated when the requested torque signal is above the driver requested value while the traction control system signal input is active. |
| Driver Demanded Engine Torque | % | This parameter displays the requested torque output of the engine by the driver. |
| Drop Throttle Detected while Traction Control Active | No | Drop Throttle Control Mode is indicated when this parameter displays Yes. |
| Drop Throttle Status | Inactive | This parameter provides an indication when the controller software determines a condition is present where the vehicle operator has abruptly released the accelerator pedal (drop-throttle) after a period of acceleration. |
| ECM Authentication Status | Valid | Authentication Status indicates the result of the comparison between the last received immobilizer response and the expected response calculated by the engine control module (ECM). |
| ECM Challenge Status | Valid | This parameter displays the condition of the ECM code challenge to the BCM. |
| ECM Requested Particulate Matter Mass Concentration Measurement | No | This parameter indicates the ECM has requested a measurement of particulate matter mass from the particulate matter sensor. |
| ECM Requested Particulate Matter Sensor Initialization | No | This parameter displays Yes when the particulate matter sensor is initialized by the ECM. |
| ECM Response Source | Normal Start | This parameter displays ECM response source. |

| Parameter | Value | Description |
|---|---|---|
| ECT Sensor | °C/°F | This parameter displays the temperature of the engine coolant based on the input from the engine coolant temperature (ECT) sensor. When the coolant temperature is low, the scan tool will display a low temperature. When the coolant temperature is high, the scan tool will display a high temperature. |
| EGR/Camshaft Position Monitor Complete | Yes/No | This parameter displays the status of the EGR/Camshaft Position Monitor. The parameter will display Yes when the EGR/ Camshaft Position Monitor is complete. |
| EGR/Camshaft Position Monitor Complete This Ignition Cycle | Yes/No | This parameter displays the status of the EGR/Camshaft Position Monitor for this Ignition Cycle. The parameter will display Yes when the EGR/Camshaft Position Monitor is complete this Ignition Cycle. |
| EGR/Camshaft Position Monitor Enabled | Yes/No | This parameter displays the status of the EGR/Camshaft Position Monitor. The parameter will display Yes when the EGR/ Camshaft Position Monitor is Enabled. |
| EGR/Camshaft Position Monitor Enabled This Ignition Cycle | Yes/No | This parameter displays the status of the EGR/Camshaft Position Monitor for this Ignition Cycle. The parameter will display Yes when the EGR/Camshaft Position Monitor is Enabled this Ignition Cycle. |
| EGR Command | % | This parameter displays the commanded duty cycle for the exhaust gas recirculation (EGR) output. |
| EGR Control Circuit 1 High Voltage Status | OK / Okay, Malfunction | This parameter displays the state of the EGR Control circuit 1. The parameter displays Malfunction if the EGR Control circuit 1 is shorted to voltage. |
| EGR Control Circuit 1 Low Voltage Status | OK / Okay, Malfunction | This parameter displays the state of the EGR Control circuit 1. The parameter displays Malfunction if the EGR Control circuit 1 is shorted to ground. |
| EGR Control Circuit 2 High Voltage Status | OK / Okay, Malfunction | This parameter displays the state of the EGR Control circuit 2. The parameter displays Malfunction if the EGR Control circuit 2 is shorted to voltage. |
| EGR Control Circuit 2 Low Voltage Status | OK / Okay, Malfunction | This parameter displays the state of the EGR Control circuit 2. The parameter displays Malfunction if the EGR Control circuit 2 is shorted to ground. |
| EGR Control Circuit Open Test Status | OK / Okay, Malfunction | This parameter displays the state of the EGR Control circuit. The parameter displays Malfunction if the EGR Control circuit is open. |
| EGR Control Circuit Shorted Test Status | OK / Okay, Malfunction | This parameter displays the state of the EGR Control circuit. The parameter displays Malfunction if the EGR Control circuit is shorted. |
| EGR Control Driver Overcurrent | No | This parameter displays the state of the EGR Control circuit. The parameter displays Yes if the EGR Control Driver Overcurrent is detected. |
| EGR Control Driver Overtemperature | No | This parameter displays the state of the EGR Control circuit. The parameter displays Yes if Over Temperature is Detected and that the driver circuit has been shut OFF. |

| Parameter | Value | Description |
|---|---|---|
| EGR Control Driver Temperature Dependent Overcurrent | No | This parameter displays the state of the EGR Control circuit. The parameter displays Yes if Temperature Dependent over Current Detected and that the driver circuit has been shut OFF. |
| EGR Control Driver Undervoltage | No | This parameter displays the state of the EGR Control circuit. The parameter displays Yes when the Under Voltage Detected indicates that the entire system voltage is low. |
| EGR Cooler Bypass Valve Command | % | This parameter displays the commanded duty cycle for the Exhaust Gas Recirculation Cooler Bypass Valve actuator output. |
| EGR Cooler Bypass Valve Control Circuit High Voltage Test Status | OK / Okay , Malfunction | This parameter displays the state of the EGR Cooler Bypass Valve Control circuit. The parameter displays Malfunction if the EGR Cooler Bypass Valve Control circuit is shorted to voltage. |
| EGR Cooler Bypass Valve Control Circuit Low Voltage Test Status | OK / Okay , Malfunction | This parameter displays the state of the EGR Cooler Bypass Valve Control circuit. The parameter displays Malfunction if the EGR Cooler Bypass Valve Control circuit is shorted to ground. |
| EGR Cooler Bypass Valve Control Circuit Open Test Status | OK / Okay, Malfunction | This parameter displays the state of the EGR Cooler Bypass Valve Control circuit. The parameter displays Malfunction if the EGR Cooler Bypass Valve Control circuit is open. |
| EGR Cooler Bypass Valve Control Circuit Shorted Test Status | OK / Okay, Malfunction, Not Run | This parameter contains the control circuit status of the exhaust gas recirculation cooler bypass valve output |
| EGR Cooler Bypass Valve Control Driver Overcurrent | No | This parameter displays the state of the EGR Cooler Bypass Valve Control circuit. The parameter displays Yes if the EGR Cooler Bypass Valve Control Driver Overcurrent is detected. |
| EGR Cooler Bypass Valve Control Driver Overtemperature | No | This parameter displays the state of the EGR Cooler Bypass Valve Control circuit. The parameter displays Yes if Over Temperature is Detected and that the driver circuit has been shut OFF. |
| EGR Cooler Bypass Valve Control Driver Temperature Dependant Overcurrent | No | This parameter displays the state of the EGR Cooler Bypass Valve Control circuit. The parameter displays Yes if Temperature Dependent over Current Detected and that the driver circuit has been shut OFF. |
| EGR Cooler Bypass Valve Control Driver Undervoltage | No | This parameter displays the state of the EGR Cooler Bypass Valve Control circuit. The parameter displays Yes when the Under Voltage Detected indicates that the entire system voltage is low. |
| EGR Cooler Bypass Valve Learned Closed Position | OK / Okay, Malfunction, Not Run | This parameter contains the control circuit status of the exhaust gas recirculation cooler bypass valve output |
| EGR Cooler Bypass Valve Learned Open Position | OK / Okay, Malfunction, Not Run | This parameter contains the control circuit status of the exhaust gas recirculation cooler bypass valve output |

| Parameter | Value | Description |
|---|---|---|
| EGR Cooler Bypass Valve Position | % | This parameter contains the actual exhaust gas recirculation (EGR) cooler bypass valve displacement determined by a position sensor (corrected based upon its learned minimum position). |
| EGR Cooler Bypass Valve Position Sensor | Volts | This parameter contains the Exhaust Gas Recirculation Cooler Bypass Valve position sensor analog input as a percentage of its reference voltage |
| EGR Cooler Temperature Sensor 1 | °C (°F) | This parameter will display the exhaust temperature entering the EGR Cooler. The EGR Temp Sensor 1 temperature will be warmer than the EGR Temp Sensor 2. |
| EGR Cooler Temperature Sensor 2 | °C (°F) | This parameter will display the exhaust temperature exiting the EGR Cooler. The EGR Temp Sensor 2 temperature will be cooler than the EGR Temp Sensor 1. |
| EGR Temperature Sensor 1 | ºC (ºF) | This parameter contains the undefaulted exhaust gas recirculation cooler temperature measured by a sensor that is located before the inlet of the EGR heat exchanger. |
| EGR Temperature Sensor 2 | ºC (ºF) | This parameter contains the undefaulted exhaust gas recirculation cooler temperature measured by a sensor that is located on the outlet of the EGR heat exchanger. |
| EGR Learned Minimum Position | Volts | This parameter displays the learned minimum position of the EGR valve as calculated by the control module. The scan tool will display a low value if the current closed EGR position is the same as the last ignition cycle. The scan tool will display a higher value if the EGR valve has closed at a new position. |
| EGR Learned Minimum Position This Ignition Cycle | % | This parameter displays the Exhaust Gas Recirculation Sensor Learned Minimum Position. |
| EGR Position Sensor | % | This parameter displays the EGR valve position as calculated by the control module based on an input from the EGR valve position sensor. The scan tool will display a lower value when the EGR valve is closed, and a higher value when the EGR valve is open. |
| EGR Position Sensor | Volts | This parameter displays the voltage signal received from the EGR valve position sensor by the control module. The scan tool will display a lower value when the EGR valve is closed, and a higher value when the EGR valve is open. |
| EGR Position Variance | % | This parameter displays the EGR position variance from the last learned position. |
| EGR System Malfunction Warning Indicator Command | Off | This parameter indicates when the EGR system malfunction warming indicator is commanded ON. |
| Electric Power management Inhibit reason | None | This parameter displays the reason of the Regulated Voltage Control (RVC) override command. RVC lowers system operat-ing voltage to reduce system electrical load and improve fuel economy performance. |

| Parameter | Value | Description |
|---|---|---|
| Engine Calibration Monitoring | Not Present | This parameter displays Present when Incorrect Engine Calibration Detected. |
| Engine Calibration Monitoring Identifier | Programmed / Not Programmed | This parameter contains status bits associated with the Engine Upgrade Protection strategy. |
| Engine Calibration Part Number History 1–10 | # | This parameter displays the part number of the 10 most recent calibrations. |
| Engine Calibration Part Number History 1–10 Counter | Counts | This parameter displays the current count of engine calibrations. |
| Engine Controls Ignition Relay Command | On | This parameter displays the state of the control circuit for engine control module power relay as commanded by the engine control module. |
| Engine Controls Ignition Relay Feedback 2 Signal | Volts | This parameter indicates the signal voltage from the second input to the controller from the powertrain relay. |
| Engine Controls Ignition Relay Feedback 3 Signal | Volts | This parameter indicates the signal voltage from the third input to the controller from the powertrain relay. |
| Engine Controls Ignition Relay Control Circuit High Voltage Test Status | OK / Okay, Malfunction | This parameter displays the state of the Engine Controls Ignition Relay control circuit. The parameter displays Malfunction if the Engine Controls Ignition Relay control circuit is shorted to voltage. |
| Engine Controls Ignition Relay Control Circuit Low Voltage Test Status | OK / Okay, Malfunction | This parameter displays the state of the Engine Controls Ignition Relay control circuit. The parameter displays Malfunction if the Engine Controls Ignition Relay control circuit is shorted to ground. |
| Engine Controls Ignition Relay Control Circuit Open Test Status | OK / Okay, Malfunction | This parameter displays the state of the Engine Controls Ignition Relay control circuit. The parameter displays Malfunction if the Engine Controls Ignition Relay control circuit is open. |
| Engine Controls Ignition Relay Feedback Signal | Volts | This parameter displays the voltage available at the Engine Controls Ignition Relay pin of the engine control module. |
| Engine Load | Varies | This parameter displays the engine load in percent based on inputs to the control module from various engine sensors. The scan tool will display a low percentage when the engine is at idle with little or no load. The scan tool will display a high percentage when the engine is running at a high RPM under a heavy load. |
| Engine Load During Misfire History 1-10 | % | This parameter displays the engine load during the last misfire event. |
| Engine Off Time | Seconds – Varies | This parameter displays the amount of time that has elapsed since the engine was last cycled OFF. |
| Engine Oil Absolute Pressure Sensor | kPa (psi) | This parameter displays the absolute pressure of the engine oil in kPa and psi. |

| Parameter | Value | Description |
|---|---|---|
| Engine Oil Level Switch | OK / Okay, Low | This parameter displays the status of the engine oil level switch as determined by the control module. The control module uses this information to turn on the low engine oil lamp if the engine oil level remains approximately 1 quart low for a sufficient amount of time. The scan tool will display Low when the engine oil level is low. The scan tool will display OK / Okay when the engine oil level is correct. |
| Engine Oil Life Remaining | Varies | This parameter displays the amount engine oil life remaining before requiring an oil change based on calculations by the control module. The scan tool will display lower values as the engine oil life approaches 0 miles. |
| Engine Oil Pressure | kPa (psi) | This parameter displays the pressure of the engine oil as calculated by the control module using a signal from the engine oil pressure (EOP) sensor. The scan tool will display oil pressure when the engine is running. The engine oil pressure sensor has a range of values indicating a low value when the oil pressure is low to a high value when the oil pressure is high. |
| Engine Oil Pressure Control Solenoid Valve Command | High Pressure/Low Pressure | This parameter displays the current command of the oil pressure solenoid valve. |
| Engine Oil Pressure Control Solenoid Valve Control Circuit High Voltage Test Status | OK / Okay , Malfunction | This parameter displays the status of the output driver for the engine oil pressure control solenoid circuit. The parameter displays Malfunction if the engine oil pressure control solenoid circuit is shorted to voltage. |
| Engine Oil Pressure Control Solenoid Valve Control Circuit Low Voltage Test Status | OK / Okay , Malfunction | This parameter displays the status of the output driver for the engine oil pressure control solenoid circuit. The parameter displays Malfunction if the engine oil pressure control solenoid circuit is shorted to ground. |
| Engine Oil Pressure Control Solenoid Valve Control Circuit Open Voltage Test Status | OK / Okay , Malfunction | This parameter displays the status of the output driver for the engine oil pressure control solenoid circuit. The parameter displays Malfunction if the engine oil pressure control solenoid circuit is open. |
| Engine Oil Pressure Sensor | Volts | This parameter displays the actual engine oil pressure measured by a sensor in volts. |
| Engine Oil Pressure Switch | OK / Okay , Low | This parameter displays the state of the EOP as determined by the control module. The control module monitors the engine oil pressure (EOP) switch to determine if the EOP is sufficient. The scan tool will display low when the EOP is below a predetermined value. |
| Engine Run Time | Varies | This parameter displays the time elapsed since the engine was started. The scan tool will display the time in hours, minutes and seconds. The engine run time will reset to zero when the engine stops running. |
| Engine Run Time Since Last DPF Regeneration | Varies | This parameter displays the total of time since the last regeneration. This parameter will be displayed in hours, minutes and seconds. |

| Parameter | Value | Description |
| --- | --- | --- |
| Engine Serial Number | # | This parameter displays the current engine serial number. |
| Engine Speed | RPM | This parameter displays the speed of the crankshaft as determined by the ECM using an input from the CKP sensor. The scan tool will display a high value at high engine speeds and a low value at low engine speeds. |
| Engine Speed During Misfire History 1–5 | RPM | This parameter displays the last 5 engine speeds during misfire events. |
| Engine Speed When Engine Overspeed Detected | RPM | This parameter displays the engine speed observed upon initial detection of an overspeed condition. This value will be updated after each overspeed condition. |
| Engine Torque | Varies | This parameter displays the estimated amount of torque that is delivered from the engine. The scan tool displays engine torque in newtonm (lb-ft). The ECM sends the engine torque information to the TCM via the high speed GMLAN serial data line. |
| { If equipped } Exhaust Aftertreatment Fuel Injection System | Inactive | This parameter displays the state of the Exhaust Aftertreatment Fuel Injection System command. |
| { If equipped } Exhaust Aftertreatment Fuel Injector Test Abort Reasons | None, Fuel Pressure Out of Range, Vehicle Speed Detected, Incorrect Power Mode, Exhaust Gas Temperature Too High, DTC Present, Diesel Particulate Filter Regeneration Active, Engine Must Be Running, Transmission Must Be in Park or Neutral, Exhaust Gas Temperature Too Low | This parameter contains the abort reason for the Exhaust Aftertreatment Fuel Injector Tip Cleaning Trigger Device Control and Exhaust Aftertreatment Fuel Injector Flow Test Trigger |
| { If equipped } Exhaust Aftertreatment Fuel Injector Test Status | Not Requested, Flow Test Active, Flow Test Complete, Flow Test Aborted, Cleaning Procedure Active, Cleaning Procedure Complete, Cleaning Procedure Aborted | This parameter contains the status of the Exhaust Aftertreatment Fuel Injector Tip Cleaning and Flow Test device controls. |
| { If equipped } Exhaust Aftertreatment Fuel Injector Command | % | This parameter displays the state of the Exhaust Aftertreatment Fuel Injection System command in percentage. |
| { If equipped } Exhaust Aftertreatment Fuel Injector Control Circuit Command | Off | This parameter displays the state of the Exhaust Aftertreatment Fuel Injection Control Circuit command. |
| { If equipped } Exhaust Aftertreatment Fuel Injector Control Circuit High Voltage Test Status | OK / Okay , Malfunction | This parameter displays the status of the exhaust aftertreatment fuel injector control circuit. The parameter displays Malfunction if the exhaust aftertreatment fuel injector circuit is shorted to voltage. |
| { If equipped } Exhaust Aftertreatment Fuel Injector Control Circuit Low Voltage Test Status | OK / Okay , Malfunction | This parameter displays the status of the exhaust aftertreatment fuel injector control circuit. The parameter displays Malfunction if the exhaust aftertreatment fuel injector control circuit is shorted to ground. |
| { If equipped } Exhaust Aftertreatment Fuel Injector Control Circuit Open Test Status | OK / Okay , Malfunction | This parameter displays the status of the exhaust aftertreatment fuel injector control circuit. The parameter displays Malfunction if the exhaust aftertreatment fuel injector control circuit is open. |

| Parameter | Value | Description |
|---|---|---|
| { If equipped } Exhaust Aftertreatment Fuel Injector Control Circuit Shorted Test Status | OK / Okay , Malfunction | This parameter displays the status of the exhaust aftertreatment fuel injector control circuit. The parameter displays Malfunction if the exhaust aftertreatment fuel injector control circuit is shorted. |
| { If equipped } Exhaust Aftertreatment Fuel Injector Control Driver Overtemperature | No | This parameter displays if the Exhaust Aftertreatment Fuel Injector Control Driver (low side) has reached an overtemperature condition. |
| { If equipped } Exhaust Aftertreatment Fuel Injector High Control Circuit High Voltage Test Status | OK / Okay , Malfunction | This parameter displays the status of the exhaust aftertreatment fuel injector high control circuit. The parameter displays Malfunction if the exhaust aftertreatment fuel injector high control circuit is shorted to voltage. |
| { If equipped } Exhaust Aftertreatment Fuel Injector High Control Circuit Low Voltage Test Status | OK / Okay , Malfunction | This parameter displays the status of the exhaust aftertreatment fuel injector high control circuit. The parameter displays Malfunction if the exhaust aftertreatment fuel injector high control circuit is shorted to ground. |
| { If equipped } Exhaust Aftertreatment Fuel Injector High Control Driver Overtemperature | No | This parameter displays if the Exhaust Aftertreatment Fuel Injector High Control Driver (high side) has reached an overtemperature condition. |
| { If equipped } Exhaust Aftertreatment Monitor Complete | No | This parameter displays the state of Exhaust Aftertreatment Monitor. The parameter displays Yes when the Exhaust Aftertreatment Monitor is complete. |
| { If equipped } Exhaust Aftertreatment Monitor Complete This Ignition Cycle | No | This parameter displays the state of Exhaust Aftertreatment Monitor Complete This Ignition Cycle. The parameter displays Yes when the Exhaust Aftertreatment Monitor is Complete This Ignition Cycle. |
| { If equipped } Exhaust Aftertreatment Monitor Enabled | No | This parameter displays the status of the Exhaust Aftertreatment Monitor. The parameter will display Yes when the Exhaust Aftertreatment Monitor is Enabled. |
| { If equipped } Exhaust Aftertreatment Monitor Enabled This Ignition Cycle | No | This parameter displays the status of the Exhaust Aftertreatment Monitor Enabled This Ignition Cycle. The parameter will display Yes when the Exhaust Aftertreatment Monitor is Enabled This Ignition Cycle. |
| Exhaust Brake Switch | Off | This parameter displays the status of the Exhaust Brake Switch. The parameter will display On when the Exhaust Brake Switch is enabled. |
| Exhaust Gas Sensor Monitor Complete | Yes/No | This parameter displays the state of Exhaust Gas Sensor Monitor. The parameter displays Yes when the Exhaust Gas Sensor Monitor is complete. |
| Exhaust Gas Sensor Monitor Complete This Ignition Cycle | Yes/No | This parameter displays the state of Exhaust Gas Sensor Monitor Complete This Ignition Cycle. The parameter displays Yes when the Exhaust Gas Sensor Monitor is Complete This Ignition Cycle. |
| Exhaust Gas Sensor Monitor Enabled | Yes/No | This parameter displays the status of the Exhaust Gas Sensor Monitor. The parameter will display Yes when the Exhaust Gas Sensor Monitor is Enabled. |

| Parameter | Value | Description |
|---|---|---|
| Exhaust Gas Sensor Monitor Enabled This Ignition Cycle | Yes/No | This parameter displays the status of the Exhaust Gas Sensor Monitor Enabled This Ignition Cycle. The parameter will display Yes when the Exhaust Gas Sensor Monitor is Enabled This Ignition Cycle. |
| Exhaust Gas Temperature Sensor 1, 2, 3, 4, or 5 | °C (°F) | This parameter will display the exhaust temperature before the DPF. When the exhaust temperature is low, the scan tool will display a low temperature. When the exhaust temperature is high, the scan tool will display a high temperature. |
| Extended Travel Brake Pedal Position Signal | Released | This parameter displays the status of the Extended Travel Brake Pedal Position sensor. |
| Frozen Reductant – Diagnostic Inhibit | No | This parameter displays Yes if the reductant diagnostic is inoperative due to frozen reductant. |
| Frozen Reductant – Injection Inhibit | No | This parameter displays Yes if the reductant injection is inoperative due to frozen reductant. |
| Frozen Reductant – Refill Recognition Inhibit | No | This parameter displays Yes if the reductant refill monitor is inoperative due to frozen reductant. |
| Fuel Consumed Since Last DPF Regeneration | Liters/Gallons | This parameter displays the amount of fuel consumed since the last DPF regeneration. |
| Fuel Consumed Since Last DPF Replacement | Liters | This parameter displays the amount of Fuel Consumed Since Last DPF Replacement. |
| Fuel Consumption Rate | L/H | This parameter displays the amount of fuel consumed by engine per unit of time in liters per hour. NOTE: Engine Fuel Rate shall indicate zero L/H when the engine is not running. |
| Fuel Economy Mode Switch | OK / Okay , Malfunction | This parameter displays the state of the fuel economy mode switch circuit. The parameter displays Malfunction if the fuel economy mode switch circuit is open. |
| Fuel Economy Mode Switch | Volts | This parameter displays the economy mode switch reference voltage. |
| Fuel Filter Life Remaining | % | This parameter displays the fuel filter life remaining before requiring an fuel filter change. This number is calculated by the control module based on many inputs and is displayed as a percent. The lower the percentage, the sooner the next fuel filter change will be required. |
| Fuel Filter Pressure Switch | OK / Okay , Malfunction | This parameter displays the status of the fuel filter pressure switch. |
| Fuel Heater Relay Command | Off | This parameter displays the status of the fuel relay heater command. |
| Fuel Heater Relay Control Circuit High Voltage Test Status | OK / Okay , Malfunction | This parameter displays the status of the output driver for the fuel heater relay control circuit. The parameter displays Malfunction if the fuel heater relay control circuit is shorted to voltage. |
| Fuel Heater Relay Control Circuit Low Voltage Test Status | OK / Okay , Malfunction | This parameter displays the status of the output driver for the fuel heater relay control circuit. The parameter displays Malfunction if the fuel heater relay control circuit is shorted to ground. |

| Parameter | Value | Description |
|---|---|---|
| Fuel Heater Relay Control Circuit Open Test Status | OK / Okay , Malfunction | This parameter displays the status of the output driver for the fuel heater relay control circuit. The parameter displays Malfunction if the fuel heater relay control circuit is open. |
| Fuel Injection Mode | Normal, Homogeneous Combustion Mode, Particulate Filter Regeneration with High Oxygen Concentration, Fuel Injection Small Quantity Learn, Fuel Injection Small Quantity Learn, Particulate Filter Regeneration with Low Oxygen Concentration, NOx Adsorber Catalyst Regeneration, Lean SOx Adsorber Catalyst Regeneration, Rich SOx Adsorber Catalyst Regeneration, Inhomogeneous Combustion Mode, NOx Catalyst Heating Mode 1, NOx Catalyst Heating Mode 2, Park or Neutral Gear DPF Regeneration, Rich Idle DPF Regeneration, Engine Protection High Oxygen Concentration DPF Regeneration, Engine Protection Low Oxygen Concentration DPF Regeneration, Engine Protection SOx Adsorber Catalyst Regeneration, NOx Catalyst Heating Mode 3, Fuel Injection Small Quantity Learn Combustion Mode, Hydrocarbon Purge Combustion Mode, Park or Neutral Gear Hydrocarbon Purge Combustion Mode, Reductant System Malfunction Warning Service Bay Test Warm Up Combustion Mode, Reductant System Malfunction Warning Service Bay Test Combustion Mode, SOx Purge Combustion Mode, Emissions Combustion Mode, Fast Exhaust System Warm-Up, Exhaust System Warm-Up | This parameter indicates which of the injection modes that currently is active. |
| Fuel Level Sensor | Volts | This parameter displays the voltage from the sensor used to monitor the fuel level inside the fuel tank. |
| Fuel Level Sensor Rear Tank | Volts | This parameter contains the unfiltered fuel level sensor analog input for the secondary fuel tank as a percentage of its reference voltage. |
| Fuel Pressure Sensor | kPa (psi) | For Port Fuel Injected (PFI) systems, this parameter displays undefaulted fuel rail pressure at the engine. For high pressure fuel systems, this parameter indicates the undefaulted low side fuel pressure before the high pressure pump. |
| Fuel Pressure Sensor | Volts | This parameter contains the fuel supply pressure sensor analog input as a percentage of its reference voltage. |
| Fuel Pressure Regulator 1 Command | % | This parameter displays the Fuel Pressure Regulator 1 duty cycle as commanded by the engine control module. |
| Fuel Pressure Regulator 1 Control Circuit Command | On/Off | This parameter displays the current command of the fuel pressure regulator 1. |
| Fuel Pressure Regulator 1 Control Circuit High Voltage Test Status | OK / Okay , Malfunction | This parameter displays the status of the output driver for the Fuel Pressure Regulator 1 Control Circuit High. The parameter displays Malfunction if the Fuel Pressure Regulator 1 Control Circuit High is shorted to voltage. |

| Parameter | Value | Description |
|---|---|---|
| Fuel Pressure Regulator 1 Control Circuit Low Voltage Test Status | OK / Okay , Malfunction | This parameter displays the status of the output driver for the Fuel Pressure Regulator 1 Control Circuit High. The parameter displays Malfunction if the Fuel Pressure Regulator 1 Control Circuit High is shorted to ground. |
| Fuel Pressure Regulator 1 Control Circuit Open Test Status | OK / Okay , Malfunction | This parameter displays the status of the output driver for the Fuel Pressure Regulator 1 Control Circuit High. The parameter displays Malfunction if the Fuel Pressure Regulator 1 Control Circuit High is open. |
| Fuel Pressure Regulator 1 Control Circuit Shorted Test Status | OK / Okay , Malfunction | This parameter displays the status of the output driver for the Fuel Pressure Regulator 1 Control Circuit. The parameter displays Malfunction if the Fuel Pressure Regulator 1 Circuit is shorted. |
| Fuel Pressure Regulator 1 Control Driver Overtemperature | No | This parameter displays the state of the Fuel Pressure Regulator 1 Control Driver circuit. The parameter displays Yes if the Fuel Pressure Regulator 1 Control Driver Overtemperature is detected. |
| Fuel Pressure Regulator 1 Current | mA | This parameter displays the actual current for the Fuel Pressure Regulator 1. |
| Fuel Pressure Regulator 1 High Control Circuit Command | On | This parameter displays the status of the Fuel Pressure Regulator 1 High Control Circuit Command. The parameter displays ON when the Fuel Pressure Regulator 1 High Control Circuit is Commanded ON by the engine control module. |
| Fuel Pressure Regulator 1 High Control Circuit High Voltage Test Status | OK / Okay , Malfunction | This parameter displays the state of the Fuel Pressure Regulator 1 High Control Circuit. The parameter displays Malfunction if the Fuel Pressure Regulator 1 High Control Circuit is shorted to voltage. |
| Fuel Pressure Regulator 1 High Control Circuit Low Voltage Test Status | OK / Okay , Malfunction | This parameter displays the state of the Fuel Pressure Regulator 1 High Control Circuit. The parameter displays Malfunction if the Fuel Pressure Regulator 1 High Control Circuit is shorted to ground. |
| Fuel Pressure Regulator 1 High Control Driver Overtemperature | No | This parameter displays the state of the Fuel Pressure Regulator 1 High Control Driver circuit. The parameter displays Yes if the Fuel Pressure Regulator 1 High Control Driver Overtemperature is detected. |
| Fuel Pressure Regulator 2 Command | % | This parameter displays the Fuel Rail Pressure Regulator 2 duty cycle. |
| Fuel Pressure Regulator 2 Control Circuit Command | On | This parameter displays the current command of the fuel pressure regulator 2. |
| Fuel Pressure Regulator 2 Control Circuit High Voltage Test Status | OK / Okay , Malfunction | This parameter displays the state of the Fuel Pressure Regulator 2 Control Circuit. The parameter displays Malfunction if the Fuel Pressure Regulator 2 Control Circuit is shorted to voltage. |
| Fuel Pressure Regulator 2 Control Circuit Low Voltage Test Status | OK / Okay , Malfunction | This parameter displays the state of the Fuel Pressure Regulator 2 Control Circuit. The parameter displays Malfunction if the Fuel Pressure Regulator 2 Control Circuit is shorted to ground. |

| Parameter | Value | Description |
|---|---|---|
| Fuel Pressure Regulator 2 Control Circuit Open Test Status | OK / Okay , Malfunction | This parameter displays the state of the Fuel Pressure Regulator 2 Control Circuit. The parameter displays Malfunction if the Fuel Pressure Regulator 2 Control Circuit is open. |
| Fuel Pressure Regulator 2 Control Circuit Shorted Test Status | OK / Okay, Malfunction | This parameter displays the state of the Fuel Pressure Regulator 2 Control Circuit. The parameter displays Malfunction if the Fuel Pressure Regulator 2 Control Circuit is shorted. |
| Fuel Pressure Regulator 2 Control Driver Overtemperature | No | This parameter displays the state of the Fuel Pressure Regulator 2 High Control Driver circuit. The parameter displays Yes if the Fuel Pressure Regulator 2 High Control Driver Overtemperature is detected. |
| Fuel Pressure Regulator 2 High Control Circuit Command | On/Off | This parameter displays the status of the Fuel Pressure Regulator 2 High Control Circuit Command. The parameter displays On when the Fuel Pressure Regulator 2 High Control Circuit is Commanded ON by the engine control module. |
| Fuel Pressure Regulator 2 High Control Circuit High Voltage Test Status | OK / Okay , Malfunction | This parameter displays the state of the Fuel Pressure Regulator 2 High Control Circuit. The parameter displays Malfunction if the Fuel Pressure Regulator 2 High Control Circuit is shorted to voltage. |
| Fuel Pressure Regulator 2 High Control Circuit Low Voltage Test Status | OK / Okay , Malfunction | This parameter displays the state of the Fuel Pressure Regulator 2 High Control Circuit. The parameter displays Malfunction if the Fuel Pressure Regulator 2 High Control Circuit is shorted to ground. |
| Fuel Pressure Regulator 2 High Control Driver Overtemperature | No | This parameter displays the state of the Fuel Pressure Regulator 2 High Control Driver circuit. The parameter displays Yes if the Fuel Pressure Regulator 2 High Control Driver Overtemperature is detected. |
| Fuel Pressure Sensor | kPa (psi) | For Port Fuel Injected (PFI) systems, this Parameter displays fuel rail pressure at the engine. For high pressure fuel systems, this Parameter indicates the low side fuel pressure before the high pressure pump. |
| Fuel Pressure Sensor | Volts | This parameter displays the fuel supply pressure sensor analog input as a percentage of its reference voltage. |
| Fuel Pump 2 Relay Command | On / Off | This parameter contains several signals associated with the status of the fuel system |
| Fuel Pump 2 Relay Command | On / Off | This parameter contains the commanded state of the secondary fuel pump output along with the status of its associated short to ground, open circuit, and short to power tests |
| Fuel Pump 2 Relay Control Circuit High Voltage Test Status | OK / Okay, Malfunction, Not Run | This parameter contains the commanded state of the secondary fuel pump output along with the status of its associated short to ground, open circuit, and short to power tests |

| Parameter | Value | Description |
|---|---|---|
| Fuel Pump 2 Relay Control Circuit Low Voltage Test Status | OK / Okay, Malfunction, Not Run | This parameter contains the commanded state of the secondary fuel pump output along with the status of its associated short to ground, open circuit, and short to power tests |
| Fuel Pump 2 Relay Control Circuit Open Test Status | OK / Okay, Malfunction, Not Run | This parameter contains the commanded state of the secondary fuel pump output along with the status of its associated short to ground, open circuit, and short to power tests |
| Fuel Pump Driver Control Module Battery Voltage | Volts | This parameter contains the Fuel Tank Zone Module's (FTZM) sensed battery voltage that's being transmitted from FTZM to the ECM over serial data |
| Fuel Pump Driver Control Module Voltage Signal | Volts | This parameter contains the Fuel Tank Zone Module's (FTZM) sensed Run/ Crank voltage that's being transmitted from FTZM to the ECM over serial data. |
| Fuel Pump Enable Circuit High Voltage Test Status | OK / Okay , Malfunction, Not Run | This parameter displays the status of the output driver for the fuel pump control circuit. The scan tool will display OK / Okay if the circuit is operating correctly or Not Run if a diagnosis has not been made. The scan tool will display Malfunction if there is an short to voltage in the circuit. |
| Fuel Pump Enable Circuit Low Voltage Test Status | OK / Okay, Malfunction, Not Run | This parameter displays the status of the output driver for the fuel pump control circuit. The scan tool will display OK / Okay if the circuit is operating correctly or Not Run if a diagnosis has not been made. The scan tool will display Malfunction if there is an short to ground in the circuit. |
| Fuel Pump Enable Command | On | This parameter displays the commanded state of the fuel pump output (the output is considered to be commanded ON if its duty cycle is not zero). |
| Fuel Pump Phase U-V-W Circuits High Voltage Test Status | OK / Okay, Malfunction, Not Run | This parameter contains the Fuel Tank Zone Module's (FTZM) reported status short to power test |
| Fuel Pump Phase U-V-W Circuits Low Voltage Test Status | OK / Okay, Malfunction, Not Run | This parameter contains the Fuel Tank Zone Module's (FTZM) reported status of short to ground test |
| Fuel Pump Phase U-V-W Circuits Open Test Status | OK / Okay, Malfunction, Not Run | This parameter contains the Fuel Tank Zone Module's (FTZM) reported status of open circuit test |
| Fuel Pump Phase U-V-W Circuits Shorted Test Status | OK / Okay, Malfunction, Not Run | This parameter contains the Fuel Tank Zone Module's (FTZM) reported status of phase-to-phase short test |
| Fuel Pump Relay Command | On | This parameter displays the commanded state of the fuel pump relay control circuit. The fuel pump relay should be On when the scan tool indicates the Fuel Pump Relay Command is ON. The fuel pump relay should be Off when the scan tool indicates the Fuel Pump Relay Command is OFF. |
| Fuel Pump Relay Control Circuit High Voltage Test Status | OK / Okay , Malfunction | This parameter displays the state of the Fuel Pump Relay Control Circuit. The parameter displays Malfunction if the Fuel Pump Relay Control Circuit is shorted to voltage. |

| Parameter | Value | Description |
|---|---|---|
| Fuel Pump Relay Control Circuit Low Voltage Test Status | OK / Okay , Malfunction | This parameter displays the state of the Fuel Pump Relay Control Circuit. The parameter displays Malfunction if the Fuel Pump Relay Control Circuit is shorted to ground. |
| Fuel Pump Relay Control Circuit Open Test Status | OK / Okay, Malfunction | This parameter displays the state of the Fuel Pump Relay Control Circuit. The parameter displays Malfunction if the Fuel Pump Relay Control Circuit is open. |
| Fuel Pump Speed | RPM | This parameter contains the fuel pump speed as sensed by the FTZM (Fuel Tank Zone Module). |
| Fuel Pump Speed Command | RPM | This parameter contains the fuel pump commanded speed determined by the ECM and the speed to which the FTZM (Fuel Tank Zone Module) electronically commutates the brushless fuel pump. |
| Fuel Pump Speed Too High | Yes / No | This parameter contains signals used within the Fuel Pump Speed Rationality Diagnostic (PSRD). |
| Fuel Pump Speed Too Low | Yes / No | This parameter contains signals used within the Fuel Pump Speed Rationality Diagnostic (PSRD). |
| Fuel Pump Trim | % | This parameter displays the adjustments for the fuel pump duty cycle control. This is calculated by comparing the estimated fuel rail pressure to the desired fuel rail pressure. If the short term fuel pump trim consistently deviates from 0, the long term fuel pump trim is adjusted accordingly. |
| Fuel Rail Pressure Regulator 1 Command | % | This parameter contains the commanded duty cycle for the fuel pressure regulator 1 solenoid output. |
| Fuel Rail Pressure Sensor | MPa (psi) | This parameter displays the fuel rail pressure as calculated by the control module. This value is calculated based on engine speed, engine load, and sensor inputs. The scan tool will display a higher value at higher engine speeds and loads, and a lower value at idle. |
| Fuel Rail Pressure Sensor | Volts | This parameter displays the voltage signal sent to the control module from the sensor used to measure the fuel rail pressure. The scan tool will display a low voltage at idle and high voltage when pressure demands are high. |
| Fuel Rail Temperature Sensor | °C (°F) | This parameter displays the current fuel rail temperature. |
| Fuel System Monitor Complete | Yes | This parameter displays the status of the Fuel System Monitor. The scan tool displays Yes when test is completed. |
| Fuel System Monitor Complete This Ignition Cycle | Yes | This parameter displays the state of the Fuel System Monitor Complete This Ignition Cycle. The parameter displays Yes when the Fuel System Monitor is Complete This Ignition Cycle. |
| Fuel System Monitor Enabled | Yes | This parameter displays the status of the Fuel System Monitor. The parameter will display Yes when the Fuel System Monitor is Enabled. |

| Parameter | Value | Description |
|---|---|---|
| Fuel System Monitor Enabled This Ignition Cycle | Yes/No | This parameter displays the status of the Fuel System Monitor Enabled This Ignition Cycle. The parameter will display Yes when the Fuel System Monitor is Enabled This Ignition Cycle. |
| Fuel Tank Rated Capacity | Liters | This parameter displays the capacity of the fuel tank in liters or gallons. The rated capacity displayed by the scan tool will vary with vehicle type. |
| Fuel Temperature Sensor | °C (°F) | This parameter displays the current fuel temperature as calculated by the control module based on input from the fuel temperature sensor. The scan tool will display a higher value at higher fuel temperatures. The scan tool will display a lower value at lower fuel temperatures. |
| Fuel Trim | Mm3/stk | This parameter displays the Fuel Mass Observer (FMO) correction value. |
| Fuel Trim | Allowed | This parameter displays the status of the Fuel Mass Observer (FMO) system. |
| Fuel Trim Enabled | Yes | This parameter indicates that the fuel mass observer functionality is enabled. |
| Fuel Trim Learn | Enabled | This parameter displays the status of the Fuel Mass Observer (FMO) system. |
| Fuel Used Since Last DPF Regeneration | Liters/Gallons | This parameter will display the amount of fuel used since last regeneration of the exhaust particulate filter. |
| Generator F-Terminal Signal | % | This parameter indicates the generator field duty cycle as commanded by the voltage regulator or control module. The scan tool will display a higher value for a higher commanded generator output, and a lower value for a lower commanded generator output. |
| Generator L-Terminal Circuit High Voltage Test Status | OK / Okay , Incomplete, Short B+/Open, Short Gnd | This parameter displays the diagnostic state of the Generator L-Terminal circuit. The scan tool will display OK / Okay, Incomplete, Short B+/Open, Short Gnd. The scan tool will display OK / Okay if the circuit is operating correctly. |
| Generator L-Terminal Circuit Low Voltage Test Status | OK / Okay , Incomplete, Short B+/Open, Short Gnd | This parameter displays the diagnostic state of the Generator L-Terminal circuit. The scan tool will display OK / Okay, Incomplete, Short B+/Open, Short Gnd. The scan tool will display OK / Okay if the circuit is operating correctly. |
| Generator L-Terminal Circuit Open Test Status | OK / Okay , Incomplete, Short B+/Open, Short Gnd | This parameter displays the diagnostic state of the Generator L-Terminal circuit. The scan tool will display OK / Okay, Incomplete, Short B+/Open, Short Gnd. The scan tool will display OK / Okay if the circuit is operating correctly. |
| Generator L-Terminal Command | % | This parameter displays the control modules commanded state of the voltage regulator on the generator. |
| Generator L-Terminal Signal Command | On/Off | This parameter displays the signal command of the Generator L-Terminal. |
| Glow Plug Command | On/Off | This parameter displays the voltage supply to the glow plugs as measured by the control module. The scan tool will display a higher value at high voltages, or a lower value at lower voltages. |

| Parameter | Value | Description |
|---|---|---|
| High Idle Speed | Enabled/Disabled | This parameter displays the current state of the High Idle Speed. |
| HO2S 1 | Lambda | This parameter displays the actual lambda signal measured by wide range oxygen sensor 1 bank 1. |
| H02S 1 Heater Command | On/Off | This parameter displays the current command of the oxygen sensor heater control. |
| H02S 1 Heater Command | % | This parameter displays the current command of the oxygen sensor heater control in percentage. |
| H02S 1 Heater Control Circuit High Voltage Test Status | OK / Okay, Malfunction | This parameter displays the state of the oxygen sensor heater control circuit. The parameter displays Malfunction if the oxygen sensor heater control circuit is shorted to voltage. |
| H02S 1 Heater Control Circuit Low Voltage Test Status | OK / Okay , Malfunction | This parameter displays the state of the oxygen sensor heater control circuit. The parameter displays Malfunction if the oxygen sensor heater control circuit is shorted to ground. |
| H02S 1 Heater Control Circuit Open Test Status | OK / Okay , Malfunction | This parameter displays the state of the oxygen sensor heater control circuit. The parameter displays Malfunction if the oxygen sensor heater control circuit is open. |
| H02S 1 Module Signal | Volts | This parameter displays the current volt- age of the oxygen sensor heater module signal circuit. |
| IAT Sensor 1 | °C (°F) | This parameter displays the temperature of the air entering the engine as calculated by the control module based on the input from the intake air temperature (IAT) sensor. The scan tool will display a low value when the air temperature is low, and a high value when the air temperature is high. |
| IAT Sensor 2 | °C (°F) | This parameter displays the temperature of the air entering the engine as calculated by the control module based on the input from the intake air temperature (IAT) sensor 2. The scan tool will display a low value when the air temperature is low, and a high value when the air temperature is high. |
| IAT Sensor 2 | Hz | This parameter displays the frequency of the humidity sensors' intake air temperature (IAT) sensor input to the engine control module. |
| IAT Sensor 3 | °C (°F) | This parameter displays the temperature of the air entering the engine as calculated by the control module based on the input from the intake air temperature (IAT) sensor 3. The scan tool will display a low value when the air temperature is low, and a high value when the air temperature is high. |
| Ignition 1 Signal | On/Off | This parameter displays On when the control module detects B+ voltage at the ignition 1 input terminal. |

| Parameter | Value | Description |
|---|---|---|
| Ignition Accessory Signal | Off | This parameter displays the state of the ignition 0 input to the control module from the ignition switch. The scan tool will display On when the ignition switch is in the ignition accessory position. The scan tool will display Off when the ignition switch is in any other position. |
| Ignition Cycles with Malfunction Since 1st Malfunction | Counts | This parameter displays the number of ignition cycles with a malfunction detected since the first ignition cycle with a malfunction detected. |
| Ignition Cycles without Completed Test Since 1st Malfunction | Counts | This parameter displays the number of ignition cycles without a pass or a malfunction reported since the first ignition cycle with a malfunction reported. |
| Ignition Cycles without Malfunction Since Last Malfunction | Counts | This parameter displays the number of ignition cycles with a pass reported and no malfunctions reported since the first ignition cycle with a malfunction reported. |
| Immobilizer Auto Learn Counter | Counts | This parameter displays the number of auto learn cycles that have been successfully completed within the immobilizer system. |
| Immobilizer Automatic Learn Timer | hh:mm:ss | This parameter indicates that either the auto learn timer (used in the auto learn procedure to enable VTD password learning) or the seed and key timer (used in the seed and key procedure to enable VTD password learning) is active. |
| Immobilizer Password Learn | Disabled | This indicates learning of the Immobilizer password received from the platform electronics is enabled. Immobilizer password learning is first enabled in assembly plant (prior to the manufacturer's enable counter being set to zero) may be re-enabled using 1 of 2 procedures. |
| Immobilizer Password Learn Scan Tool Delay | Active/Inactive | Scan Tool Learn Delay Active indicates that the security code has been accepted but the scan tool learn delay is active and will not allow learning enabled, programming security code, or resetting security code. |
| Immobilizer Security Code Accepted | Yes | This parameter displays if the Immobilizer Security code was accepted by the ECM. |
| Immobilizer Security Code Function | Present | This parameter displays if the immobilizer security code was supported by the ECM. |
| Immobilizer Security Code Lockout | Inactive | This parameter displays if the Immobilizer Security code is locked out of the ECM. |
| Immobilizer Security Code Programmed | Yes | This parameter displays if the Immobilizer Security code is currently being programmed in the ECM. |
| Immobilizer Security Information Programmed | Yes | This parameter displays if the Immobilizer Security code has been programmed in the ECM. |
| Immobilizer System Status | Varies | This parameter displays the Immobilizer System status in the BCM. |
| Immobilizer Valid Response Received Time | ms | This parameter displays the actual time observed for a valid immobilizer response. |
| Induction System Leak Indication | :1 | This parameter contains the ratio of desired intake air flow and the actual intake air flow as determined by the mass air flow (MAF) sensor. |

| Parameter | Value | Description |
|---|---|---|
| Injector Timing | ° | Indicates the current timing of the main injection pulse as calculated by the control module. The scan tool will display a higher value for a main injection event farther from top dead center (TDC). The Scan tool will display a lower value for a main injection event closer to TDC. |
| Inspection/Maintenance Drive Cycle Complete | No | Inspection/Maintenance Drive Cycle Complete means that all required components of the standard drive cycle have completed. |
| Inspection/Maintenance Drive Cycle Idle Time Complete | No | Inspection/Maintenance Drive Cycle Idle Time Complete indicates that the engine idle time requirement is complete. |
| Inspection/Maintenance Drive Cycle Idle Timer | hh:mm:ss | This parameter displays the Inspection/ Maintenance Drive Cycle Idle Timer. |
| Inspection/Maintenance Drive Cycle Propulsion System Active Time Complete | No | This parameter displays the Inspection/ Maintenance Drive Cycle Propulsion System Active Time Complete. The parameter displays Yes when the Inspection/Maintenance Drive Cycle Propulsion System Active Time is Complete. |
| Inspection/Maintenance Drive Cycle Propulsion System Active Timer | hh:mm:ss | This parameter displays the total accumulated time in which the propulsion system has been active after the 1st time the engine is started. |
| Inspection/Maintenance Drive Cycle Vehicle Speed Time Complete | No | This parameter displays Yes when the Vehicle Speed Time Complete indicates that the vehicle has been above 25 mph for five minutes. |
| Inspection/Maintenance Drive Cycle Vehicle Speed Timer | hh:mm:ss | This parameter displays the total accumulated time in which the vehicle speed has been greater than 25 mph after the 1st time the engine is started. |
| Intake Air Flow Valve Control Circuit 1 High Voltage Test Status | OK / Okay , Malfunction, Not Run | This parameter displays the status of the Intake Air Flow Valve Control Circuit 1 output driver. The scan tool will display OK / Okay if the circuit is operating correctly or Not Run if a diagnosis has not been made. The scan tool will display Malfunction if there is a short to voltage in the circuit. |
| Intake Air Flow Valve Control Circuit 1 Low Voltage Test Status | OK / Okay, Malfunction, Not Run | This parameter displays the status of the Intake Air Flow Valve Control Circuit 1 output driver. The scan tool will display OK / Okay if the circuit is operating correctly or Not Run if a diagnosis has not been made. The scan tool will display Malfunction if there is a short to ground in the circuit. |
| Intake Air Flow Valve Control Circuit 2 High Voltage Test Status | OK / Okay , Malfunction, Not Run | This parameter displays the status of the Intake Air Flow Valve Control Circuit 2 output driver. The scan tool will display OK / Okay if the circuit is operating correctly or Not Run if a diagnosis has not been made. The scan tool will display Malfunction if there is a short to voltage in the circuit. |

| Parameter | Value | Description |
|---|---|---|
| Intake Air Flow Valve Control Circuit 2 Low Voltage Test Status | OK / Okay, Malfunction, Not Run | This parameter displays the status of the Intake Air Flow Valve Control Circuit 2 output driver. The scan tool will display OK / Okay if the circuit is operating correctly or Not Run if a diagnosis has not been made. The scan tool will display Malfunction if there is a short to ground in the circuit. |
| Intake Air Flow Valve Control Circuit Open Test Status | OK / Okay, Malfunction, Not Run | This parameter displays the status of the Intake Air Flow Valve Control Circuit. The scan tool will display OK / Okay if the circuit is operating correctly or Not Run if a diagnosis has not been made. The scan tool will display Malfunction if there is an open in the circuit. |
| Intake Air Flow Valve Control Circuit Shorted Test Status | OK / Okay, Malfunction, Not Run | This parameter displays the status of the Intake Air Flow Valve Control Circuit. The scan tool will display OK / Okay if the circuit is operating correctly or Not Run if a diagnosis has not been made. The scan tool will display Malfunction if there is a short in the circuit. |
| Intake Air Flow Valve Control Driver Overcurrent | No | This parameter displays the status of the Intake Air Flow Valve Control driver. The scan tool will display Yes when an overcurrent is detected. |
| Intake Air Flow Valve Control Driver Overtemperature | No | This parameter displays the status of the Intake Air Flow Valve Control driver. The scan tool will display Yes when overtem-perature is detected. |
| Intake Air Flow Valve Control Driver Temperature Dependent Overcurrent | No | This parameter displays the status of the Intake Air Flow Valve Control driver. The scan tool will display Yes when Temperature Dependent Overcurrent is detected. |
| Intake Air Flow Valve Control Driver Undervoltage | No | This parameter displays the status of the Intake Air Flow Valve Control driver. The scan tool will display Yes when Undervoltage is detected. |
| Intake Air Flow Valve Learned Closed Position | % | This parameter displays the minimum position learned for Intake Air Flow Valve position sensor when the Intake Air Flow Valve is closed. |
| Intake Air Flow Valve Motor Command | % | This parameter displays the commanded duty cycle for the Intake Airflow Valve output. |
| Intake Air Flow Valve Position | % | This parameter displays the position determined from Intake Air Flow Valve position sensor (corrected based upon its learned minimum position). |
| Intake Air Flow Valve Position Sensor | Volts | This parameter displays the Intake Air Flow Valve position sensor voltage input. |
| Intake Air Heater Command | On/Off | This parameter displays the current status of the Intake Air Heater. |
| Intake Air Heater Command | % | This parameter displays the current status of the Intake Air Heater in percentage. |
| Intake Air Humidity Sensor | % | This parameter displays the percentage of humidity at the intake air sensor. |

| Parameter | Value | Description |
|---|---|---|
| Intake Manifold Pressure | kPa | This parameter displays the engine intake manifold vacuum pressure calculated as the difference between ambient air pressure (barometric pressure) and intake manifold absolute pressure (MAP). |
| Intake Manifold Runner Control Valve Command | % | This parameter displays the current command in percentage of the intake manifold runner control valve. |
| Intake Manifold Runner Control Valve Diagnostic Test Status | Varies | This parameter displays the current phase of the intake manifold runner control valve diagnostic test. |
| Intake Manifold Runner Control Valve Feedback Signal | % | This parameter displays the current command in percentage of the intake manifold runner control valve feedback signal. |
| Intake Manifold Runner Control Valve Position | Open, Intermediate, Closed | This parameter displays the current position of the intake manifold runner control valve. |
| Low Engine Oil Level Indicator Command | Off | This parameter displays the Engine Oil Level Low Indicator Command. The scan tool displays ON in order to inform the driver of a low engine oil level condition. |
| Low Engine Oil Pressure Indicator Command | Off | This parameter displays the Low Engine Oil Indicator Command. The scan tool displays ON in order to inform the driver of a low engine oil pressure condition. |
| MAF Sensor | g/s | This parameter indicates the quantity calculated by the control module based on a signal from the MAF sensor. The scan tool will display a high value at high engine speeds, and a low value at low engine speeds. |
| MAF Sensor | Hz | This parameter indicates the frequency signal received from the MAF sensor by the control module. The scan tool will display a high value at high engine speeds, and a low value at low engine speeds. |
| MAF When Engine Overspeed Detected | g/s | This parameter indicates the quantity calculated by the control module based on a signal from the MAF sensor at the time an overspeed was detected. |
| Main-Injection | Inactive | Main Injection Active indicates that main injection is active. |
| MAP Sensor | Volts | This parameter indicates the voltage signal received by the control module from the MAP sensor. The scan tool displays a low voltage at idle, and a high voltage at wide open throttle. Barometric pressure and altitude can affect these values. |
| MAP Sensor | kPa (psi) | This parameter displays the actual engine intake manifold absolute pressure (MAP). |
| MIL Command | Off | This parameter displays the commanded state of the malfunction indicator lamp (MIL) control circuit by the engine control module. |
| MIL Control Circuit High Voltage Test Status | OK / Okay, Malfunction | This parameter displays the state of the MIL control circuit. The parameter displays Malfunction if the MIL control circuit is shorted to voltage. |

| Parameter | Value | Description |
|---|---|---|
| MIL Control Circuit Low Voltage Test Status | OK / Okay, Malfunction | This parameter displays the state of the MIL control circuit. The parameter displays Malfunction if the MIL control circuit is shorted to ground. |
| MIL Control Circuit Open Test Status | OK / Okay, Malfunction | This parameter displays the state of the MIL control circuit. The parameter displays Malfunction if the MIL control circuit is open. |
| MIL Requested | No | This parameter displays the commanded state of the malfunction indicator lamp (MIL) control circuit by the engine control module. |
| MIL Requested by DTC | No | This parameter indicates the reason the control module illuminated the MIL. The scan tool will display Yes when the MIL is requested as a result of an A or B type DTC. The scan tool will display No if the MIL is illuminated for another reason, such as transmission DTCs. |
| Misfire Diagnostic Engine Speed | RPM | This parameter displays the engine speed used within the misfire diagnostic. This engine speed is the maximum engine speed observed over the previous engine cycle. |
| Misfire Monitor Complete | No | This parameter displays the status of the Misfire Monitor. The parameter will display Yes when the Misfire Monitor is Complete. |
| Misfire Monitor Complete This Ignition Cycle | Varies | This parameter displays the diagnostic monitor enable status during the current driving/monitoring cycle. |
| Misfire Monitor Enabled | No | This parameter displays the status of the Misfire Monitor. The parameter will display Yes when the Misfire Monitor is Enabled. |
| Misfire Monitor Enabled This Ignition Cycle | Varies | This parameter displays the diagnostic monitor enable status during the current driving/monitoring cycle. |
| Neutral Position Sensor | % | This parameter displays the current state of the neutral position sensor in degrees. |
| NOx Catalyst Efficiency | % | This parameter displays the actual average Selective Catalyst Reduction (SCR) efficiency for urea quality determination. |
| NOx Catalyst Efficiency Gross Error Test | % | This parameter displays the actual average Selective Catalyst Reduction (SCR) efficiency for urea quality determination during the gross error test. |
| NOx Catalyst Reductant Load | g | This parameter contains the NH3 (Ammonia) storage in the SCR (Selective Catalyst Reduction) system in terms of gram. |
| NOx Catalyst Reductant-Load Adaptive Value | # | This parameter displays the phrase of the Pressure Control Valve (PCV) test results. |
| NOx Catalyst Reductant-Load Variance | g | This parameter displays the absolute difference between the targeted and estimated load in the SCR system in terms of grams. |
| NOx Catalyst System Malfunction Warning Indicator Command | 1–7 | This parameter displays the Non-Tamper SCR warning command. |

| Parameter | Value | Description |
|---|---|---|
| NOx Sensor 1 Heater Circuit Open Test Status | OK / Okay, Malfunction | This parameter displays the state of the NOx Sensor 1 Heater Circuit. The parameter displays Malfunction if the NOx Sensor 1 Heater Circuit is open. |
| NOx Sensor 1 Heater Circuit Shorted Test Status | OK / Okay, Malfunction | This parameter displays the state of the NOx Sensor 1 Heater Circuit . The parameter displays Malfunction if the NOx Sensor 1 Heater Circuit is shorted. |
| NOx Sensor 1 Heater Command | Off | This parameter displays the state of the control circuit for NOx Sensor 1 Heater as commanded by the engine control module. |
| NOx Sensor 1 Heater Mode | Varies | This parameter displays the status of the NOx Sensor 1 Heater. |
| NOx Sensor 1 Heater Operation | Allowed | This parameter displays the state of the NOx Sensor 1 Heater Operation. The parameter displays Allowed when commanded by the engine control module. |
| NOx Sensor 1 Heater Resistance | Ω | This parameter displays the resistance value of the NOx sensor 1 heater. |
| NOx Sensor 1 NOx Concentration | ppm | This parameter displays the concentration of NOx in the exhaust gas. |
| NOx Sensor 1 NOx Signal Circuit Open Test Status | OK / Okay, Malfunction | This parameter displays the state of the NOx Sensor 1 NOx Signal Circuit. The parameter displays Malfunction if the NOx Sensor 1 NOx Signal circuit is open. |
| NOx Sensor 1 NOx Signal Circuit Shorted Test Status | OK / Okay, Malfunction | This parameter displays the state of the NOx Sensor 1 NOx Signal Circuit. The parameter displays Malfunction if the NOx Sensor 1 NOx Signal circuit is shorted. |
| NOx Sensor 1 Oxygen Concentration | % | This parameter displays the concentration of Oxygen in the exhaust gas from NOx sensor 1. |
| NOx Sensor 1 Oxygen Signal Circuit 1 Open Test Status | OK / Okay, Malfunction | This parameter displays the state of the NOx Sensor 1 Oxygen Signal Circuit 1. The parameter displays Malfunction if the NOx Sensor 1 Oxygen Signal Circuit 1 is open. |
| NOx Sensor 1 Oxygen Signal Circuit 1 Shorted Test Status | OK / Okay, Malfunction | This parameter displays the state of the NOx Sensor 1 Oxygen Signal Circuit 1. The parameter displays Malfunction if the NOx Sensor 1 Oxygen Signal Circuit 1 is shorted. |
| NOx Sensor 1 Oxygen Signal Circuit 2 Open Test Status | OK / Okay, Malfunction | This parameter displays the state of the NOx Sensor 1 Oxygen Signal Circuit 2. The parameter displays Malfunction if the NOx Sensor 1 Oxygen Signal Circuit 2 is open. |
| NOx Sensor 1 Oxygen Signal Circuit 2 Shorted Test Status | OK / Okay, Malfunction | This parameter displays the state of the NOx Sensor 1 Oxygen Signal Circuit 2. The parameter displays Malfunction if the NOx Sensor 1 Oxygen Signal Circuit 2 is shorted. |
| NOx Sensor 2 Heater Circuit Open Test Status | OK / Okay, Malfunction | This parameter displays the state of the NOx Sensor 2 Heater Circuit 2. The parameter displays Malfunction if the NOx Sensor 2 Heater Circuit is open. |
| NOx Sensor 2 Heater Circuit Shorted Test Status | OK / Okay, Malfunction | This parameter displays the state of the NOx Sensor 2 Heater Circuit 2. The parameter displays Malfunction if the NOx Sensor 2 Heater Circuit is shorted. |

| Parameter | Value | Description |
|---|---|---|
| NOx Sensor 2 Heater Command | Off | This parameter displays the state of the control circuit for NOx Sensor 2 Heater as commanded by the engine control module. |
| NOx Sensor 2 Heater Mode | Varies | This parameter displays the status of the NOx Sensor 2 Heater. |
| NOx Sensor 2 Heater Operation | Allowed | This parameter displays the state of the NOx Sensor 2 Heater Operation. The parameter displays Allowed when commanded by the engine control module. |
| NOx Sensor 2 Heater Resistance | Ω | This parameter displays the resistance value of the NOx sensor 1 heater. |
| NOx Sensor 2 NOx Concentration | ppm | This parameter displays the concentration of NOx in the exhaust gas from NOx sensor 2. |
| NOx Sensor 2 NOx Signal Circuit Open Test Status | OK / Okay, Malfunction | This parameter displays the state of the NOx Sensor 2 NOx Signal Circuit . The parameter displays Malfunction if the NOx Sensor 2 NOx Signal Circuit is open. |
| NOx Sensor 2 NOx Signal Circuit Shorted Test Status | OK / Okay, Malfunction | This parameter displays the state of the NOx Sensor 2 NOx Signal Circuit . The parameter displays Malfunction if the NOx Sensor 2 NOx Signal Circuit is shorted. |
| NOx Sensor 2 Oxygen Concentration | % | This parameter displays the concentration of Oxygen in the exhaust gas from NOx sensor 2. |
| NOx Sensor 2 Oxygen Signal Circuit 1 Open Test Status | OK / Okay, Malfunction | This parameter displays the state of the NOx Sensor 2 Oxygen Signal Circuit 1. The parameter displays Malfunction if the NOx Sensor 2 Oxygen Signal Circuit 1 is open. |
| NOx Sensor 2 Oxygen Signal Circuit 1 Shorted Test Status | OK / Okay, Malfunction | This parameter displays the state of the NOx Sensor 2 Oxygen Signal Circuit 1. The parameter displays Malfunction if the NOx Sensor 2 Oxygen Signal Circuit 1 is shorted. |
| NOx Sensor 2 Oxygen Signal Circuit 2 Open Test Status | OK / Okay, Malfunction | This parameter displays the state of the NOx Sensor 2 Oxygen Signal Circuit 2. The parameter displays Malfunction if the NOx Sensor 2 Oxygen Signal Circuit 2 is open. |
| NOx Sensor 2 Oxygen Signal Circuit 2 Shorted Test Status | OK / Okay, Malfunction | This parameter displays the state of the NOx Sensor 2 Oxygen Signal Circuit 2. The parameter displays Malfunction if the NOx Sensor 2 Oxygen Signal Circuit 2 is shorted. |
| Number of Completed DPF Regenerations | Counts | This parameter displays the number of successful DPF regenerations. |
| Number of DTC(s) | Counts | This parameter displays the number of emission related DTCs stored in the ECM. |
| Odometer When Engine Overspeed Detected | km/miles | This parameter displays the kilometers or miles of the Odometer When Engine Overspeed Detected. |
| Output Shaft Speed Sensor | RPM | This parameter displays the transmission output speed. |
| PTO | Active / Inactive | This parameter contains an indication that power take off (PTO) is active |

| Parameter | Value | Description |
|---|---|---|
| PTO Engine Shutdown Signal | Yes / No | This parameter contains several signals associated with the status of the power take off (PTO) and fast idle systems. |
| Park/Neutral Position Switch | Park/Neutral/In Gear | This parameter indicates the range selection of the automatic transmission as calculated by the control module based on input from the park/neutral position (PNP) switch. The scan tool will display, In Gear, Park, or Neutral depending on the PNP switch position. |
| Particulate Matter Sensor | Mg/m3 | This parameter displays the mass concentration of exhaust particulate matter measured by the particulate matter sensor. |
| Particulate Matter Sensor | uA | This parameter displays the measured current from the sensing element of the particulate matter sensor. |
| Particulate Matter Sensor Control Unit Communication Status | Ready | This parameter displays the communication status of the particulate matter sensor control unit. |
| Particulate Matter Sensor Identifier | # | This parameter displays the value sent from the sensor control unit to engine control module to provide sensor build information in order for the software to compensate for sensor variations. |
| Particulate Matter Sensor Measurement | Active | This parameter displays the status of the particular matter sensor. |
| Particulate Matter Sensor Operation | Allowed | This parameter displays if the exhaust temperature dew point is reached to allow the particulate matter sensor to operate. |
| Particulate Matter Sensor Regeneration | Inactive | This parameter displays Active when the particulate matter sensor is regenerating. |
| Particulate Matter Sensor Status | Ready | This parameter displays the status of the particulate matter sensor. |
| Particulate Matter Sensor Temperature | °C (°F) | This parameter displays the current temperature of the particulate matter sensor in Celsius and Fahrenheit. |
| Pilot Injection | Inactive | Pilot Injection Active indicates that pilot injections are active. |
| Positive Crankcase Ventilation Heater Command | On/Off | This parameter displays the current command of the positive crankcase ventilation heater. |
| Positive Crankcase Ventilation Heater Control Circuit High Voltage Test Status | OK / Okay, Malfunction | This parameter displays the state of the positive crankcase heater control circuit. The parameter displays Malfunction if the positive crankcase heater control circuit is shorted to voltage. |
| Positive Crankcase Ventilation Heater Control Circuit Low Voltage Test Status | OK / Okay, Malfunction | This parameter displays the state of the positive crankcase heater control circuit. The parameter displays Malfunction if the positive crankcase heater control circuit is shorted to ground. |
| Positive Crankcase Ventilation Heater Control Circuit Open Test Status | OK / Okay, Malfunction | This parameter displays the state of the positive crankcase heater control circuit. The parameter displays Malfunction if the positive crankcase heater control circuit is open. |
| Post Injection | Inactive | Post Injection Active indicates that post injections is active |

| Parameter | Value | Description |
|---|---|---|
| Power Mode | Off | This parameter displays the state of the System Power Mode. This signal is based upon the state of the system power mode received over serial communication from the vehicle electronics. |
| Radiator Coolant Temperature Sensor | °C (°F) | This parameter displays the radiator coolant temperature measured by a sensor located in the coolant outlet of the radiator. |
| Reduced Engine Power | Inactive | This parameter will display the fuel system status as commanded by the ECM. |
| Reduced Engine Power History | Varies | This parameter displays the last reason that the engine control module has illuminated the Reduced Engine Power (REP) indication. |
| Reductant Absolute Pressure | kPa | This parameter displays the absolute pressure of the reductant. |
| Reductant Fluid Quality Gross Error Test Diagnostics | Varies | This parameter displays the phases of the Selective Catalyst Reduction (SCR) service quality check procedure. |
| Reductant Fluid Quality Test | Completed with success | This parameter displays the phases of the SCR (Selective Catalyst Reduction) service quality check procedure. |
| Reductant Fluid Quality Test Diagnostic | Varies | This parameter displays the phases of the Selective Catalyst Reduction (SCR) service quality check procedure. |
| Reductant Fluid Quality Warning Indicator Command | None | This parameter displays the NOx reductant quality warning. |
| Reductant Heater 1 Command | On / Off | This parameter contains the commanded state of the reductant heater 1 output (the output is considered to be commanded on if its duty cycle is not zero) along with the status of its associated short to ground (Low side), short to power (Low side), short to ground (High side), short to power (High side) and open circuit tests |
| Reductant Heater 1 Control Circuit High Voltage Test Status | OK / Okay, Malfunction, Not Run | This parameter contains the commanded state of the reductant heater 1 output (the output is considered to be commanded on if its duty cycle is not zero) along with the status of its associated short to ground (Low side), short to power (Low side), short to ground (High side), short to power (High side) and open circuit tests |
| Reductant Heater 1 Control Circuit Low Voltage Test Status | OK / Okay, Malfunction, Not Run | This parameter contains the commanded state of the reductant heater 1 output (the output is considered to be commanded on if its duty cycle is not zero) along with the status of its associated short to ground (Low side), short to power (Low side), short to ground (High side), short to power (High side) and open circuit tests |
| Reductant Heater 1 Control Circuit Open Test Status | OK / Okay, Malfunction, Not Run | This parameter contains the commanded state of the reductant heater 1 output (the output is considered to be commanded on if its duty cycle is not zero) along with the status of its associated short to ground (Low side), short to power (Low side), short to ground (High side), short to power (High side) and open circuit tests |

| Parameter | Value | Description |
|---|---|---|
| Reductant Heater 1 Current | Amps | This parameter contains the current feedback for the reductant heater 1 output. |
| Reductant Heater 1 High Control Circuit High Voltage Test Status | OK / Okay, Malfunction, Not Run | This parameter contains the commanded state of the reductant heater 1 output (the output is considered to be commanded on if its duty cycle is not zero) along with the status of its associated short to ground (Low side), short to power (Low side), short to ground (High side), short to power (High side) and open circuit tests |
| Reductant Heater 1 High Control Circuit Low Voltage Test Status | OK / Okay, Malfunction, Not Run | This parameter contains the current feedback for the reductant heater 1 output. |
| Reductant Heater 2 Command | On / Off | This parameter contains the commanded state of the reductant heater 2 output (the output is considered to be commanded on if its duty cycle is not zero) along with the status of its associated short to ground (Low side), short to power (Low side), short to ground (High side), short to power (High side) and open circuit tests |
| Reductant Heater 2 Control Circuit High Voltage Test Status | OK / Okay, Malfunction, Not Run | This parameter contains the commanded state of the reductant heater 2 output (the output is considered to be commanded on if its duty cycle is not zero) along with the status of its associated short to ground (Low side), short to power (Low side), short to ground (High side), short to power (High side) and open circuit tests |
| Reductant Heater 2 Control Circuit Low Voltage Test Status | OK / Okay, Malfunction, Not Run | This parameter contains the current feedback for the reductant heater 2 output. |
| Reductant Heater 2 Control Circuit Open Test Status | OK / Okay, Malfunction, Not Run | This parameter indicates the status of the NOx (Nitrogen Oxides) Reductant Tank. |
| Reductant Heater 2 Current | Amps | This parameter contains the current feedback for the reductant heater 2 output. |
| Reductant Heater 2 High Control Circuit High Voltage Test Status | OK / Okay, Malfunction, Not Run | This parameter contains the commanded state of the reductant heater 2 output (the output is considered to be commanded on if its duty cycle is not zero) along with the status of its associated short to ground (Low side), short to power (Low side), short to ground (High side), short to power (High side) and open circuit tests |
| Reductant Heater 2 High Control Circuit Low Voltage Test Status | OK / Okay, Malfunction, Not Run | This parameter contains the current feedback for the reductant heater 2 output. |
| Reductant Heater 1 Request | Off | This parameter displays the commanded state of the Reductant Heater 1. The Reductant Heater 1 should be On when the scan tool indicates the Reductant Heater 1 Command is ON. |
| Reductant Heater 2 Request | Off | This parameter displays the commanded state of the Reductant Heater 2. The Reductant Heater 2 should be On when the scan tool indicates the Reductant Heater 2 Command is ON. |
| Reductant Heater 3 Request | Off | This parameter displays the commanded state of the Reductant Heater 3. The Reductant Heater 3 should be On when the scan tool indicates the Reductant Heater 3 Command is ON. |

| Parameter | Value | Description |
|---|---|---|
| Reductant Injection Control Extreme Pressure Test | Passed | This parameter displays the test status of the NOx reductant dosing system extreme pressure test. |
| Reductant Injection Control Low Pressure Test | Passed | This parameter displays the test status of the NOx reductant dosing system low pressure test. |
| Reductant Injection Control Overpressure Test Status | Passed | This parameter displays the test status of the NOx reductant closing system overpressure test. |
| Reductant Injection Control Pressure Build-Up Test Status | Passed | This parameter displays the test status of the NOx reductant dosing system test. |
| Reductant Injection Inhibit Reason | None | This parameter displays the reasons why the NOx Reductant system has been inhibited from operation. |
| Reductant Injector Command | % | This parameter displays the commanded duty cycle for the NOx reductant dosing valve output. |
| Reductant Injector Control Circuit Status | No Malfunction Present | This parameter displays the status of the Reductant Injection Control Circuit output. |
| Reductant Level | % | This parameter displays the total Reductant level as a percentage of the rated capacity of the tank. |
| Reductant Level Sensor 1 | Inactive | This parameter displays the individual Reductant Level Switch states. Active indicates that the level switch is detecting fluid in regards to its position in the reductant reservoir. |
| Reductant Level Sensor 1 Circuit Status | No Malfunction | This parameter displays the circuit status of each reductant level sensor. |
| Reductant Level Sensor 2 | Inactive | This parameter displays the individual Reductant Level Switch states. Active indicates that the level switch is detecting fluid in regards to its position in the reductant reservoir. |
| Reductant Level Sensor 2 Circuit Status | No Malfunction | This parameter displays the circuit status of each reductant level sensor. |
| Reductant Level Sensor 3 | Inactive | This parameter displays the individual Reductant Level Switch states. Active indicates that the level switch is detecting fluid in regards to its position in the reductant reservoir. |
| Reductant Level Sensor 3 Circuit Status | No Malfunction | This parameter displays the circuit status of each reductant level sensor. |
| Reductant Level Warning Indicator Command | None | This parameter displays the engine control module (ECM) requested reductant fluid level warning indicator state. |
| Redundant Odometer Memory | Present/Not Present | This parameter displays if there is a reductant odometer reading present in the control module. |
| Reductant Pressure | kPa | This parameter displays the engine Reductant pressure from the sensor. |
| Reductant Pressure Sensor | Volts | This parameter contains the reductant pressure analog input as a percentage of its reference voltage. |
| Reductant Pump Command | % | This parameter displays the commanded duty cycle for the NOx reductant pump output. |

| Parameter | Value | Description |
|---|---|---|
| Reductant Pump Control Circuit Status | No Malfunction Present | This parameter displays the status of the Reductant Pump Control Circuit. |
| Reductant Pump Speed | RPM | This parameter contains the actual reductant pump motor speed. |
| Reductant Purge Solenoid Valve Command | On/Off | This parameter displays the commanded state of the reductant line purge solenoid valve. The scan tool displays On when the reductant line purge solenoid valve is commanded ON. |
| Reductant Purge Solenoid Valve Control Circuit Status | No Malfunction Present | This parameter displays the status of the Reductant Purge Solenoid Valve Control Circuit. |
| Reductant Range | km/miles | This parameter displays the Distance that can be driven before the Reductant tank needs to be refilled. |
| Reductant System Adaption Diagnostic | Varies | This parameter displays the status of the Selective Catalyst Reduction (SCR) adaption check diagnosis. |
| Reductant System Malfunction Warning Indicator Command | None | This parameter displays the NOx Reductant System Malfunction warning. |
| Reductant System Malfunction Warning Service Bay Test | Varies | This parameter displays a malfunction warning for the reductant system during a service bay test. |
| Reductant System Tamper Warning Service Bay Test Abort Reason | Not Requested, In Progress, Passed, Failed, Interrupted | This parameter contains the status of the SCR Tamper/No Tamper service bay test procedure. |
| Reductant System Tamper Warning Service Bay Test Result | Reductant System Tamper Warning Service Bay Test Result | This parameter holds the most recent abort reason for the SCR Tamper/No Tamper service bay test algorithm |
| Reductant Tank Level | Varies | This parameter displays the current reductant tank fluid level. |
| Reductant Tank Temperature 1 | ºC (ºF) | This parameter contains the undefaulted reductant temperature measured by a sensor that is located within the holding tank. |
| Reductant Tank Temperature 2 | ºC (ºF) | This parameter contains the undefaulted reductant temperature measured by a sensor that is part of the reductant quality sensor |
| Reductant Tank Temperature Sensor 2 Circuit Erratic Test Status | Yes / No | This parameter contains the all monitors that trigger the SCR Tamper/Not Tamper Warning Strategy. |
| Reductant Tank Temperature Sensor 2 Circuit High Voltage Test Status | Yes / No | This parameter contains the all monitors that trigger the SCR Tamper/Not Tamper Warning Strategy. |
| Reductant Tank Temperature Sensor 2 Circuit Low Voltage Test Status | Yes / No | This parameter contains the all monitors that trigger the SCR Tamper/Not Tamper Warning Strategy. |
| Reductant Tank Temperature Sensor 2 Circuit Performance Test Status | Yes / No | This parameter contains the all monitors that trigger the SCR Tamper/Not Tamper Warning Strategy. |
| Reductant Tank Temperature Sensor Circuit Erratic Test Status | Yes / No | This parameter contains the all monitors that trigger the SCR Tamper/Not Tamper Warning Strategy. |
| Reductant Tank Temperature Sensor Circuit High Voltage Test Status | Yes / No | This parameter contains the all monitors that trigger the SCR Tamper/Not Tamper Warning Strategy. |

| Parameter | Value | Description |
|---|---|---|
| Reductant Tank Temperature Sensor Circuit Low Voltage Test Status | Yes / No | This parameter contains the all monitors that trigger the SCR Tamper/Not Tamper Warning Strategy. |
| Reductant Temperature | °C (°F) | This parameter displays the Reductant temperature measured by a sensor that is located within the holding tank. |
| Remaining Reductant in Tank | g | This parameter displays the current reductant remaining in the holding tank. |
| Remaining Fuel in Tank | % | This parameter displays the total fuel level as a percentage of the rated capacity of the fuel tank. |
| Remaining Fuel in Tank | Liters | This parameter displays the actual total fuel volume contained in the fuel tank. |
| Remote Vehicle Start Disable History 1–8 | Reason for RVS Disable | These parameters display the last eight reasons the control module disabled remote vehicle start (RVS). |
| Remote Vehicle Start Request Signal | Off | Remote Vehicle Start Request indicates the state of the request received over serial communication from the remote vehicle start (RVS) system to start the vehicle in remote mode. |
| Replicated Transmission OSS Signal | RPM | This parameter displays the Replicated Transmission Output Speed (Replicated TOS) received from the Transmission Control Module. |
| Sensor Reference | Volts | This parameter displays the voltage sensed on the 5 V reference circuits at the control module. The scan tool will display a higher value at higher voltage. The scan tool will display a lower value at lower voltage. |
| Sensor Reference 2-4 | Volts | This parameter displays the voltage sensed on the 5 V reference circuits at the control module. The scan tool will display a higher value at higher voltage. The scan tool will display a lower value at lower voltage. |
| Sensor Reference Circuit Status | OK / Okay, Malfunction | This parameter will display OK / Okay if the circuit is good or Malfunction if a short to ground, or short to B+ is present. |
| Sensor Reference 2-4 Circuit Status | OK / Okay, Malfunction | This parameter will display OK / Okay if the circuit is good or Malfunction if a short to ground, or short to B+ is present. |
| Sensor Supply Voltage Relay Command | On / Off | This parameter contains the exhaust gas recirculation cooler temperature at power-up (Run/Crank transition from low to high) from a sensor that is located before the inlet of the exhaust gas recirculation cooler heat exchanger. |
| Soot Mass Correction | # | This parameter displays the soot mass correction value caused by Continuous Regenerating Trap (CRT) effect. |
| Specific Humidity | % | This parameter displays the current specific humidity in percentage. |
| Start-Up Charge Air Cooler Temperature | °C (°F) | This parameter displays the current start-up charge air cooler temperature. |

| Parameter | Value | Description |
|---|---|---|
| Start-Up Charge Air Cooler Inlet Temperature | ºC (ºF) | This parameter contains the charge air temperature (measured by a sensor that is located first in the charge air cooler stream in relationship to any other charge air cooler temperature sensors in the system.) recorded at power-up. |
| Start-Up Charge Air Cooler Outlet Temperature | ºC (ºF) | This parameter contains the charge air temperature (measured by a sensor that is located second in the charge air cooler stream in relationship to any other charge air cooler temperature sensors in the system.) recorded at power-up. |
| Start-Up Temperature EGR Cooler Temperature Sensor 1 | ºC (ºF) | This parameter contains the exhaust gas recirculation cooler temperature at power-up (Run/Crank transition from low to high) from a sensor that is located before the inlet of the exhaust gas recirculation cooler heat exchanger. |
| Start-Up Temperature EGR Cooler Temperature Sensor 2 | ºC (ºF) | This parameter contains the exhaust gas recirculation cooler temperature at power-up (Run/Crank transition from low to high) from a sensor that is located on the outlet of the exhaust gas recirculation cooler heat exchanger. |
| Start-Up ECT | °C (°F) | This parameter Indicates the engine coolant temperature at engine start up as calculated by the control module based on the signal from the ECT sensor. The scan tool will display a higher value on a warmer engine, and a lower value on a colder engine. |
| Start-Up Exhaust Gas Temperature Sensor 1, 2, 3, or 4 | °C (°F) | This parameter displays the current start-up exhaust gas temperature for sensor 4. |
| Start-Up Fuel Temperature | °C (°F) | This parameter Indicates the fuel temperature at engine start up as calculated by the control module based on the signal from the fuel temperature sensor. The scan tool will display a higher value on a warmer fuel, and a lower value on a colder fuel. |
| Start-Up IAT Sensor 1–3 | °C (°F) | This parameter indicates the intake air temperature at engine start up as calculated by the control module based on the signal from the IAT sensor. The scan tool will display a higher value during warmer under hood temperatures, and a lower value during colder under hood temperatures. |
| Start-Up Particulate Matter Sensor Temperature | °C (°F) | This parameter displays the start-up particulate matter temperature in Celsius and Fahrenheit. |
| Starter Relay Command | Off | The scan tool displays ON/OFF. The scan tool displays Off until the ignition is placed into the CRANK position, then it reads On. |
| Starter Relay Control Circuit High Voltage Test Status | OK / Okay, Malfunction | This parameter displays the state of the starter relay control circuit. The parameter displays Malfunction if the starter relay control circuit is shorted to voltage. This parameter may not change if the scan tool is used to command the relay control circuit ON. |

| Parameter | Value | Description |
|---|---|---|
| Starter Relay Control Circuit Low Voltage Test Status | OK / Okay, Malfunction | This parameter displays the state of the starter relay control circuit. The parameter displays Malfunction if the starter relay control circuit is shorted to ground. This parameter may not change if the scan tool is used to command the relay control circuit ON. |
| Starter Relay Control Circuit Open Test Status | OK / Okay, Malfunction | This parameter displays the state of the starter relay control circuit. The parameter displays Malfunction if the starter relay control circuit is open. This parameter may not change if the scan tool is used to command the relay control circuit ON. |
| Starter Motor Relay Control Circuit High Voltage Test Status | OK / Okay, Malfunction, Not Run | This parameter contains the commanded state of the starter relay output along with the status of its associated short to ground, open circuit, and short to power tests |
| Starter Motor Relay Control Circuit Low Voltage Test Status | OK / Okay, Malfunction, Not Run | This parameter contains the commanded state of the starter relay output along with the status of its associated short to ground, open circuit, and short to power tests |
| Starter Motor Relay Control Circuit Open Test Status | OK / Okay, Malfunction, Not Run | This parameter contains the commanded state of the starter relay output along with the status of its associated short to ground, open circuit, and short to power tests |
| TCC Control | Disengaged | This parameter displays the current state of the TCC. |
| Torque Delivered Signal | N•m | This parameter displays the engine torque based upon the airflow through the engine and the torque losses due to fuel shutoff. Since this is a steady state engine torque, it does not include the inertial component of engine torque. |
| Total Fuel Consumed | Liters | This parameter displays the fuel consumed in the current drive cycle in liters. |
| Total Misfire | Counts | This parameter displays the total number of cylinder firing events that the control module detected as misfires for the last 200 crankshaft revolution sample period. |
| Tow/Haul Mode | Active / Inactive / Not Available | This parameter contains signals associated with Tow Haul Mode as selected by the driver mode determination (DMD) switches |
| Traction Control Status | Inactive | This parameter displays Active if the electronic brake and traction control module (EBTCM) is commanding traction control. |
| Traction Control Torque Delivered Signal | % | This parameter displays the estimated engine torque delivered by the powertrain, as a percentage of maximum engine torque that is provided to the ABS/TCS module. |
| Traction Control Torque Request Signal | % | This parameter displays the engine torque requested by the traction control system, as a percentage of maximum engine torque. |
| Transmission Inhibiting Engine Cranking | Yes / No | This parameter contains several signals associated with the status of the power mode and starter systems |

| Parameter | Value | Description |
|---|---|---|
| Turbocharger Control Module Supply Voltage | Volts | This parameter contains the undefaulted voltage applied to the turbocharger actuator power supply pins. |
| Turbocharger Vane Learned Closed Position | % | This is the learned position of the blades that control the airflow into the turbo charger. This parameter displays the learned closed position. |
| Turbocharger Van Learned Closed Position | Volts | This parameter displays the minimum position learned for Turbo Charger Vane position sensor when the Turbo Charger Vanes are closed. |
| Turbocharger Vane Learned Open Position | % | This is the learned position of blades that control the airflow into the turbo charger. This parameter displays the learned open position. |
| Turbocharger Vane Learned Open Position | Volts | This parameter displays the minimum position learned for Turbo Charger Vane position sensor when the Turbo Charger Vanes are open. |
| Turbocharger Vane Position Learn Status | Learned | This parameter indicates the status of the control module in learning the turbocharger vane position. The scan tool will display No if the turbocharger vane position has not been learned since the last DTC clear. |
| Turbocharger Vane Position Initial Learned Value | Counts | This parameter contains the end of line (EOL) learn span in commutation counts |
| Turbocharger Vane Position Learned Value | Counts | This parameter contains the full span learn (FSL) in commutation counts that occurs at ignition off. |
| Turbocharger Vane Position Sensor | % | This parameter displays the current commanded state of the turbocharger vane position control solenoid valve by the control module. The scan tool will display a higher value as the solenoid is commanded open. The scan tool will display a lower value as the solenoid is commanded closed. |
| Turbocharger Vane Position Sensor | Volts | This parameter displays the voltage signal sent to the control module from the sensor. The scan tool will display a higher value as the solenoid is commanded open. The scan tool will display a lower value as the solenoid is commanded closed. |
| Turbocharger Vane Position Solenoid Valve Circuit High Voltage Test Status | OK / Okay, Malfunction | This parameter displays the state of the Turbocharger Vane Position Solenoid Valve circuit. The parameter displays Malfunction if the Turbocharger Vane Position Solenoid valve circuit is shorted to voltage. |
| Turbocharger Vane Position Solenoid Valve Circuit Low Voltage Test Status | OK / Okay, Malfunction | This parameter displays the state of the Turbocharger Vane Position Solenoid Valve circuit. The parameter displays Malfunction if the Turbocharger Vane Position Solenoid valve circuit is shorted to ground. |
| Turbocharger Vane Position Solenoid Valve Circuit Open Test Status | OK / Okay, Malfunction | This parameter displays the state of the Turbocharger Vane Position Solenoid Valve circuit. The parameter displays Malfunction if the Turbocharger Vane Position Solenoid valve circuit is open. |

| Parameter | Value | Description |
|---|---|---|
| Turbocharger Vane Position Solenoid Valve Circuit Shorted Test Status | OK / Okay, Malfunction | This parameter displays the state of the Turbocharger Vane Position Solenoid Valve Circuit. The parameter displays Malfunction if the Turbocharger Vane Position Solenoid valve circuit is shorted. |
| Turbocharger Vane Position Solenoid Valve Command | % | This parameter displays the commanded duty cycle for the solenoid on variable geometry turbocharger. |
| Turbocharger Vane Position Solenoid Valve Control Circuit Command | Off | This parameter displays the commanded state of the turbocharger solenoid valve. |
| Turbocharger Vane Position Solenoid Valve Control Driver Overtemperature | No | This parameter displays the state of the turbocharger vane position solenoid valve control driver. |
| Turbocharger Vane Position Solenoid Valve High Control Circuit Command | Off | This parameter displays the commanded state of the turbocharger solenoid valve high control circuit. |
| Turbocharger Vane Position Solenoid Valve High Control Circuit High Voltage Test Status | OK / Okay, Malfunction | This parameter displays the state of the Turbocharger Vane Position Solenoid Valve high control circuit. The parameter displays Malfunction if the Turbocharger Vane Position Solenoid valve high control circuit is shorted to voltage. |
| Turbocharger Vane Position Solenoid Valve High Control Circuit Low Voltage Test Status | OK / Okay, Malfunction | This parameter displays the state of the Turbocharger Vane Position Solenoid Valve high control circuit. The parameter displays Malfunction if the Turbocharger Vane Position Solenoid valve high control circuit is shorted to ground. |
| Turbocharger Vane Position Solenoid Valve High Control Circuit Open Test Status | OK / Okay, Malfunction | This parameter displays the state of the Turbocharger Vane Position Solenoid Valve high control circuit. The parameter displays Malfunction if the Turbocharger Vane Position Solenoid valve high control circuit is open. |
| Vehicle Speed Output Circuit 2 High Voltage Test Status | OK / Okay, Malfunction | This parameter displays the state of the Vehicle Speed Output circuit 2 control circuit. The parameter displays Malfunction if the Vehicle Speed Output circuit 2 control circuit is shorted to voltage. |
| Vehicle Speed Output Circuit 2 Low Voltage Test Status | OK / Okay, Malfunction | This parameter displays the state of the Vehicle Speed Output circuit 2 control circuit. The parameter displays Malfunction if the Vehicle Speed Output Circuit 2 control circuit is shorted to ground. |
| Vehicle Speed Output Circuit 2 Open Test Status | OK / Okay, Malfunction | This parameter displays the state of the Vehicle Speed Output circuit 2 control circuit. The parameter displays Malfunction if the Vehicle Speed Output circuit 2 control circuit is open. |
| Vehicle Speed Sensor | km/h/MPH | This parameter indicates the vehicle speed as calculated by the control module based on a signal from the vehicle speed sensor (VSS). The scan tool will display a higher value at higher vehicle speeds, and a lower value at lower vehicle speeds. |
| Vehicle Speed When Engine Overspeed Detected | Km/h<br>mph | This parameter displays the Vehicle Speed When Engine Overspeed Detected. |

| Parameter | Value | Description |
|---|---|---|
| Wait to Start Indicator Command | On/Off | The wait to start indicator illuminates with the ignition ON and the engine OFF. The wait to start indicator will not illuminate during post-start glow plug operation. |
| Wait to Start Indicator Control Circuit High Voltage Test Status | OK / Okay, Malfunction | This parameter displays the state of the wait to start indicator control circuit. The parameter displays Malfunction if the wait to start indicator control circuit is shorted to voltage. |
| Wait to Start Indicator Control Circuit Low Voltage Test Status | OK / Okay, Malfunction | This parameter displays the state of the wait to start indicator control circuit. The parameter displays Malfunction if the wait to start indicator control circuit is shorted to ground. |
| Wait to Start Indicator Control Circuit Open Test Status | OK / Okay, Malfunction | This parameter displays the state of the wait to start indicator control circuit. The parameter displays Malfunction if the wait to start indicator control circuit is open. |
| Warm-ups Since DTC Cleared | Counts | This parameter indicates the number of warm up cycles that have occurred Since DTCs were cleared. The scan tool will display a higher counts as more warm up cycles have occurred since the DTCs were cleared. |
| Warm-ups without Emission Malfunctions | Counts | This parameter indicates the number of warm up cycles that have occurred without an emission fault present. The scan tool will display a 0 if a malfunction has occurred. The scan tool will display a higher count if a number of warm up cycles have occurred without an emission malfunction. |
| Warm-ups without Non-emission Malfunctions | Counts | This parameter indicates the number of warm up cycles that have occurred without a non-emission fault present. The scan tool will display a 0 if a malfunction has occurred. The scan tool will display a higher count if a number of warm up cycles have occurred without a non-emission malfunction. |
| Water in Fuel | No | This parameter indicates if there is water in the fuel. |
| Water in Fuel Indicator Command | Off | This parameter indicates if water in the fuel indicator is On or Off. |
| Water in Fuel Sensor | Volts | This parameter displays the water in fuel sensor voltage input. |

## Output Control

| Parameter | Description |
|---|---|
| This is a comprehensive list. Not all output controls listed are available for all applications. | |
| A/C Compressor Clutch Relay | This device control is used to override the state of the air conditioning compressor output. |
| Ambient Air Temperature Calculation Reset | This device control is used to reset the estimated ambient air temperature value to the current sensor value following a service repair. |
| BARO Sensor Reset | This device control is used to reset learned barometric pressure values in case of either an ECU or barometric pressure sensor replacement. |
| Brake Pedal Position Sensor Learn | This device control is used to reset the initialized values for the brake pedal fully released learned position. |
| Catalyst Reset | This device control is used to reset learned values in case of a diesel oxidation catalyst replacement. The engine must be OFF and Ignition ON. |

| Parameter | Description |
|---|---|
| Compression Test Starter Relay | This device control is used to set up the internal combustion engine for a compression test. |
| Coolant Fill | This device control is used to start an automatic coolant fill service routine that will ensure proper fill and de-aeration of the cooling system. |
| Cooling Fan Motor | This device control is used to override the state of cooling fan duty cycle control output. |
| Crankshaft Position Reluctor Ring Learned Values Reset | This device control is used to reset the crank wheel adaptation values in case of an ECU or crank wheel replacement. |
| Crankshaft Position Variation Learn | This device control is used to activate the crankshaft position variation learn (CASE) algorithm which calculates the reference pulse correction factors for the misfire diagnostic. |
| Cylinder 1–8 Fuel Injector Correction Value Reset | This device control is to be used to reset the NVC and ZFC values to zero if one or more of the fuel injectors have been replaced. |
| Cylinder 1–8 Injector Flow Identifier | This device control contains the data that the Engine Control Module will need in order to do proper Injector Fuel Quantity adjustments. If a new ECM is being installed, this data shall be read from the old ECM and transferred to the new ECM.<br>If an injector is replaced, the injector code must be downloaded to the ECM |
| Cylinder Balance Rate Monitor | This device control is used to enable or disable Cylinder Fuel Balancing. |
| Cylinder Power Balance | This device control disables each fuel injector at any engine or vehicle speed. The device control will not change unless changed or cancelled by the scan tool. |
| DPF Pressure Sensor Reset | This device control is used to reset learned values in case of a diesel particulate filter pressure sensor replacement. |
| DPF Regeneration Enable | This function enables a DPF Regeneration when the vehicle meets the conditions for running. This function will by-pass the normal soot model, so the next time the vehicle is under the conditions for an active regeneration to take place, the ECM will go ahead and initiate the regeneration event.<br>This device control is used to Force the Diesel Particulate Filter to perform regeneration. The Device Control sets an indication in the ECU that the controller shall perform regeneration, the next time the driving condition are met. The Regeneration shall be performed even if the tool is no longer connected to the vehicle. |
| DPF Regeneration Inhibit | This device control is used to inhibit the Diesel Particulate Filter to perform regeneration, even if the driving conditions are met. The inhibit function shall only work when the tool is connected to the vehicle. |
| DPF Reset | This device control is used to reset learned values in case of a diesel particulate filter replacement. |
| DPF Service Regeneration | This device control enables a DPF Regeneration. The engine coolant must be greater than 70–115°C (158–239°F). Vehicle must be in Park. Ambient temperature must be greater than −30°C (−22°F). Brake pedal and accelerator must be in the released position. The scan tool will display all inhibit reasons. The scan tool must remain connected until test is complete. This function takes approximately 35 minutes to complete. During this procedure the RPM will slowly increase to 2,500 RPM and remain there for approximately 25 minutes. |
| EGR | This device control is used to verify functionality of the Exhaust Gas Recirculation Valve by allowing the Exhaust Gas Recirculation Valve output to be commanded to a specific duty cycle. |
| EGR Cooler Bypass Motor | This device control is used to verify functionality of the Exhaust Gas Recirculation (EGR) Cooler Bypass Valve system by allowing the EGR Cooler Bypass Valve output to be commanded to a specific position. |
| EGR Cooler Bypass Valve | This device control is used to verify functionality of the Exhaust Gas Recirculation (EGR) Cooler Bypass Valve system by allowing the EGR Cooler Bypass Valve output to be commanded to a specific position |
| EGR Valve | This device control is used to verify functionality of the Exhaust Gas Recirculation (EGR) system by allowing the Exhaust Gas Recirculation output to be commanded to a specific lift. |
| Engine Compression Quick Test | This device control is used to initiate the semi-automatic compression test on Diesel engines. |
| Engine Controls Ignition Relay | This device control is used to override the state of the Powertrain Relay. |
| Engine Oil Life Reset | This device control contains the engine oil remaining life determined from a calibration based upon the effective engine revolutions and the distance driven since the last oil change. This device control may be used to reset the engine oil remaining life to 100% after an oil change or to any other value when replacing an engine control module. |

| Parameter | Description |
|---|---|
| Engine Oil Pressure Control Solenoid Valve | This device control is used to override the state of the variable displacement oil pump. When the variable displacement oil pump is turned ON, the oil pump will be commanded to a low pressure state. |
| Engine Speed | This device control is used to override the idle engine speed. |
| Exhaust Aftertreatment Data Reset | This device control is used to reset the exhaust aftertreatment fuel injector OEM data in case of a replacement. |
| Exhaust Aftertreatment Fuel Injector | This device control is used to verify functionality of the Exhaust Aftertreatment Fuel Injector by allowing Exhaust Aftertreatment Fuel Injector output to be commanded to a specific duty cycle. |
| Exhaust Aftertreatment Fuel Injector Cleaning Procedure | This device control is used to trigger the Exhaust Aftertreatment Fuel Injector tip cleaning procedure. |
| Exhaust Aftertreatment Fuel Injector Flow Test | This device control is used to trigger the Exhaust Aftertreatment Fuel Injector to be commanded on for a calibrateable duration and a calibrateable HC injection quantity in order to test the flow of the injector. |
| Exhaust Gas Recirculation | This device control is used to verify functionality of the Exhaust Gas Recirculation (EGR) system by allowing the Exhaust Gas Recirculation output to be commanded to a specific lift. |
| Exhaust Gas Temperature Sensor Reset | This device control is used to reset the SCR (Selective Catalytic Reduction) Temperature Sensor data in case of a replacement. |
| Fuel Filter Life Reset | This device control resets the fuel filter life remaining to 100%. |
| Fuel Injection Small Quantity Data Reset | This device control is used to reset the learned values of the small quantity adjustment (SQA) map in case of a fuel rail pressure sensor replacement. |
| Fuel Injection Small Quantity Learning Odometer Reset | This device control is used to initialize small quantity learn internal odometer to a default value. |
| Fuel Heater Relay | This device control is used to override the state of the Fuel Filter Heater output. |
| Fuel Injector Balance | This feature will allow the technician to inspect the fuel system for leaks after servicing the fuel system or after any other service procedure that required disconnection or removal of fuel system components. |
| Fuel Injector Correction Value Preset | This device control resets all injector NVC and ZFC values to the default value. This device control is to be used if the old ECM values cannot be transferred to the new ECM after replacement. |
| Fuel Pressure Regulator 1 | This device control is intended for use on a Direct Injection (DI) high pressure fuel supply system to activate the fuel pressure regulator 1 at ignition ON, engine OFF. Both the low side and high side of the regulator are controlled together. Commanding the regulator to ON will modulate the high side driver to a calibratible “maximum” duty cycle. (Note: As this is an electrical circuit test, a regulator solenoid commanded to ON does not necessarily equate to the regulator state at maximum fuel pressure.) |
| Fuel Pressure Regulator 2 | This device control is intended for use on a Direct Injection (DI) high pressure fuel supply system to activate the fuel pressure regulator 2 at ignition ON, engine OFF. Both the low side and high side of the regulator are controlled together. Commanding the regulator to ON will modulate the high side driver to a calibratible “maximum” duty cycle. (Note: As this is an electrical circuit test, a regulator solenoid commanded to ON does not necessarily equate to the regulator state at maximum fuel pressure.) |
| Fuel Pump Relay | This device control is used to override the state of the fuel pump output. |
| Fuel Pump 2 Relay | This device control is used to override the state of the electric secondary transfer pump output. |
| Fuel Rail Pressure | This device control is intended for use on a Direct Injection (DI) high pressure fuel supply system to override the commanded fuel high pressure output from the powertrain controller. |
| Fuel Trim Enable | This device control is used to deactivate the Fuel Mass Observer (FMO). |
| Fuel Trim Reset | This device control is used to reset the Fuel Mass Observer data in case of a replacement. |
| Generator L-Terminal | The commanded states are ON and OFF. Selecting OFF commands the ECM to turn OFF the generator and stop generating an output voltage. |
| High Side Driver 1 | This device control is used to override the state of the Shared High Side Driver 1 output. |
| High Side Driver 2 | This device control is used to override the state of the Shared High Side Driver 2 output. |
| HO2S Heater Sensor 1 | This device control is used to override the duty cycle of the oxygen sensor heaters. |

| Parameter | Description |
|---|---|
| Intake Air Flow Valve Motor | This function increases or decreases the position of the IAF valve. |
| Intake Air Flow Valve Position | This parameter displays the actual position of the intake air flow valve. |
| Intake Manifold Runner Control Valve | This device control is used to override the state of the intake manifold runner control output. |
| Malfunction Indicator Lamp (MIL) | This device control is used to either turn the Malfunction Indicator Lamp (MIL) on or off. |
| Misfire Graphic | This device control produces a misfire graphic while the engine is running. |
| NOx Catalyst Reductant Loading Reset | This device control is used to reset the adaptive values for the SCR (Selective Catalytic Reduction) data. |
| NOx Catalyst Reset | This device control is used to reset the Selective Catalytic Reduction (SCR) data in case of a replacement. |
| NOx Sensor 1 Heater- Engine Running | This device control is used to control the duty cycle of the NOx Sensor 1 Heater with the engine running. The Duty Cycle is fixed at a predetermined value and is controlled for a predetermined amount of time. |
| NOx Sensor 1 Reset | This device control is used to reset the NOx Sensor 1 data in case of a replacement. The engine must be Off and the Ignition On. |
| NOx Sensor 2 Heater- Engine Running | This device control is used to control the duty cycle of the NOx Sensor 2 Heater with the engine running. The Duty Cycle is fixed at a predetermined value and is controlled for a predetermined amount of time. |
| NOx Sensor 2 Reset | This device control is used to reset the NOx Sensor 2 data in case of a replacement. The engine must be OFF and the Ignition ON. |
| Particulate Matter Sensor Service Regeneration | This device control is used to force a particulate matter sensor measurement cycle, consisting of a particulate sensor probe regeneration and subsequent soot accumulation measurement. The system will return to normal control after one measurement cycle is successfully completed. One full measurement cycle can take 15 minutes or more to complete depending up the particulate filter state of health. |
| Pilot Injection Balance Procedure | This device control disables each fuel injector pilot injection. Device Control can be changed at any engine or vehicle speed. The device control will not change unless changed or cancelled by the scan tool. |
| Positive Crankcase Ventilation Heater | This device control is used to turn the crankcase ventilation heater output ON or OFF. |
| Prime Fuel Pump | This device control is used to override the state of the fuel pump output. |
| Programming History | This device control is used to view the history buffer entries for the primary calibration part in the controller. |
| Reductant Fluid Quality Test | This device control is used to force a Selective Catalyst Reduction (SCR) Service Quality Check. |
| Reductant Fluid Tank Level Reset | This device control is used to Reset the Reductant Fluid Tank Level. |
| Reductant Heater 1 | This device control is used to override the state of the Reductant Heater 1. The scan tool disables the test when the following control limits are exceeded.<br>• Reductant System DTC is set.<br>• The exhaust temperature is too low.<br>• Ignition voltage is too low.<br>• Ignition voltage is too high. |
| Reductant Heater 2 | This device control is used to override the state of the Reductant Heater 2. |
| Reductant Heater 3 | This device control is used to override the state of the Reductant Heater 3. |
| Reductant Injection Quantity Test | This device control is used to inject a specific amount of reductant from the reductant injector. A system purge will be required once the test is complete. |
| Reductant Injector | This device control is used to verify functionality of the NOx Reductant Injector by allowing NOx Reductant Injector output to be commanded to a specific duty cycle. |
| Reductant Injector Reset | This device control is used to reset the Reductant Injector variables after the Injector is replaced. |
| Reductant Pump | This device control is used to verify functionality of the NOx Reductant Pump by allowing NOx Reductant Pump output to be commanded to a specific duty cycle. |

| Parameter | Description |
|---|---|
| Reductant Purge | This device control is used to purge the reductant lines of fluid. |
| Reductant Purge Valve | This device control is used to command the state of the NOx Reductant Line Purge valve. |
| Reductant System Tamper Warning Service Bay Test | This device control is used to force a SCR (Selective Catalyst Reduction) service bay test. |
| Reductant System Data Reset | This device control is used to reset the ECM data in case of a replacement. |
| Reductant System Leak Test | This device control is used to pressurize the reductant system in order to perform a visual inspection for leaks. A system purge will be required once the test is complete. |
| Reductant System Malfunction Warning Service Bay Test | This device control triggers the Selective Catalytic Reduction (SCR) Tamper Service Bay Test. |
| Reductant System Reset | This device control is used to reset the Reductant Module data in case of a replacement. |
| Remote Vehicle Start Disable History Reset | This device control is used to trigger the reset of the last eight reasons that powertrain has disabled remote vehicle start (RVS). |
| Sensor Supply Voltage Relay | This device control is used to control the sensor bus supply relay. |
| Starter Relay | This device control is used to override the state of the Starter Relay output. Fuel is disabled to prevent the engine from starting if the starter relay output is commanded On. |
| Total Fuel Consumed Reset | This device control contains the after treatment related data parameter that needs to be transferred in case of an ECM replacement. |
| Turbocharger Learn | This device control is used when the Turbocharger assembly, Vane position control solenoid valve, Vane position sensor is replaced, or repairs that disturb turbocharger components. |
| Turbocharger Vane Position | This device control adjusts the turbocharger vane position in 5 percent increments from 0–100 percent. The device control will be aborted if engine speed is above idle or if the coolant temperature is too cold. |
| Turbocharger Vane Position Actuator | This device control is used to control the duty cycle for a variable geometry turbocharger . |
| Turbocharger Vane Position Learn | This device control triggers the Variable Geometry Turbo (VGT) Actuator Learn in the event of a turbocharger or actuator replacement. |
| Turbocharger Vane Position Solenoid Valve | This device control cycles the turbocharger vane position solenoid to 100 percent boost and back to 0 percent boost. The device control is limited to engine speeds less than 1,500 RPM and will be disabled if DTC P0047 or P0048 are set. |
| Wait to Start Indicator | This device control is used to turn the Glow Plug (Wait to start) Lamp ON/OFF. |

## K20 Engine Control Module: Scan Tool Information (L8T)

### Engine Control Module Scan Tool Data

| Parameter | Value | Description |
|---|---|---|
| This is a comprehensive list. Not all parameters listed are available for all applications. **Base Operating Conditions:** Engine Idling/Radiator Hose Hot/Park or Neutral/Closed Loop | | |
| 5 V Reference 1, 2, 3, 4 or 5 | Volts | This parameter displays the voltage sensed on the 5 V reference circuits at the control module. The scan tool will display a higher value at higher voltage. The scan tool will display a lower value at lower voltage. |
| 5 V Reference 1, 2, 3, 4 or 5 Circuit Status | OK / Okay , Malfunction | This parameter will display OK / Okay if the circuit is good or Malfunction if a short to ground, short to B+ is present. |
| A/C Compressor Clutch Inhibit Reason History 1 or 2 | None | This parameter displays one of the following if an A/C Compressor Clutch Inhibit reasons is detected. High Side Fluid Pressure, Engine Speed, Battery Voltage, Engine Stall, Engine Speed Stabilization, Wide Open Throttle, Vehicle Launch Performance, High Coolant Temperature, AC Relay Fault, Hybrid Request, AutoStop Request, High Power Electronics Coolant Temperature, High Transmission Fluid Temperature, Full Pedal Power Limit Applied, Airbag deployed, Battery Power Limit Exceeded, Powertrain Diagnostics, AC Compressor Fault, Serial Communication Fault, or Low Brake Vacuum. |

| Parameter | Value | Description |
|---|---|---|
| A/C Compressor Clutch Relay Command | Off | This parameter displays when the A/C Compressor Clutch relay is commanded ON or OFF. |
| A/C Compressor Clutch Relay Control Circuit High Voltage Test Status | OK / Okay , Malfunction, Not Run | This parameter displays the status of the relay control circuit. It can display OK / Okay, Malfunction or Not Run. |
| A/C Compressor Clutch Relay Control Circuit Low Voltage Test Status | OK / Okay , Malfunction, Not Run | This parameter displays the status of the relay control circuit. It can display OK / Okay, Malfunction or Not Run. |
| A/C Compressor Clutch Relay Control Circuit Open Test Status | OK / Okay , Malfunction, Not Run | This parameter displays the status of the relay control circuit. It can display OK / Okay, Malfunction or Not Run. |
| A/C Disabled – A/C Pressure Out of Range | No | This parameter displays whether the A/C pressure is out of range for normal operation as determined by the control module. |
| A/C Disengage 1–8 History | Reason for A/C Disengagement | The parameter displays reason for the last 8 air conditioning (A/C) compressor disengagements in order from 1 to 8 with 8 being the most recent. There are 8 possible causes for the A/C compressor to disengage. |
| A/C High Side Pressure Sensor | Volts* | This parameter displays the voltage signal from the A/C high side pressure sensor input to the control module.<br>* Varies with temperature, humidity, and altitude. |
| A/C High Side Pressure Sensor | kPa (psi)* | This parameter displays the pressure from the A/C high side pressure sensor signal circuit to the control module.<br>* Varies with temperature, humidity, and altitude. |
| A/C OFF for WOT | No | This parameter displays whether the control module is commanding the A/C compressor clutch relay OFF for wide open throttle (WOT). |
| A/C Request Signal | No | This parameter displays the state of the A/C request input to the control module from the heating, ventilation, and air conditioning (HVAC) controls. |
| Accelerator Pedal Position | % | This parameter displays the angle of the accelerator pedal position (APP) as calculated by the control module using the signals from the APP sensors. |
| Accelerator Pedal Position When Engine Overspeed Detected | % | This parameter displays the accelerator pedal position (APP) observed upon initial detection of an overspeed condition. This value will be updated upon each overspeed condition. |
| Active Grille Air Shutter Ambient Air Temperature | ºC (ºF) | This parameter displays the temperature detected and used by the Active Air Shutter system. |
| Active Grille Air Shutter Control | Active / Inactive | This parameter indicates if the Active Grille Air Shutter Control is Active or Inactive. |
| Active Grille Air Shutter Control Status | ON/OFF | This parameter displays the control status of the active air shutter. |
| Active Grille Air Shutter Desired Position Achieved | Yes / No | This parameter indicates if the Active Grille Air Shutter Desired Position is Achieved. |
| Active Grille Air Shutter Diagnostic Control | Active / Inactive | This parameter indicates if the control system is attempting to move the Active Grille Air Shutter for diagnostic purposes. Displays Active or Inactive. |
| Active Grille Air Shutter Ice Protection Mode | Active / Inactive | This parameter indicates whether or not the Shutter control algorithm is in Ice Mode, which attempts to park the shutter and prohibit further operation. Displays Active or Inactive. |
| Active Grille Air Shutter Initialization Status | Complete / Incomplete | This parameter displays the initialization status of the Active Grille Air Shutter. |
| Active Grille Air Shutter Position | % | This parameter displays the position of the active grill air shutter. 0% = fully closed, 100% = fully open. |
| Active Grille Air Shutter Status | Moving / Stationary | This parameter indicates if the Active Grille Air Shutter is Moving or Stationary. |

| Parameter | Value | Description |
|---|---|---|
| Active Grille Air Shutter Supply Voltage | Volts | This parameter indicates the Active Grille Air Shutter Supply Voltage. |
| Active Grille Air Shutter Torque Command | Counts | This parameter displays the commanded torque level for the active air shutter. 0 = Nominal Torque. |
| Air/Fuel Equivalence Ratio Command | Varies | This parameter should display 1.0 when in Closed Loop fuel control. |
| Alternative Fuel Injector 1, 2, 3, 4, 5, 6, 7 or 8 Command | On / Off | This parameter contains the commanded state of the alternative fuel injector 1 output (the output is considered to be commanded on if the injector is enabled while the engine is running or cranking). |
| Alternative Fuel Injector 1 Control Circuit High Voltage Test Status | OK / Okay, Malfunction, Not Run | This parameter displays the state of the Alternative Fuel Injector 1 control circuit. The parameter displays Malfunction if the Alternative Fuel Injector 1 control circuit is shorted to voltage. |
| Alternative Fuel Injector 1 Control Circuit Low Voltage Test Status | OK / Okay , Malfunction, Not Run | This parameter displays the state of the Alternative Fuel Injector 1 control circuit. The parameter displays Malfunction if the Alternative Fuel Injector 1 control circuit is shorted to ground. |
| Alternative Fuel Injector Pulse Width Bank 1 | ms | This parameter displays the alternative fuel injector pulse width (on time) commanded to each cylinder on bank 1. |
| Alternative Fuel Injector Pulse Width Bank 2 | ms | This parameter displays the alternative fuel injector pulse width (on time) commanded to each cylinder on bank 2. |
| Alternative Fuel Rail Pressure | kPa / psi | This parameter displays the fuel rail pressure calculated as the difference between alternative fuel rail absolute pressure and ambient air pressure (barometric pressure). This measurement is a "gauge pressure." (Gauge = Absolute − Ambient) Range 0 to 2048 kPa. |
| Alternative Fuel Rail Pressure | Volts | This parameter displays the alternative fuel rail pressure sensor analog input as a percentage of its reference voltage. |
| Alternative Fuel Rail Pressure Sensor | kPa | This parameter displays an ‘undefaulted’ fuel rail pressure relative to manifold vacuum. This is intended for gaseous fuel injection alternative fuel applications (CNG/LPG Mono-Fuel and Bi-Fuel). |
| Alternative Fuel Rail Temperature | °C (°F) | This parameter displays the undefaulted alternative fuel rail temperature measured by a sensor. Range is −40 to 215°C. |
| Alternative Fuel Shutoff Valve 1 or 2 Control Circuit Command | On / Off | This parameter displays the commanded state of the alternative fuel shutoff valve 1 output (the output is considered to be commanded on if the shutoff valve is enabled while the engine is running or cranking). |
| Alternative Fuel Shutoff Valve 1 or 2 Control Circuit High Voltage Test Status | OK / Okay, Malfunction, Not Run | This parameter displays the state of the Alternative Fuel Shutoff Valve 1 or 2 control circuit. The parameter displays Malfunction if the Alternative Fuel Shutoff Valve is shorted to voltage. |
| Alternative Fuel Tank Pressure | Volts | This parameter displays the alternative fuel tank pressure sensor analog input as a percentage of its reference voltage. |
| Ambient Air Temperature | Varies | This parameter displays temperature from the input of the Intake Air Temperature Sensor. |
| Ambient Air Temperature | °C (°F) Varies | This parameter displays the outside air temperature as calculated by the control module. |
| Ambient Air Temperature When Recommended Maximum Fuel Alcohol Content Exceeded | °C (°F) | This parameter displays the ambient air temperature when the recommended maximum fuel alcohol content was exceeded. |
| Ambient Humidity | % | This parameter displays the current ambient humidity level. |
| APP Sensor 1 | Volts | This parameter displays the actual voltage on the accelerator pedal position (APP) sensor 1 signal circuit as measured by the control module. |

| Parameter | Value | Description |
|---|---|---|
| APP Sensor 1 and 2 | Agree | This parameter displays Disagree if the control module detects the signal voltage from APP sensor 1 is not in correct relationship to APP sensor 2. The scan tool displays Agree under the normal operating conditions. |
| APP Sensor 1 Circuit Status | OK / Okay | APP Sensor 1 Out of Range indicates that the sensed accelerator pedal position 1 sensor value is currently out of range or that a Malfunction has been detected based upon the sensed accelerator pedal position 1 sensor value being out of range |
| APP Sensor 1 Learned Applied Position | % | This parameter contains the learned maximum (fully applied) accelerator pedal position relating to absolute accelerator pedal position (no correction or normalization based upon learned minimum or maximum positions) from accelerator pedal position sensor 1. |
| APP Sensor 1 Learned Released Position | Volts | This parameter indicates the accelerator pedal sensor 1 signal at its minimum learned position (pedal released) as a percentage of its reference voltage. (The minimum learned position is automatically updated periodically as determined by the calibration. |
| APP Sensor 1 Position | % | This parameter contains the displacement determined from accelerator pedal position sensor 1 (corrected and normalized based upon its learned minimum and maximum positions). |
| APP Sensor 2 | Volts | This parameter contains the accelerator pedal position sensor 2 analog input as a percentage of its reference voltage |
| APP Sensor 2 | Volts | This parameter displays the actual voltage on the accelerator pedal position (APP) sensor 2 signal circuit as measured by the control module. |
| APP Sensor 2 Circuit Status | OK / Okay | APP Sensor 2 Out of Range indicates that the sensed accelerator pedal position 2 sensor value is currently out of range or that a malfunction has been detected (and latched) based upon the sensed accelerator pedal position 2 sensor value being out of range |
| APP Sensor 2 Learned Applied Position | % | This parameter contains the learned maximum (fully applied) accelerator pedal position relating to absolute accelerator pedal position (no correction or normalization based upon learned minimum or maximum positions) from accelerator pedal position sensor 2. |
| APP Sensor 2 Learned Released Position | Volts | This parameter indicates the accelerator pedal sensor 2 signal at its minimum learned position (pedal released) as a percentage of its reference voltage. (The minimum learned position is automatically updated periodically as determined by the engine control module. |
| APP Sensor 2 Position | % | This parameter contains the displacement determined from accelerator pedal position sensor 2 (corrected and normalized based upon its learned minimum and maximum positions). |
| APP Sensors | % | This parameter contains the accelerator pedal position resulting directly from the settling of differences of the accelerator pedal position sensors (prior to any compensation to determine driver intent). |
| Autostop/Autostart Disable Mode | Active | This parameter displays “Active” when all conditions for allowing the autostop/autostart mode are present (no inhibit conditions exist), this parameter displays "Inactive" when all conditions for allowing the autostop/autostart mode are not present. |
| Autostart Inhibit Reason Autostop/Autostart Malfunction | No | This parameter displays that a immediate stop was commanded due to a Autostop/Autostart malfunction. |

| Parameter | Value | Description |
|---|---|---|
| Autostart Inhibit Reason | No | The scan tool displays Yes if one of the following Autostart Inhibit Reason is detected. Control Function Active, Crank Abort, Driver Exited Vehicle, ECM Malfunction, ECM Request, Engine Coolant Temperature Out of Range, Hood Ajar, Hybrid/EV Power Conditions, Hybrid/EV Battery Pack Contactor Open, Hybrid/EV Battery Pack Power Low, Hybrid/EV Battery Pack State of Charge Low, Hybrid/EV Battery Pack Voltage Low, Hybrid/EV Propulsion System Inactive, Not Commanded, Run/Crank Not Active, System Malfunction, Transmission Range. |
| Autostart Reason | No | This parameter displays Yes if one of the following Autostart Reason is detected. A/C Request, Acceleration Request, Accelerator Pedal Pressed, Auxiliary Transmission Fluid Pump Not Available, Brake Booster Weak Vacuum, Brake Pedal Released, Clutch Pedal Applied, Control Function Active, Drive Motor Inverter Temperature High, Drive Motor Temperature High, Driver Exited Vehicle, ECM Request, Engine Coolant Temperature Out of Range, Hood Ajar, Hybrid/EV Battery Module Voltage Low, Hybrid/EV Battery Pack Power Low, Hybrid/EV Battery Pack State of Charge Low, Hybrid/EV Battery Pack Temperature, Hybrid/EV Battery Pack Voltage Low, Hybrid/EV Propulsion System Inactive, Ignition Switch Start, Inclination, Invalid Data Received, Low Voltage Battery Discharge Current High, Low Voltage Battery State of Function Low, Low Voltage Battery State of Health Low, Low Voltage Battery Voltage Low, Maximum Autostop Time Exceeded, Minimum Engine Run Time Not met, Reduced Engine Power Active, Remote Vehicle Start Request, Stop/Start Select Switch, System Malfunction, System Optimization, System Voltage Low, TCM Demand, Tow/Haul Mode Switch ON, Transmission Fluid Temperature Out of Range, Transmission In Reverse, Transmission Range, Vehicle Speed Too High. |
| Autostop Disable Reason | No | The scan tool displays Yes if one of the following Autostop Disable Reason is detected. 12 V Start Counter Exceeded, A/C Request, Acceleration Request, Accelerator Pedal Pressed, Auxiliary Transmission Fluid Pump Not Available, Brake Booster Weak Vacuum, Brake Pedal Released, Clutch Pedal Applied, Control Function Active, Drive Motor Inverter Temperature High, Drive Motor Temperature High, ECM Request, Engine Coolant Temperature Out of range, Engine Speed High, Generator Load High, Hood Ajar Hybrid/EV Battery Module Voltage Low, Hybrid/EV Battery Pack Power Low, Hybrid/EV Battery Pack State of Charge Low, Hybrid/EV Battery Pack Temperature, Hybrid/EV Battery Pack Voltage Low, Hybrid/EV Propulsion System Inactive, Idle Boost Mode Active, Ignition Switch Start, Intake Manifold Weak Vacuum, Invalid Data Received, Low Voltage Battery Discharge Current High, Low Voltage Battery State of Charge Low, Low Voltage Battery State of Function Low, Low Voltage Battery State of Health Low, Low Voltage Battery Temperature Out of Range, Low Voltage Battery Voltage Low, Maximum Vehicle Stop Time Exceeded, Minimum Engine Run Time Not Met, Reduced Engine Power Active, Remote Vehicle Start Request, Run/ Crank Not Active, Stop/Start Select Switch, System Optimization, System Voltage Low, TCM Request, Tow/ Haul Mode Switch ON, Transmission Fluid Temperature Out of Range, Transmission in Reverse, Transmission Range, Vehicle Inclination, Vehicle Speed Threshold Not Reached, Vehicle Speed Too High, Wheel Slip Detected. |
| Auxiliary Coolant Pump Relay Command | On / Off | This parameter displays the command status of the Auxiliary Coolant Pump Relay. |
| Auxiliary Coolant Pump Relay Control Circuit High Voltage Test Status | OK / Okay , Malfunction, Not Run | This parameter displays the status of the Auxiliary Coolant Pump Relay Control Circuit High Voltage Test. Can display OK / Okay, Malfunction, or Not Run. |
| Auxiliary Coolant Pump Relay Control Circuit Low Voltage Test Status | OK / Okay, Malfunction, Not Run | This parameter displays the status of the Auxiliary Coolant Pump Relay Control Circuit Low Voltage Test. Can display OK / Okay , Malfunction, or Not Run. |

| Parameter | Value | Description |
|---|---|---|
| Auxiliary Coolant Pump Relay Control Circuit Open Test Status | OK / Okay , Malfunction, Not Run | This parameter displays the status of the Auxiliary Coolant Pump Relay Control Circuit Open Circuit Test. Can display OK / Okay , Malfunction, or Not Run. |
| Average Fuel Age | Days | This parameter displays the average fuel age in days. |
| Axle Torque | N•m | This parameter displays the Axle Torque value sent from the hybrid control processor (HCP) to the ECM and anti-lock brake system (ABS) module. |
| Axle Torque Command | N•m (lb ft) | This parameter displays the commanded Axle Torque value. |
| BARO | kPa (psi) | This parameter displays the barometric pressure. The control module uses the barometric pressure sensor input for fuel control to compensate for altitude differences. |
| BARO Sensor | Volts | This parameter displays the barometric pressure sensor voltage. |
| Barometric Pressure Sensor Bank 1 | kPa (psi) | This parameter displays the ambient air pressure. |
| Barometric Pressure Sensor Bank 2 | Volts | This parameter displays the signal voltage of the barometric pressure sensor |
| Base Model Part Number | # | This parameter displays information which is used during programming to identify unique combinations of hardware and software. |
| Battery Capacity | Ah | This parameter displays the capacity of the battery in Amp-hours. |
| Battery Sensor Module Battery State Information | Available / Not Available | This parameter indicates if Battery State Information is Available or Not Available. Battery State Information is Not Available when there is a battery drain such as a parasitic draw. |
| Battery Sensor Module Reset Occurred - Using Estimated State of Charge | Yes / No | This parameter indicates if the current battery State of Charge is estimated. This occurs when the BSM has been reset. |
| Battery State of Charge | % | This parameter displays the Battery State of Charge (SOC). SOC is a calculated value provided by an intelligent battery sensor (IBS). |
| Battery State of Health | % | This parameter displays the Battery State of Health (SOH). SOH is a calculated value provided by an intelligent battery sensor (IBS). |
| Battery Type | N/A | This parameter displays the battery type. |
| Battery Voltage | Volts | This parameter displays the battery voltage. |
| Battery Voltage High Resolution | Volts | This parameter displays the high resolution battery voltage value. |
| Boost Pressure | kPa | This parameter shows the Turbocharger boost pressure in kPa. |
| Boost Pressure Sensor | kPa | This parameter shows the Turbocharger boost pressure in kPa. |
| Boost Pressure Sensor | Volts | This parameter displays the turbocharger boost pressure sensor in voltage. |
| Brake Booster Pressure Sensor | Volts | This parameter displays the brake booster vacuum pressure analog input as a percentage of its reference voltage. |
| Brake Booster Pressure Sensor | kPa | This parameter displays the undefaulted, unfiltered brake booster vacuum pressure measured by a sensor. |
| Brake Pedal Position Circuit Signal | Closed | This parameter displays the serial data message of the brake signal from the electronic brake and traction control module (EBTCM). |
| Brake Pedal Position Circuit Signal | Released | This parameter displays the displacement of the brake pedal. |

| Parameter | Value | Description |
|---|---|---|
| Brake Pedal Position Sensor | % | This parameter displays the displacement of the brake pedal, where 0% corresponds to the brake pedal being released and 100% corresponds to the brake pedal being fully applied. |
| Brake Pedal Position Sensor | Volts | This parameter displays the brake pedal position as indicated by the analog sensor as a percentage of its reference voltage. |
| Brake Pedal Position Sensor Fully Released Learn Status | Complete | This parameter displays the brake pedal fully released learn position status. |
| Brake Pedal Position Sensor Learned Released Position | Volts | This parameter displays the position learned for the brake pedal position sensor when the brake pedal is fully released. |
| Brake Pedal Position Sensor Signal | Released | This parameter displays the serial data message of the brake position sensor signal from the electronic brake and traction control module (EBTCM). |
| Calculated Air Flow | G/S | This parameter contains the mass airflow determined from the speed density (MAP based) calculation of air mass per cylinder. |
| Calculated BARO | kPa / psi | This parameter contains an estimate of barometric pressure, used to correlate with sensed ambient air pressure in the Barometric Pressure Correlation Diagnostic. |
| Calculated Catalyst Temperature<br>or<br>Calculated Catalyst Temperature Bank 1 or Bank 2 | °C (°F) | This parameter contains the estimated catalyst temperature (as a function of engine speed, engine airflow, and fuel ethanol percentage) for use in the oxygen sensor and catalyst monitor diagnostic algorithms. |
| Calculated Engine Oil Pressure | kPa (psi) | This parameter displays the filtered value for the engine oil pressure. |
| Calculated Engine Oil Temperature | °C (°F) | This parameter displays the estimated engine oil temperature (as a function of engine coolant temperature and other parameters). |
| Calibration History Buffer | Unlocked | This parameter displays locked when the buffer has been locked against further updates due to detection of a non-production calibration. |
| Calibration Verification Number History 1–10 | # | This parameter displays the history entries for the primary calibration part in the controller. |
| Camshaft Position Active Counter | Counts | This parameter displays a rolling count of the number of primary cam position sensor pulses. |
| Camshaft Position Sensor | RPM | This parameter displays the speed of the engine as calculated by the signal from a camshaft position (CMP) sensor. This parameter will always display 0 unless a condition with the CKP sensor or CKP reluctor exists. If a CKP condition exists the control module will use a valid CMP sensor signal to determine engine speed and crank/ camshaft position. |
| Camshaft Position Signal Output Circuit High Voltage Test Status | OK / Okay , Malfunction | This parameter displays the state of the Camshaft Position Signal Output Circuit. The parameter displays Malfunction if the Camshaft Position Signal Output Circuit is shorted to voltage. |
| Camshaft Position Signal Output Circuit Low Voltage Test Status | OK / Okay , Malfunction | This parameter displays the state of the Camshaft Position Signal Output Circuit. The parameter displays Malfunction if the Camshaft Position Signal Output Circuit is shorted to ground. |
| Camshaft Position Signal Output Circuit Open Test Status | OK / Okay , Malfunction | This parameter displays the state of the Camshaft Position Signal Output Circuit. The parameter displays Malfunction if the Camshaft Position Signal Output Circuit is open. |
| Catalyst Monitor Complete | Yes/No | This parameter indicates the status of the Catalyst. The scan tool displays YES when the diagnostic is complete. And NO if the diagnostic has not run, or a malfunction is detected in the catalyst. |

| Parameter | Value | Description |
|---|---|---|
| Catalyst Monitor Complete This Ignition Cycle | Yes/No | This parameter indicates the status of the catalyst monitor diagnostic. Catalyst Monitor Test Running indicates yes or no when the catalyst monitor diagnostic is actively running a test. |
| Catalyst Monitor Enabled | Yes/No | The scan tool displays YES when the Catalyst Monitor is Enabled. If the scan tool displays NO this could indicate a malfunction in the Catalyst Monitor circuit. |
| Catalyst Monitor Enabled this Ignition Cycle | Yes/No | This parameter displays the monitor enable status during the current driving/monitoring cycle. |
| Catalyst Monitor Not At Idle Test Conditions Met | Yes/No | This parameter indicates the status of the catalyst monitor diagnostic. Catalyst Monitor Test Running indicates yes or no when the catalyst monitor diagnostic is actively running a test. |
| Catalyst Monitor Test Counter<br>or<br>Catalyst Monitor Test Counter Bank 1 or 2 | Counts | This parameter contains the number of repeated results of the catalyst monitor diagnostic test that have been performed since a code clear (used to determine if a sufficient number of tests have run to report a passing condition). |
| Catalyst Monitor Test Result<br>or<br>Catalyst Monitor Test Result Bank 1 or 2 | No Decision/Failed/Passed | This parameter indicates the status of the catalyst monitor diagnostic. Multiple tests may run before the diagnostic reports a “Pass” or “Fail” and will be tracked by Catalyst Monitor Diagnostic Test Counter. When this Parameter reports a “Pass” or “Fail”, the diagnostic is complete for the current trip and will not attempt any further tests. |
| Catalyst Monitor Test State | Active/Inactive | This parameter indicates the status of the catalyst monitor diagnostic by displaying active or inactive. This test will only run with the engine at idle. |
| Change Engine Oil Indicator Command | Off | This parameter sends a signal through the serial communication to inform the driver to change the engine oil. It is based on a calibrated amount of time. |
| Charge Air Cooler Coolant Pump Relay Command | Off | This parameter displays the commanded state of the intercooler pump relay command. |
| Charge Air Cooler Coolant Pump Relay Control Circuit High Voltage Test Status | OK / Okay , Malfunction | This parameter displays the state of the charge air cooler coolant pump control circuit. The parameter displays Malfunction if the charge air cooler coolant pump control circuit is shorted to voltage. |
| Charge Air Cooler Coolant Pump Relay Control Circuit Low Voltage Test Status | OK / Okay , Malfunction | This parameter displays the state of the charge air cooler coolant pump control circuit. The parameter displays Malfunction if the charge air cooler coolant pump control circuit is shorted to ground. |
| Charge Air Cooler Coolant Pump Relay Control Circuit Open Test Status | OK / Okay , Malfunction | This parameter displays the state of the charge air cooler coolant pump control circuit. The parameter displays Malfunction if the charge air cooler coolant pump control circuit is open. |
| Clutch Pedal Starter Inhibit Switch (If Equipped) | On | This parameter displays ON when the clutch pedal is released. |
| Clutch Pedal Switch (If Equipped) | Released | This parameter displays the state of the clutch pedal as determined by the control module from the clutch pedal switch. |
| Cold Startup | No | This parameter displays whether the engine meets the conditions for a cold startup during the present ignition cycle. The scan tool displays Yes when the conditions for a cold startup are met during the ignition cycle. The scan tool displays No when the conditions for a cold startup are not met during the present ignition cycle. Conditions for a cold startup require the coolant temperature and the intake air temperature to be below a predetermined temperature and within a certain range of each other. These conditions must occur after the engine was warmed up to a specific temperature during the previous ignition cycle. |

| Parameter | Value | Description |
|---|---|---|
| Component Monitor Complete | Yes/No | This parameter displays Yes when the Component Monitor is Complete. The engine control module looks at many input and output components to make this determination. If a malfunction is detected the scan tool will display No. |
| Component Monitor Enabled | Yes/No | This parameter displays Yes when Component Monitor is Enabled. And No when it is not Enabled. |
| Component Monitor - This Ignition Cycle | Disabled, Enabled, Complete | This parameter displays the status of the Component Monitor during this ignition cycle. Can display Disabled, Enabled, or Complete. |
| Cooling Fan Command | % | This parameter displays the amount of fan power commanded as a percentage of the total fan power available. |
| Cooling Fan Motor Command | % | This parameter displays the commanded duty cycle for the cooling fan. |
| Cooling Fan Control Circuit High Voltage Test Status | OK / Okay , Malfunction, Not Run | This parameter displays the status of the Cooling Fan Control Circuit High Voltage Test. Can display OK / Okay , Malfunction, or Not Run. |
| Cooling Fan Control Circuit Low Voltage Test Status | OK / Okay , Malfunction, Not Run | This parameter displays the status of the Cooling Fan Control Circuit Low Voltage Test. Can display OK / Okay , Malfunction, or Not Run. |
| Cooling Fan Control Circuit Open Test Status | OK / Okay , Malfunction, Not Run | This parameter displays the status of the Cooling Fan Control Circuit Open Circuit Test. Can display OK / Okay , Malfunction, or Not Run. |
| Cooling Fan Relay 1 Command | On | This parameter displays the commanded state of the fan relay 1 control circuit. The cooling fan relay 1 should be ON when the scan tool indicates the FC Relay 1 Command is ON. The cooling fan relay 1 should be OFF when the scan tool indicates the FC Relay 1` Command is OFF. |
| Cooling Fan Relays 2 and 3 Command | On | This parameter displays the commanded state of the fan relay 2 output. |
| Cooling Fan Relay 1 Control Circuit Open Test Status | OK / Okay , Malfunction | This parameter displays the state of the cooling fan relay control circuit. The parameter displays Malfunction if the cooling fan relay control circuit is open. |
| Cooling Fan Relay 1, or 2 and 3 Control Circuit High Voltage Test Status | OK / Okay , Malfunction | This parameter displays the state of the cooling fan relay control circuit. The parameter displays Malfunction if the cooling fan relay control circuit is shorted to voltage. |
| Cooling Fan Relay 1, or 2 and 3 Control Circuit Low Voltage Test Status | OK / Okay , Malfunction | This parameter displays the state of the cooling fan relay control circuit. The parameter displays Malfunction if the cooling fan relay control circuit is shorted to ground. |
| Cooling Fan Solenoid Valve Command | % | This parameter displays the commanded duty cycle for the PWM fan system. |
| Cooling Fan Speed | Varies | This parameter displays the current state of the cooling fan speed. (For example OFF, Low, Medium, or High) rather than rotational speed. |
| CPP Learn Status | Learned | This parameter displays the status of the procedure used to learn the clutch pedal fully applied position. |
| CPP Learned Apply Position | Volts | This parameter displays the position learned for the clutch pedal position sensor when the clutch pedal is fully applied during the associated learn procedure. |
| CPP Learned Release Position | Volts | This parameter displays the position learned for the clutch pedal position sensor when the clutch pedal is released. |
| CPP Sensor | Volts | This parameter displays the clutch pedal position sensor analog input as a voltage. |
| CPP Sensor | % | This parameter displays the displacement of the clutch pedal (corrected and normalized based upon its learned released and fully applied positions), where 0% corresponds to the clutch pedal being released and 100% corresponds to the clutch pedal being fully applied. |

| Parameter | Value | Description |
|---|---|---|
| Crank Request Signal | No / Yes | This parameter displays whether the ignition switch has been cycled to the crank position requesting the control module to activate the starter relay. |
| Crankshaft Position Active Counter | Counts | This parameter displays an incrementing counter when the control module receives a signal from the crankshaft position sensor (CKP). |
| Crankshaft Position Learned Apply Position | Volts | This parameter displays the position learned for the clutch pedal position (CPP) sensor when the clutch pedal is fully applied during the associated learn procedure. |
| Crankshaft Position Learned Release Position | Volts | This parameter displays the position learned for the clutch pedal position sensor when the clutch pedal is released. |
| Crankshaft Position Resync Counter | Counts | This parameter displays the number of times the control module has to resynchronize with the CKP sensor. The parameter will begin to increment if the control module does not detect a CKP reference pulse. The parameter will reset to 0 after the ignition is switched OFF. |
| Crankshaft Position Sensor | RPM | This parameter displays engine speed. |
| Crankshaft Position Signal Output Circuit High Voltage Test Status | OK / Okay , Malfunction | This parameter displays the state of the crankshaft position signal output circuit. The parameter displays Malfunction if the crankshaft position signal output circuit is shorted to voltage. |
| Crankshaft Position Signal Output Circuit Low Voltage Test Status | OK / Okay , Malfunction | This parameter displays the state of the crankshaft position signal output circuit. The parameter displays Malfunction if the crankshaft position signal output circuit is shorted to ground. |
| Crankshaft Position Signal Output Circuit Open Test Status | OK / Okay , Malfunction | This parameter displays the state of the crankshaft position signal output circuit. The parameter displays Malfunction if the crankshaft position signal output circuit is open. |
| Crankshaft Position Variation Learn | Not Learned | This parameter displays if the crank angle learned this key cycle. |
| Crankshaft Position Variation Learn Attempts | Counts | This parameter displays the number of attempts to learn the crank angle sensing error (CASE) during current key cycle. |
| Crankshaft Position Variation Learn Crank Pulse to Cylinder Count | Counts | This parameter displays the number of attempts to learn the crank angle sensing error (CASE) during the current key cycle. |
| Crankshaft Position Variation Learn Crank Pulse to Cylinder Count | Agree | This parameters displays the number of crank pulses observed over an engine cycle did not equal the number of cylinders for the engine at some point during the CASE learn cycle. |
| Crankshaft Position Variation Learn Cylinder Compensation Factors | In Range / Out Of Range | This parameter indicates if one or more compensation factors calculated for individual cylinders is out of range. |
| Crankshaft Position Variation Learn Data Collected | Sufficient / Insufficient | This parameter indicates if the CASE learn algorighm has collected sufficient data. |
| Crankshaft Position Variation Learn Opposing Cylinder Compensation Factors | In Range / Out Of Range | This parameter indicates if the difference in the compensation factors calculated for one or more pairs of opposing cylinders is out of range. |
| Crankshaft Position Variation Learn Reluctor Ring Tooth Spacing Factors | In Range / Out Of Range | This parameter indicates if one or more of the compensation factors calculated for the individual tooth spacing is out of range. |
| Crankshaft Position Variation Learn Required Engine Speed | In Range | This parameter displays that the engine speed required to complete the CASE learn process has not been achieved. |
| Crankshaft Position Variation Learn Status | Complete | This parameter displays the status of the crank angle sensing error (CASE) learn algorithm. |
| Crankshaft Position Variation Learn Sum of Cylinder Compensation Factors | In Range / Out Of Range | This parameter indicates if the sum of the compensation factors calculated for the individual cylinders is too large. |

| Parameter | Value | Description |
|---|---|---|
| Cruise Control | Active | This parameter displays the status of the cruise control system as determined by the control module. |
| Cruise Control Acceleration Switch | Active, Inactive, Invalid | This parameter Indicates the state of the cruise control speed ACCEL switch. This signal is based upon the state of the cruise control speed ACCEL switch received over serial communication from the platform electronics. |
| Cruise Control Cancel Switch | Inactive | This parameter displays the status of the cruise control cancel switch. |
| Cruise Control Switch 2 | N/A | This parameter indicates the state of the secondary Cruise Control Switch. |
| Cruise Control Disengage 1-8 History | Reason for Cruise Disengagement | The parameter displays the last 8 cruise control disengages in order from 1 to 8, with 8 being the most recent. There are approximately 30 possible causes for the cruise control to disengage. |
| Cruise Control Inhibit Reason | Off | The parameter displays the reason the cruise control system cannot engage. |
| | Park/Neutral | |
| Cruise Control ON/OFF Switch | On | The engine control module (ECM) monitors the signal circuit of the cruise control switch. A closed switch is displayed as ON. |
| Cruise Control Resume/ Accelerator Switch | On | The scan tool displays ON, when the cruise ON/OFF switch is ON and the resume/accel (+) button is pressed, the ECM detects a predetermined voltage value for the resume/ accel. switch. |
| Cruise Control Set/Coast Switch | On | The scan tool displays ON, when the cruise ON/OFF switch is ON and the ECM detects a predetermined voltage value for the set/coast (−) switch. |
| Cruise Control Switch | Inactive | The engine control module (ECM) monitors the signal circuit of the cruise control switch. A closed switch is displayed as Active. |
| Current Fuel Type | Varies | This parameter displays the current fuel type such as Not available, Gasoline/petrol, Methanol, Ethanol, Diesel, Liquefied Petroleum Gas, Compressed Natural Gas, Propane, Battery/electric, Bi-fuel, or Hybrid. |
| Current Gear | P/N | This parameter displays the transmission gear commanded by the transmission control module. |
| | Reverse/1st-5th | |
| Current Gear When Engine Overspeed Detected | Varies | This parameter displays the transmission actual gear observed upon initial detection of an overspeed condition. |
| Cycles of Misfire Data | counts | This parameter displays the number of cylinder firing events recorded by the control module. |
| Cylinder Deactivation Disable History 1-8 | — | This parameter displays one of the last eight reasons for the reactivation of all engine cylinders. |

| Parameter | Value | Description |
|---|---|---|
| Cylinder Deactivation Inhibit | Yes / No | A/C Compressor Clutch On, Acceleration Request, APP High, APP Rate High, Axle Torque Limiting, Brake Booster Pressure Sensor DTC, Brake Booster Weak Vacuum, Calculated Torque, Camshaft Position Actuator DTC, Camshaft Position Sensor DTC, Catalyst Overtemperature Protection, Catalyst Temperature Low, Crankshaft Position Sensor DTC, Cylinder Deactivation Solenoid Valve DTC, Cylinder Deactivation System DTC, Deceleration Fuel Cut-Off, ECT, ECT Sensor DTC, Engine Controls Ignition Relay DTC, Engine Oil Pressure, Engine Oil Pressure Control Solenoid Valve Stuck Off, Engine Oil Pressure Control Test Active, Engine Oil Pressure Sensor DTC, Engine Oil Temperature, Engine Overtemperature Protection, Engine Speed, Engine Stall Prevention, Exiting Deceleration Fuel Cut-Off, Fuel Trim Cylinder Balance DTC, Heater Performance, HO2S 2 Test, Hot Coolant Mode, IAT Sensor DTC, Ignition Voltage, Injector Stable Time, Insufficient Torque Capacity, Intake Manifold Weak Vacuum, MAP Sensor DTC, Maximum Deactivation Time Exceeded, Maximum Throttle Exceeded, Minimum Time After TAC DTC, Minimum Time On All Cylinders, Misfire DTC, Oil Aeration, Panic Brake Assist Active, Piston Protection, RPM Limit, Scan Tool Override, TAC System DTC, Torque Reduction, Transmission Gear, Transmission Range, Transmission Shifting, Vehicle Speed Too Low, VSS DTC |
| Cylinder Deactivation Performance Test | OK / Okay, Malfunction | This parameter indicates if one or more cylinders failed to deactivate when commanded. |
| Cylinder Deactivation System Command | All Cylinder / Cylinder Deactivation | This parameter indicates the status of the Cylinder Deactivation System Command. |
| Cylinder 1,2,3,4,5,6,7,8 Current Misfire Counter | Counts | The scan tool displays a range of 0–255 counts. This parameter displays the number of misfires that have been detected during the last 255 cylinder firing events. The counters may normally display some activity, but the activity should be nearly equal for all of the cylinders, and in low numbers. |
| Cylinder 1–4 Exhaust Camshaft Profile Sleeve Position | Fixed Lift / Low Lift / High Lift / Cylinder Deactivation / Undetermined | The scan tool displays the position of the Exhaust Camshaft Profile Sleeve as commanded by the control module. |
| Cylinder 1,2,3,4,5,6,7, or 8 History Misfire Counter | Counts | The scan tool displays a range of 0–65,535 counts. The misfire history counters display the total level of misfire that has been detected on each cylinder. The misfire history counters will not update or show any activity until a misfire DTC P0300 has become active. The misfire history counters will update every 255 cylinder firing events. |
| Cylinder 1, 2, 3, 4, 5, 6, 7 or 8 Injector Control Circuit High Voltage Test Status | OK / Okay , Malfunction | This parameter displays the state of the injector control circuit. The parameter displays Malfunction if the injector control circuit is shorted to voltage. |
| Cylinder 1, 2, 3, 4, 5, 6, 7 or 8 Injector Control Circuit Low Voltage Test Status | OK / Okay , Malfunction | This parameter displays the state of the injector control circuit. The parameter displays Malfunction if the injector control circuit is shorted to ground. |
| Cylinder 1, 2, 3, 4, 5, 6, 7 or 8 Injector Control Circuit Open Test Status | OK / Okay , Malfunction | This parameter displays the state of the injector control circuit. The parameter displays Malfunction if the injector control circuit is open. |
| Cylinder 1, 2, 3, 4, 5, 6, 7 or 8 Injector Flow Identifier | OK / Okay | This parameter displays the End of Line Injector Adjustment (EIA) for the fuel injector. This value shall be used by the ECM for adjustment to actual fuel injected quantity compared to nominal for the injector. |
| Cylinder 1-6 Injector Control Circuit Status | OK / Okay | This parameter displays the state of the fuel injector control circuit. |
| Cylinder 1-6 Injector Disabled Misfire Detected | No | This parameter displays the injector that has been disabled by the misfire catalyst converter protection calibration. |
| Cylinder 1–4 Intake Camshaft Profile Sleeve Position | Fixed Lift / Low Lift / High Lift / Cylinder Deactivation / Undetermined | The scan tool displays the position of the IntakeCamshaft Profile Sleeve as commanded by the control module. |

| Parameter | Value | Description |
|---|---|---|
| Cylinder 1–6 Knock Detected | No | This parameter displays yes if a knock has been detected in an individual cylinder. |
| DC/DC Converter Ignition 1 Signal | On / Off | This parameter indicates if the DC/DC Converter Ignition 1 Signal is On or Off. |
| DC/DC Converter Output Voltage 1 Variance - Engine Cranking | Volts | This parameter indicates the DC/DC Converter Output Voltage 1 Variance with the engine cranking. |
| DC/DC Converter Output Voltage 1 Variance - Engine Running / Off | Volts | This parameter indicates the DC/DC Converter Output Voltage 1 Variance with the engine running or Off. |
| DC/DC Converter Output Voltage 2 Variance - Engine Cranking | Volts | This parameter indicates the DC/DC Converter Output Voltage 2 Variance with the engine cranking. |
| DC/DC Converter Output Voltage 2 Variance - Engine Running / Off | Volts | This parameter indicates the DC/DC Converter Output Voltage 2 Variance with the engine running or Off. |
| DC/DC Converter Output Voltage Sensor Circuit 1 | Volts | This parameter measures voltage at the DC/DC Converter Output Voltage Sensor Circuit 1. |
| DC/DC Converter Output Voltage Sensor Circuit 2 | Volts | This parameter measures voltage at the DC/DC Converter Output Voltage Sensor Circuit 2. |
| Deceleration Fuel Cut-Off | Inactive | This parameter displays the status of the operating mode of the control module used to turn OFF the fuel injectors and the EVAP canister purge valve during certain deceleration conditions. |
| Desired Active Grille Air Shutter Position | % | This parameter displays the commanded position for the active grille air shutter. 0%=fully closed, 100%=fully open. |
| Desired Boost Pressure | kPa | This parameter displays the desired turbocharger boost pressure. |
| Desired Cooling Fan Speed | RPM | This parameter displays the desired fan speed. |
| Desired ECT | °C (°F) | This parameter displays the desired engine coolant temperature in degrees. |
| Desired Exhaust Camshaft Position<br>or<br>Desired Exhaust Camshaft Position Bank 1 or 2 | Degrees | This parameter displays the desired exhaust camshaft angle as commanded by the control module. |
| Desired Fuel Pressure | kPa (psi) | This parameter displays the desired fuel supply pressure. |
| Desired Fuel Rail Pressure | MPa (psi) | This parameter displays the desired Fuel Rail Pressure commanded by the control module. |
| Desired Idle Speed | RPM | This parameter displays the desired engine idle speed as commanded by the control module. The desired idle speed varies depending on engine load. |
| Desired Intake Camshaft Position<br>or<br>Desired Intake Camshaft Position Bank 1 or 2 | Degrees | This parameter displays the desired intake camshaft angle as commanded by the control module. |
| Desired Throttle Position | % | Commanded Throttle Actuator Control. |
| Distance Since DTC Cleared | km / mi | This parameter displays in kilometers or miles the distance traveled since a DTC was cleared. |
| Distance Since First Malfunction | km / mi | This parameter displays in kilometers or miles the distance traveled since a Malfunction occurred. |
| Distance Since Last Malfunction | km / mi | This parameter displays the distance accumulated since last malfunction was captured. This parameter is only meaningful within the context of a failure record or freeze frame. |

| Parameter | Value | Description |
|---|---|---|
| Distance Since Last Oil Level Warning | km / mi | This parameter displays in kilometers or miles the distance traveled since the last oil level warning Malfunction occurred. |
| Distance Since Last Oil Pressure Warning | km / mi | This parameter displays in kilometers or miles the distance traveled since the last oil pressure warning Malfunction occurred. |
| Distance Since Recommended Maximum Fuel Alcohol Content Exceeded | km / mi | This parameter displays in kilometers or miles the distance Since Recommended Maximum Fuel Alcohol Content Exceeded. |
| Distance This Driving Cycle | km / mi | This parameter displays the distance a vehicle has traveled in the current driving cycle. |
| Distance with MIL On | km / mi | This parameter displays the accumulated distance driven with the malfunction indicator lamp (MIL) on. |
| Drag Control Status | Active/Inactive | EDC Active (Drag Active) control mode is indicated when the requested torque signal is above the driver requested value while the traction control system signal input is active. |
| Driver Requested Axle Torque | N•m | This parameter displays a (desired) output value after comparing engine load as an input to the hybrid control processor and engine control module. |
| Drop-Throttle Detected while Traction Control Active | No | This parameter displays if the Drop Throttle Control Mode is active while the Traction Control System Data Control Signal input is active. |
| Drop-Throttle Status | Inactive | This parameter displays the Drop Throttle Control Mode is active when the Requested Torque Signal indicates greater than 90 percent duty cycle while the Traction Control System Data Control Signal input is active. |
| ECM Authentication Status | Valid | ECM Authentication Status indicates the result of the comparison between the last received immobilizer response and the expected response calculated into the ECM. |
| ECM Challenge Status | Valid | This parameter displays the immobilizer system status of the ECM challenge. This indicates whether the currently calculated ECM challenge is valid. |
| ECM in Immobilizer Fail Enable Mode | Yes / No | This parameter displays that a serial communication failure has been detected after the receipt of the correct VTD password. |
| ECM Odometer | km / mi | This parameter displays the odometer reading of the vehicle. |
| ECM Response Source | Ignition Switch Start | ECM Response Source indicates the source used to calculate the ECM response. |
| Economy Mode Indicator Command | Off | This parameter indicates the status of the serial data signal used to illuminate the economy mode indicator lamp. |
| ECT Sensor | °C (°F) | This parameter displays the temperature of the engine coolant based on input to the control module from the engine coolant temperature (ECT) sensor. |
| ECT vs. IAT Sensor Temperature at Last ECT vs. RCT Malfunction Detection | Agree | This parameter displays that the temperature values of the ECT and IAT sensors did not agree at the time of the most recent failure of the ECT/RCT rationality diagnostic. |
| EGR/Camshaft Position Monitor Complete | Yes/No | This parameter displays the status of the EGR/Camshaft Position Monitor. The parameter will display Yes when the EGR/Camshaft Position Monitor is complete. |
| EGR/Camshaft Position Monitor Complete This Ignition Cycle | Yes/No | This parameter displays Yes or No of the completion status during the current driving/monitoring cycle of emission related monitors. |
| EGR/Camshaft Position Monitor Enabled | Yes/No | This parameter displays the status of the EGR/Camshaft Position Monitor. The parameter will display Yes when the EGR/Camshaft Position Monitor is Enabled. |

| Parameter | Value | Description |
|---|---|---|
| EGR/Camshaft Position Monitor Enabled This Ignition Cycle | Yes/No | This parameter displays Yes or No of the completion status during the current driving/monitoring cycle of emission related monitors. |
| Electric Power Management Inhibit Reason | None | This parameter displays the reason for the source of the Regulated Voltage Control (RVC) override command. RVC lowers system operating voltage to reduce system electrical load and improve fuel economy performance. The following is a list of possible reasons:<br>• None<br>• Control Function<br>• Active/Fuel System<br>• On-board Diagnostic System<br>• Air Flow Measurement System<br>• Cylinder Deactivation System<br>• System Transmission Control Module |
| End Model Part Number | # | This parameter identifies the part number that represents the combination of hardware, software, and calibrations present in the ECU. |
| Engine Autostopped | No | This parameter displays the status of the internal combustion engine (ICE) in vehicles incorporating ICE autostart/stop functionality. |
| Engine Calibration Part Number History 1-10 | # | This parameter displays the engine calibration part number history. |
| Engine Calibration Part Number History 1-10 Counter | # | This parameter displays the number of times the engine controller had been calibrated. |
| Engine Controls Ignition Relay Command | Off | This parameter displays the state of the control circuit for control module power relay as commanded by the control module. |
| Engine Controls Ignition Relay Control Circuit High Voltage Test Status | OK / Okay , Malfunction | This parameter displays the state of the Engine Controls Ignition Relay control circuit. The parameter displays Malfunction if the Engine Controls Ignition Relay control circuit is shorted to voltage. |
| Engine Controls Ignition Relay Controls Circuit Low Voltage Test Status | OK / Okay , Malfunction | This parameter displays the state of the Engine Controls Ignition Relay control circuit. The parameter displays Malfunction if the Engine Controls Ignition Relay control circuit is shorted to ground. |
| Engine Controls Ignition Relay Controls Circuit Open Test Status | OK / Okay , Malfunction | This parameter displays the state of the Engine Controls Ignition Relay control circuit. The parameter displays Malfunction if the Engine Controls Ignition Relay control circuit is open. |
| Engine Controls Ignition Relay Feedback 2 Signal | Volts | This parameter indicates the signal voltage from the second input to the controller from the powertrain relay. |
| Engine Controls Ignition Relay Feedback 3 Signal | Volts | This parameter indicates the signal voltage from the third input to the controller from the powertrain relay. |
| Engine Controls Ignition Relay Feedback Signal | Volts | This parameter displays the voltage available at the engine controls ignition relay terminal of the engine control module. |
| Engine Coolant Pump Clutch Relay Command | Flow / No Flow | This parameter displays the commanded state of the engine coolant pump clutch. |
| Engine Coolant Thermostat Heater Command | % | This parameter displays the commanded duty cycle for the engine coolant thermostat. |
| Engine Coolant Thermostat Heater Control Circuit High Voltage Test Status | OK / Okay , Malfunction | This parameter displays the state of the engine coolant thermostat heater control circuit. The parameter displays Malfunction if the engine coolant thermostat heater control circuit is shorted to voltage. |

| Parameter | Value | Description |
|---|---|---|
| Engine Coolant Thermostat Heater Control Circuit Low Voltage Test Status | OK / Okay , Malfunction | This parameter displays the state of the engine coolant thermostat heater control circuit. The parameter displays Malfunction if the engine coolant thermostat heater control circuit is shorted to ground. |
| Engine Coolant Thermostat Heater Control Circuit Open Test Status | OK / Okay , Malfunction | This parameter displays the state of the engine coolant thermostat heater control circuit. The parameter displays Malfunction if the engine coolant thermostat heater control circuit is open. |
| Engine Crank Command | Yes / No | This parameter indicates if the engine is being commanded to crank or not. |
| Engine Crank Time | Seconds – Varies | This parameter indicates the time between the start of engine cranking to when the engine reaches an operating RPM. |
| Engine Load | % | This parameter displays the calculated engine load in percent based on inputs to the control module from various engine sensors. |
| Engine Load During Misfire History 1-10 | % | This parameter displays the engine load during the last misfire event. |
| Engine Off | No | This parameter displays the status of the internal combustion engine (ICE) in vehicles incorporating ICE autostop/autostart functionality. |
| Engine OFF Time | Seconds – Varies | This parameter displays the amount of time that has elapsed since the engine was last cycled OFF. |
| Engine Oil Absolute Pressure Sensor | kPa / psi | This parameter displays the undefaulted, unfiltered measured engine oil pressure read by an oil absolute pressure sensor. |
| Engine Oil Level Switch | OK / Okay , Low | This parameter displays the status of the engine oil level switch as determined by the control module. The control module uses this information to turn on the low engine oil lamp if the engine oil level remains approximately 1 quart low for a sufficient amount of time. The scan tool will display Low when the engine oil level is low. The scan tool will display OK / Okay when the engine oil level is correct. |
| Engine Oil Life Remaining | % | This parameter displays the percent of engine oil life remaining. The controller calculates the engine oil life by monitoring engine load, coolant temperature, and engine speed. |
| Engine Oil Pressure | kPa / psi | This parameter displays the actual engine oil pressure measured by a sensor. |
| Engine Oil Pressure Control Disable History 1 or 2 | — | This parameter indicates one of the last two reasons that powertrain has disengaged oil control. |
| Engine Oil Pressure Control Solenoid Valve Command | High Pressure/Low Pressure | This parameter displays the commanded state of the variable displacement oil pump output. |
| Engine Oil Pressure Control Solenoid Valve Control Circuit High Voltage Test Status | OK / Okay , Malfunction | This parameter displays the state of the engine oil pressure control solenoid valve control circuit. The parameter displays Malfunction if the engine oil pressure control solenoid valve control circuit is shorted to voltage. |
| Engine Oil Pressure Control Solenoid Valve Control Circuit Low Voltage Test Status | OK / Okay , Malfunction | This parameter displays the state of the engine oil pressure control solenoid valve control circuit. The parameter displays Malfunction if the engine oil pressure control solenoid valve control circuit is shorted to ground. |
| Engine Oil Pressure Control Solenoid Valve Control Circuit Open Test Status | OK / Okay , Malfunction | This parameter displays the state of the engine oil pressure control solenoid valve control circuit. The parameter displays Malfunction if the engine oil pressure control solenoid valve control circuit is open. |
| Engine Oil Pressure Control Test Counter | Counts | This parameter displays the number of times that the Engine Oil Pressure Control test has been activated during the current key cycle. |

| Parameter | Value | Description |
|---|---|---|
| Engine Oil Pressure Control Test Inhibit History 1 or 2 | — | This parameter indicates one of the last two reasons that powertrain has inhibited oil pressure intrusive diagnostic test. |
| Engine Oil Pressure Sensor | OK / Okay | This parameter displays the engine oil pressure as determined by engine oil pressure sensor. |
| Engine Oil Pressure Switch | OK / Okay, Low | This parameter displays the status of the engine oil pressure sensor. |
| Engine Oil Temperature Sensor | C° (°F) | This parameter displays engine oil temperature as measured by a sensor connected to the ECM. |
| Engine Oil Temperature When Engine Overspeed Detected | Temperature | This parameter displays the temperature of the engine oil as determined by the control module. |
| Engine Oil Type | Conventional / Synthetic | This parameter indicates whether the engine oil type is conventional or synthetic oil. |
| Engine Overspeed | Not Present | This parameter displays if an Engine Overspeed is Present or Not Present. |
| Engine Overspeed Counter | Counts | This parameter displays the accumulated number of engine overspeed detection events. |
| Engine Run Time | 0:00:00<br>Increments when the engine is operating | This parameter displays the time elapsed since the engine was started. |
| Engine Running | No | This parameter displays the status of the internal combustion engine (ICE) in vehicles incorporating ICE autostop/autostart functionality. |
| Engine Serial Number | # | This parameter displays the engine serial number. |
| Engine Shutdown Counter – Excessive Idle Time | Counts | This parameter displays the count of engine shutdowns due to excessive idle time. |
| Engine Shutdown Counter – High Coolant Temperature | Counts | This parameter displays the count of engine shutdowns due to high coolant temperature. |
| Engine Shutdown Counter – Low Coolant Level | Counts | This parameter displays the count of engine shutdowns due to low coolant level. |
| Engine Shutdown Counter – Low Oil Level | Counts | This parameter displays the count of engine shutdowns due to low oil level. |
| Engine Speed | RPM | This parameter displays the speed of the engine crankshaft rotation from information received from the crankshaft position (CKP) sensor. If there is a CKP sensor DTC, the ECM calculates the engine speed from one of the camshaft position (CMP) sensors. |
| Engine Speed During Misfire History 1–5 | RPM | This parameter displays the last 5 engine speeds during misfire events. |
| Engine Speed When Engine Overspeed Detected | RPM | This parameter displays the engine speed observed upon initial detection of an overspeed condition. This value will be updated after each overspeed condition. |
| Engine Stalled | No | This parameter displays that the internal combustion engine has stopped running unintentionally. |
| Engine Starting | No | This parameter displays that the internal combustion engine is being started (in transition from engine OFF to engine running). |
| Engine Stopping | No | Engine Stopping indicates that the internal combustion engine is stopping (in transition from engine running to engine off, OR in transition from engine running to engine failed). |
| Engine Torque | % | This parameter indicates the current indicated torque as a percent of engine reference torque. |
| Engine Torque Command | N•m | This parameter displays the commanded predicted engine torque value, which is the torque request for the slow response air path (control of the throttle). |

| Parameter | Value | Description |
|---|---|---|
| EVAP Malfunction History | None | This parameter displays the result of the evaporative emission (EVAP) system as determined by the control module. The scan tool will display the following:<br>• None<br>• Excess Vacuum<br>• Purge Valve Leak<br>• Small Leak<br>• Weak Vacuum<br>• No Test Result |
| EVAP Monitor Complete | Yes/No | This parameter displays if the most recent evaporative emissions diagnostic test is complete. |
| EVAP Monitor Complete This Ignition Cycle | Yes/No | This parameter displays the diagnostic monitor completion status during the current driving/monitoring cycle. |
| EVAP Monitor Enabled | Yes/No | This parameter displays if the evaporative emissions diagnostic test is enabled. |
| EVAP Monitor Enabled This Ignition Cycle | Yes/No | This parameter displays the diagnostic monitor enable status during the current driving/monitoring cycle. |
| EVAP Purge Solenoid Valve Command | % | This parameter displays the commanded duty cycle for the canister purge output. |
| EVAP Purge Solenoid Valve Control Circuit High Voltage Test Status | OK / Okay , Malfunction | This parameter displays the state of the evaporative emission (EVAP) purge solenoid control circuit. The parameter displays Malfunction if the EVAP purge solenoid control circuit is shorted to voltage. |
| EVAP Purge Solenoid Valve Control Circuit Low Voltage Test Status | OK / Okay , Malfunction | This parameter displays the state of the evaporative emission (EVAP) purge solenoid control circuit. The parameter displays Malfunction if the EVAP purge solenoid control circuit is shorted to ground. |
| EVAP Purge Solenoid Valve Control Circuit Open Test Status | OK / Okay , Malfunction | This parameter displays the state of the evaporative emission (EVAP) purge solenoid control circuit. The parameter displays Malfunction if the EVAP purge solenoid control circuit is open. |
| EVAP System Fuel Tank Pressure Sensor to Fuel Tank Restriction Detected | Yes / No | This parameter indicates if the Fuel Tank Pressure Sensor detects a blockage in the fuel system. |
| EVAP Vent Solenoid Command | Not Venting | This parameter displays the state of the control circuit for evaporative emission (EVAP) vent solenoid as commanded by the control module. |
| EVAP Vent Solenoid Valve Control Circuit High Voltage Test Status | OK / Okay , Malfunction | This parameter displays the state of the EVAP vent solenoid control circuit. The parameter displays Malfunction if the EVAP vent solenoid control circuit is shorted to voltage. This parameter may not change if the scan tool is used to command the EVAP vent solenoid ON. |
| EVAP Vent Solenoid Valve Control Circuit Low Voltage Test Status | OK / Okay, Malfunction | This parameter displays the state of the EVAP vent solenoid control circuit. The parameter displays Malfunction if the EVAP vent solenoid control circuit is shorted to ground. This parameter may not change if the scan tool is used to command the EVAP vent solenoid ON. |
| EVAP Vent Solenoid Valve Control Circuit Open Test Status | OK / Okay , Malfunction | This parameter displays the state of the EVAP vent solenoid control circuit. The parameter displays Malfunction if the EVAP vent solenoid control circuit is open. This parameter may not change if the scan tool is used to command the EVAP vent solenoid ON. |
| Exhaust Camshaft Position | ° | This parameter displays the position of the exhaust camshaft in terms of degrees of camshaft rotation (retard) from the park position (a value of zero represents the park position). |

| Parameter | Value | Description |
|---|---|---|
| Exhaust Camshaft Position Active Counter or Exhaust Camshaft Position Active Counter Bank 1 or 2 | 0–255 | This parameter displays an incrementing counter when the control module receives a signal from the exhaust camshaft position (CMP) sensor. |
| Exhaust Camshaft Position Actuator Solenoid Valve Control Circuit High Voltage Test Status or Exhaust Camshaft Position Actuator Solenoid Valve Control Circuit High Voltage Test Status Bank 1 or 2 | OK / Okay , Malfunction | This parameter displays the state of the exhaust camshaft actuator solenoid control circuit. The parameter displays Malfunction if the camshaft actuator solenoid control circuit is shorted to voltage. |
| Exhaust Camshaft Position Actuator Solenoid Valve Control Circuit Low Voltage Test Status or Exhaust Camshaft Position Actuator Solenoid Valve Control Circuit Low Voltage Test Status Bank 1 or 2 | OK / Okay , Malfunction | This parameter displays the state of the exhaust camshaft actuator solenoid control circuit. The parameter displays Malfunction if the camshaft actuator solenoid control circuit is shorted to ground. |
| Exhaust Camshaft Position Actuator Solenoid Valve Control Circuit Open Test Status or Exhaust Camshaft Position Actuator Solenoid Valve Control Circuit Open Test Status Bank 1 or 2 | OK / Okay , Malfunction | This parameter displays the state of the exhaust camshaft actuator solenoid control circuit. The parameter displays Malfunction if the camshaft actuator solenoid control circuit is open. |
| Exhaust Camshaft Position or Exhaust Camshaft Position Bank 1 or 2 | Degrees | This parameter displays the actual exhaust camshaft position in degrees. |
| Exhaust Camshaft Position Command or Exhaust Camshaft Position Command Bank 1 or 2 | % | This parameter displays the on-time or duty cycle of the exhaust camshaft position (CMP) actuator solenoid valve as commanded by the control module. |
| Exhaust Camshaft Position Variance or Exhaust Camshaft Position Variance Bank 1 or 2 | Degrees | This parameter displays in degrees, the difference between the desired exhaust camshaft position and the actual exhaust camshaft position. |
| Exhaust Camshaft Profile Actuator 1–4 Command | On / Off | This parameter displays the commanded state of the Exhaust Camshaft Profile Actuator output. |
| Exhaust Camshaft Profile Actuator 1–4 Control Circuit High Voltage Test Status | OK / Okay, Malfunction, Not Run | This parameter displays the state of the Exhaust Camshaft Profile Actuator control circuit per cylinder. The parameter displays Malfunction if the Exhaust Camshaft Profile Actuator control circuit is shorted to voltage. |
| Exhaust Camshaft Profile Actuator 1–4 Control Circuit Low Voltage Test Status | OK / Okay, Malfunction, Not Run | This parameter displays the state of the Exhaust Camshaft Profile Actuator control circuit per cylinder. The parameter displays Malfunction if the Exhaust Camshaft Profile Actuator control circuit is shorted to ground. |
| Exhaust Camshaft Profile Actuator 1–4 Control Circuit Open Test Status | Okay, Malfunction, Not Run | This parameter displays the state of the Exhaust Camshaft Profile Actuator control circuit per cylinder. The parameter displays Malfunction if the Exhaust Camshaft Profile Actuator control circuit is open. |
| Exhaust Camshaft Profile Actuator Position Sensor 1–4 | % | This parameter displays the commanded duty cycle for the Exhaust Camshaft Profile Actuator. |

| Parameter | Value | Description |
|---|---|---|
| Exhaust Camshaft Profile Actuator Position Sensor 1–4 | mm | This parameter displays the commanded duty cycle for the Exhaust Camshaft Profile Actuator. |
| Exhaust Camshaft Profile Sleeve Position Sensor 1, 2 | Counts | This parameter displays the number of times that the Exhaust Camshaft Profile Sleeve test has been activated during the current key cycle. |
| Extended Travel Brake Pedal Position Signal | Released | This parameter displays the status of the Extended Travel Brake Pedal Position sensor. |
| Extended Travel Brake Pedal Switch | Released | This parameter displays the undebounced / undefaulted state of the extended travel brake switch input to the ECM |
| Filtered System Voltage | Volts | This parameter indicates the filtered voltage of the system. |
| Filtered System Voltage Prior to Engine Crank | Volts | This parameter displays the filtered system voltage just before an engine cranking event. |
| Freeze Frame DTC | # | This parameter displays the diagnostic trouble code (DTC) that caused the freeze frame to be stored. |
| Fuel Alcohol Content | % | This parameter displays the percentage of alcohol in the fuel. The value is calculated by the ECM using the fuel composition sensor input. |
| Fuel Alcohol Content When Recommended Maximum Fuel Alcohol Content Exceeded | % | This parameter displays a percentage of Fuel Alcohol Content When Recommended Maximum Fuel Alcohol Content Exceeded. |
| Fuel Composition Learn | Inactive | This parameter displays Active or Inactive. Active will be displayed if the ECM is learning the alcohol content of the fuel. |
| Fuel Composition Sensor | Hz | This parameter displays the frequency of the fuel composition sensor input. This value can be used to determine fuel composition or sensor malfunction. |
| Fuel Consumed Since Recommended Maximum Fuel Alcohol Content Exceeded | Liters | This parameter displays in Liters the Fuel Consumed Since Recommended Maximum Fuel Alcohol Content Exceeded. |
| Fuel Control Loop Status | Closed | Fuel Closed Loop Active indicates that oxygen sensor 1 of each bank is being used as feedback to adjust the amount of fuel delivered to the engine. |
| Fuel Economy | Liters per Hour | This parameter displays the instant fuel consumption rate of the engine in liters per hour. |
| Fuel Economy Mode | Inactive | This parameter indicates if the economy mode algorithm has activated economy mode. |
| Fuel Economy Mode Request | Off | This parameter indicates if the driver of the vehicle has requested economy mode by pressing the economy mode switch. |
| Fuel Economy Mode Switch | OK / Okay , Malfunction | This parameter displays the state of the fuel economy mode switch circuit. The parameter displays Malfunction if the fuel economy mode switch circuit is shorted to voltage. |
| Fuel Economy Mode Switch | OK / Okay , Malfunction | This parameter displays the state of the fuel economy mode switch circuit. The parameter displays Malfunction if the fuel economy mode switch circuit is shorted to ground. |
| Fuel Economy Mode Switch | OK / Okay , Malfunction | This parameter displays the state of the fuel economy mode switch circuit. The parameter displays Malfunction if the fuel economy mode switch circuit is open. |
| Fuel Economy Mode Switch | Volts | This parameter displays the economy mode switch reference voltage. |
| Fuel Enrichment-Hot Catalyst | Inactive | Fuel Enrichment Catalyst Protection Active indicates fuel is being added to cool the catalytic converter. |

| Parameter | Value | Description |
|---|---|---|
| Fuel Enrichment-Hot Coolant | Inactive | Hot Coolant Enrichment Active indicates that the conditions to enable hot coolant enrichment are active and that a richer than stoichiometric air/fuel ratio is being commanded in order to help cool the engine when a system malfunction is causing the engine to run at extreme temperatures. |
| Fuel Injector Driver Supply Voltage | Volts | This parameter displays the injector driver circuit boost supply voltage. |
| Fuel Level Sensor | Volts | This parameter displays the unfiltered fuel level sensor analog input for the primary fuel tank as a percentage of its reference voltage. |
| Fuel Level Sensor Left Tank (If Equipped) | Volts | This parameter displays the voltage signal received by the control module from the secondary fuel level sensor in the left side of the fuel tank. |
| Fuel Level Sensor Reference Command | % | This parameter displays the percentage of time that the power supply for the fuel level sensor is on. This percentage is minimized when the fuel has high ethanol content and is maximized when the fuel has low ethanol content. |
| Fuel Level Sensor Right Tank (If Equipped) | Volts | This parameter displays the voltage signal received by the control module from the primary fuel level sensor in the right side of the fuel tank. |
| Fuel Maintenance Mode | Active / Inactive | This parameter displays if the Fuel Maintenance Mode is currently active. |
| Fuel Maintenance Mode Counter | Counts | This parameter displays the cumulative number of fuel maintenance mode events over the life of the controller. |
| Fuel Mode Active | Gaseous, Gasoline | This parameter displays if the fuel mode algorithm has activated the alternative fuel mode. |
| Fuel Mode Driver Request | Gaseous, Gasoline | This parameter displays if the driver of the vehicle has selected one of the two specific fuel modes (alternative fuel, or petrol fuel) |
| Fuel Mode Indication On | Gaseous, Gasoline | This parameter displays the status of the signal used to illuminate the fuel mode indicator lamp. |
| Fuel Mode Indicator Lamp Command | On / Off | This parameter displays the commanded state of the fuel mode indicator lamp. |
| Fuel Mode Indicator Lamp Control Circuit High Voltage Test Status | OK / Okay , Malfunction, Not Run | This parameter displays the state of the Fuel Mode Indicator Lamp control circuit. The parameter displays Malfunction if the Fuel Mode Indicator Lamp control circuit is shorted to voltage. |
| Fuel Mode Indicator Lamp Control Circuit Low Voltage Test Status | OK / Okay, Malfunction, Not Run | This parameter displays the state of the Fuel Mode Indicator Lamp control circuit. The parameter displays Malfunction if the Fuel Mode Indicator Lamp control circuit is shorted to ground. |
| Fuel Mode Indicator Lamp Control Circuit Open Test Status | OK / Okay , Malfunction, Not Run | This parameter displays the state of the Alternative Fuel Injector 1 control circuit. The parameter displays Malfunction if the Alternative Fuel Injector 1 control circuit is open. |
| Fuel Mode Switch | mV | This parameter displays the Fuel Mode Switch circuit in voltage. |
| Fuel Mode Switch Both States Latched | True, False | This parameter displays true once both the on and off switch states are observed and will remain latched for the current ignition cycle. |
| Fuel Mode Switch State | Fault Low, On, Indeterminate, Off, Fault High | This parameter displays the raw fuel mode switch state information. |

| Parameter | Value | Description |
|---|---|---|
| Fuel Pressure Drop - Cylinder 1-8 Injector | — | This parameter contains the result of the Fuel Injector Flow Device Control (Direct and Gaseous Fuel Injected Engines). The fuel or alternative fuel rail pressure sensor value after the injection event is subtracted from the fuel rail or alternative fuel pressure sensor value before the injection event and reported as the pressure drop for the appropriate injector. |
| Fuel Pressure Regulator Control Circuit Command | On | This parameter displays the commanded state of the fuel pressure regulator 1 low side output (the output is considered to be commanded ON if the regulator is enabled while the engine is running or cranking). |
| Fuel Pressure Regulator Control Circuit Command | % | This parameter displays the commanded state of the fuel pressure regulator 1 low side output (the output is considered to be commanded ON if the regulator is enabled while the engine is running or cranking). |
| Fuel Pressure Regulator Control Circuit High Voltage Test | OK / Okay , Malfunction, Not Run | This parameter displays the status of the output driver for the fuel pressure regulator control circuit. The scan tool will display OK / Okay if the circuit is operating correctly or Not Run if a diagnosis has not been made. The scan tool will display Malfunction if there is an short to voltage in the circuit. |
| Fuel Pressure Regulator Control Circuit Low Voltage Test | OK / Okay , Malfunction, Not Run | This parameter displays the status of the output driver for the fuel pressure regulator control circuit. The scan tool will display OK / Okay if the circuit is operating correctly or Not Run if a diagnosis has not been made. The scan tool will display Malfunction if there is an short to ground in the circuit. |
| Fuel Pressure Regulator Control Circuit Open Test Status | OK / Okay , Malfunction, Not Run | This parameter displays the status of the output driver for the fuel pressure regulator control circuit. The scan tool will display OK / Okay if the circuit is operating correctly or Not Run if a diagnosis has not been made. The scan tool will display Malfunction if there is an open in the circuit. |
| Fuel Pressure Regulator High Control Circuit Command | On / Off | This parameter displays the commanded duty cycle for the fuel pressure regulator 1 solenoid output. |
| Fuel Pressure Regulator High Control Circuit High Voltage Test Status | OK / Okay , Malfunction, Not Run | This parameter displays the status of the output driver for the fuel pressure regulator high control circuit. The scan tool will display OK / Okay if the circuit is operating correctly or Not Run if a diagnosis has not been made. The scan tool will display Malfunction if there is an short to voltage in the circuit. |
| Fuel Pressure Regulator High Control Circuit Low Voltage Test Status | OK / Okay, Malfunction, Not Run | This parameter displays the status of the output driver for the fuel pressure regulator high control circuit. The scan tool will display OK / Okay if the circuit is operating correctly or Not Run if a diagnosis has not been made. The scan tool will display Malfunction if there is an short to ground in the circuit. |
| Fuel Pressure Regulator High Control Circuit Open Test Status | OK / Okay, Malfunction, Not Run | This parameter displays the status of the output driver for the fuel pressure regulator high control circuit. The scan tool will display OK / Okay if the circuit is operating correctly or Not Run if a diagnosis has not been made. The scan tool will display Malfunction if there is an open in the circuit. |
| Fuel Pressure Sensor | kPa / psi | For Port Fuel Injected (PFI) systems, this Parameter displays fuel rail pressure at the engine. For high pressure fuel systems, this Parameter indicates the low side fuel pressure before the high pressure pump. |
| Fuel Pressure Sensor | Volts | This parameter displays the fuel supply pressure sensor analog input as a percentage of its reference voltage. |
| Fuel Pump Enable Command | On | This parameter displays the commanded state of the fuel pump output (the output is considered to be commanded ON if its duty cycle is not zero). |

| Parameter | Value | Description |
|---|---|---|
| Fuel Pump Enable Circuit High Voltage Test Status | OK / Okay , Malfunction, Not Run | This parameter displays the status of the output driver for the fuel pump control circuit. The scan tool will display OK / Okay if the circuit is operating correctly or Not Run if a diagnosis has not been made. The scan tool will display Malfunction if there is an short to voltage in the circuit. |
| Fuel Pump Enable Circuit Low Voltage Test Status | OK / Okay, Malfunction, Not Run | This parameter displays the status of the output driver for the fuel pump control circuit. The scan tool will display OK / Okay if the circuit is operating correctly or Not Run if a diagnosis has not been made. The scan tool will display Malfunction if there is an short to ground in the circuit. |
| Fuel Pump Phase U-V-W Circuits High Voltage Test Status | OK / Okay, Malfunction, Not Run | This parameter contains the Fuel Tank Zone Module’s (FTZM) reported status short to power test |
| Fuel Pump Phase U-V-W Circuits Low Voltage Test Status | OK / Okay, Malfunction, Not Run | This parameter contains the Fuel Tank Zone Module’s (FTZM) reported status of short to ground test |
| Fuel Pump Phase U-V-W Circuits Open Test Status | OK / Okay, Malfunction, Not Run | This parameter contains the Fuel Tank Zone Module’s (FTZM) reported status of open circuit test |
| Fuel Pump Phase U-V-W Circuits Shorted Test Status | OK / Okay, Malfunction, Not Run | This parameter contains the Fuel Tank Zone Module’s (FTZM) reported status of phase-to-phase short test |
| Fuel Pump Enable Circuit Open Test Status | OK / Okay , Malfunction, Not Run | This parameter displays the status of the output driver for the fuel pump control circuit. The scan tool will display OK / Okay if the circuit is operating correctly or Not Run if a diagnosis has not been made. The scan tool will display Malfunction if there is an open in the circuit. |
| Fuel Pump Relay Control Circuit High Voltage Test Status | OK / Okay , Malfunction | This parameter displays the state of the fuel pump relay control circuit. The parameter displays Malfunction if the fuel pump relay control circuit is shorted to voltage. |
| Fuel Pump Relay Control Circuit Low Voltage Test Status | OK / Okay , Malfunction | This parameter displays the state of the fuel pump relay control circuit. The parameter displays Malfunction if the fuel pump relay control circuit is shorted to ground. |
| Fuel Pump Relay Control Circuit Open Test Status | OK / Okay, Malfunction | This parameter displays the state of the fuel pump relay control circuit. The parameter displays Malfunction if the fuel pump relay control circuit is open. |
| Fuel Pump Speed Output Circuit High Voltage Test Status | OK / Okay, Malfunction, Not Run | This parameter displays the Fuel Pump Speed Output Circuit High Voltage Test Status. Can display OK / Okay, Malfunction, or Not Run. |
| Fuel Pump Speed Output Circuit Low Voltage Test Status | OK / Okay , Malfunction, Not Run | This parameter displays the Fuel Pump Speed Output Circuit Low Voltage Test Status. Can display OK / Okay, Malfunction, or Not Run. |
| Fuel Pump Speed Output Circuit Open Test Status | OK / Okay, Malfunction, Not Run | This parameter displays the Fuel Pump Speed Output Circuit Open Circuit Test Status. Can display OK / Okay, Malfunction, or Not Run. |
| Fuel Pump Trim | % | This parameter displays the adjustments for the fuel pump duty cycle control. This is calculated by comparing the estimated fuel rail pressure to the desired fuel rail pressure. If the short term fuel pump trim consistently deviates from 0, the long term fuel pump trim is adjusted accordingly. |
| Fuel Rail Pressure Regulator Command (If Equipped) | Degrees | The scan tool displays in degrees, the Fuel Rail Pressure Regulator ON time as commanded by the control module. |
| Fuel Rail Pressure Sensor | MPa / psi | This parameter displays the high side fuel pressure after the high pressure pump. |
| Fuel Rail Pressure Sensor | Volts | This parameter displays the voltage signal received by the control module from the fuel rail pressure (FRP) sensor. |
| Fuel Rail Pressure Sensor Initial Learn | Complete | This parameter displays the if the Fuel Rail Pressure Sensor First Time Adaptation is Complete |
| Fuel Rail Pressure Sensor Learn | Active | This parameter displays the current state of the fuel rail pressure sensor learn condition. |

| Parameter | Value | Description |
| --- | --- | --- |
| Fuel Rail Pressure Sensor Learn Inhibit | No | This parameter displays the reason for the fuel rail pressure sensor learn to be inhibited. These include: Assembly Plant Mode Counter Not Programmed, Assembly Plant Suspension, Barometric Pressure Sensor DTC, Barometric Pressure Too Low, Clutch Pedal Applied, Clutch Pedal Position Sensor DTC, Desired Fuel Rail Pressure Too Low, DTC Present, Engine in Catalyst Warm-Up Mode, Engine Not Synchronized, Engine Stopped, Fuel Pressure Spike, Fuel Level Too Low, Fuel Pressure Regulator Control Circuit DTC, Fuel Pump Control Function Active, Fuel Pump is Off, Fuel Rail Pressure Control Function Active, Fuel Rail Pressure Sensor DTC, Fuel System in Open Loop Operation, Fuel Temperature Out of Range, Idle Test Failed, Injector Flow Test in Progress, Intake Air Temperature Too Low, Low Pressure Fuel System Malfunction, Low Pressure Fuel System Pressure Too Low, Minimum Engine Run Time Not Met, Minimum Normal Fuel Pressure Control Time Not Met, Minimum Run Time, Time After New Engine Mode Not Met, Minimum Time After Drive Not Met, Minimum Time for Released Accelerator Pedal Not Met, New Engine Mode, Not in Control of Idle Speed, Other Diagnostics Active, Sensor Reading Too High Test Failed, Some Cylinders Are Turned Off, Stuck Sensor Test Failed, Vehicle Speed Too High |
| Fuel Rail Pressure Sensor Learn Status | Complete | This parameter displays several signals associated with the status of the power mode and starter systems. |
| Fuel Rail Pressure Sensor Learned Value | kPa | This parameter displays the fuel rail pressure learned value at the fuel rail pressure sensor. |
| Fuel Rail Temperature Sensor 1 | ºC (ºF) | This parameter indicates the fuel rail temperature measured by the first sensor on the rail. |
| Fuel Rail Temperature Sensor 2 | ºC (ºF) | This parameter indicates the fuel rail temperature measured by the second sensor on the rail. |
| Fuel System Monitor Complete | Yes/No | This parameter displays the enable and completion status during the current driving/monitoring cycle of each continuous legislated emission related monitor and noncontinuous legislated emission related monitor. |
| Fuel System Monitor Complete This Ignition Cycle | No | This parameter displays the completion status of the fuel system monitor during the current driving / monitoring cycle. |
| Fuel System Monitor Enabled | Yes/No | This parameter displays the enable and completion status during the current driving/monitoring cycle of each continuous legislated emission related monitor and noncontinuous legislated emission related monitor. |
| Fuel System Monitor Enabled This Ignition Cycle | No | This parameter displays the enable status of the fuel system monitor during the current driving / monitoring cycle. |
| Fuel Tank Pressure Sensor | kPa / psi | This parameter displays the pressure/vacuum inside the fuel tank. A negative value indicates a vacuum, while a positive value indicates a pressure. |
| Fuel Tank Pressure Sensor | mmHg / in H2O | This parameter displays the fuel tank pressure in mmHg/in H2O at the fuel tank pressure sensor. |
| Fuel Tank Pressure Sensor | Volts | This parameter displays the voltage signal received by the control module from the fuel tank pressure (FTP) sensor. |
| Fuel Tank Rated Capacity | Varies | This parameter displays the capacity of the fuel tank in liters or gallons. The rated capacity displayed by the scan tool will varies with vehicle type. |
| Fuel Trim Cylinder Balance Test<br>or<br>Fuel Trim Cylinder Balance Test Bank 1–2 | Inactive | This parameter indicates the current state of the fuel trim cylinder balance test. |

| Parameter | Value | Description |
|---|---|---|
| Fuel Trim Cylinder Balance Test Counter<br>or<br>Fuel Trim Cylinder Balance Test Counter Bank 1-2 | Counts | This parameter displays the number of Air Fuel Imbalance Monitor tests that have been performed since a code clear or non volatile memory (NVM) reset. |
| Fuel Trim Cylinder Balance Test Status Bank 1-2 | No Result | This parameter indicates the current state of the fuel trim cylinder balance test. |
| Fuel Trim Learn | Enabled | This parameter displays Enabled when conditions are appropriate for enabling long term fuel trim corrections. This indicates that the long term fuel trim is adapting continuing amounts of short term fuel trim. If the scan tool displays Disabled, then long term fuel trim will not respond to changes in short term fuel trim. |
| Fuel Trim Learn | Enabled | This parameter displays if the fuel trim learn is enabled. |
| Fuel Trim Memory Cell | Counts 0–250 | This parameter displays long term fuel corrections that is active based upon the current operating conditions (MAP, engine speed, purge duty cycle, A/C compressor state, and transmission range). |
| Fuel Trim Memory Cell | # | This parameter displays the intake air temperature (measured by a sensor located near the throttle body) recorded at power-up (Run/Crank transition from low to high). |
| Fuel Trim System Test State | Complete | This parameter displays the current state of the fuel adjustment system diagnostic. |
| Fuel Trim System Test State | Complete | This parameter displays the state of the fuel trim system test. |
| Fuel Volatility | Varies | This parameter indicates the rate the fuel can be vaporized in the cylinder as calculated by the control module. The scan tool will display HIGH when the fuel volatility is high. The scan tool will display LOW when the fuel volatility is low. |
| Generator F  Terminal Signal | % | This parameter displays the amount of generator ON-time as commanded by the control module. The higher the percentage the greater the generator output. |
| Generator Indicator Command | On | This parameter displays On or Off associated with the status of the generator. |
| Generator L  Terminal Circuit High Voltage Test Status | OK / Okay, Malfunction | This parameter displays the state of the generator L circuit terminal. The parameter displays Malfunction if the generator L circuit is shorted to voltage. |
| Generator L  Terminal Circuit Low Voltage Test Status | OK / Okay, Malfunction | This parameter displays the state of the generator L circuit terminal. The parameter displays Malfunction if the generator L circuit is shorted to ground. |
| Generator L  Terminal Circuit Open Test Status | OK / Okay , Malfunction | This parameter displays the state of the generator L circuit terminal. The parameter displays Malfunction if the generator L circuit is open. |
| Generator L-Terminal Command | % | This parameter displays the control modules commanded state of the voltage regulator on the generator. |
| Generator L-Terminal Signal Command | On / Off | This parameter displays the commanded state of the generator L-terminal output. |
| Heated Catalyst Monitor Complete | Yes | This parameter indicates the status of the heated catalyst. The scan tool displays Yes when the diagnostic is complete. And No if the diagnostic has not ran or a malfunction is detected in the heated catalyst. |
| Heated Catalyst Monitor Enabled | Yes | This parameter indicates the status of the heated catalyst monitor diagnostic. Catalyst Monitor Test Running indicates Yes or No when the heated catalyst monitor diagnostic is actively running a test. |
| Heater Coolant Pump Relay Command | On / Off | This parameter indicates if the heater core pump relay is commanded On or Off. |

| Parameter | Value | Description |
|---|---|---|
| Heater Coolant Pump Relay Control Circuit High Voltage Test Status | OK / Okay, Malfunction, Not Run | This parameter displays the Heater Coolant Pump Relay Control Circuit High Voltage Test Status. Can display OK / Okay, Malfunction, or Not Run. |
| Heater Coolant Pump Relay Control Circuit Low Voltage Test Status | OK / Okay, Malfunction, Not Run | This parameter displays the Heater Coolant Pump Relay Control Circuit Low Voltage Test Status. Can display OK / Okay, Malfunction, or Not Run. |
| Heater Coolant Pump Relay Control Circuit Open Test Status | OK / Okay, Malfunction, Not Run | This parameter displays the Heater Coolant Pump Relay Control Circuit Open Circuit Test Status. Can display OK / Okay, Malfunction, or Not Run. |
| High Side Driver 1 Circuit High Voltage Test Status | OK / Okay, Malfunction, Not Run | This parameter displays the High Side Driver 1 Circuit High Voltage Test Status. Can display OK / Okay, Malfunction, or Not Run. |
| High Side Driver 1 Circuit Low Voltage Test Status | OK / Okay, Malfunction, Not Run | This parameter displays the High Side Driver 1 Circuit Low Voltage Test Status. Can display OK / Okay, Malfunction, or Not Run. |
| High Side Driver 1 Circuit Open Test Status | OK / Okay, Malfunction, Not Run | This parameter displays the High Side Driver 1 Circuit Open Circuit Test Status. Can display OK / Okay, Malfunction, or Not Run. |
| High Side Driver 1 Command | On / Off | This parameter indicates if the High Side Driver 1 is being commanded On or Off. |
| High Side Driver 2 Circuit High Voltage Test Status | OK / Okay, Malfunction, Not Run | This parameter displays the High Side Driver 2 Circuit High Voltage Test Status. Can display OK / Okay, Malfunction, or Not Run. |
| High Side Driver 2 Circuit Low Voltage Test Status | OK / Okay, Malfunction, Not Run | This parameter displays the High Side Driver 2 Circuit Low Voltage Test Status. Can display OK / Okay, Malfunction, or Not Run. |
| High Side Driver 2 Circuit Open Test Status | OK / Okay, Malfunction, Not Run | This parameter displays the High Side Driver 2 Circuit Open Circuit Test Status. Can display OK / Okay, Malfunction, or Not Run. |
| High Side Driver 2 Command | On / Off | This parameter indicates if the High Side Driver 2 is being commanded On or Off. |
| Hood Position | Closed, Ajar, Open, Invalid | This parameter indicates the Position of the Hood. |
| Hood Position Switch | Closed | This parameter displays the current position of the hood. |
| HO2S Sensor 1<br>or<br>HO2S Bank 1 Sensor 1 or Bank 2 Sensor 1 | Volts | This parameter displays the voltage output from the HO2S to the control module. A lower voltage indicates a lean exhaust, while a higher voltage indicates a rich exhaust. |
| HO2S Sensor 1<br>or<br>HO2S Bank 1 Sensor 1 or Bank 2 Sensor 1 | Lambda | This parameter displays the voltage output as a lambda value. When the fuel system is lean, the oxygen level will be high and the lambda signal will be high or more than 1. When the fuel system is rich, the oxygen level will be low, and the lambda signal will be low or less than 1. The ECM uses this information to maintain the correct air/fuel ratio |
| HO2S Sensor 2<br>or<br>HO2S Bank 1 Sensor 2 or Bank 2 Sensor 2 | Volts | This parameter displays the voltage output from the HO2S to the control module. A lower voltage indicates a lean exhaust, while a higher voltage indicates a rich exhaust. |
| HO2S Heater Sensor 1<br>or<br>HO2S Heater Bank 1 Sensor 1 or Bank 2 Sensor 1 | Amps | This parameter display the current feedback for the oxygen sensor heater output for sensor 1. |
| HO2S Heater Sensor 2<br>or<br>HO2S Heater Bank 1 Sensor 2 or Bank 2 Sensor 2 | Amps | This parameter display the current feedback for the oxygen sensor heater output for sensor 2. |

| Parameter | Value | Description |
|---|---|---|
| HO2S Heater Command<br>or<br>HO2S Heater Command Bank 1 or 2 Sensor 1 or 2 | Off | This parameter display the state of the HO2S heater control circuit as commanded by the control module. |
| HO2S Heater Command Bank 1 or 2 Sensor 1 or 2 Heater Command | % | This parameter displays the HO2S heater ON time in percentage, as commanded by the control module. |
| HO2S Heater Control Circuit High Voltage Test Status<br>or<br>HO2S Heater Control Circuit High Voltage Test Status Bank 1 Sensor 1 or Bank 2 Sensor 1 | OK / Okay , Malfunction | This parameter displays the state of the oxygen sensor heater control circuit. The parameter displays Malfunction if the oxygen sensor heater control circuit is shorted to voltage. |
| HO2S Heater Control Circuit High Voltage Test Status<br>or<br>HO2S Heater Control Circuit High Voltage Test Status Bank 1 Sensor 2 or Bank 2 Sensor 2 | OK / Okay , Malfunction | This parameter displays the state of the oxygen sensor heater control circuit. The parameter displays Malfunction if the oxygen sensor heater control circuit is shorted to voltage. |
| HO2S Heater Control Circuit Low Voltage Test Status<br>or<br>HO2S Heater Control Circuit Low Voltage Test Status Bank 1 Sensor 1 or Bank 2 Sensor 1 | OK / Okay, Malfunction | This parameter displays the state of the oxygen sensor heater control circuit. The parameter displays Malfunction if the oxygen sensor heater control circuit is shorted to ground. |
| HO2S Heater Control Circuit Low Voltage Test Status<br>or<br>HO2S Heater Control Circuit Low Voltage Test Status Bank 1 Sensor 2 or Bank 2 Sensor 2 | OK / Okay, Malfunction | This parameter displays the state of the oxygen sensor heater control circuit. The parameter displays Malfunction if the oxygen sensor heater control circuit is shorted to ground. |
| HO2S Heater Control Circuit Open Test Status<br>or<br>HO2S Heater Control Circuit Open Test Status Bank 1 Sensor 1 or Bank 2 Sensor 1 | OK / Okay, Malfunction | This parameter displays the state of the oxygen sensor heater control circuit. The parameter displays Malfunction if the oxygen sensor heater control circuit is open. |
| HO2S Heater Control Circuit Open Test Status<br>or<br>HO2S Heater Control Circuit Open Test Status Bank 1 Sensor 2 or Bank 2 Sensor 2 | OK / Okay, Malfunction | This parameter displays the state of the oxygen sensor heater control circuit. The parameter displays Malfunction if the oxygen sensor heater control circuit is open. |
| HO2S/Heater Monitor Complete This Ignition Cycle | Yes/No | This parameter displays the diagnostic monitor completion status during the current driving/monitoring cycle. |
| HO2S Heater Monitor Enabled | No | This parameter displays the current state of the H02S heater monitor. |
| HO2S/Heater Monitor Enabled This Ignition Cycle | Yes/No | This parameter displays the diagnostic monitor enable status during the current driving/monitoring cycle. |
| Humidity Sensor Intake Air Temperature Signal | Hz | This parameter displays the frequency of the humidity sensor’s intake air temperature (IAT) sensor input. |
| IAT Sensor 1 | °C<br>(°F) | This parameter displays the temperature of the air entering the air induction system based on input to the control module from the intake air temperature (IAT) sensor. |
| IAT Sensor 2 | Hz | This parameter displays the frequency of the humidity sensor’s intake air temperature (IAT) sensor input to the engine control module. |

| Parameter | Value | Description |
|---|---|---|
| IAT Sensor 2 | °C (°F) | This parameter displays the temperature of the air entering the engine as calculated by the control module based on the input from the intake air temperature (IAT) sensor 2. The scan tool will display a low value when the air temperature is low, and a high value when the air temperature is high. |
| IAT Sensor 3 | °C (°F) | This parameter displays the temperature of the air entering the engine as calculated by the control module based on the input from the intake air temperature (IAT) sensor 3. The scan tool will display a low value when the air temperature is low, and a high value when the air temperature is high. |
| Idle Speed Correction | RPM | This parameter displays the engine idle speed correction within a restricted range to address complaints of vehicle vibration. |
| Ignition 1 Signal | B+ | This parameter displays B+ when the control module detects a voltage at the ignition 1 input terminal. |
| Ignition Accessory Signal | On | This parameter displays On when the control module detects a voltage at the ignition accessory input terminal. |
| Ignition Coil 1,2,3,4,5,6,7, or 8 Control Circuit High Voltage Test Status | OK / Okay, Malfunction | This parameter displays the state of the Ignition control circuit. The parameter displays Malfunction if the Ignition control circuit is shorted to voltage. |
| Ignition Coil 1,2,3,4,5,6,7, or 8 Control Circuit Low Voltage Test Status | OK / Okay, Malfunction | This parameter displays the state of the Ignition control circuit. The parameter display Malfunctions if the Ignition control circuit is shorted to ground. |
| Ignition Coil 1,2,3,4,5,6,7, or 8 Control Circuit Open Test Status | OK / Okay, Malfunction | This parameter displays the state of the Ignition control circuit. The parameter displays if Malfunction the Ignition control circuit is open. |
| Ignition Coil Supply Voltage<br>or<br>Ignition Coil Supply Voltage Bank 1 or 2 | On | This parameter displays ON when voltage is supplied to the Ignition coil. |
| Ignition Cycles Since Recommended Maximum Fuel Alcohol Content Exceeded | Counts | This parameter displays the number of Ignition Cycles since Recommended Maximum Fuel Alcohol Content Exceeded. |
| Ignition Cycles with Malfunction Since 1st Malfunction | Counts | This parameter contains the number of ignition cycles with a failure reported since the first ignition cycle with a failure reported. |
| Ignition Cycles Without Completed Test Since 1st Malfunction | Counts | This parameter displays the number of ignition cycles without a pass or a failure reported since the first ignition cycle with a failure reported. |
| Ignition Cycles Without Malfunction Since Last Malfunction | Counts | This parameter displays the number of ignition cycles with a pass reported and no malfunctions reported since the first ignition cycle with a malfunction reported. |
| Ignition Cycles without Malfunction Since Last Malfunction | Counts | This parameter contains the number of ignition cycles with a pass reported and no failures reported since the first ignition cycle with a failure reported. |
| Ignition Off Time | hh:mm:ss | This parameter displays the time that the ignition has been OFF. |
| Ignition Timing | Degrees | This parameter displays the final spark advance in terms of a crankshaft angle. |
| Immobilizer Auto Learn Counter | Counts | This parameter displays the number of auto-learn cycles that have been successfully completed within the immobilizer system. |
| Immobilizer Automatic Learn Timer | h/m/s | This parameter displays the time elapsed within the current auto-learn cycle within the immobilizer system. |
| Immobilizer ECM Identifier | OK / Okay | This parameter displays that the immobilizer control module (ICM) has received the correct powertrain identifier. |

| Parameter | Value | Description |
|---|---|---|
| Immobilizer Environment Device 1-4 | OK / Okay | This parameter displays that the associated device is OK / Okay or unknown or its identification is pending to the immobilizer control module (ICM). |
| Immobilizer Fuel Disable | Inactive | This parameter displays if the vehicle is immobilized by the ECM. |
| Immobilizer Module Environment Identification | Inactive | This parameter displays that the ICM has not received the powertrain identifier or has received the wrong powertrain identifier. |
| Immobilizer Module Fuel Disable | Inactive | This parameter displays if the vehicle is immobilized by the ICM. |
| Immobilizer Module Identification | Complete | This parameter indicates that the ICM has not received the powertrain identifier or has received the wrong powertrain identifier. |
| Immobilizer Module Security Code Programmed | Yes | This parameter indicates that the ICM security code has been programmed (i.e., the immobilizer device is locked). |
| Immobilizer Password Learn | Active/Inactive | Learning Enabled indicates that learning of immobilizer code information is enabled. |
| Immobilizer Password Learn Scan Tool Delay | Active/Inactive | Scan tool Learn Delay Active indicates that the security code has been accepted but the scan tool learn delay is active and will not allow learning enabled, programming security code, or resetting security code. |
| Immobilizer Password Programmed | Yes | This parameter indicates that the ICM password has been programmed. |
| Immobilizer Post-Release Passive State | Active / Inactive | This parameter displays that the immobilizer algorithm is in the post release passive state. |
| Immobilizer Post-Release State | Active / Inactive | This parameter displays that the immobilizer algorithm is in the post release passive state. |
| Immobilizer Pre-Release State | Active / Inactive | This parameter displays that the immobilizer algorithm is in the pre release active state. |
| Immobilizer Release State | Active / Inactive | This parameter displays that the immobilizer algorithm is in the release active state. |
| Immobilizer Security Code Accepted | Yes/No | Security Code Accepted displaying Yes indicates' that the received security code is correct. |
| Immobilizer Security Code Function | Present/Not Present | This parameter indicates if the ECU supports the immobilizer security code strategy. |
| Immobilizer Security Code Lockout | Yes/No | Security Code Lockout Active indicates that the security code has not passed and lockout is active. |
| Immobilizer Security Code Lockout Active Timer | ms | This parameter displays the time elapsed since the immobilizer security code lockout has been activated either due to a battery disconnect or an incorrect immobilizer security code being entered. |
| Immobilizer Security Code Programmed | Yes/No | Security Code Programmed indicates that the security code has been programmed. |
| Immobilizer Security Code Programming Counter | Counts | This parameter displays the number of times a new immobilizer security code has been programmed through secure access. This counter can only be incremented. |
| Immobilizer Security Code Reset Counter | Counts | This parameter displays the number of times the immobilizer security code has been reset to the default value through secure access. This counter can only be incremented. |
| Immobilizer Security Information Programmed | Yes/No | This parameter displays the status of the immobilizer system. |
| Immobilizer Security Level | # | This parameter displays the current immobilizer security level. If the correct security code is entered, the security level will remain at or be reset to a level of 10. If an incorrect security code is entered, the security level will be set to a level of 9. |

| Parameter | Value | Description |
|---|---|---|
| Immobilizer Transponder Identification | Active / Inactive | This parameter displays that the transponder identification process is active within the ICM. |
| Immobilizer Transponder Key | OK / Okay | This parameter displays that the transponder key is correct for the ICM. |
| Immobilizer Transponder Key Identification | OK / Okay | This parameter displays that the transponder key identification process is active within the ICM. |
| Immobilizer System Status | Varies | This parameter displays the status of the immobilizer system, the following maybe displayed. Standby, Immobilized at Startup, Immobilized, No Response, Immobilized Negative Response, Immobilized, Incorrect Response, Post-Release State, Pre-Release State, Release State. |
| Immobilizer Valid Response Received Time | ms | This parameter displays the actual time observed for a valid immobilizer response. |
| Initialized Fuel Alcohol Content | % | This parameter displays the initialized fuel composition to be used as a starting point for the fuel composition algorithm. |
| Injector Duty Cycle<br>or<br>Injector Duty Cycle Bank 1 or 2 | ms | This parameter displays the amount of fuel injector ON time or pulse width as commanded by the control module. |
| Inspection/Maintenance Drive Cycle Complete | Yes/No | Inspection/Maintenance Drive Cycle Complete means that all required components of the standard drive cycle have completed. |
| Inspection/Maintenance Drive Cycle Idle Time Complete | Yes/No | Inspection/Maintenance Drive Cycle Idle Time Complete indicates that the engine idle time requirement is complete. |
| Inspection/Maintenance Drive Cycle Idle Timer | hh:mm:ss | This parameter displays the Inspection/Maintenance Drive Cycle Idle Timer. |
| Inspection/Maintenance Drive Cycle Propulsion System Active Time Complete | Yes/No | This parameter displays the Inspection/Maintenance Drive Cycle Propulsion System Active Time Complete. The parameter displays Yes when the Inspection/Maintenance Drive Cycle Propulsion System Active Time is Complete. |
| Inspection/Maintenance Drive Cycle Propulsion System Active Timer | hh:mm:ss | This parameter displays the total accumulated time in which the propulsion system has been active after the 1st time the engine is started. |
| Inspection/Maintenance Drive Cycle Vehicle Speed Time Complete | Yes/No | This parameter displays Yes when the Vehicle Speed Time Complete indicates that the vehicle has been above 25 mph for five minutes. |
| Inspection/Maintenance Drive Cycle Vehicle Speed Timer | hh:mm:ss | This parameter displays the total accumulated time in which the vehicle speed has been greater than 25 mph after the 1st time the engine is started. |
| Intake Air Humidity Sensor | % | This parameter displays the raw duty cycle signal from the relative humidity sensor electronics, which represents the relative humidity of the intake air. |
| Intake Camshaft Position | ° | This parameter displays the position of the intake camshaft for bank 1 in terms of degrees of camshaft rotation (advance) from the park position (a value of zero represents the park position). |
| Intake Camshaft Position Active Counter<br>or<br>Intake Camshaft Position Active Counter Bank 1 or 2 | 0–255 | This parameter displays an incrementing counter when the control module receives a signal from the intake camshaft position (CMP) sensor. |
| Intake Camshaft Position Actuator Oil Pressure | kPa | This parameter displays the oil pressure at the intake camshaft position actuator. |
| Intake Camshaft Position Actuator Oil Pressure Sensor | Volts | This parameter displays the intake camshaft position actuator pressure sensor in voltage. |

| Parameter | Value | Description |
|---|---|---|
| Intake Camshaft Position Actuator Park Lock Solenoid Valve Command Bank 1 | Locked / Unlocked | This parameter indicates if the Intake Camshaft Position Actuator Park Lock Solenoid Valve for Bank 1 is Locked or Unlocked. |
| Intake Camshaft Position Actuator Park Lock Solenoid Valve Command Bank 2 | Locked / Unlocked | This parameter indicates if the Intake Camshaft Position Actuator Park Lock Solenoid Valve for Bank 2 is Locked or Unlocked. |
| Intake Camshaft Position Actuator Park Lock Solenoid Valve Control Circuit High Voltage Test Status Bank 1 | OK / Okay, Malfunction, Not Run | This parameter displays the Intake Camshaft Position Actuator Park Lock Solenoid Valve Control Circuit High Voltage Test Status Bank 1. Can display OK / Okay, Malfunction, or Not Run. |
| Intake Camshaft Position Actuator Park Lock Solenoid Valve Control Circuit High Voltage Test Status Bank 2 | OK / Okay, Malfunction, Not Run | This parameter displays the Intake Camshaft Position Actuator Park Lock Solenoid Valve Control Circuit High Voltage Test Status Bank 2. Can display OK / Okay, Malfunction, or Not Run. |
| Intake Camshaft Position Actuator Park Lock Solenoid Valve Control Circuit Low Voltage Test Status Bank 1 | OK / Okay, Malfunction, Not Run | This parameter displays the Intake Camshaft Position Actuator Park Lock Solenoid Valve Control Circuit Low Voltage Test Status Bank 1. Can display OK / Okay, Malfunction, or Not Run. |
| Intake Camshaft Position Actuator Park Lock Solenoid Valve Control Circuit Low Voltage Test Status Bank 2 | OK / Okay, Malfunction, Not Run | This parameter displays the Intake Camshaft Position Actuator Park Lock Solenoid Valve Control Circuit Low Voltage Test Status Bank 2. Can display OK / Okay, Malfunction, or Not Run. |
| Intake Camshaft Position Actuator Park Lock Solenoid Valve Control Circuit Open Test Status Bank 1 | OK / Okay, Malfunction, Not Run | This parameter displays the Intake Camshaft Position Actuator Park Lock Solenoid Valve Control Circuit Open Circuit Test Status Bank 1. Can display OK / Okay, Malfunction, or Not Run. |
| Intake Camshaft Position Actuator Park Lock Solenoid Valve Control Circuit Open Test Status Bank 2 | OK / Okay, Malfunction, Not Run | This parameter displays the Intake Camshaft Position Actuator Park Lock Solenoid Valve Control Circuit Open Circuit Test Status Bank 2. Can display OK / Okay, Malfunction, or Not Run. |
| Intake Camshaft Position Actuator Park Lock Test Abort Reason Bank 1 | N/A | This parameter indicates the reason why the Intake Camshaft Actuator Park Lock Pin Test for Bank 1 was aborted. |
| Intake Camshaft Position Actuator Park Lock Test Abort Reason Bank 2 | N/A | This parameter indicates the reason why the Intake Camshaft Actuator Park Lock Pin Test for Bank 2 was aborted. |
| Intake Camshaft Position Actuator Park Lock Test Status Bank 1 | N/A | This parameter indicates the status of the intake camshaft actuator park lock pin test for bank 1. |
| Intake Camshaft Position Actuator Park Lock Test Status Bank 2 | N/A | This parameter indicates the status of the intake camshaft actuator park lock pin test for Bank 2. |
| Intake Camshaft Position Actuator Solenoid Valve Control Circuit High Voltage Test Status<br>or<br>Intake Camshaft Position Actuator Solenoid Valve Control Circuit High Voltage Test Status Bank 1 or 2 | OK / Okay, Malfunction | This parameter displays the state of the intake camshaft actuator solenoid control circuit. The parameter displays Malfunction if the camshaft actuator solenoid control circuit is shorted to voltage. |
| Intake Camshaft Position Actuator Solenoid Valve Control Circuit Low Voltage Test Status<br>or<br>Intake Camshaft Position Actuator Solenoid Valve Control Circuit Low Voltage Test Status Bank 1 or 2 | OK / Okay, Malfunction | This parameter displays the state of the intake camshaft actuator solenoid control circuit. The parameter displays Malfunction if the camshaft actuator solenoid control circuit is shorted to ground. |

| Parameter | Value | Description |
|---|---|---|
| Intake Camshaft Position Actuator Solenoid Valve Control Circuit Open Test Status<br>or<br>Intake Camshaft Position Actuator Solenoid Valve Control Circuit Open Test Status Bank 1 or 2 | OK / Okay, Malfunction | This parameter displays the state of the intake camshaft actuator solenoid control circuit. The parameter displays Malfunction if the camshaft actuator solenoid control circuit is open. |
| Intake Camshaft Position<br>or<br>Intake Camshaft Position Bank 1 or 2 | Degrees | This parameter displays the actual intake camshaft position in degrees. |
| Intake Camshaft Position Commanded<br>or<br>Intake Camshaft Position Commanded Bank 1 or 2 | % | This parameter displays the ON-time or duty cycle of the intake camshaft position (CMP) actuator solenoid valve as commanded by the control module. |
| Intake Camshaft Position Variance<br>or<br>Intake Camshaft Position Variance Bank 1 or 2 | Degrees | This parameter displays in degrees, the difference between the desired intake camshaft position and the actual intake camshaft position. |
| Intake Camshaft Profile Actuator 1–8 Command | On / Off | This parameter displays the commanded state of the Intake Camshaft Profile Actuator output. |
| Intake Camshaft Profile Actuator 1–8 Control Circuit High Voltage Test Status | OK / Okay, Malfunction, Not Run | This parameter displays the state of the Intake Camshaft Profile Actuator control circuit per cylinder. The parameter displays Malfunction if the Intake Camshaft Profile Actuator control circuit is shorted to voltage. |
| Intake Camshaft Profile Actuator 1–8 Control Circuit Low Voltage Test Status | OK / Okay, Malfunction, Not Run | This parameter displays the state of the Intake Camshaft Profile Actuator control circuit per cylinder. The parameter displays Malfunction if the Intake Camshaft Profile Actuator control circuit is shorted to ground. |
| Intake Camshaft Profile Actuator 1–8 Control Circuit Open Test Status | OK / Okay, Malfunction, Not Run | This parameter displays the state of the Intake Camshaft Profile Actuator control circuit per cylinder. The parameter displays Malfunction if the Intake Camshaft Profile Actuator control circuit is open. |
| Intake Camshaft Profile Actuator Position Sensor 1–4 | % | This parameter displays the commanded duty cycle for the Intake Camshaft Profile Actuator. |
| Intake Camshaft Profile Actuator Position Sensor 1–4 | mm | This parameter displays the commanded duty cycle for the Intake Camshaft Profile Actuator. |
| Intake Camshaft Profile Sleeve Position Sensor 1, 2 | Counts | This parameter displays the number of times that the Intake Camshaft Profile Sleeve test has been activated during the current key cycle. |
| Intake Manifold Pressure | kPa/psi | This parameter displays the engine intake manifold vacuum pressure calculated as the difference between ambient air pressure (barometric pressure) and intake manifold absolute pressure (MAP). |
| Intake Manifold Tuning Control Valve Control Circuit Command | On | This parameter displays the commanded state of the intake manifold tuning valve output. |
| Intake Manifold Tuning Control Valve Control Circuit High Voltage Test Status | OK / Okay, Malfunction | This parameter displays the state of the intake manifold tuning control valve control circuit. The parameter displays Malfunction if the intake manifold tuning control valve control circuit is shorted to voltage. |
| Intake Manifold Tuning Control Valve Control Circuit Low Voltage Test Status | OK / Okay, Malfunction | This parameter displays the state of the skip shift solenoid actuator control circuit. The parameter displays Malfunction if the skip shift solenoid actuator control circuit is shorted to ground. |

| Parameter | Value | Description |
|---|---|---|
| Intake Manifold Tuning Control Valve Control Circuit Open Test Status | OK / Okay , Malfunction | This parameter displays the state of the skip shift solenoid actuator control circuit. The parameter displays Malfunction if the skip shift solenoid actuator control circuit is open. |
| Intake Manifold Tuning Control Valve Feedback Signal | % | This parameter displays the duty cycle of the PWM feedback from the intake manifold tuning electronics, which represents the position of the intake manifold tuning valve. |
| Intake Manifold Tuning Control Valve Learn | Inactive | This parameter displays that the intake manifold tuning electronics are currently learning the hard stop position for the intake manifold tuning valve. |
| Intake Manifold Tuning Control Valve Position | Closed | This parameter displays whether the intake manifold tuning valve is in an open, closed, or intermediate position based upon the PWM feedback from the intake manifold tuning electronics. |
| Intake Rocker Arm Solenoid Valve 1–2 Command | Off | This parameter displays the intake rocker arm solenoid valve command ON/OFF status. |
| Intake Rocker Arm Solenoid Valve 1–2 Command | High Lift/Low Lift | This parameter displays the intake rocker arm solenoid valve command status. |
| Intake Rocker Arm Solenoid Valve 1–2 Control Circuit High Voltage Test Status | OK / Okay , Malfunction | This parameter displays the state of the intake rocker arm solenoid valve control circuit. The parameter displays Malfunction if the intake rocker arm solenoid valve circuit is shorted to voltage. |
| Intake Rocker Arm Solenoid Valve 1–2 Control Circuit Low Voltage Test Status | OK / Okay , Malfunction | This parameter displays the state of the intake rocker arm solenoid valve control circuit. The parameter displays Malfunction if the intake rocker arm solenoid valve control circuit is shorted to ground. |
| Intake Rocker Arm Solenoid Valve 1–2 Control Circuit Open Test Status | OK / Okay , Malfunction | This parameter displays the state of the intake rocker arm solenoid valve control circuit. The parameter displays Malfunction if the intake rocker arm solenoid valve control circuit is open. |
| ISS/OSS Supply Voltage | OK / Okay , Malfunction | This parameter displays the state of the ISS/OSS Supply Voltage circuit. |
| Knock Retard | Degrees | This parameter indicates the amount of spark advance the control module removes from the ignition control (IC) spark advance in response to the signal from the knock sensors. |
| Long Term Fuel Pump Trim | # | This parameter displays a numeric value. This is the long term (LT) fuel pump trim. |
| Long Term Fuel Trim<br>or<br>Long Term Fuel Trim Bank 1 or 2 | % | This parameter displays the commanded Long Term Fuel Trim correction by the control module for cruise and acceleration conditions. |
| Long Term Fuel Trim Test Average<br>or<br>Long Term Fuel Trim Test Average Bank 1 or 2 | % | This parameter displays the filtered long term closed loop fuel correction. This value is compared to thresholds to determine if the fuel adjustment system diagnostic is passing or failing or if an excess purge vapor test should be executed. |
| Long Term Fuel Trim Test Average without Purge<br>or<br>Long Term Fuel Trim Test Average without Purge Bank 1 or 2 | % | This parameter displays the filtered non purge long term closed loop fuel correction. This value is compared to thresholds to determine if the fuel adjustment system diagnostic is passing, failing, or indeterminate during normal purge-OFF operation as well as during the intrusive excess purge vapor test. |
| Long Term Secondary O2 Sensor Fuel Trim Bank 1 or 2 | % | This parameter displays the Long Term Secondary O2 Sensor Fuel Trim for Bank 1 or 2. |
| Lost Communication with Active Grille Air Shutter Actuator Test Status | OK / Okay, Malfunction, Not Run | This parameter indicates the status of the Active Grille Air Shutter actuator diagnostic test. |
| Low Engine Oil Level Indicator Command | Off | The scan tool displays On or Off. This is the state of the low engine oil level indicator as monitored by the ECM. |

| Parameter | Value | Description |
|---|---|---|
| Low Engine Oil Pressure Indicator Command | Off | This parameter displays the commanded state of the low EOP lamp control circuit by the control module. |
| Low-Voltage Battery Current | Amps | This parameter displays the battery current. |
| Low-Voltage Battery State of Charge | Volts | This parameter indicates the percentage of the battery charge remaining. |
| Low-Voltage Battery State of Function | Volts | This parameter displays the predicted minimum voltage of the next crank event. |
| Low-Voltage Battery State of Health | Volts | This parameter indicates the available capacity of the battery if it were fully charged, relative to the capacity when the battery was new. |
| Low-Voltage Battery Temperature | ºC (ºF) | This parameter indicates the temperature of the battery. |
| MAF Performance Test | OK / Okay | This parameter displays the status of the MAF performance test by the engine control module. The scan tool will display OK / Okay if no malfunction is found. The scan tool will display malfunction if the engine control module detects a malfunction during the test. |
| MAF Sensor | g/s | This parameter displays in grams per second, the measured quantity of air flowing into the engine during all operating conditions. |
| MAF Sensor | Hz | The scan tool displays a range of 0-65,555 hertz. This parameter displays the frequency signal input to the control module, and represents measured quantity of air flowing into the engine during all operating conditions. |
| MAF Sensor Supply Voltage Command | On / Off | This parameter indicates if the mass air flow sensor supply voltage is commanded On or Off. |
| MAF Sensor Supply Voltage Control Circuit High Voltage Test Status | OK / Okay, Malfunction, Not Run | This parameter displays the mass air flow sensor supply voltage Control Circuit High Voltage Test Status. Can display OK / Okay, Malfunction, or Not Run. |
| MAF Sensor Supply Voltage Control Circuit Low Voltage Test Status | OK / Okay, Malfunction, Not Run | This parameter displays the mass air flow sensor supply voltage Control Circuit Low Voltage Test Status. Can display OK / Okay, Malfunction, or Not Run. |
| MAF Sensor Supply Voltage Control Circuit Open Test Status | OK / Okay, Malfunction, Not Run | This parameter displays the mass air flow sensor supply voltage Control Circuit Open Circuit Test Status. Can display OK / Okay, Malfunction, or Not Run. |
| MAF When Engine Overspeed Detected | g/s | This parameter indicates the quantity calculated by the control module based on a signal from the MAF sensor at the time an overspeed was detected. |
| MAP Performance Test 1 | OK / Okay | MAP Test 1 Residual Out of Tolerance indicates that the filtered MAP Test 1 residual (the difference between the measured intake manifold pressure and the intake manifold pressure predicted from the intake manifold model using the mass airflow predicted from the throttle model) exceeds a failure threshold. |
| MAP Performance Test 2 | OK / Okay | MAP Test 2 Residual Out of Tolerance indicates that the filtered MAP Test 2 residual (the difference between the measured intake manifold pressure and the intake manifold pressure predicted from the intake manifold model using the measured mass airflow) exceeds a failure threshold. |
| MAP Sensor | kPa/psi | This parameter displays the actual engine intake manifold absolute pressure (MAP). |
| MAP Sensor | Volts | The parameter displays The MAP sensor voltage as it measures the change in the intake manifold pressure which results from engine load and speed changes. As the intake manifold pressure increases, the air density in the intake also increases and additional fuel is required. |
| Maximum Engine Speed When Engine Overspeed Detected | RPM | This parameter displays the Maximum Engine Speed When Engine Overspeed Detected. |

| Parameter | Value | Description |
|---|---|---|
| MIL Command | Off | This parameter displays the commanded state of the malfunction indicator lamp (MIL) control circuit by the control module. |
| MIL Control Circuit High Voltage Test Status | OK / Okay , Malfunction | This parameter displays the state of the MIL control circuit. The parameter displays Malfunction if the MIL control circuit is shorted to voltage. |
| MIL Control Circuit Low Voltage Test Status | OK / Okay , Malfunction | This parameter displays the state of the MIL control circuit. The parameter displays Malfunction if the MIL control circuit is shorted to ground. |
| MIL Control Circuit Open Test Status | OK / Okay , Malfunction | This parameter displays the state of the MIL control circuit. The parameter displays Malfunction if the MIL control circuit is open. |
| MIL Requested | No | This parameter displays the reason the engine control module illuminated the MIL. The scan tool will display Yes when the MIL is requested as a result of an A or B type DTC. The scan tool will display No if the MIL is illuminated for another reason, such as transmission DTCs. |
| MIL Requested by DTC | No | This parameter indicates the reason the control module illuminated the MIL. The scan tool will display YES when the MIL is requested as a result of an A or B type DTC. The scan tool will display NO if the MIL is illuminated for another reason, such as transmission DTCs. |
| Minimum DC/DC Converter Output Voltage on Circuit 1 - Last Engine Crank | Volts | This parameter indicates the minimum DC/DC Converter Output Voltage on Circuit 1 on the last engine crank. |
| Minimum DC/DC Converter Output Voltage on Circuit 2 - Last Engine Crank | Volts | This parameter indicates the minimum DC/DC Converter Output Voltage on Circuit 2 on the last engine crank. |
| Misfire Diagnostic Engine Load | % | This parameter displays the engine load used within the misfire diagnostic (calculated as the ratio of the mass of air predicted to be in the cylinder two firing events into the future to the maximum possible mass of air in the cylinder based on the current ambient air pressure and charge temperature). |
| Misfire Diagnostic Engine Speed | RPM | This parameter displays the engine speed used within the misfire diagnostic. This engine speed is the maximum engine speed observed over the previous engine cycle. |
| Misfire Engine Load History 1–5 | % | This parameter displays the specific engine load when the engine was operating for one of the last five misfire events . |
| Misfire Engine Speed History 1–5 | RPM | This parameter displays the specific engine speed when the engine was operating for one of the last five misfire events . |
| Misfire Monitor Complete | Yes/No | This parameter displays the status of the Misfire Monitor. The parameter will display Yes when the Misfire Monitor is Complete. |
| Misfire Monitor Complete This Ignition Cycle | No | This parameter displays the completion status of the misfire monitor during the current driving / monitoring cycle. |
| Misfire Monitor Enabled | Yes/No | This parameter displays the status of the Misfire Monitor. The parameter will display Yes when the Misfire Monitor is Enabled. |
| Misfire Monitor Enabled This Ignition Cycle | No | This parameter displays the enable status of the misfire monitor during the current driving / monitoring cycle. |
| Neutral Position Sensor | ° | This parameter displays the current state of the neutral position sensor in degrees. |
| Number of Calibration History Events Stored | Counts | This parameter displays the history entries for the primary calibration in the controller. |
| Number of DTC(s) | # | This parameter indicates the number of diagnostic trouble codes (DTCs). |

| Parameter | Value | Description |
|---|---|---|
| O2S/HO2S Monitor Complete | Yes/No | This parameter displays the enable and completion status during the current driving/monitoring cycle of each continuous legislated emission related monitor and non continuous legislated emission related monitor. |
| O2S/HO2S Monitor Complete This Ignition Cycle | Yes/No | This parameter displays the enable and completion status during the current driving/monitoring cycle of each continuous legislated emission related monitor and non continuous legislated emission related monitor. |
| O2S/HO2S Monitor Enabled | Yes/No | This parameter displays the enable and completion status during the current driving/monitoring cycle of each continuous legislated emission related monitor and non continuous legislated emission related monitor. |
| O2S/HO2S Monitor Enabled This Ignition Cycle | Yes/No | This parameter displays the enable and completion status during the current driving/monitoring cycle of each continuous legislated emission related monitor and non continuous legislated emission related monitor. |
| Odometer at Engine Shutdown – Excessive Idle Time | km / mi | This parameter displays the odometer reading at an engine shutdown due to excessive idle time. |
| Odometer at Engine Shutdown – High Coolant Temperature | km / mi | This parameter displays the odometer reading at an engine shutdown due to high coolant temperature. |
| Odometer at Engine Shutdown – Low Coolant Level | km / mi | This parameter displays the odometer reading at an engine shutdown due to low coolant level. |
| Odometer at Engine Shutdown – Low Oil Level | km / mi | This parameter displays the odometer reading at an engine shutdown due to low oil level. |
| Odometer When Engine Overspeed Detected | km / mi | This parameter displays the kilometers or miles of the Odometer When Engine Overspeed Detected. |
| Oil Level Warning Counter City | Counts | This parameter displays a rolling count of oil level debounce events for the city calibration. |
| Oil Level Warning Counter Country Road | Counts | This parameter displays a rolling count of oil level debounce events for the country road calibration |
| Oil Level Warning Counter Highway | Counts | This parameter displays a rolling count of oil level debounce events for the highway calibration. |
| Output Shaft Speed Sensor | RPM | This parameter displays the transmission output speed. |
| Park/Neutral Position Switch (If Equipped) | Park/Neutral | This parameter indicates the range selection of the automatic transmission as calculated by the control module based on input from the PNP switch. The scan tool will display, In Gear, Park, or Neutral depending on the PNP switch position. |
| Park/Neutral Position Switch (RPO=MO5) | Active/Inactive | This parameter indicates the status of the Park/Neutral Position (PNP) Switch. When in Park, the PNP Switch is closed and the scan tool will display active. When in Reverse, Neutral, or Drive, the PNP Switch is open and the scan tool will display inactive. |
| Power Enrichment | Inactive | This parameter indicates if the control module has detected conditions appropriate to operate in Power Enrichment mode. The scan tool will display Active if the mode is in operation, and Inactive if the mode is not in operation. The control module enters Open Loop operation and increases injector pulse width when in power enrichment mode. |
| Power Mode | Run | This parameter displays the state of the System Power Mode. This signal is based upon the state of the system power mode received over serial communication from the vehicle electronics. If the serial data signal not received, the Parameter will display Off. |
| Radiator Coolant Temperature Sensor | Varies C° (F°) | This parameter displays the undefaulted radiator coolant temperature measured by a sensor located in the coolant outlet of the radiator. |

| Parameter | Value | Description |
|---|---|---|
| RCT vs. IAT Sensor Temperature at Last ECT vs. RCT Malfunction Detection | Agree | This parameter displays that the temperature values of the RCT and IAT sensors did not agree at the time of the most recent failure of the ECT/RCT rationality diagnostic. |
| Recommended Maximum Fuel Alcohol Content | % | This parameter displays the percentage of the Recommended Maximum Fuel Alcohol Content. |
| Recommended Maximum Fuel Alcohol Content Exceeded | No | This parameter displays Yes or No if the Recommended Maximum Fuel Alcohol Content Exceeded. |
| Recommended Maximum Fuel Alcohol Content When Recommended Maximum Fuel Alcohol Content Exceeded | % | This parameter displays the percentage of the Recommended Maximum Fuel Alcohol Content When Recommended Maximum Fuel Alcohol Content Exceeded. |
| Reduced Engine Power | Inactive | This parameter displays Active if the control module is commanding reduced engine power due to a throttle actuator control (TAC) system condition. |
| Reduced Engine Power History | Throttle Malfunction, Cooling Fan Malfunction, Engine Over-temperature Protection Active, Engine Oil Temperature Too High, Remote Vehicle Speed Limiting, Engine Calibration Malfunction, Engine Oil Life, High Pressure Fuel System Malfunction | This parameter displays the last reason that Powertrain has illuminated the Reduced Engine Power (REP) indication. |
| Redundant Odometer Memory | Present | ECU Odometer Programmed indicates if the ECU odometer value has been programmed. |
| Refueling Events Since Recommended Maximum Fuel Alcohol Content Exceeded | Counts | This parameter displays the number Refueling Events Since Recommended Maximum Fuel Alcohol Content Exceeded. |
| Remaining Fuel in Tank | % | This parameter displays the total fuel level as a percentage of the rated capacity of the fuel tank. |
| Remaining Fuel in Tank | Liters/Gallons | This parameter displays the actual total fuel volume contained in the fuel tank. |
| Remote Vehicle Start Disable History 1–8 | Reason for RVS Disable | These parameters displays the last eight reasons the control module disabled remote vehicle start (RVS). |
| Remote Vehicle Start Request Signal | Off | Remote Vehicle Start Request indicates the state of the request received over serial communication from the remote vehicle start (RVS) system to start the vehicle in remote mode. |
| Replicated Transmission OSS Signal | RPM | This parameter displays the Replicated Transmission Output Speed (Replicated TOS) received from the Transmission Control Module. |
| Reverse Inhibit Solenoid Actuator Command | Allowed | This parameter displays that the driver is inhibited from shifting into reverse. |
| Reverse Inhibit Solenoid Actuator Control Circuit High Voltage Test Status | OK / Okay , Malfunction | This parameter displays the state of the reverse inhibit solenoid actuator control circuit. The parameter displays Malfunction if the reverse inhibit solenoid actuator control circuit is shorted to voltage. |
| Reverse Inhibit Solenoid Actuator Control Circuit Low Voltage Test Status | OK / Okay , Malfunction | This parameter displays the state of the reverse inhibit solenoid actuator control circuit. The parameter displays Malfunction if the reverse inhibit solenoid actuator control circuit is shorted to ground. |
| Reverse Inhibit Solenoid Actuator Control Circuit Open Test Status | OK / Okay , Malfunction | This parameter displays the state of the reverse inhibit solenoid actuator control circuit. The parameter displays Malfunction if the reverse inhibit solenoid actuator control circuit is open. |
| Reverse Position Switch | Off | This parameter displays if the manual transmission shifter is in reverse. |
| Secondary Air Injection Monitor Enabled | Yes | This parameter displays the status of the secondary air injection monitor. |

| Parameter | Value | Description |
|---|---|---|
| Secondary Air Injection Pressure | kPa | This parameter displays the normalized secondary air injection system pressure. |
| Secondary Air Injection Pressure Sensor | kPa | This parameter displays the unfiltered secondary air injection system pressure. |
| Secondary Air Injection Pressure Sensor | Volts | This parameter displays the secondary air injection system pressure analog input as a percentage of its reference voltage. |
| Secondary Air Injection Pressure Sensor Variance | kPa | This parameter displays the weighted average pressure error (difference between the predicted and actual secondary air injection system pressure) during the secondary air injection on test (phase 1). |
| Secondary Air Injection Pump Relay Command | Off | This parameter displays the commanded state of the secondary air injection pump output. |
| Secondary Air Injection Pump Relay Control Circuit High Voltage Test Status | OK / Okay , Malfunction | This parameter displays the state of the secondary air injection pump relay control circuit. The parameter displays Malfunction if the secondary air injection pump relay control circuit is shorted to voltage. |
| Secondary Air Injection Pump Relay Control Circuit Low Voltage Test Status | OK / Okay , Malfunction | This parameter displays the state of the secondary air injection pump relay control circuit. The parameter displays Malfunction if the secondary air injection pump relay control circuit is shorted to ground. |
| Secondary Air Injection Pump Relay Control Circuit Open Test Status | OK / Okay , Malfunction | This parameter displays the state of the secondary air injection pump relay control circuit. The parameter displays Malfunction if the secondary air injection pump relay control circuit is open. |
| Secondary Air Injection Solenoid Valve Command | Off | This parameter displays the commanded state of the secondary air injection valve output. |
| Secondary Air Injection Solenoid Valve Control Circuit High Voltage Test Status | OK / Okay , Malfunction | This parameter displays the state of the secondary air injection solenoid valve control circuit. The parameter displays Malfunction if the secondary air injection solenoid valve control circuit is shorted to voltage. |
| Secondary Air Injection Solenoid Valve Control Circuit Low Voltage Test Status | OK / Okay, Malfunction | This parameter displays the state of the secondary air injection solenoid valve control circuit. The parameter displays Malfunction if the secondary air injection solenoid valve control circuit is shorted to ground. |
| Secondary Air Injection Solenoid Valve Control Circuit Open Test Status | OK / Okay , Malfunction | This parameter displays the state of the secondary air injection solenoid valve control circuit. The parameter displays Malfunction if the secondary air injection solenoid valve control circuit is open. |
| Short Term Fuel Pump Trim | # | This parameter displays a numeric value. This is the short term (ST) fuel pump trim. |
| Short Term Fuel Trim<br>or<br>Short Term Fuel Trim Bank 1 or Bank 2 | % | This parameter displays the short-term correction to the fuel delivery by the control module in response to oxygen sensor 1 or 2. If the oxygen sensor indicates a lean air/fuel mixture, the control module will add fuel increasing the short term fuel trim above 0. If the oxygen sensor indicates a rich air/fuel mixture, the control module will reduce fuel decreasing the short term fuel trim below 0. |
| Short Term Fuel Trim Test Average<br>or<br>Short Term Fuel Trim Test Average Bank 1 or Bank 2 | % | This parameter display's the filtered short term closed loop fuel correction. This value is compared to thresholds to determine if the fuel adjustment system diagnostic is passing or failing or if an excess purge vapor test should be executed. |
| Short Term Secondary O2 Sensor Fuel Trim Bank 1 or 2 | % | This parameter displays the Short Term Secondary O2 Sensor Fuel Trim for Bank 1 or 2. |
| Skip Shift Solenoid Actuator Command | No Skip | This parameter indicates that the skip shift solenoid is commanded on, inhibiting the driver from shifting up to one of the next highest gears. |

| Parameter | Value | Description |
|---|---|---|
| Skip Shift Solenoid Actuator Control Circuit High Voltage Test Status | OK / Okay , Malfunction | This parameter displays the state of the skip shift solenoid actuator control circuit. The parameter displays Malfunction if the skip shift solenoid actuator control circuit is shorted to voltage. |
| Skip Shift Solenoid Actuator Control Circuit Low Voltage Test Status | OK / Okay, Malfunction | This parameter displays the state of the skip shift solenoid actuator control circuit. The parameter displays Malfunction if the skip shift solenoid actuator control circuit is shorted to ground. |
| Skip Shift Solenoid Actuator Control Circuit Open Test Status | OK / Okay , Malfunction | This parameter displays the state of the skip shift solenoid actuator control circuit. The parameter displays Malfunction if the skip shift solenoid actuator control circuit is open. |
| Specific Humidity | % | This parameter shows the current specific humidity level. |
| Starter Pinion Solenoid Actuator Relay Command | On / Off | This parameter indicates the commanded state of the Starter Pinion Solenoid Actuator relay. |
| Starter Pinion Solenoid Actuator Relay Control Circuit High Voltage Test Status | OK / Okay, Malfunction, Not Run | This parameter displays the Starter Pinior Solenoid Actuator Relay Control Circuit High Voltage Test Status. Can display OK / Okay, Malfunction, or Not Run. |
| Starter Pinion Solenoid Actuator Relay Control Circuit Low Voltage Test Status | OK / Okay, Malfunction, Not Run | This parameter displays the Starter Pinior Solenoid Actuator Relay Control Circuit Low Voltage Test Status. Can display OK / Okay, Malfunction, or Not Run. |
| Starter Pinion Solenoid Actuator Relay Control Circuit Open Test Status | OK / Okay, Malfunction, Not Run | This parameter displays the Starter Pinior Solenoid Actuator Relay Control Circuit Open Circuit Test Status. Can display OK / Okay, Malfunction, or Not Run. |
| Starter Relay Command | On / Off | This parameter indicates whether the control module is commanding the starter relay to go On or Off. |
| Starter Relay Control Circuit High Voltage Test Status | OK / Okay , Malfunction | This parameter displays the state of the starter relay control circuit. The parameter displays Malfunction if the starter relay control circuit is shorted to voltage.<br>This parameter may not change if the scan tool is used to command the relay control circuit On. |
| Starter Relay Control Circuit Low Voltage Test Status | OK / Okay , Malfunction | This parameter displays the state of the starter relay control circuit. The parameter displays Malfunction if the starter relay control circuit is shorted to ground.<br>This parameter may not change if the scan tool is used to command the relay control circuit On. |
| Starter Relay Control Circuit Open Test Status | OK / Okay , Malfunction | This parameter displays the state of the starter relay control circuit. The parameter displays Malfunction if the starter relay control circuit is open.<br>This parameter may not change if the scan tool is used to command the relay control circuit On. |
| Start-Up ECT | °C (°F) | This parameter displays the temperature of the engine coolant on start-up based on input to the control module from the ECT sensor. |
| Start-Up Fuel Rail Temperature | ºC (ºF) | This parameter indicates the fuel rail temperature when the engine was started from the first sensor located on the fuel rail. |
| Start-Up Fuel Rail Temperature 1 | ºC (ºF) | This parameter indicates the fuel rail temperature when the engine was started from the first sensor located on the fuel rail. |
| Start-Up Fuel Rail Temperature 2 | ºC (ºF) | This parameter indicates the fuel rail temperature when the engine was started from the second sensor located on the fuel rail. |
| Start-Up IAT Sensor or Start-Up IAT Sensor 1 or 2 | °C (°F) | This parameter displays the temperature of the intake air at start in the air induction system based on input to the control module from the IAT sensor. |
| Start-Up IAT Sensor 3 | ºC (ºF) | This parameter indicates the intake air temperature when the engine was started. |

| Parameter | Value | Description |
|---|---|---|
| Stop/Start Disable Mode | Active / Inactive / Not Available | This parameter indicates the status of the Stop/Start Disable Mode. |
| Supercharger Bypass Solenoid Valve Command | % | This parameter displays the commanded duty cycle for the supercharger boost solenoid output. |
| Supercharger Bypass Solenoid Valve Control Circuit High Voltage Test Status | OK / Okay , Malfunction | This parameter displays the state of the supercharger bypass solenoid valve control circuit. The parameter displays Malfunction if the supercharger bypass solenoid valve control circuit is shorted to voltage. |
| Supercharger Bypass Solenoid Valve Control Circuit Low Voltage Test Status | OK / Okay , Malfunction | This parameter displays the state of the supercharger bypass solenoid valve control circuit. The parameter displays Malfunction if the supercharger bypass solenoid valve control circuit is shorted to ground. |
| Supercharger Bypass Solenoid Valve Control Circuit Open Test Status | OK / Okay , Malfunction | This parameter displays the state of the supercharger bypass solenoid valve control circuit. The parameter displays Malfunction if the supercharger bypass solenoid valve control circuit is open. |
| Supercharger Inlet Pressure | kPa | This parameter displays the supercharger inlet vacuum pressure calculated as the difference between ambient air pressure (barometric pressure) and supercharger inlet absolute pressure (SCIAP). |
| Supercharger Inlet Pressure Sensor | kPa | This parameter displays the unfiltered supercharger inlet absolute pressure (SCIAP). |
| Supercharger Inlet Pressure Sensor | Volts | This parameter displays the supercharger inlet absolute pressure (SCIAP) analog input as a percentage of its reference voltage. |
| SVS Indicator Command | Off | This parameter displays that the Service Vehicle Soon lamp is being commanded on due to the failure of a non emission related diagnostic test. |
| System Off | No | This parameter displays that the vehicle is waiting for a key crank to happen (key crank not done yet). |
| TAC Forced Engine Shutdown | No | This parameter indicates the status of the TAC motor by the control module. The scan tool will display Yes if the engine has been shut down due to a throttle control fault. |
| TAC Motor | Enabled | This parameter indicates the status of the throttle actuator control (TAC) motor driver in the control module. The scan tool will display Enabled if TAC motor operation is allowed. The scan tool will display Disabled if the control module detects a condition that affects TAC motor operation. |
| TAC Motor Command | % | This parameter displays the commanded duty cycle for the throttle actuator output. |
| TCC/Cruise Control Brake Pedal Switch | Applied / Released | This parameter indicates the state of the TCC/Cruise Control Brake Pedal Switch. |
| Throttle Body Idle Air Flow Compensation | % | This parameter displays the percent compensation of the Learned Airflow Variation Calibration. This value indicates the current amount of airflow compensation in response to engine intake airflow restrictions. It can also be used as feedback for the Learned Airflow Adapts Reset Trigger Device Control. |
| Throttle Position | % | This parameter displays the desired throttle position angle commanded by the control module. |
| Throttle Position Performance Test | OK / Okay , Malfunction | Throttle Position Residual Out of Tolerance indicates that the filtered throttle position residual (the product of the MAF residual and the MAP Test 1 residual) exceeds a failure threshold. |
| Throttle Position Sensor 1 | Volts | This parameter displays the actual voltage on the TP sensor 1 signal circuit as measured by the control module. |
| Throttle Position Sensor 1 Learned Minimum | Volts | This parameter displays the learned minimum value of throttle position (TP) sensor 1 as recorded by the control module during the last learn procedure. |

| Parameter | Value | Description |
|---|---|---|
| Throttle Position Sensor 1 or 2 Position | % | This parameter displays the actual voltage on the TP sensor 2 signal circuit as measured by the control module. |
| Throttle Position Sensor 2 | Volts | This parameter displays the voltage signal sent to the control module from TP sensor 2 of the throttle assembly. The TP sensor 2 is a range of values indicating a low voltage when the throttle is closed to a high voltage when the throttle plate is fully open. |
| Throttle Position Sensor 2 Learned Minimum | Volts | This parameter displays the learned minimum value of TP sensor 2 as recorded by the control module during the last learn procedure. |
| Throttle Position Sensors 1 and 2 | Agree | This parameter displays Disagree when the control module detects that TP sensor 1 voltage signal is not within the correct relationship to TP sensor 2. The scan tool displays Agree under the normal operating conditions. |
| Tire Size | Rev / km | This parameter displays the vehicle tire circumference in centimeters. |
| Torque Delivered Signal | N•m /Lb/Ft | This parameter displays the engine torque based upon the airflow through the engine and the torque losses due to spark retard and fuel shutoff. Since this is a steady state engine torque, it does not include the inertial component of engine torque. |
| Torque Management Ignition Timing Retard | Degrees | This parameter displays the total spark retard (in terms of a crankshaft angle). |
| Torque Request Inhibit – Fuel | No | This parameter displays the existing condition in the ECM causing the transmission torque request to be limited. |
| Torque Request Inhibit – Ignition Timing | No | This parameter displays the existing condition in the ECM causing the transmission torque request to be limited. |
| Torque Request Inhibit – Ignition Timing Advance | No | This parameter displays the existing condition in the ECM causing the transmission torque request to be limited. |
| Torque Request Inhibit – Minimum Idle | No | This parameter displays the existing condition in the ECM causing the transmission torque request to be limited. |
| Torque Request Inhibit – Minimum Torque | No | This parameter displays the existing condition in the ECM causing the transmission torque request to be limited. |
| Torque Request Inhibit – TAC | No | This parameter displays the existing condition in the ECM causing the transmission torque request to be limited. |
| Torque Request Inhibit – TAC Limit | No | This parameter displays the existing condition in the ECM causing the transmission torque request to be limited. |
| Total Alternative Fuel Level Percentage | % | This parameter displays the undefaulted, total alternative fuel level as a percentage of the rated (advertised) capacity of the alternative fuel tank(s). |
| Total Engine Mass Air Flow | g/s | This parameter indicates the engine mass airflow. |
| Total Engine Overspeed Time | ms | This parameter displays the Total Engine Overspeed Time. |
| Total Knock Retard | Degrees | This parameter displays how much ignition spark timing is being retarded due to all control systems monitored by the control module. |
| Total Misfire | # | This parameter displays the total number of cylinder firing events that the control module detected as misfires for the last 200 crankshaft revolution sample period. |
| Traction Control Axle Torque Request Signal | N•m (lb ft) | This parameter indicates the axle torque requested by the traction control module. |
| Traction Control Status | Inactive | This parameter displays Active if the electronic brake and traction control module (EBTCM) is commanding traction control. |
| Transmission Fluid Pressure Accumulator Solenoid Valve Command | On/Off | This parameter displays the position of the Transmission Fluid Pressure Accumulator Solenoid Valve Control. |

| Parameter | Value | Description |
|---|---|---|
| Transmission Fluid Pressure Accumulator Solenoid Valve Control Circuit High Voltage Test Status | OK / Okay, Malfunction, Not Run | This parameter displays the state of the Transmission Fluid Pressure Accumulator Solenoid Valve Control Circuit. The parameter displays Malfunction if the Transmission Fluid Pressure Accumulator Solenoid Valve Control Circuit is shorted to voltage. |
| Transmission Fluid Pressure Accumulator Solenoid Valve Control Circuit Low Voltage Test Status | OK / Okay, Malfunction, Not Run | This parameter displays the state of the Transmission Fluid Pressure Accumulator Solenoid Valve Control Circuit. The parameter displays Malfunction if the Transmission Fluid Pressure Accumulator Solenoid Valve Control Circuit is shorted to ground. |
| Transmission Fluid Pressure Accumulator Solenoid Valve Control Circuit Open Test Status | OK / Okay, Malfunction, Not Run | This parameter displays the state of the Transmission Fluid Pressure Accumulator Solenoid Valve Control Circuit. The parameter displays Malfunction if the Transmission Fluid Pressure Accumulator Solenoid Valve Control Circuit is open. |
| Transmission Fluid Temperature Sensor | °C (°F) | This parameter displays the undefaulted, unfiltered transmission oil / fluid temperature measured by a sensor. |
| Turbocharger 1 Turbine Inlet Valve Control Circuit High Voltage Test Status | OK / Okay , Malfunction | This parameter displays the state of the turbocharger 1 turbine inlet valve control circuit. The parameter displays Malfunction if the turbocharger 1 turbine inlet valve control circuit is shorted to voltage. |
| Turbocharger 1 Turbine Inlet Valve Control Circuit Open Test Status | OK / Okay , Malfunction | This parameter displays the state of the turbocharger 1 turbine inlet valve control circuit. The parameter displays Malfunction if the turbocharger 1 turbine inlet valve control circuit is open. |
| Turbocharger 1 Turbine Inlet Valve Duty Cycle | % | This parameter displays the commanded duty cycle for the turbocharger 1 turbine inlet valve in a percentage. |
| Turbocharger Bypass Solenoid Valve Command | % | This parameter displays the commanded duty cycle for the turbocharger bypass solenoid valve in a percentage. |
| Turbocharger Bypass Solenoid Valve Control Circuit High Voltage Test Status | OK / Okay , Malfunction | This parameter displays the state of the turbocharger bypass solenoid valve control circuit. The parameter displays Malfunction if the turbocharger bypass solenoid valve control circuit is shorted to voltage. |
| Turbocharger Bypass Solenoid Valve Control Circuit Low Voltage Test Status | OK / Okay , Malfunction | This parameter displays the state of the turbocharger bypass solenoid valve control circuit. The parameter displays Malfunction if the turbocharger bypass solenoid valve control circuit is shorted to ground. |
| Turbocharger Bypass Solenoid Valve Control Circuit Open Test Status | OK / Okay , Malfunction | This parameter displays the state of the turbocharger bypass solenoid valve control circuit. The parameter displays Malfunction if the turbocharger bypass solenoid valve control circuit is open. |
| Turbocharger Wastegate Solenoid Valve Command | % | This parameter displays the commanded duty cycle for the turbocharger wastegate solenoid valve in a percentage. |
| Turbocharger Wastegate Solenoid Valve Control Circuit High Voltage Test Status | OK / Okay , Malfunction | This parameter displays the state of the turbocharger wastegate solenoid valve control circuit. The parameter displays Malfunction if the turbocharger wastegate solenoid valve control circuit is shorted to voltage. |
| Turbocharger Wastegate Solenoid Valve Control Circuit Low Voltage Test Status | OK / Okay , Malfunction | This parameter displays the state of the turbocharger wastegate solenoid valve control circuit. The parameter displays Malfunction if the turbocharger wastegate solenoid valve control circuit is shorted to ground. |
| Turbocharger Wastegate Solenoid Valve Control Circuit Open Test Status | OK / Okay , Malfunction | This parameter displays the state of the turbocharger wastegate solenoid valve control circuit. The parameter displays Malfunction if the turbocharger wastegate solenoid valve control circuit is open. |
| Upshift Indicator Command | Off | This parameter displays On when commanded by the engine control module. |
| Variable Valve Lift Low Lift Disable History 1–8 | Varies | This parameter displays the reason for the last 8 variable valve lift disable history reasons. |

| Parameter | Value | Description |
|---|---|---|
| Variable Valve Lift Low Lift Inhibit – Reason | Varies | This parameter lists the reason the variable valve lift low lift may be inhibited. These include; 4WD Low State Invalid, A/C Compressor Clutch On, Acceleration Request, Brake Booster Pressure Sensor DTC, Brake Booster Weak Vacuum, Calculated Torque, Camshaft Position Sensor DTC, Control Function Active, Crankshaft Position Sensor DTC, ECT, ECT Sensor DTC, Engine Controls Ignition Relay DTC, Engine Not Synchronized, Engine Off, Engine Oil Pressure, Engine Oil Pressure Control Solenoid Valve Stuck Off, Engine Oil Pressure Control Test Active, Engine Oil Pressure Sensor DTC, Engine Oil Temperature, Engine Overtemperature Protection, Engine Power Not Requested, Engine Speed, Engine Torque Capacity, Fuel Alcohol Content Learn In Progress, Fuel Alcohol Content Too High, Fuel System Disabled, Green Engine Mode, HO2S 2 Test, Hot Coolant Mode, Hybrid/EV Powertrain Control Module Request, IAT Sensor DTC, Ignition Voltage, MAP Sensor DTC, Maximum Throttle Exceeded, Minimum Time After TAC DTC, Misfire DTC, Oil Aeration. On-Board Diagnostic System, Rocker Arm Solenoid Valve DTC, RPM Limit, TAC System DTC, Transmission Gear, Transmission Range, Transmission Shifting, Vehicle Speed Too Low, VSS DTC. |
| Variable Valve Lift System Command | Low Lift | This parameter displays the current state of the variable valve lift system command. |
| Vehicle Speed Sensor | Km/h<br>mph | This parameter displays the speed of the vehicle as calculated by the transmission control module (TCM) from information received from the vehicle speed sensor (VSS). |
| Vehicle Speed When Engine Overspeed Detected | Km/h<br>mph | This parameter displays the Vehicle Speed When Engine Overspeed Detected. |
| VIN Programming Counter | Counts | This parameter displays the number of times the VIN has been programmed. This counter can only be incremented. |
| Warm Ups Since DTC Cleared | Counts | This parameter indicates the number of warm up cycles that have occurred Since DTCs were cleared. The scan tool will display a higher counts as more warm up cycles have occurred since the DTCs were cleared. |
| Warm Ups without Emission Malfunctions | Counts | This parameter displays the number of OBD defined warm up cycles since the last emissions related (fault type A or B) fail report or MIL request. Emissions related DTCs are cleared from memory when this counter reaches 40. |
| Warm Ups without Non Emission Malfunctions | Counts | This parameter displays the number of OBD defined warm up cycles since the last non emissions related (fault type C) fail report. Non emissions related DTCs are cleared from memory when this counter reaches 40. |
| Weight Percent Water in Air | % | This parameter displays the calculated value of weight per cent water (specific humidity) in the intake air. |
| Wide Open Throttle | No | This parameter displays the throttle status commanded by the control module. The scan tool will display Yes if the vehicle throttle is commanded to 100 percent. |
| Wide Open Throttle | No | This parameter displays the desired throttle position exceeds a WOT threshold (selected specifically for service). |

## Engine Control Module (ECM) Scan Tool Output Controls

| Output Control | Description |
|---|---|
| This is a comprehensive list. Not all output controls listed are available for all applications. | |
| A/C Compressor Clutch Relay | This device control is used to override the state of the air conditioning compressor output. |
| Active Grill Air Shutter 1 or 2 Commanded Position | This device control is used to command the position of the active grill air shutter 1 or 2 output. 0% equals fully closed, 100% equals fully open. |

| Output Control | Description |
|---|---|
| Alternative Fuel High Pressure Shutoff Valve Control | This device control is used to override the state of the alternative fuel shutoff valve 1 output. |
| Alternative Fuel Injector Disable Control | This device control is used with the engine running to override the state of the alternative fuel injector outputs. This device control is used to disable alternative fuel injectors in order to cut off alternative fuel to the associated cylinders. |
| Alternative Fuel Injector Flow Control | This device control is used to trigger a single Alternative fuel injector to be commanded on for a calibrated number of pulses (e.g. 25) in order to test the flow of the Alternative fuel injector. |
| Alternative Fuel Low Pressure Shutoff Valve Control | This device control is used to verify functionality of the Alternative Fuel Low Pressure Fuel Shutoff Valve system by allowing the Alternative Fuel Low Pressure Fuel Shutoff Valve output to be commanded to a specific Alternative Fuel Rail Pressure. |
| Alternative Fuel System Leak Test – Service Bay Test | This device control will signal the ECM to begin the Alternative Fuel System Leak Test. |
| Autostop/Autostart | This device control is used to override the internal combustion engine (ICE) running state. |
| BiFuel System – Fuel Mode Selection | When this CPID is active, the fuel mode is commanded to the selection made in “Fuel Mode Selection.” |
| Brake Pedal Position Learn | This device control is used to reset the brake pedal fully released learned position to its initialized value after a brake system repair. |
| Camshaft Profile Actuator Stuck On Reset | This device control is used to reset a latched default action when the camshaft profile actuator control is stuck on. The device control will work in conjunction with the vehicle diagnostics to ensure a proper system check before allowing normal vehicle operation. |
| Camshaft Profile Actuator System | This device control is used to override the state |
| Compression Test | This device control is used to set up the internal combustion engine for a compression test. The fuel pump, fuel injectors, and spark are all disabled. The throttle is opened to a Wide Open Throttle (WOT) position. For conventional engine vehicles, the extended crank feature is not active, and for strong hybrid vehicles, the Hybrid Powertrain Control Module is configured to crank at the speed specified in the device control command. Engine cranking is completely controlled by the technician either through the ignition key or through a remote starter switch as applicable. The device control limits and rejects will apply normally upon entry to the device control. Once the device control is active, the limits will be monitored (to prevent unwanted starter operation, for example), but in the case of a limit exceeded or a tester disconnect, device control of the fuel and spark will not be released until the Power Mode switches to Accessory or OFF. This will prevent unexpected fuel and spark operation in the case of a device control abort. |
| Coolant Fill | This device control is used to start an automatic coolant fill service routine that will ensure proper fill and de-aeration of the cooling system. |
| Cooling Fan Relay 1 | This function activates the cooling fan relay  1. The normal commanded state of the fan relay is NONE. The relay command status can also be monitored on the scan tool data parameter Cooling Fan Relay  1 Command. The control module allows cooling fan relay control when the following conditions are met:<br>• The Ignition is ON or the engine is running.<br>• A/C compressor operation is not requested.<br>• The engine coolant temperature is less than 106°C (224°F). |
| Cooling Fan Relay 1,2 and 3 | This function activates the cooling fan relay 1, 2 and 3. The normal commanded state of the fan relays is NONE. The relay command status can also be monitored on the scan tool data parameters Cooling Fan Relay 1 Command and Cooling Fan Relays 2 and 3 Command. The control module allows cooling fan relay control when the following conditions are met:<br>• The Ignition is ON or the engine is running.<br>• A/C compressor operation is not requested.<br>• The engine coolant temperature is less than 106°C (224°F). |
| Cooling Fan 2 and 3 | This function activates the cooling fan relay 2 and relay 3. The normal commanded state of the fan relays is NONE. The relay command status can also be monitored on the scan tool data parameter 2 and 3 Command. The control module allows cooling fan relay control when the following conditions are met:<br>• The Ignition is ON or the engine is running.<br>• A/C compressor operation is not requested.<br>• The engine coolant temperature is less than 106°C (224°F). |

| Output Control | Description |
|---|---|
| Crankshaft Position Variation Learn | This device control is used to activate the crankshaft position variation learn algorithm which calculates the reference pulse correction factors for the misfire diagnostic. |
| Cylinder Power Balance | **Note:** The Misfire Current and Misfire History parameters may not increment when using this function.<br>This function disables the selected fuel injector. The normal commanded state is None. The scan tool initiates the test when the following conditions are met:<br>• The engine is operating and the engine idle is stable.<br>• The vehicle speed is 0 km/h (0 mph).<br>• There are no DTCs set for the vehicle speed sensor.<br>If the fuel injector was disabled for 30 seconds, fuel injector control is not allowed again on the same fuel injector for 60 seconds. |
| Cylinder 1–4 Exhaust Camshaft Profile Sleeve | This device control is used to override the state. In order to command Deactivate on the B camshaft, the A camshaft profile for the same cylinder must be commanded to Deactivate. |
| Cylinder 1–4 Intake Camshaft Profile Sleeve | This device control is used to override the state. Upon return to normal control, the system shall actuate the camshaft profile control sleeve as necessary to the system desired position. |
| Depressurize Fuel System | When the low pressure fuel pump is used in conjunction with a separate high pressure fuel pump for Direct Injection (DI) engines, this device control can be used to reduce the high fuel pressure to a low working level. The high fuel pressure control shall monitor the low pressure “Fuel Pump Device Control with Engine Running” such that when the low pressure pump is commanded OFF the high pressure pump will be controlled to a low pressure value. This combination shall be held until either the FPMR device control is released, or the engine stalls. |
| Engine Controls Ignition Relay | This device control is used to override the state of the Powertrain Relay. |
| Engine Coolant Thermostat Heater | This device control is used to override the state of the Engine Coolant Thermostat Heater. |
| Engine Oil Life Reset | This DID contains the engine oil remaining life determined from an algorithm based upon the effective engine revolutions and the distance driven since the last oil change. This DID may be used to reset the engine oil remaining life to 100 % after an oil change or to any other value when replacing a control module. |
| Engine Oil Pressure Control Solenoid Valve | This device control is used to override the state of the variable displacement oil pump. When the variable displacement oil pump is turned on, the oil pump will be commanded to a low pressure state. |
| Engine Speed | This function controls the idle speed override in 25 RPM, 100 RPM, and 500 RPM increments, from the base idle speed to 1,400 RPM. The scan tool initiates the test when the following conditions are met:<br>• The transmission is in park or neutral.<br>• The engine speed is less than 1,000 RPM.<br>The engine speed will remain in the commanded state until cancelled by the scan tool. |
| EVAP Purge/Seal | **Note:** The EVAP Purge and Vent Solenoid Command parameters may not change states when using this output control.<br>This function activates both the EVAP purge solenoid valve and EVAP vent solenoid to seal the EVAP system. When activated, the purge valve is commanded to 0 percent and the vent valve is commanded ON, Not-venting. The normal commanded state for both solenoids is None. Both of the solenoids remain in the commanded state until cancelled by the scan tool or the FTP sensor exceeds −24 mm Hg (−12 inch H20). |
| EVAP Purge Solenoid Valve | **Note:** The EVAP Purge Solenoid Command parameter may not change states when using this output control.<br>This function controls the evaporative emission (EVAP) purge solenoid valve. The normal commanded state is NONE. The system will increase or decrease the amount of purge by changing the duty cycle of the purge valve in 10 percent increments within a range of 0–100 percent. The system remains in the commanded state until cancelled by the scan tool or the fuel tank pressure (FTP) sensor exceeds −24 mm Hg (−12 inch H20). |
| EVAP Test | This device control is used to activate the evaporative emissions service bay test. |

| Output Control | Description |
|---|---|
| EVAP Vent Solenoid Valve | **Note:** The EVAP Vent Solenoid Command parameter may not change states when using this output control.<br>This function controls the EVAP vent solenoid. The normal commanded state is NONE. When commanded ON, the vent valve switches to Not-venting. The system remains in the commanded state unless one of the following conditions occur:<br>• Cancelled by the scan tool<br>• The EVAP canister purge solenoid is more than 0 percent, and the FTP sensor exceeds −24 mm Hg (−12 inch H20). |
| Excessive Clutch Slip Data Reset | This device control is used to reset all clutch slip detection values. |
| Exhaust Camshaft Position Actuator<br>or<br>Exhaust Camshaft Position Actuator Bank 1 | This device control is used to override the state of the exhaust cam phase output. The commanded camshaft position is expressed in terms of degrees of camshaft rotation (retard for exhaust camshaft) from the park position (a camshaft position of zero represents the park position). |
| Exhaust Camshaft Position Actuator<br>or<br>Exhaust Camshaft Position Actuator Bank 2 | This device control is used to override the state of the exhaust cam phase output. The commanded camshaft position is expressed in terms of degrees of camshaft rotation (retard for exhaust camshaft) from the park position (a camshaft position of zero represents the park position). |
| Exhaust Camshaft Position Actuator Solenoid Valve<br>or<br>Exhaust Camshaft Position Actuator Solenoid Valve Bank 1 | This device control is used to override the state of the exhaust cam phase solenoid output. |
| Exhaust Camshaft Position Actuator Solenoid Valve<br>or<br>Exhaust Camshaft Position Actuator Solenoid Valve Bank 2 | This device control is used to override the state of the exhaust cam phase solenoid output. |
| Exhaust Camshaft Profile Actuator | This device control is used to override the state of the B camshaft profile actuator control outputs. The device control is intended as an electrical test and is only allowed with the actuator connector disconnected. This is confirmed by having the open circuit fault active for the camshaft profile actuator position sensor and at least one of the two camshaft profile actuator control outputs on the actuator assembly the device control is being requested for. |
| Fuel Composition Reset | **Note:** Do not use this output control unless the actual alcohol content of the fuel in the tank is 10 percent or less. This will reset the learned alcohol composition to 0 percent in the engine control module (ECM). |
| Fuel Control Loop Status | This function controls the heated oxygen sensor (HO2S) loop status. The commanded states include NONE, OPEN, and CLOSED. The normal commanded state is NONE. The loop status changes as commanded, OPEN or CLOSED.<br>The system remains in the commanded state until cancelled by the scan tool. |
| Fuel Injector Balance Test (If Available) | This function enables the fuel injector in order to verify the correct fuel injector flow. The ECM will pulse the selected fuel injector when the following conditions are met:<br>• All instruction on the scan tool is complete.<br>• A fuel injector is selected.<br>• The ignition is ON with the engine OFF.<br>The selected fuel injector can only be flowed/pulsed once per ignition cycle. |
| Fuel Mode Indicator Lamp System | This device control is used to verify the functionality of the Fuel Mode Indicator Lamp. |

| Output Control | Description |
|---|---|
| Fuel Pressure | This function allows control of the fuel rail pressure (FRP) regulator which is integral to the high pressure fuel pump. The system will Increase or Decrease the fuel rail pressure in increments, as commanded within an approximate range of 1862–17,237 kPa (270–2500 psi). The scan tool initiates the test when the following conditions are met:<br>• The engine is operating<br>• The ignition voltage is 10–18 V<br>• The vehicle speed is 0 mph<br>• DTC P0700 is not set<br>The system remains in the commanded state for about 30 seconds or until cancelled by the scan tool or the ECM detects a vehicle speed. |
| Fuel Pressure Regulator | **Note:** As this is an electrical circuit test, a regulator solenoid commanded to ON does not necessarily equate to the regulator state at maximum fuel pressure.<br>This device control is intended for use on a Direct Injection (DI) high pressure fuel supply system to activate the fuel pressure regulator at ignition ON, engine OFF. Both the low side and high side of the regulator are controlled together. Commanding the regulator to ON will modulate the high side driver to a calibratible Maximum Duty Cycle. |
| Fuel Pump Enable | This function controls the fuel pump. The normal commanded state is NONE. The scan tool initiates the test when the following conditions are met:<br>• There are no vehicle speed sensor DTCs set.<br>• The vehicle speed is 0 km/h (0 mph).<br>When commanded ON/OFF, the engine control module (ECM) turns the fuel pump ON/OFF. If the engine is running and the fuel pump is commanded OFF, the engine will stall. The system remains in the commanded state for about 2 seconds or until cancelled by the scan tool or the ECM detects a vehicle speed. |
| Fuel Pump Speed | This device control is used to override the normal control of the fuel pump output. The device control is a service diagnostic aid that is used to determine if the fuel pump system is functioning properly. Different limit checks are used when the engine is and is not running for the operation of the fuel pump. |
| Fuel Rail Pressure | This device control is intended for use on a Direct Injection (DI) high pressure fuel supply system to override the commanded fuel high pressure output from the powertrain controller. |
| Fuel Trim Enable | This function disables the control modules ability to learn new fuel trim parameters. The commanded states are NONE, ENABLED, DISABLED. The normal commanded state is NONE. The system remains in the commanded state until cancelled by the scan tool. |
| Fuel Trim Reset | This function is used to reset the learned fuel trim values to their initial values. |
| Generator L-Terminal | Commands the generator L terminal ON and OFF. |
| Heater Coolant Pump | This device control is used to override the state of the heater core pump relay output. |
| HO2S Heater Sensor 1<br>or<br>HO2S Heater Bank 1 Sensor 1 | This device control is used to override the duty cycle of the oxygen sensor heaters. With the engine OFF, this device control is intended to be used as a discrete control for circuit diagnosis. With the engine OFF, none of the oxygen sensor heaters can be commanded ON for more than 3.0 seconds, after which the selected oxygen sensor heater must be disabled for a limited duration (typically 60 seconds) before it may be enabled again. With the engine running, this device control is used to operate the oxygen sensor heaters at the various duty cycles available to the engine controller. |
| HO2S Heater Sensor 2<br>or<br>HO2S Heater Bank 1 Sensor 2 | This device control is used to override the duty cycle of the oxygen sensor heaters. With the engine OFF, this device control is intended to be used as a discrete control for circuit diagnosis. With the engine OFF, none of the oxygen sensor heaters can be commanded ON for more than 3.0 seconds, after which the selected oxygen sensor heater must be disabled for a limited duration (typically 60 seconds) before it may be enabled again. With the engine running, this device control is used to operate the oxygen sensor heaters at the various duty cycles available to the engine controller. |
| HO2S Heater Bank 2 Sensor 1 | This device control is used to override the duty cycle of the oxygen sensor heaters. With the engine OFF, this device control is intended to be used as a discrete control for circuit diagnosis. With the engine OFF, none of the oxygen sensor heaters can be commanded ON for more than 3.0 seconds, after which the selected oxygen sensor heater must be disabled for a limited duration (typically 60 seconds) before it may be enabled again. With the engine running, this device control is used to operate the oxygen sensor heaters at the various duty cycles available to the engine controller. |

| Output Control | Description |
|---|---|
| HO2S Heater Bank 2 Sensor 2 | This device control is used to override the duty cycle of the oxygen sensor heaters. With the engine OFF, this device control is intended to be used as a discrete control for circuit diagnosis. With the engine OFF, none of the oxygen sensor heaters can be commanded ON for more than 3.0 seconds, after which the selected oxygen sensor heater must be disabled for a limited duration (typically 60 seconds) before it may be enabled again. With the engine running, this device control is used to operate the oxygen sensor heaters at the various duty cycles available to the engine controller. |
| HO2S Heater Learn | This device control is used to trigger the reset of the learned resistances for the oxygen sensor heaters following a replacement in service. The learned resistances are reset to a calibration used to prevent overheating of the sensors until more accurate resistances may be learned following an extended engine OFF time (typically 12 or more hours). |
| Idle Ignition Timing | Disables and enables idle spark advance with the engine running. |
| Idle Learn | This function allows the throttle position and the idle speed to be relearned by the ECM, once the following conditions have been met.<br>• The ignition is ON with the engine OFF.<br>• The ECT is between 5–85°C (41–185°F).<br>• No throttle actuator control (TAC) system DTCs are set. |
| Ignition Timing Retard | This device control is used to retard the spark angle from the software calculated spark angle. For example, if the software calculated spark angle was 15 degrees advanced and this device control requested a 3 degree retard, the commanded spark angle that would be delivered would be 12 degrees advanced. |
| Intake Air Heater | This device control is used to override the state of the intake air heater. |
| Intake Camshaft Position Actuator<br>or<br>Intake Camshaft Position Actuator Bank 1 | This device control is used to override the state of the intake cam phase output. The commanded camshaft position is expressed in terms of degrees of camshaft rotation (advance for intake camshafts) from the park position (a camshaft position of zero represents the park position). |
| Intake Camshaft Position Actuator<br>or<br>Intake Camshaft Position Actuator Bank 2 | This device control is used to override the state of the intake cam phase output. The commanded camshaft position is expressed in terms of degrees of camshaft rotation (advance for intake camshafts) from the park position (a camshaft position of zero represents the park position). |
| Intake Camshaft Position Actuator Solenoid Valve<br>or<br>Intake Camshaft Position Actuator Solenoid Valve Bank 1 | This device control is used to override the state of the intake cam phase solenoid output. |
| Intake Camshaft Position Actuator Solenoid Valve<br>or<br>Intake Camshaft Position Actuator Solenoid Valve Bank 2 | This device control is used to override the state of the intake cam phase solenoid output. |
| Intake Camshaft Profile Actuator | This device control is used to override the state of the A camshaft profile actuator control outputs. The device control is intended as an electrical test and is only allowed with the actuator connector disconnected. This is confirmed by having the open circuit fault active for the camshaft profile actuator position sensor and at least one of the two camshaft profile actuator control outputs on the actuator assembly the device control is being requested for. |
| Intake Rocker Arm Solenoid Valve 1–2 or 1 and 2 | When the engine is running, this device control may be used to command intake valve opening to low or high (high being default when the solenoid is not energized) valve lift mode either in cylinder pairs or as a system. |
| Malfunction Indicator Lamp (MIL) | This function controls the malfunction indicator lamp (MIL). The normal commanded state is NONE. When commanded ON/OFF, the ECM turns the MIL ON/OFF. The system remains in the commanded state until cancelled by the scan tool. |
| Mass Air Flow Sensor Supply Voltage | This device control is used to override the state of the mass air flow sensor supply voltage output. |
| Misfire Graphic | This function clears the misfire graphics from the scan tool. |
| Oil Life Reset | This output control is used to reset the engine oil life monitor from 0 to 100 %. |

| Output Control | Description |
|---|---|
| Remote Vehicle Start Disable History Reset | This function clears the remote vehicle start (RVS) disable history. When RESET is selected the reason the control module did not allow RVS in the last 8 attempts is cleared. |
| Secondary Air Injection Pump Relay | This device control is used to turn the AIR Pump ON or OFF. |
| Secondary Air Injection Solenoid Valve | This device control is used to turn the AIR Valve ON or OFF. |
| Secondary Air Injection Test | This device control is used to trigger the secondary air injection (SAI) diagnostic service bay test, which causes the on board SAI diagnostic to execute until it is completed or aborted. |
| Starter Relay (If Available) | Commands the starter relay ON and OFF. |
| Throttle Position | This device control is used to override the commanded throttle position. |
| Throttle Sweep | This function moves the Throttle plate slowly from a closed position to wide open position, aiding diagnosis of TAC motor. |
| Transmission Fluid Pressure Accumulator Solenoid Valve | This device control is used to override the state of the Transmission Fluid Pressure Accumulator Solenoid Valve. |
| Turbocharger Bypass Solenoid Valve | This device control is used to control the duty cycle for the turbocharger A compressor bypass. |
| Turbocharger Wastegate Solenoid Valve | This device control is used to control the duty cycle for the turbocharger A wastegate. |

## K219 Lighting Control Module: Scan Tool Information

### Lighting Control Module — Data Display — Front Exterior Lighting Data

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| **Operating Conditions:** Ignition ON/Vehicle in Service Mode, Vehicle in Park, All Doors Closed | | | |
| Left Daytime Running Lamps | — | Off | The scan tool displays On or Off. |
| Right Daytime Running Lamps | — | Off | The scan tool displays On or Off. |
| Left Low Beam Command | — | Inactive | The scan tool displays Active or Inactive. |
| Right Low Beam Command | — | Inactive | The scan tool displays Active or Inactive. |
| Left Front Turn Signal Lamp Command | — | Off | The scan tool displays On or Off. |
| Right Front Turn Signal Lamp Command | — | Off | The scan tool displays On or Off. |
| Left Park Lamps Command | — | Off | The scan tool displays On or Off. |
| Right Park Lamps Command | — | Off | The scan tool displays On or Off. |

### Lighting Control Module — Data Display — Rear Exterior Lighting Data

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| **Operating Conditions:** Ignition ON/Vehicle in Service Mode, Vehicle in Park, All Doors Closed | | | |
| Left Turn Signal Lamps | — | Off | The scan tool displays On or Off. |
| Right Turn Signal Lamps | — | Off | The scan tool displays On or Off. |
| Left Tail Lamp Driver | — | Off | The scan tool displays On or Off. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Right Tail Lamp Driver | — | Off | The scan tool displays On or Off. |
| Center High Mounted Stop Lamp Driver | — | Off | The scan tool displays On or Off. |
| License Plate Lamp Circuit Driver | — | Off | The scan tool displays On or Off. |

## Lighting Control Module — Data Display — Side Exterior Lighting Data

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| **Operating Conditions:** Ignition ON/Vehicle in Service Mode, Vehicle in Park, All Doors Closed | | | |
| Left Side Marker Lamp Command | — | Off | The scan tool displays On or Off. |
| Right Side Marker Lamp Command | — | Off | The scan tool displays On or Off. |
| Left Turn Signal Repeater Lamp Command | — | Off | The scan tool displays On or Off. |
| Right Turn Signal Repeater Lamp Command | — | Off | The scan tool displays On or Off. |

## Lighting Control Module — Data Display — Indicator Data

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| **Operating Conditions:** Ignition ON/Vehicle in Service Mode, Vehicle in Park, All Doors Closed | | | |
| Daytime Running Lamps Indicator | — | Off | The scan tool displays On or Off. |
| Front Park Lamps Indicator | — | Off | The scan tool displays On or Off. |
| Headlamp High Beam Indicator | — | Inactive | The scan tool displays Active or Inactive. |
| Left Turn Signal Indicator | — | Off | The scan tool displays On or Off. |
| Right Turn Signal Indicator | — | Off | The scan tool displays On or Off. |
| Left Front Turn Signal Lamp Malfunction Indicator | — | Off | The scan tool displays On or Off. |
| Left Rear Turn Signal Lamp Malfunction Indicator | — | Off | The scan tool displays On or Off. |
| Right Front Turn Signal Lamp Malfunction Indicator | — | Off | The scan tool displays On or Off. |
| Right Rear Turn Signal Lamp Malfunction Indicator | — | Off | The scan tool displays On or Off. |

## Lighting Control Module — Exterior Lighting — Scan Tool Output Controls

| Output Control | Description |
|---|---|
| Center High Mounted Stop Lamp | This output control is used to activate the center high mounted stop lamp when selecting On. The center high mounted stop lamp should illuminate until commanded Off. |
| Left Stop Lamp | This output control is used to activate the left stop lamp when selecting On. The left stop lamp should illuminate until commanded Off. |
| Right Stop Lamp | This output control is used to activate the right stop lamp when selecting On. The right stop lamp should illuminate until commanded Off. |

| Output Control | Description |
| --- | --- |
| License Plate Lamps | This output control is used to activate the license plate lamps when selecting On. The license plate lamps should illuminate until commanded Off. |
| Backup Lamps | This output control is used to activate the backup lamps when selecting On. The backup lamps should illuminate until commanded Off. |
| Left Front Park Lamp Status | This output control is used to activate the left park lamps when selecting On. The left park lamps should illuminate until commanded Off. |
| Right Front Park Lamp Status | This output control is used to activate the right park lamps when selecting On. The right park lamps should illuminate until commanded Off. |
| Left Daytime Running Lamps | This output control is used to activate the left daytime running lamps when selecting On. The left daytime running lamps should illuminate until commanded Off. |
| Right Daytime Running Lamps | This output control is used to activate the right daytime running lamps when selecting On. The right daytime running lamps should illuminate until commanded Off. |
| Left Auxiliary Daytime Running Lamps | This output control is used to activate the left auxiliary daytime running lamps when selecting On. The left auxiliary daytime running lamps should illuminate until commanded Off. |
| Right Auxiliary Daytime Running Lamps | This output control is used to activate the right auxiliary daytime running lamps when selecting On. The right auxiliary daytime running lamps should illuminate until commanded Off. |
| Left Front Auxiliary Park Lamp Command | This output control is used to activate the left front auxiliary park lamp when selecting On. The left front auxiliary park lamp should illuminate until commanded Off. |
| Right Front Auxiliary Park Lamp Command | This output control is used to activate the right front auxiliary park lamp when selecting On. The right front auxiliary park lamp should illuminate until commanded Off. |
| Left Front Turn Signal Lamp Command | This output control is used to activate the left front turn signal lamp when selecting On. The left front turn signal lamp should illuminate until commanded Off. |
| Right Front Turn Signal Lamp Command | This output control is used to activate the right front turn signal lamp when selecting On. The right front turn signal lamp should illuminate until commanded Off. |
| Left Turn Signal Repeater Lamp Command | This output control is used to activate the left turn signal repeater lamp when selecting On. The left turn signal repeater lamp should illuminate until commanded Off. |
| Right Turn Signal Repeater Lamp Command | This output control is used to activate the right turn signal repeater lamp when selecting On. The right turn signal repeater lamp should illuminate until commanded Off. |
| Left Rear Turn Signal Lamp | This output control is used to activate the left rear turn signal lamp when selecting On. The left rear turn signal lamp should illuminate until commanded Off. |
| Right Rear Turn Signal Lamp | This output control is used to activate the right rear turn signal lamp when selecting On. The right rear turn signal lamp should illuminate until commanded Off. |

## K234 Rear Seat Heater Vent Control Module: Scan Tool Information

### Rear Seat Heating Control Module Scan Tool Data Display Parameters

| Parameter | Expected Value | Description |
| --- | --- | --- |
| **Operating Conditions:** Engine Running | | |
| Left Rear Seat Cushion Heating Command | Inactive | The scan tool displays Inactive or Active. This parameter displays the commanded output from the seat heating control module to the seat heater elements. |
| Left Rear Seat Cushion Temperature Sensor | Varies | The scan tool displays 0 – 5 V. The voltage displayed is an input to the seat heating control module from the seat cushion temperature sensor. Higher voltage readings indicate cooler seat temperatures while lower voltage readings indicate warmer seat temperatures. |
| Left Rear Seat Heating/Venting/ Cooling Level | Off | The scan tool displays Off, High Medium, or Low. When the heated seat is active, this parameter displays the selected temperature setting. |
| Left Rear Seat Heating/Venting/ Cooling Mode | Off | The scan tool displays Off or Back & Cushion Heat. This parameter indicates the heated seat mode of operation. |

| Parameter | Expected Value | Description |
|---|---|---|
| Right Rear Seat Cushion Heating Command | Inactive | The scan tool displays Inactive or Active. This parameter displays the commanded output from the seat heating control module to the seat heater elements. |
| Right Rear Seat Cushion Temperature Sensor | Varies | The scan tool displays 0 – 5 V. The voltage displayed is an input to the seat heating control module from the seat cushion temperature sensor. Higher voltage readings indicate cooler seat temperatures while lower voltage readings indicate warmer seat temperatures. |
| Right Rear Seat Heating/Venting/ Cooling Level | Off | The scan tool displays Off, High Medium, or Low. When the heated seat is active, this parameter displays the selected temperature setting. |
| Right Rear Seat Heating/Venting/ Cooling Mode | Off | The scan tool displays Off or Back & Cushion Heat. This parameter indicates the heated seat mode of operation. |

### Rear Seat Heating Control Module Scan Tool Control Functions

| Control Functions | Description |
|---|---|
| **Operating Conditions:** Engine Running | |
| Left Rear Seat Cushion Heating | This output control is used to command the left rear seat heater element On. |
| Right Rear Seat Cushion Heating | This output control is used to command the right rear seat heater element On. |

## K29FV Front Seat Heater Vent Control Module: Scan Tool Information

### Front Seat Heating Control Module Scan Tool Data Parameters

| Parameter | Expected Values | Description |
|---|---|---|
| **Operating Conditions:** Engine Running | | |
| Seat Heating/Venting/Cooling Load Shed | Inactive / Active | When this parameter is active it indicates the Heating/Venting/ System is shutdown to reduce strain on the vehicle electrical system which is experiencing too high of a current draw |
| Left Front Seat Heating/Venting/ Cooling Operating Conditions | Remote Vehicle Start / Automatic / Manual / Autostop Request | The functional behavior of heated seats is dependent on its determined operational state. This parameter indicates the defined state which it is operating in. |
| Left Front Seat Heating/Venting/ Cooling Switch | Inactive / Active | The Heated/Vented switch assembly contains a number of switches affecting the operation of the Heated Vented Seats. This parameter indicates when any one of the switches is active and is persistent as long as the switch is pressed. |
| Left Front Seat Heating/Venting/ Cooling Requested Mode | Off / Seat Back Heating / Seat Back and Cushion Heating / Seat Venting/ Cooling | This parameter indicates the type of Heated/Vented Seat function being requested , as determined by the BCM tracking various inputs |
| Left Front Seat Heating/Venting/ Cooling Requested Level | Off / High / Medium / Low | This parameter indicates the type of Heated/Vented Seat level of intensity being requested as determined by the BCM tracking various inputs |
| Left Front Seat Heating/Venting/ Cooling Mode | Off / Seat Back Heating / Seat Back and Cushion Heating / Seat Venting/ Cooling | This parameter indicates the type of Heated/Vented Seat function being applied as commanded by the BCM software based on a number of factors |
| Left Front Seat Heating/Venting/ Cooling Level | Off / High / Medium / Low | This parameter indicates the type of Heated/Vented Seat level of intensity being applied as commanded by the BCM software based on a number of factors. |
| Right Front Seat Heating/Venting/ Cooling Operating Conditions | Remote Vehicle Start / Automatic / Manual / Autostop Request | The functional behavior of heated seats is dependent on its determined operational state. This parameter indicates the defined state which it is operating in. |
| Right Front Seat Heating/Venting/ Cooling Switch | Inactive / Active | The Heated/Vented switch assembly contains a number of switches affecting the operation of the Heated Vented Seats. This parameter indicates when any one of the switches is active and is persistent as long as the switch is pressed. |

| Parameter | Expected Values | Description |
|---|---|---|
| Right Front Seat Heating/Venting/ Cooling Requested Mode | Off / Seat Back Heating / Seat Back and Cushion Heating / Seat Venting/ Cooling | This parameter indicates the type of Heated/Vented Seat function being requested, as determined by the BCM tracking various inputs |
| Right Front Seat Heating/Venting/ Cooling Requested Level | Off / High / Medium / Low | This parameter indicates the type of Heated/Vented Seat level of intensity being requested as determined by the BCM tracking various inputs |
| Right Front Seat Heating/Venting/ Cooling Mode | Off / Seat Back Heating / Seat Back and Cushion Heating / Seat Venting/ Cooling | This parameter indicates the type of Heated/Vented Seat function being applied as commanded by the BCM software based on a number of factors |
| Right Front Seat Heating/Venting/ Cooling Level | Off / High / Medium / Low | This parameter indicates the type of Heated/Vented Seat level of intensity being applied as commanded by the BCM software based on a number of factors. |

### Front Seat Heating Control Module Scan Tool Output Controls

| Control Functions | Description |
|---|---|
| **Operating Conditions:** Engine Running | |
| Left Front Seat Heating | This output control is used to command the left front seat heater elements On. |
| Right Front Seat Heating | This output control is used to command the right front seat heater elements On. |
| Left Front Seat Blower Command | This output control is used to command the left front seat blower On. |
| Right Front Seat Blower Command | This output control is used to command the right front seat blower On. |

## K36 Restraints Control Module: Scan Tool Information

**Note:** Some parameters and values in the table below may not apply to every vehicle.

### Restraints Control Module Scan Tool Data Parameters

| Parameter | Expected Value | Definition |
|---|---|---|
| **Operating Conditions:** Ignition ON | | |
| 2nd Row Left Seat Belt Reminder Sensor Pad Enable Status | Disabled/Enabled | The scan tool displays if the left rear seat belt reminder sensor pad is enabled to the RCM. |
| 2nd Row Left Seat Belt Reminder Sensor Pad Learn Status | Learned/Not Learned | The scan tool displays Learned or Not Learned. Learned is displayed if the left rear seat belt reminder sensor pad has been learned by the RCM. |
| 2nd Row Left Seat Belt Status | Buckled/Unbuckled | The scan tool displays Buckled or Unbuckled. This is the state of the left rear seat belt switch when the seat belt is buckled or unbuckled. |
| 2nd Row Middle Seat Belt Reminder Sensor Pad Enable Status | Disabled/Enabled | The scan tool displays if the rear middle seat belt reminder sensor pad is enabled to the RCM. |
| 2nd Row Middle Seat Belt Reminder Sensor Pad Learn Status | Learned/Not Learned | The scan tool displays Learned or Not Learned. Learned is displayed if the rear middle seat belt reminder sensor pad has been learned by the RCM. |
| 2nd Row Middle Seat Belt Status | Buckled/Unbuckled | The scan tool displays Buckled or Unbuckled. This is the state of the middle rear seat belt switch when the seat belt is buckled or unbuckled. |
| 2nd Row Middle Seat Belt Reminder Sensor Pad Enable Status | Disabled/Enabled | The scan tool displays if the rear right seat belt reminder sensor pad is enabled to the RCM. |

| Parameter | Expected Value | Definition |
|---|---|---|
| 2nd Row Middle Seat Belt Reminder Sensor Pad Learn Status | Learned/Not Learned | The scan tool displays Learned or Not Learned. Learned is displayed if the rear right seat belt reminder sensor pad has been learned by the RCM. |
| 2nd Row Right Seat Belt Status | Buckled/Unbuckled | The scan tool displays Buckled or Unbuckled. This is the state of the right rear seat belt switch when the seat belt is buckled or unbuckled. |
| Air Bag Malfunction Indicator | On/Off/Flashes | The scan tool will display On or Flashes if there is a problem with the SIR system. Any problems within the SIR system will illuminate the air bag indicator. The indicator will either flash or stay on. |
| Base Model Part Number | Varies, 8 Digit Number | The scan tool displays the part number of the RCM which is stored in non volatile memory. |
| Calibration Part Number | Varies, 8 Digit Number | The scan tool displays the part number of the calibration file in the RCM. |
| Deployment Loop 1-18 Enable Status | Enabled/Disabled | The scan tool displays Enabled or Disabled. This is the status of the air bag or pretensioner. |
| Deployment Loop 1-18 Learn Status | Learned/Not Learned | The scan tool displays Learned or Not learned. Learned is displayed if the RCM has defined the number loop programmed from an air bag or pretensioner. |
| Deployment Loop 1-18 Resistance | 1.44–4.25 Ohms | The scan tool displays the resistance of the learned loop of the air bag or pretensioner when connected to the RCM. |
| Deployment Loop 1-18 Type | Varies | The scan tool displays the name of the air bag or pretensioner associated with the loop type 1–18. |
| Driver Seat Belt Reminder Indicator | On/Off | The scan tool displays On if this indicator is on. If the indicator is on it means the seat belt has not been buckled. |
| Driver Seat Belt Sensor Enable Status | Enabled/Disabled | The scan tool displays if the seat belt sensor in the seat belt buckle is enabled to the RCM. |
| Driver Seat Belt Sensor Learn Status | Learned/Not learned | The scan tool displays Learned or Not Learned. Learned is displayed if the driver seat belt sensor has been learned by the RCM. |
| Driver Seat Belt Status | Buckled/Unbuckled | The scan tool displays Buckled or Unbuckled. This is the state of the driver seat belt switch when the seat belt is buckled or unbuckled. |
| Driver Seat Position Sensor | Rearward/Forward | The scan tool will display if the driver seat is forward or rearward of the sensor set position. |
| Driver Seat Position Sensor Enable Status | Enabled/Disabled | The scan tool displays if the seat position sensor is enabled to the RCM. |
| Driver Seat Position Sensor Learn Status | Learned/Not Learned | The scan tool displays Learned or Not Learned. Learned is displayed if the driver seat position sensor has been learned by the RCM. |
| End Model Part Number | Varies, 8 Digit Number | The scan tool displays the part number of the RCM in production. |
| Impact Sensor 1-8 Enable Status | Enabled/Disabled | The scan tool displays Enabled or Disabled This is the status of the impact sensor. |
| Impact Sensor 1-8 Learn Status | Learned/Not Learned | The scan tool displays Learned or Not learned. Learned is displayed if the RCM has learned and has assigned a number to that impact sensor. |
| Impact Sensor 1-8 Type | Equipped/Not Equipped | The scan tool displays the name of the impact sensor associated with the type 1–8. |
| Restraint Control Module Module Primary Key | Hex Value | The scan tool indicates the primary key Hex value. |
| Manufacturer's Traceability Number | Varies, 16 Digit Number | The scan tool displays the 16 digit traceability number in the RCM. |
| Module Setup | Incomplete/Complete | The scan tool indicates if the RCM is set up. |
| Passenger Air Bag Disabled Switch | On/Off | The scan tool displays Off when the customer manually turns the passenger airbag off with this switch. |

| Parameter | Expected Value | Definition |
|---|---|---|
| Passenger Air Bag Off Indicator | On/Off | The scan tool displays Off when the passenger indicator is not illuminated. This indicator is off when the disable switch is in the off position or no one is sitting in the passenger seat. |
| Passenger Air Bag On Indicator | On/Off | The scan tool displays On when the passenger indicator is illuminated. This indicator is on when the disable switch is in the on position and someone is sitting in the passenger seat. |
| Passenger Air Bag Status | Enabled/Disabled | The scan tool displays if the passenger air bag is enabled to the RCM. |
| Passenger Air Bag Disable Indicator Enable Status | Enabled/Disabled | The scan tool displays if the passenger air bag disable indicator is enabled to the RCM. |
| Passenger Air Bag Disable Indicator Learn Status | Learned/Not Learned | The scan tool displays Learned or Not Learned. Learned is displayed if the RCM has learned the status of the passenger air bag disable indicator. |
| Passenger Air Bag Disable Switch Enable Status | Enabled/Disabled | The scan tool displays if the passenger air bag disable switch is enabled to the RCM. |
| Passenger Air Bag Disable Switch Learn Status | Learned/Not Learned | The scan tool displays Learned or Not Learned. Learned is displayed if the RCM has learned the status of the passenger air bag disable switch. |
| Passenger Air Bag Enable Indicator Enable Status | Enabled/Disabled | The scan tool displays if the passenger air bag enable indicator is enabled to the RCM. |
| Passenger Air Bag Enable Indicator Learn Status | Learned/Not Learned | The scan tool displays Learned or Not Learned. Learned is displayed if the RCM has learned the status of the passenger air bag enable indicator. |
| Passenger Classification | 00–07 | The scan tool will display what type of individual is sitting in the passenger seat. |
| Passenger Presence Detection System Enable Status | Enabled/Disabled | The scan tool displays if the restraint occupation classification system is enabled to the RCM. |
| Passenger Presence Detection System Learn Status | Learned/Not Learned | The scan tool displays Learned or Not Learned. Learned is displayed if the RCM has learned the passenger presence system. |
| Passenger Presence Detection System Reporting DTC(s) | Yes/No | The RCM will report if there are DTCs set in the passenger presence module. |
| Passenger Seat Belt Reminder Indicator | On/Off | The scan tool displays On if this indicator is on. If the indicator is on it means the seat belt has not been buckled. |
| Passenger Seat Belt Reminder Indicator Enable Status | Disabled/Enabled | The scan tool displays if the passenger seat belt reminder indicator is enabled to the RCM. |
| Passenger Seat Belt Reminder Indicator Learn Status | Learned/Not Learned | The scan tool displays Learned or Not Learned. Learned is displayed if the passenger seat belt reminder indicator has been learned by the RCM. |
| Passenger Seat Belt Reminder Sensor Pad Enable Status | Disabled/Enabled | The scan tool displays if the passenger seat belt reminder sensor pad is enabled to the RCM. |
| Passenger Seat Belt Reminder Sensor Pad Learn Status | Learned/Not Learned | The scan tool displays Learned or Not Learned. Learned is displayed if the passenger seat belt reminder sensor pad has been learned by the RCM. |
| Passenger Seat Belt Sensor Enable Status | Enabled/Disabled | The scan tool displays if the seat position sensor is enabled to the RCM. |
| Passenger Seat Belt Sensor Learn Status | Learned/Not learned | The scan tool displays Learned or Not Learned. Learned is displayed if the passenger seat belt sensor has been learned by the RCM. |
| Passenger Seat Belt Status | Buckled/Unbuckled | The scan tool displays Buckled or Unbuckled. This is the state of the passenger seat belt switch when the seat belt is buckled or unbuckled. |
| Passenger Seat Occupancy Status | Empty Seat/Occupied | The scan tool displays Occupied if someone is sitting in the passenger seat. |
| Passenger Seat Position Sensor | Rearward/Forward | The scan tool will display if the passenger seat is forward or rearward of the sensor set position. |

| Parameter | Expected Value | Definition |
|---|---|---|
| Passenger Seat Position Sensor Enable Status | Disabled/Enabled | The scan tool displays if the passenger seat position sensor pad is enabled to the RCM. |
| Passenger Seat Position Sensor Learn Status | Learned/Not Learned | The scan tool displays Learned or Not Learned. Learned is displayed if the passenger seat position sensor has been learned by the RCM. |
| Power Mode | Off/Accessory/Run/Crank Request | The scan tool will display the power mode of the vehicle. |
| Primary Key Status | Valid/Invalid | The scan tool displays Valid if the primary key matches what is stored to memory in the RCM. |
| Primary Key Status Last Ignition Cycle | Invalid/Valid | The RCM checks to see if the primary key data received is valid. |
| Received Primary Key | Hex Value | The scan tool displays a Hex value indicating the RCM received primary key data. |
| Rollover Sensor Enable Status | Disabled/Enabled | The scan tool displays if the rollover sensor is enabled to the RCM. |
| Rollover Sensor Learn Status | Learn/Unlearn | The scan tool displays Learned or Not Learned. Learned is displayed if the rollover sensor has been learned by the RCM. |
| Security Code Accepted | Yes/No | The RCM either accepts the security code or it does not. The scan tool displays Yes if the security code has been accepted by the RCM. |
| Security Code Lockout | Yes/No | The scan tool displays Yes if the RCM has been locked out because of the security code not being accepted. |
| Security Code Lockout Active Timer | Random Value | The RCM uses a timer before the security code is locked in the RCM. |
| Security Code Programmed | Yes/No | The scan tool displays Yes if the RCM has been programmed with the security code. |
| Security Code Programming Counter | Random Value | The RCM uses a counter for the value of the security code programming. |
| Security Code Reset Counter | Random Value | The RCM uses a counter to reset the value of the security code. |
| Software Part Number | Varies, 8 Digit Number | The scan tool displays the software part number in the RCM. |
| Vehicle Identification Number | Varies, 17 Digit Number | The VIN number of the vehicle programmed into the RCM. |
| VIN Programmed | Yes/No | The scan tool displays Yes if the VIN has been programmed into the RCM. |
| VIN Programming Counter | Random Value | The RCM uses this counter while programming the VIN. |

## K38A Chassis Control Module - Auxiliary: Scan Tool Information

### Trailer Brake Controls Scan Tool Data List

| Scan Tool Parameter | System State | Expected Value | Definition |
|---|---|---|---|
| **Operating Conditions:** Ignition is ON, engine OFF, and vehicle is stationary | | | |
| ABS Active | — | No | The scan tool displays Yes/No. The scan tool displays No when ABS is not active. |
| Brake Apply Pressure Status | — | Valid | The scan tool displays Invalid or Valid. The scan tool displays Valid when the ignition is ON, and the brake apply sensor is not faulted. |
| Battery Voltage Signal | — | Varies | The scan tool displays 0–18 Volts. The scan tool displays approximately 12 Volts when the ignition is ON. |
| Brake Switch Status | — | Off | The scan tool displays On/Off. The scan tool indicates Off when the brake is not applied. |

| Scan Tool Parameter | System State | Expected Value | Definition |
|---|---|---|---|
| Electric Trailer Brakes Detected | — | No | The scan tool displays Yes or No. The scan tool displays Yes when the vehicle is connected to a trailer equipped with electric brakes. |
| HS Communication | — | Yes | The scan tool displays Yes or No. |
| Ignition Run/Crank | — | Active | The scan tool will display Active or Inactive. The scan tool will display Active when the signal received from the ECM Run/Crank position. |
| Master Cylinder Pressure Sensor Input | — | Varies | The scan tool will display brake fluid pressure. The scan tool will display kPa or psi signal received from the trailer brake control module. |
| Manual Apply Switch | — | Varies | The scan tool displays percent of manual apply lever travel. The scan tool displays 0–100%. |
| Manual Apply Switch 5 V Reference | — | Varies | The scan tool displays Volts. This is the reference voltage of the manual apply switch. |
| Manual Apply Switch | — | Varies | The scan tool displays Volts. This is the voltage of the manual apply lever. |
| Manual Apply Sw. Pos. Error | — | Varies | The scan tool displays percent of error between the manual apply and redundant manual apply signals. The scan tool displays 0–100%. A proper functioning switch should have a value less than 20 % |
| Redundant Manual Apply Sw. | — | Varies | The scan tool displays percent of manual apply lever travel using a redundant signal track. The scan tool displays 0–100% |
| Redundant Manual Apply Sw. | — | Varies | The scan tool displays volts. This is the voltage of the manual apply switch. |
| TBCM Diagnostic Fault | — | No | The scan tool will display Yes or No if a fault is detected. The scan tool will display the Yes if a fault signal is received from the trailer brake control module. |
| TBCM Relay Feedback | — | 0 | The scan tool displays a numeric value. |
| TBCM Relay Feedback Signal (unfiltered) | — | Varies | The scan tool displays Volts. This is the unfiltered feedback signal of the TBCM relay. |
| TBCM Relay Feedback Signal (filtered) | — | Varies | The scan tool displays Volts. This is the filtered feedback signal of the TBCM relay. |
| TBCM Relay Feedback Signal | — | Varies | The scan tool displays volts. This is the voltage of the relay feedback signal. |
| TBCM Cmd. Duty Cycle | — | Varies | The scan tool displays percent of battery voltage output commanded to the trailer brakes and depends on battery voltage and user gain setting. Approximately 100% will be indicated when user gain is set to 10.0 and the manual apply lever is fully applied with the engine running. |
| Trailer Brake Control | — | Disabled | The scan tool will display Enabled/ Disabled. The scan tool will display the signal received from the trailer brake control module. |
| Trailer Stop Lamp Signal | — | Off | The scan tool will display Not Requested or Off, Requested depending on the state of the brake switch, and manual apply lever. Requested will be displayed if the brake switch is active or On if the manual apply lever is applied. |

| Scan Tool Parameter | System State | Expected Value | Definition |
|---|---|---|---|
| Trailer Brake Relay Cmd. | — | 12 Volts | The scan tool displays 0–18 Volts. The scan tool displays voltage commanded to the trailer brakes when a trailer with electric brakes is connected and depends on battery voltage and user gain setting. Approximately 12–14 volts will be indicated when user gain is set to 10.0 and the manual apply lever is fully applied with the engine running. |
| Trailer Brake Relay Status | — | Enabled | The scan tool will display Disabled or Enabled. Enabled will be displayed whenever there are no faults present in the trailer brake control module. |
| Trailer Connection Detected | — | No | The scan tool displays Yes or No. The scan tool displays Yes when a trailer with electric trailer brakes is connected. |
| Trailer Disconnect Detected | — | No | The scan tool will display Yes or No depending on the trailer connections. Yes will be displayed if a trailer connection is made to a trailer equipped with electric trailer brakes, and a disconnect occurs within the same ignition cycle. |
| User Gain Switch | — | Varies | The scan tool displays percent of full gain setting. The scan tool displays 0–100%. Each full gain setting represents an increment of approximately 10 percent of full gain setting. Approximately 40% will be indicated with a gain setting of 4.0, 65% will be indicated with a gain setting of 6.5, etc. |
| User Gain Switch | — | Varies | The scan tool displays volts. This is the voltage of the full gain setting. |
| User Gain Switch 5 V Reference | — | Varies | The scan tool displays volts. This is the reference voltage of the user gain switch. |
| Vehicle Speed | — | km/h or mph | The scan tool displays 0–327 km/h (0–204 mph). The scan tool displays 0 km/h (0 mph) when the vehicle is not moving or is moving at speeds less than or equal to 0 km/h (0 mph). |

## Scan Tool Parameters for Electronic Locking Differential (If Equipped)

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| **Operating Conditions:** Ignition ON/Engine Idling at Normal Operating Temperature / Vehicle is in Park or Neutral | | | |
| 5V Reference 1 | — | Volts | The scan tool displays Volts. This is the Reference Voltage. |
| Differential Lock Switch Voltage | — | Volts | The scan tool displays Volts. This is the Front/Both Axle Differential Lock Switch. |
| Front Axle Differential Lock Actuator High Control Relay Feedback | — | Volts | The scan tool displays Volts. This is the Front Differential Lock Actuator High Side Feedback Voltage. |
| Front Axle Differential Lock Actuator Low Control Relay Feedback | — | Volts | The scan tool displays Volts. This is the Front Differential Lock Actuator Low Side Feedback Voltage. |
| Front Axle Differential Lock High Control Relay Command | — | On/Off | The scan tool displays On/Off. This is the state of the Front Axle Differential Lock. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Front Axle Differential Lock Indicator Command | — | On/Off | The scan tool displays On/Off. This is the state of the Front/ Both Axle Differential Lock indicator. |
| Front Axle Differential Lock Low Control Relay Command | — | On/Off | The scan tool displays On/Off. This is the state of the Front Axle Differential Lock. |
| Front Axle Differential Lock Switch Status | — | On/Off | The scan tool displays On/Off. This is the state of the Front Axle Differential Lock Switch. |
| Front Axle Differential Status | — | Open/Locked<br>Engaged/Disengaged | The scan tool displays varies states. This is the state of the Front Axle Differential Lock. |
| Ignition 1 Signal | — | Volts | The scan tool displays Volts. This is the state of voltage of power input to control module. |
| Rear Axle Differential Lock Actuator High Control Relay Feedback | — | Volts | The scan tool displays Volts. This is the Rear Differential Lock Actuator High Side Feed-back Voltage. |
| Rear Axle Differential Lock Actuator Low Control Relay Feedback | — | Volts | The scan tool displays Volts. This is the Rear Differential Lock Actuator Low Side Feed-back Voltage. |
| Rear Axle Differential Lock High Control Relay Command | — | On/Off | The scan tool displays On/Off. This is the state of the Rear Axle Differential Lock. |
| Rear Axle Differential Lock Indicator Command | — | On/Off | The scan tool displays On/Off. This is the state of the Rear Axle Differential Lock Indicator. |
| Rear Axle Differential Lock Low Control Relay Command | — | On/Off | The scan tool displays On/Off. This is the state of the Rear Axle Differential Lock. |
| Rear Axle Differential Lock Switch Status | — | On/Off | The scan tool displays On/Off. This is the state of the Rear Axle Differential Lock Switch. |
| Rear Axle Differential Status | — | Open/Locked<br>Engaged/Disengaged | The scan tool displays varies states. This is the state of the Rear Axle Differential Lock. |

### Scan Tool Output Controls for Electronic Locking Differential (If Equipped)

| Output Control | Description |
|---|---|
| Front Axle Differential Lock High Control Relay | This output control is used to turn the front axle differential lock high control relay on and off. |
| Front Axle Differential Lock Indicator | This output control is used to turn the front axle differential lock indicator on and off. |
| Front Axle Differential Lock Low Control Relay | This output control is used to turn the front axle differential lock low control relay on and off. |
| Rear Axle Differential Lock High Control Relay | This output control is used to turn the rear axle differential lock high control relay on and off. |
| Rear Axle Differential Lock Indicator | This output control is used to turn the rear axle differential lock indicator on and off. |
| Rear Axle Differential Lock Low Control Relay | This output control is used to turn the rear axle differential lock low control relay on and off. |

## K40D Driver Seat Adjuster Memory Module: Scan Tool Information

### Seat Position Scan Tool Data Parameters

| Parameter | Expected Value | Definition |
|---|---|---|
| **Operating Conditions:** Ignition ON | | |
| Driver Seat Back Switch | Inactive | The scan tool displays Inactive, Forward, or Rearward. When the seat recline switch is pressed, the scan tool displays the direction for which the switch is pressed. |
| Driver Seat Back Direction Command | Inactive | The scan tool displays Inactive, Forward, or Rearward. When the seat recline switch is pressed or when a memory recall occurs, the scan tool displays the direction the memory control module is commanding the seat recline motor. |
| Driver Seat Back Position | Varies | The scan tool displays 0–65,535 counts. The module counts the number of pulse signals with each rotation of the motor that the scan tool displays as counts. High count values indicate that the seat back is in the forward position, while low count values indicate that the seat back is in the rearward position. |
| Driver Seat Cushion Front Vertical Direction Command | Inactive | The scan tool displays Inactive, Up or Down. When the seat front vertical switch is pressed or when a memory recall occurs, the scan tool displays the direction the memory control module is commanding the seat front vertical motor. |
| Driver Seat Cushion Front Vertical Position | Varies | The scan tool displays 0–65,535 counts. The module counts the number of pulse signals with each rotation of the motor that the scan tool displays as counts. High count values indicate that the seat front vertical is in the up position, while low count values indicate that the seat front vertical is in the down position. |
| Driver Seat Cushion Front Vertical Switch | Inactive | The scan tool displays Inactive, Up or Down. When the seat front vertical switch is pressed, the scan tool should display the direction for which the switch is pressed. |
| Driver Seat Cushion Rear Vertical Direction Command | Inactive | The scan tool displays Inactive, Up or Down. When the seat rear vertical switch is pressed or when a memory recall occurs, the scan tool displays the direction the memory control module is commanding the seat rear vertical motor. |
| Driver Seat Cushion Rear Vertical Position | Varies | The scan tool displays 0–65,535 counts. The module counts the number of pulse signals with each rotation of the motor that the scan tool displays as counts. High count values indicate that the seat rear vertical is in the up position, while low count values indicate that the seat rear vertical is in the down position. |
| Driver Seat Cushion Rear Vertical Switch | Inactive | The scan tool displays Inactive, Up or Down. When the seat rear vertical switch is pressed, the scan tool should display the direction for which the switch is pressed. |
| Driver Seat Horizontal Direction Command | Inactive | The scan tool displays Inactive, Forward, or Rearward. When the seat horizontal switch is pressed or when a memory recall occurs, the scan tool displays the direction the memory control module is commanding the seat horizontal motor. |
| Driver Seat Horizontal Position | Varies | The scan tool displays 0–65,535 counts. The module counts the number of pulse signals with each rotation of the motor that the scan tool displays as counts. High count values indicate that the seat horizontal position is forward, while low count values indicate that the seat horizontal position is rearward. |
| Driver Seat Horizontal Switch | Inactive | The scan tool displays Inactive, Forward, or Rearward. When the seat horizontal switch is pressed, the scan tool should display the direction for which the switch is pressed. |
| Driver Seat Lumbar Support Horizontal Switch | Inactive | The scan tool displays Inactive, Forward, or Rearward. When the seat lumbar horizontal switch is pressed, the scan tool should display the direction for which the switch is pressed. |
| Driver Seat Lumbar Support Horizontal Direction Command | Inactive | The scan tool displays Inactive, Forward, or Rearward. When the seat lumbar horizontal switch is pressed, the scan tool displays the direction the memory control module is commanding the seat lumbar horizontal motor. |
| Lumbar Support Horizontal Position | Varies | The module stores the pressure information for lumbar position. |

| Parameter | Expected Value | Definition |
|---|---|---|
| Driver Seat Lumbar Support Vertical Switch | Inactive | The scan tool displays Inactive, Up, or Down. When the seat lumbar vertical switch is pressed, the scan tool should display the direction for which the switch is pressed. |
| Driver Seat Lumbar Support Vertical Direction Command | Inactive | The scan tool displays Inactive, Up, or Down. When the seat lumbar vertical switch is pressed, the scan tool displays the direction the memory control module is commanding the seat lumbar vertical motor. |
| Driver Seat Memory Recall Switches | Inactive | The scan tool displays Inactive, Memory 1, Memory 2, or Exit. When a memory function switch is pressed, the scan tool should momentarily display the function selected. |
| Driver Seat Memory Set Switch | Inactive | The scan tool displays Inactive/Active. When the memory SET switch is pressed, the scan tool should display Active. |
| Driver Seat Back Side Bolster Direction Command | Inactive | The scan tool displays Inactive, Inflate, or Deflate. When the seat back side bolster switch is pressed, the scan tool displays the function the memory control module is commanding the seat lumbar/bolster pump. |
| Driver Seat Back Side Bolster Switch | Inactive | The scan tool displays Inactive, Inflate, or Deflate. When the seat back side bolster switch is pressed, the scan tool should display the function for which the switch is pressed. |
| Driver Seat Cushion Side Bolster Direction Command | Inactive | The scan tool displays Inactive, Inflate, or Deflate. When the seat back side bolster switch is pressed, the scan tool displays the function the memory control module is commanding the seat lumbar/bolster pump. |
| Driver Seat Cushion Side Bolster Switch | Inactive | The scan tool displays Inactive, Inflate, or Deflate. When the seat back side bolster switch is pressed, the scan tool should display the function for which the switch is pressed. |
| Seat Massage Switch | Inactive | The scan tool displays Inactive/Active. When the seat massage switch s pressed, the scan tool should display Active. |

## Mirror Memory Scan Tool Data Parameters

| Parameter | Expected Value | Definition |
|---|---|---|
| **Operating Conditions:** Ignition ON | | |
| Mirror Select Switch | None | The scan tool displays None, Driver Door, or Passenger Door. The scan tool displays the current state of the mirror select switch. |
| Mirror Direction Switch | Inactive | The scan tool displays Inactive/Up/Down/Left/Right/Folding/Extending. The scan tool displays the current state of the power mirror switch as pressed. |
| Driver Mirror Direction Command | Inactive | The scan tool displays Inactive/Up/Down/Left/Right. When the power mirror switch is being used or when a memory recall occurs, the scan tool displays the direction the memory control module is commanding the driver mirror motors. |
| Driver Mirror Vertical Position | Varies | The scan tool displays 0–5 V. The voltage displayed represents the position of the driver vertical motor. High voltage values indicate the mirror position is up, while low count values indicate the mirror position is down. |
| Driver Mirror Horizontal Position | Varies | The scan tool displays 0–5 V. The voltage displayed represents the position of the driver horizontal motor. High voltage values indicate the mirror position is to the right or in, while low count values indicate the mirror position is to the left or out. |
| Passenger Mirror Direction Command | Inactive | The scan tool displays Inactive/Up/Down/Left/Right. When the power mirror switch is being used or when a memory recall occurs, the scan tool displays the direction the memory control module is commanding the passenger mirror motors. |

| Parameter | Expected Value | Definition |
|---|---|---|
| Passenger Mirror Vertical Position | Varies | The scan tool displays 0–5 V. The voltage displayed represents the position of the passenger vertical motor. High voltage values indicate the mirror position is up, while low count values indicate the mirror position is down. |
| Passenger Mirror Horizontal Position | Varies | The scan tool displays 0–5 V. The voltage displayed represents the position of the passenger horizontal motor. High voltage values indicate the mirror position is to the right or in, while low count values indicate the mirror position is to the left or out. |

### Steering Column Scan Tool Data Parameters

| Parameter | Expected Value | Definition |
|---|---|---|
| **Operating Conditions:** Ignition ON | | |
| Steering Column Direction Switch | Varies | The scan tool displays Inactive, Forward, Rearward, Up, or Down. When the steering column switch is pressed, the scan tool should display the direction for which the switch is pressed. |
| Steering Column Direction Command | Varies | The scan tool displays Inactive, Forward, Rearward, Up, or Down. When the module is commanding movement of the column, the scan tool should display the direction the module is commanding the column to move in. |
| Steering Column Vertical Position | Varies | The scan tool displays 0–5 V. The voltage displayed is an input to the seat memory control module from the steering column vertical position sensor. Higher voltage readings indicates the steering wheel position is up while lower voltage readings indicate the steering wheel position is down. |
| Steering Column Horizontal Position | Off | The scan tool displays 0–5 V. The voltage displayed is an input to the seat memory control module from the steering column vertical position sensor. Higher voltage readings indicates the steering wheel position is forward toward the front of the vehicle or away from the driver while lower voltage readings indicate the steering wheel position is rearward toward the driver. |

### Seat Memory Scan Tool Control Functions

| Control Functions | Description |
|---|---|
| Driver Seat Back Horizontal Movement | This output control is used to command the driver seat back recline position Forward and Rearward. |
| Driver Seat Cushion Front Vertical Movement | This output control is used to command the driver seat cushion front vertical position Up and Down. |
| Driver Seat Cushion Rear Vertical Movement | This output control is used to command the driver seat cushion rear vertical position Up and Down. |
| Driver Seat Horizontal Movement | This output control is used to command the driver seat horizontal position Forward and Rearward. |
| Driver Seat Back Side Bolster Movement | This output control is used to command the driver seat back side bolster support to Inflate or Deflate. |
| Driver Seat Lumbar Support Horizontal Movement | This output control is used to command the driver seat lumbar horizontal position Forward and Rearward. |
| Driver Seat Lumbar Support Vertical Movement | This output control is used to command the lumbar vertical position Up and Down. |

### Mirror Memory Scan Tool Control Functions

| Control Functions | Description |
|---|---|
| Driver Mirror Fold | This output control is used to command the driver mirror to fold and unfold. |
| Driver Mirror Movement | This output control is used to command the driver mirror up and down or left and right. |

| Control Functions | Description |
|---|---|
| Passenger Mirror Fold | This output control is used to command the passenger mirror to fold and unfold. |
| Passenger Mirror Movement | This output control is used to command the passenger mirror up and down or left and right. |

### Adjustable Steering Column Scan Tool Control Functions

| Control Functions | Description |
|---|---|
| Steering Column Tilt Up Command | This output control is used to command the steering column to the up position. |
| Steering Column Tilt Down Command | This output control is used to command the steering column to the down position. |
| Steering Column Telescope Forward Command | This output control is used to command the steering column to the forward position. |
| Steering Column Telescope Rearward Command | This output control is used to command the steering column to the rearward position. |

### Seat Cushion Haptic Motors Scan Tool Control Functions

| Control Functions | Description |
|---|---|
| Driver Seat Cushion Left Rear Haptic Movement | This output control is used to Enable and Disable the driver seat cushion left rear haptic motor function. |
| Driver Seat Cushion Right Rear Haptic Movement | This output control is used to Enable and Disable the driver seat cushion right rear haptic motor function. |

## K40P Passenger Seat Adjuster Memory Module: Scan Tool Information

### Seat Memory Control Module Scan Tool Data Display Parameters

| Parameter | Expected Value | Definition |
|---|---|---|
| **Operating Conditions:** Ignition ON | | |
| Passenger Seat Back Switch | Inactive | The scan tool displays Inactive, Forward, or Rearward. When the seat recline switch is pressed, the scan tool displays the direction for which the switch is pressed. |
| Passenger Seat Back Direction Command | Inactive | The scan tool displays Inactive, Forward, or Rearward. When the seat recline switch is pressed or when a memory recall occurs, the scan tool displays the direction the memory control module is commanding the seat recline motor. |
| Passenger Seat Back Position | Varies | The scan tool displays 0–65,535 counts. The module counts the number of pulse signals with each rotation of the motor that the scan tool displays as counts. High count values indicate that the seat back is in the forward position, while low count values indicate that the seat back is in the rearward position. |
| Passenger Seat Cushion Front Vertical Direction Command | Inactive | The scan tool displays Inactive, Up or Down. When the seat front vertical switch is pressed or when a memory recall occurs, the scan tool displays the direction the memory control module is commanding the seat front vertical motor. |
| Passenger Seat Cushion Front Vertical Position | Varies | The scan tool displays 0–65,535 counts. The module counts the number of pulse signals with each rotation of the motor that the scan tool displays as counts. High count values indicate that the seat front vertical is in the up position, while low count values indicate that the seat front vertical is in the down position. |
| Passenger Seat Cushion Front Vertical Switch | Inactive | The scan tool displays Inactive, Up or Down. When the seat front vertical switch is pressed, the scan tool will display the direction for which the switch is pressed. |

| Parameter | Expected Value | Definition |
|---|---|---|
| Passenger Seat Cushion Rear Vertical Direction Command | Inactive | The scan tool displays Inactive, Up or Down. When the seat rear vertical switch is pressed or when a memory recall occurs, the scan tool displays the direction the memory control module is commanding the seat rear vertical motor. |
| Passenger Seat Cushion Rear Vertical Position | Varies | The scan tool displays 0–65,535 counts. The module counts the number of pulse signals with each rotation of the motor that the scan tool displays as counts. High count values indicate that the seat rear vertical is in the up position, while low count values indicate that the seat rear vertical is in the down position. |
| Passenger Seat Cushion Rear Vertical Switch | Inactive | The scan tool displays Inactive, Up or Down. When the seat rear vertical switch is pressed, the scan tool will display the direction for which the switch is pressed. |
| Passenger Seat Horizontal Direction Command | Inactive | The scan tool displays Inactive, Forward, or Rearward. When the seat horizontal switch is pressed or when a memory recall occurs, the scan tool displays the direction the memory control module is commanding the seat horizontal motor. |
| Passenger Seat Horizontal Position | Varies | The scan tool displays 0–65,535 counts. The module counts the number of pulse signals with each rotation of the motor that the scan tool displays as counts. High count values indicate that the seat horizontal position is forward, while low count values indicate that the seat horizontal position is rearward. |
| Passenger Seat Horizontal Switch | Inactive | The scan tool displays Inactive, Forward, or Rearward. When the seat horizontal switch is pressed, the scan tool will display the direction for which the switch is pressed. |
| Passenger Seat Lumbar Support Horizontal Switch | Inactive | The scan tool displays Inactive, Forward, or Rearward. When the seat lumbar horizontal switch is pressed, the scan tool will display the direction for which the switch is pressed. |
| Passenger Seat Lumbar Support Horizontal Direction Command | Inactive | The scan tool displays Inactive, Forward, or Rearward. When the seat lumbar horizontal switch is pressed, the scan tool displays the direction the memory control module is commanding the seat lumbar horizontal motor. |
| Passenger Seat Lumbar Support Horizontal Position | Varies | |
| Passenger Seat Lumbar Support Vertical Switch | Inactive | The scan tool displays Inactive, Up, or Down. When the seat lumbar vertical switch is pressed, the scan tool will display the direction for which the switch is pressed. |
| Passenger Seat Lumbar Support Vertical Direction Command | Inactive | The scan tool displays Inactive, Up, or Down. When the seat lumbar vertical switch is pressed, the scan tool displays the direction the memory control module is commanding the seat lumbar vertical motor. |
| Passenger Seat Back Side Bolster Switch | Inactive | The scan tool displays Inactive, In, or Out. When the seat back side bolster switch is pressed, the scan tool will display the function for which the switch is pressed. |
| Passenger Seat Back Side Bolster Direction | Inactive | The scan tool displays Inactive, In or Out. When the seat back side bolster switch is pressed, the scan tool displays the function the memory control module is commanding the seat lumbar/ bolster pump. |
| Seat Cushion Side Bolster Switch | Inactive | The scan tool displays Inactive, In, or Out. When the seat back side bolster switch is pressed, the scan tool will display the function for which the switch is pressed. |
| Seat Cushion Side Bolster Direction Command | Inactive | The scan tool displays Inactive, In or Out. When the seat back side bolster switch is pressed, the scan tool displays the function the memory control module is commanding the seat lumbar/ bolster pump. |
| Passenger Seat Memory Recall Switches | Inactive | The scan tool displays Inactive, Memory 1, Memory 2, or Exit. When a memory function switch is pressed, the scan tool should momentarily display the function selected. |

| Parameter | Expected Value | Definition |
|---|---|---|
| Passenger Seat Memory Set Switch | Inactive | The scan tool displays Inactive/Active. When the memory SET switch is pressed, the scan tool should display Active. |
| Seat Massage Switch | Inactive | The scan tool displays Inactive/Active. When the massage switch is pressed, the scan tool should display Active. |

### Seat Memory Control Module Scan Tool Control Functions

| Control Functions | Description |
|---|---|
| Seat Back Direction Command | This output control is used to command the seat back recline position Forward and Rearward. |
| Seat Back Side Bolster Direction Command | This output control is used to command the seat back side bolster position In or Out. |
| Seat Cushion Side Bolster Direction Command | This output control is used to command the seat cushion side bolster position In or Out. |
| Seat Cushion Front Vertical Direction Command | This output control is used to command the seat cushion front vertical position Up and Down. |
| Seat Cushion Rear Vertical Direction Command | This output control is used to command the seat cushion rear vertical position Up and Down. |
| Seat Horizontal Directional Command | This output control is used to command the seat horizontal position Forward and Rearward. |
| Lumbar Support Horizontal Direction Command | This output control is used to command the seat lumbar horizontal position Forward and Rearward. |
| Lumbar Support Vertical Direction Command | This output control is used to command the seat lumbar vertical position Up and Down. |

## K43 Power Steering Control Module: Scan Tool Information

### Power Steering Control Module Scan Tool Data Parameters

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| **Operating Conditions:** Ignition ON | | | |
| Ignition Cycle Counter | — | Varies | This displays the number of ignition cycles. |
| ECU Internal Temperature | — | Varies | This displays ° C. This is the current internal temperature of the ECU |
| Steering Wheel Angle | — | Varies | This displays Degrees. This displays the current steering wheel angle in degrees. |
| EPS Motor Overload Protection Counter | — | Varies | This displays counts. This displays the Electric Power Steering Motor Overload Protection Incidents counter. |
| EPS System Status | — | True/False | Indicates the status of Vehicle Speed Validity, AHA Calibration, and AHA Setup Procedure. |
| Engine Speed | — | 0 RPM | This displays RPM. This is the current engine speed from the ECM. |
| Vehicle Speed Low Resolution | — | 0 Km/h (0 MPH) | This displays km/h (mph). This is the current vehicle speed. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Vehicle Speed Medium Resolution | — | 0 Km/h (0 MPH) | This displays km/h (mph). This is the current vehicle speed. |
| Driver Mode Control State | — | No Actcion/Performance Mode 1–7 | This displays the current drive mode. |
| Steering Wheel Angle Gradient | — | Varies | This displays degrees/sec. This is the rate at which the steering angle is changing. |
| AHA Coil Current Commanded | — | Varies | This displays the amount of current commanded by the AHA coil.. |
| AHA Coil Current Measured | — | Varies | This displays the actual measured current of the AHA coil. |
| AHA Right Hydraulic Pressure | — | Varies | This is the current pressure (Bar) of the right side of the AHA system. |
| AHA Left Hydraulic Pressure | — | Varies | This is the current pressure (Bar) of the left side of the AHA system. |
| AHA Differential Hydraulic Pressure | — | Varies | This is the current pressure (Bar) of the differential in the AHA system. |
| AHA Pull Hydraulic Pressure Compensation Value | — | Varies | This displays the AHA pull hydraulic pressure compensation value (Bar). |
| Time Since Ignition On | — | Varies | This displays the time (ms) since the ignition was switched to ON. |
| System Power Mode | — | OFF/ACC/RUN/Crank Request | This displays the current power mode. |
| Battery Voltage | — | Varies | This displays the current battery voltage. |
| Engine Running Status | — | True/False | This displays the engine running status. |
| AHA System Status | — | Disable/Off/Operate/Warm Initialization | This displays the current status of the AHA system |

## Power Steering Control Module Scan Tool Output Controls

| Output Control | Description |
|---|---|
| Cancel All Active Device Controls | Command to cancel any active device controls. |
| Steering Assist Control | Command to enable or disable Power Assist and to change Power Assist Mode. |
| Reset Adaptive Data | Command to reset adaptive parameters to default/unlearned values. The AHA ECU shall reset both short and long term pull compensation values. |
| Clear End of Line Gear Parameters | Command to clear the end of line gear parameters to their default values. |
| Pressure Sensor Trim | Command to trim the pressure sensor. Set Trim shall set the pressure trim value to the current Pressure 1 sensor input and Pressure 2 sensor input and set the pressure trim performed flag to indicate that a trim has been performed. |
| AHA Device Controls | Ignition cycle values while this command is active shall not be permanently stored. Values will only be retained for one ignition cycle. |
| System Basic Functions | Command to disable all device outputs of the AHA ECU. |

## K44 Power Take-off Control Module: Scan Tool Information

The scan tool data lists contain all of the power take-off (PTO) related parameters that are available on the scan tool. The parameters in the list are arranged in alphabetical order. The data list column indicates the location of the parameter within the scan tool menu selections.

Use the scan tool data lists as directed by a diagnostic table or in order to supplement the diagnostic procedures. Begin all of the diagnostic procedures with Diagnostic System Check – Vehicle .

Use the scan tool data lists only after the following is determined:

- There is no published DTC procedure or published symptom procedure for the customer concern.
- The DTC or symptom procedure indicated by the diagnostic system check does not resolve the customer concern.

### Engine Speed Power Take-Off Control Module Scan Tool Data Parameters

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| **Operating Conditions:** Ignition ON/Engine Idling at Normal Operating Temperature/Vehicle is in Park or Neutral/PTO Disengaged | | | |
| Engine Speed | — | Varies | The scan tool displays 0 to 9,999 RPM. The engine control module (ECM) monitors the crankshaft position (CKP) signal circuit in order to determine the engine RPM. |
| Ignition 1 Signal | — | Varies | The scan tool displays Volts. This is the voltage at the B+ input of the PTOM. |
| PTO Disengage Reason | — | Last reason why PTO was disengaged | The scan tool displays the last reason why the PTO was disengaged. Refer to the Scan Tool Data Definitions (Disengage or Inhibit Reasons) for descriptions. |
| PTO Indicator | — | Off | The scan tool displays On or Off. The PTOM monitors the signal circuit of the PTO switch. A closed switch is displayed as On. |
| PTO Inhibit Reason | — | Reason why PTO is currently inhibited | The scan tool displays the last reason why the PTO system was inhibited. Refer to the Scan Tool Data Definitions (Disengage or Inhibit Reasons) for descriptions. |
| PTO In Cab Switch | — | PTO Off | The scan tool displays PTO Off, PTO On, Set 1, Set 2, No Action, Invalid, or Indeterminate. The PTOM monitors the signal circuit of the PTO switch. |
| PTO In Cab Switch A | — | Numeric | The scan tool displays %. The PTOM monitors the mode select A circuit and displays the current percentage. |
| PTO In Cab Switch B | — | Numeric | The scan tool displays %. The PTOM monitors the mode select B circuit and displays the current percentage. |
| PTO In Cab Switch C | — | Numeric | The scan tool displays %. The PTOM monitors the mode select C circuit and displays the current percentage. |
| PTO Option | — | Disable | The scan tool displays Enhanced, Disable, Preset, Variable, Mobile, or Fast Idle. This is the current state of the PTO system. |
| PTO Remote Accelerator Sensor (If Equipped) | — | Numeric | The scan tool displays %. If equipped, the ECM sends a serial data message to the PTO module regarding the status of the PTO remote accelerator sensor. |
| PTO Remote Switch Status | — | PTO Off | The scan tool displays PTO Off, PTO On, Set 1, Set 2, No Action, Invalid, or Indeterminate. The PTOM monitors the signal circuit of the PTO remote switch. |
| PTO Status | — | No | The scan tool displays Disabled, Standby Disabled, Standby Pending, PTO Standby, PTO Active, Reserved, PTO Set, PTO Coast, Reserved, PTO Accelerate, Shutdown, or No Action. This is the current status of the PTO system. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Requested Engine Speed | — | Varies | The scan tool displays the requested RPM. |
| Vehicle Speed | — | Varies | The scan tool displays 0 to 150 km/h (93.2 mph). The ECM monitors the vehicle speed sensor signal circuit in order to calculate the vehicle speed for display. The ECM sends a serial data message to the PTOM regarding the current vehicle speed. |

### Engine Speed Power Take-Off Control Module Scan Tool Output Controls

| Output Control | Description |
|---|---|
| Clear PTO Reasons | The scan tool clears the PTO Disengagement and Inhibit reasons stored in the PTO module. |
| Engine Shutdown | The scan tool commands the PTO module to shut down the engine. |
| PTO Indicator | The scan tool commands the PTO module to illuminate the PTO indicator on and off. |
| PTO Relay | The scan tool commands the PTO module to enable and disable the PTO relay. |

## K60 Column Lock Module: Scan Tool Information

### Scan Tool Data Parameters

| Parameter | Expected Value | Description |
|---|---|---|
| **Operating Conditions:** Ignition ON | | |
| Column Lock Status | Locked<br>Invalid<br>Unlocked<br>Unknown | The scan tool displays Failed, Unknown, Locked and Unlocked. The scan tool displays the current state of the column lock. |
| Turn Steering Wheel, Start Vehicle Again Display Message | Inactive<br>Active | The scan tool displays Active/Inactive. If the wheels are against a curb, the lock pin may not be able to pull out. A message for the driver that is displayed on the Driver Information Center. The scan tool displays the need to turn the steering wheel, turn off the vehicle and then restart the vehicle. |
| Steering Column Lock Indicator | Inactive<br>Active | The scan tool displays Active/Inactive. The scan tool displays the current state of the column lock. |

## K68 Trailer Lighting Control Module: Scan Tool Information

### Body Control Module Scan Tool Data Parameters

| Parameter | System State | Expected Value | Definition |
|---|---|---|---|
| **Operating Conditions:** Ignition ON, Vehicle in Park. | | | |
| Battery Voltage | — | Varies | The scan tool displays the current battery voltage. |
| Brake Pedal Switch Status | — | Active/Inactive | The scan tool displays the status of the brake pedal |
| State of Charge | — | Varies | The scan tool displays percentage. This parameter displays state of charge status. |
| System Voltage | — | Varies | The scan tool displays the current system voltage. |
| Trailer Connection Status | — | Connected/Not Connected | The scan tool displays the trailer connected status. |

### Body Control Module Scan Tool Output Controls

| Scan Tool Output Control | Description |
|---|---|
| Left Trailer Turn Signal/ Stop Lamp Command | The Trailer Lighting Control Module activates the left trailer turn signal/stop lamp control circuit when you select Active. B+ should be applied to terminal G at the X88 Trailer Connector. |
| Right Trailer Turn Signal/ Stop Lamp Command | The Trailer Lighting Control Module activates the right trailer turn signal/stop lamp control circuit when you select Active. B+ should be applied to terminal D at the X88 Trailer Connector. |
| Left Trailer Tail Lamp | The Trailer Lighting Control Module activates the trailer park lamp control circuit when you select Active. B+ should be applied to terminal F at the X88 Trailer Connector. |
| Right Trailer Tail Lamp | The Trailer Lighting Control Module activates the trailer park lamp control circuit when you select Active. B+ should be applied to terminal F at the X88 Trailer Connector. |
| Trailer Backup Lamps | The Trailer Lighting Control Module activates the trailer backup lamp control circuit when you select Active. B+ should be applied to terminal A at the X88 Trailer Connector. |

## K69 Transfer Case Control Module: Scan Tool Information

### Scan Tool Data Parameters

| Parameter | Expected Value | Expected Value | Description |
|---|---|---|---|
| **Operating Conditions:** Ignition ON, engine OFF, Park or Neutral, and transfer case in 2WD, unless otherwise noted. | | | |
| 2WD High Range Indicator Command | ON or OFF | ON | This parameter displays ON when the transfer case control module commands the 2WD High indicator light ON. |
| 2WD High Range Indicator Control Circuit High Voltage Test Status | Not Run, OK or Malfunction | OK | This parameter monitors the status of the 2WD High range indicator control circuit. The 2WD High range indicator control circuit is made up of the indicator dimming control circuit and the 2WD High indicator control circuit.<br>A short to battery on the 2WD High indicator control circuit will cause this parameter to display Malfunction. |
| 2WD High Range Indicator Control Circuit Low Voltage Test Status | Not Run, OK or Malfunction | OK | This parameter monitors the status of the 2WD High range indicator control circuit. The 2WD High range indicator control circuit is made up of the indicator dimming control circuit and the 2WD High indicator control circuit.<br>A short to ground on the 2WD High indicator control circuit will cause this parameter to display Malfunction. |
| 2WD High Range Indicator Control Circuit Open Test Status | Not Run, OK or Malfunction | OK | This parameter monitors the status of the 2WD High range indicator control circuit. The 2WD High range indicator control circuit is made up of the indicator dimming control circuit and the 2WD High indicator control circuit.<br>An open on the 2WD High indicator control circuit will cause this parameter to display Malfunction. |
| 4WD Automatic Range Indicator Command | ON or OFF | OFF | This parameter displays ON when the transfer case control module commands the Auto 4WD indicator ON. |
| 4WD Automatic Range Indicator Control Circuit High Voltage Test Status | Not Run, OK or Malfunction | OK | This parameter monitors the status of the 4WD automatic range indicator control circuit. The 4WD automatic range indicator control circuit is made up of the indicator dimming control circuit and the AWD indicator control circuit.<br>A short to battery on the AWD indicator control circuit will cause this parameter to display Malfunction. |
| 4WD Automatic Range Indicator Control Circuit Low Voltage Test Status | Not Run, OK or Malfunction | OK | This parameter monitors the status of the 4WD automatic range indicator control circuit. The 4WD automatic range indicator control circuit is made up of the indicator dimming control circuit and the AWD indicator control circuit.<br>A short to ground on the AWD indicator control circuit will cause this parameter to display Malfunction. |

| Parameter | Expected Value | Expected Value | Description |
|---|---|---|---|
| 4WD Automatic Range Indicator Control Circuit Open Test Status | Not Run, OK or Malfunction | OK | This parameter monitors the status of the 4WD automatic range indicator control circuit. The 4WD automatic range indicator control circuit is made up of the indicator dimming control circuit and the AWD indicator control circuit.<br>An open on the AWD indicator control circuit will cause this parameter to display Malfunction. |
| 4WD High Range Indicator Command | ON or OFF | OFF | This parameter displays ON when the transfer case control module commands the 4WD High indicator light ON. |
| 4WD High Range Indicator Control Circuit High Voltage Test Status | Not Run, OK or Malfunction | OK | This parameter monitors the status of the 4WD High range indicator control circuit. The 4WD High range indicator control circuit is made up of the indicator dimming control circuit and the 4WD High indicator control circuit.<br>A short to battery on the 4WD High indicator control circuit will cause this parameter to display Malfunction. |
| 4WD High Range Indicator Control Circuit Low Voltage Test Status | Not Run, OK or Malfunction | OK | This parameter monitors the status of the 4WD High range indicator control circuit. The 4WD High range indicator control circuit is made up of the indicator dimming control circuit and the 4WD High indicator control circuit.<br>A short to ground on the 4WD High indicator control circuit will cause this parameter to display Malfunction. |
| 4WD High Range Indicator Control Circuit Open Test Status | Not Run, OK or Malfunction | OK | This parameter monitors the status of the 4WD High range indicator control circuit. The 4WD High range indicator control circuit is made up of the indicator dimming control circuit and the 4WD High indicator control circuit.<br>An open on the 4WD High indicator control circuit will cause this parameter to display Malfunction. |
| 4WD Low Range Indicator Command | ON or OFF | OFF | This parameter displays ON when the transfer case control module commands the 4WD Low indicator light ON. |
| 4WD Low Range Indicator Control Circuit High Voltage Test Status | Not Run, OK or Malfunction | OK | This parameter monitors the status of the 4WD Low range indicator control circuit. The 4WD Low range indicator control circuit is made up of the indicator dimming control circuit and the 4WD Low indicator control circuit.<br>A short to battery on the 4WD Low indicator control circuit will cause this parameter to display Malfunction. |
| 4WD Low Range Indicator Control Circuit Low Voltage Test Status | Not Run, OK or Malfunction | OK | This parameter monitors the status of the 4WD Low range indicator control circuit. The 4WD Low range indicator control circuit is made up of the indicator dimming control circuit and the 4WD Low indicator control circuit.<br>A short to ground on the 4WD Low indicator control circuit will cause this parameter to display Malfunction. |
| 4WD Low Range Indicator Control Circuit Open Test Status | Not Run, OK or Malfunction | OK | This parameter monitors the status of the 4WD Low range indicator control circuit. The 4WD low range indicator control circuit is made up of the indicator dimming control circuit and the 4WD Low indicator control circuit.<br>An open on the 4WD Low indicator control circuit will cause this parameter to display Malfunction. |
| Brake Pedal Position Sensor Signal | Active/Released | Released | The scan tool displays Inactive or Active depending on the state of the brake pedal. |
| Calculated Transfer Case Clutch Temperature | °C/°F | Varies | This parameter displays the estimated clutch temperature. |
| Control Module Voltage | 0.0 to 25.5 V | Battery Voltage | This parameter displays the voltage measured by the transfer case control module at the battery positive voltage circuit. |
| Current Transmission Gear | Park, Reverse, Neutral, 1, 2, 3, 4, 5, and 6 | Park or Neutral | This parameter displays the current estimated gear the transmission is in. The scan tool displays Park, Reverse, and Neutral when ignition ON and engine OFF.<br>The scan tool displays Park, Reverse, Neutral, 1, 2, 3, 4, 5, and 6 when engine ON. |

| Parameter | Expected Value | Expected Value | Description |
|---|---|---|---|
| Display Dimming | 0 to 100% | Varies | This parameter displays the interior dimming display level being supplied by the body control module to the transfer case shift control switch. |
| Engine Run Time | hh:mm:ss | Varies | This parameter displays the time since Engine Start. |
| Engine Speed | RPM | Varies | This parameter displays engine RPM. |
| Front Axle Engagement Actuator Command | Engaged or Disengaged | Disengaged | This parameter displays either Engaged or Disengaged. Engaged when the body control module is commanding Auto 4WD, 4WD, or 4WD Low ranges, and Disengaged when the body control module is commanding Neutral, or 2WD ranges. |
| Front Axle Engagement Actuator Control Circuit High Voltage Test Status | Not Run, OK or Malfunction | OK | This parameter monitors the status of the front axle engagement actuator control circuit.<br>A short to battery on the front axle engagement actuator control circuit will cause this parameter to display Malfunction. |
| Front Axle Engagement Actuator Control Circuit Low Voltage Test Status | Not Run, OK or Malfunction | OK | This parameter monitors the status of the front axle engagement actuator control circuit.<br>A short to ground on the front axle engagement actuator control circuit will cause this parameter to display Malfunction. |
| Front Axle Engagement Actuator Control Circuit Open Test Status | Not Run, OK or Malfunction | OK | This parameter monitors the status of the front axle engagement actuator control circuit.<br>An open/high resistance condition on the front axle engagement actuator control circuit will cause this parameter to display Malfunction. |
| Front Axle Feedback Switch | Engaged or Disengaged | Disengaged | This parameter displays the actual status of the front axle.<br>The parameter will display Engaged when the system is in Auto 4WD, 4WD, or 4WD Low modes, and Disengaged when the system is in Neutral, or 2WD High or Neutral mode. |
| Ignition 1 Signal | ON or OFF | ON | This parameter displays the status of the run/crank ignition 1 voltage circuit to the transfer case control module. |
| Ignition Accessory Signal | ON or OFF | ON | This parameter displays the status of the ignition accessory signal circuit to the transfer case control module. |
| Left Front Wheel Speed Sensor | Varies | 0 km/h (0 MPH) | The scan tool displays km/h (MPH) depending on the current speed of the left front wheel speed sensor. |
| Left Rear Wheel Speed Sensor | Varies | 0 km/h (0 MPH) | The scan tool displays km/h (MPH) depending on the current speed of the left rear wheel speed sensor. |
| Non-Driven Wheel Speed | Varies | km/h/MPH | This parameter displays the non-drive wheel speed in kilometers or miles per hour. |
| Power Mode | OFF, Accessory, Run or Crank Request | Run | This parameter displays the status of the ignition switch. |
| Range Actuator Command | −100 to +100% | 0% | This parameter displays the pulse width modulated voltage signal being supplied by the transfer case control module to the transfer case encoder motor on circuit A or circuit B.<br>The scan tool displays negative values when turning counter-clockwise or positive values when turning clockwise. This parameter will display 0% after a range shift. |
| Range Actuator Control Circuit High Voltage Test Status | Not Run, OK or Malfunction | OK | This parameter monitors the status of the range actuator control circuit. The range actuator control circuit is made up of the range actuator control circuit A and the range actuator control circuit B.<br>A short to battery on the range actuator control circuit A or the range actuator control circuit B will cause this parameter to display Malfunction. |
| Range Actuator Control Circuit Low Voltage Test Status | Not Run, OK or Malfunction | OK | This parameter monitors the status of the range actuator control circuit. The range actuator control circuit is made up of the range actuator control circuit A and the range actuator control circuit B.<br>A short to ground on the range actuator control circuit A or the range actuator control circuit B will cause this parameter to display Malfunction. |

| Parameter | Expected Value | Expected Value | Description |
|---|---|---|---|
| Range Actuator Control Circuit Open Test Status | Not Run, OK or Malfunction | OK | This parameter monitors the status of the range actuator control circuit. The range actuator control circuit is made up of the range actuator control circuit A and the range actuator control circuit B.<br>An open on the range actuator control circuit A or the range actuator control circuit B will cause this parameter to display Malfunction. |
| Range Actuator Control Circuit Shorted Test Status | Not Run, OK or Malfunction | OK | This parameter monitors the status of the range actuator control circuit. The range actuator control circuit is made up of the range actuator control circuit A and the range actuator control circuit B.<br>A short to ground, short to battery or short together on the range actuator control circuit A and/or the range actuator control circuit B will cause this parameter to display Malfunction. |
| Range Actuator Current | −15.0 to +36.0 A | 0.0 A | This parameter displays the current drawn by the range actuator from the transfer case control module on either the range actuator control circuit A or the range actuator control circuit B.<br>Typical values display 0.0 to 12.0 A. This parameter will display 0.0 A after shifting ranges. |
| Range Actuator Direction | Invalid, Stationary, Clockwise or Counter-clockwise | Stationary | This parameter displays what direction the transfer case range actuator is actually turning. |
| Range Actuator Direction Command | Invalid, Stationary, Clockwise or Counter-clockwise | Stationary | This parameter displays what direction the transfer case control module is commanding the range actuator to turn.<br>This parameter will display Stationary after a range change. |
| Range Actuator Learn Status | Not Learned, Passed, Failed, Aborted, or In Progress | Passed | This parameter displays the status of the last range actuator learn attempt. |
| Range Actuator Lock Command | Disengaged or Engaged | Disengaged | This parameter displays the commanded status of the range actuator lock.<br>The lock will be engaged in Auto 4WD, 4WD High, or 4WD Low, and Disengaged in 2WD High and Neutral. |
| Range Actuator Position | 2WD, 4WD High–2WD 4WD High/ Locked, 4WD High–Neutral, Neutral, Neutral–4WD Low, or 4WD Low | 2WD | This parameter displays the actual position of the transfer case according to the range actuator position sensor. |
| Range Actuator Position Sensor | –150 to 210° | 35° | This parameter displays the position of the range actuator position sensor in degrees.<br>Typical scan tool displays:<br>• 2WD High = 20–50°<br>• 4WD Auto = 30–210°<br>• 4WD High = 110–210°<br>• 4WD Low = −150 to –55°<br>• Neutral = −10 to +10° |
| Range Actuator Position Sensor | 0.35–4.6 V | Varies | This parameter displays the voltage being returned from the range actuator position sensor.<br>The range actuator position sensor is also known as the incremental position sensor. |
| Range Actuator Position Sensor Direction Signal | Volts | Varies | Range Actuator Direction Signal A/D – 8 Volt Reference |

| Parameter | Expected Value | Expected Value | Description |
|---|---|---|---|
| Range Actuator Position Sensor Low Reference Command | ON or OFF | OFF | This parameter displays the commanded status of the range actuator position sensor low reference circuit. |
| Range Actuator Position Sensor Supply Voltage Command | ON or OFF | OFF | This parameter displays the commanded status of the range actuator position sensor supply voltage circuit. |
| Requested Transfer Case Clutch Torque | newtonm | Varies | This parameter displays the commanded torque to be held by the transfer case clutch. |
| Right Front Wheel Speed Sensor | Varies | 0 km/h (0 MPH) | The scan tool displays km/h (MPH) depending on the current speed of the right front wheel speed sensor. |
| Right Rear Front Wheel Speed Sensor | Varies | 0 km/h (0 MPH) | The scan tool displays km/h (MPH) depending on the current speed of the right rear wheel speed sensor. |
| Sensor Reference Voltage 1 | 4.8–5.2 V | 5.0 V | This parameter displays the voltage being supplied by the transfer case control module to the transfer case range position switch. |
| Sensor Reference Voltage 2 | 7.75–8.25 V | 8.0 V | This parameter displays the voltage being supplied by the transfer case control module to the range actuator position sensor. The range actuator position sensor is also known as the incremental position sensor. |
| Sensor Reference Voltage 3 | 4.8–5.2 V | 5.0 V | This parameter displays the voltage being supplied by the transfer case control module to the transfer case range selector switch. |
| Service 4WD Indicator Command | ON or OFF | OFF | This parameter displays ON anytime a DTC sets. |
| Software Part Number | Current Software Release | — | This parameter displays the numbers or characters assigned to the current version of software used in the transfer case control module. The scan tool displays an alphanumeric value. |
| Steering Wheel Angle | Steering wheel in straight position | −5 to +5° | The scan tool displays °. This is the current position of the steering angle sensor. |
| | Steering wheel turned left until stop | 450–550° | |
| | Steering wheel turned right until stop | −550 to −450° | |
| Transfer Case Clutch Torque | newtonm | 0.0 | This parameter displays the estimated torque being held by the transfer case clutch. |
| Transfer Case Commanded Position | 2WD, 4WD High/Locked, 4WD Low, Neutral or None | 2WD | This parameter displays the current range commanded by the driver. |
| Transfer Case Neutral Range Indicator Command | ON or OFF | OFF | This parameter displays ON when the transfer case control module commands the Neutral indicator light ON. |
| Transfer Case Output Shafts Slip Speed | 0–8,192 RPM | Varies | This parameter displays the difference between the rotational speeds of the transfer case front and rear output shafts. |
| Transfer Case Range | Invalid, Neutral, 2WD, 4WD/AWD Automatic, 4WD High/Locked, 4WD Low, 4WD Unlocked | 2WD | This parameter displays the current mode the transfer case is in, as indicated by the transfer case range position switch. |
| Transfer Case Range Position Sensor | ° | 35° | This parameter displays the position of the rotational position sensor in degrees. |

| Parameter | Expected Value | Expected Value | Description |
|---|---|---|---|
| Transfer Case Range Position Sensor | 190–210 Hz | 199 Hz | This parameter displays the frequency of the current being supplied to the range position sensor. |
| Transfer Case Range Position Sensor | 0–100% | 24% (±5%) | This parameter displays the position of the range position sensor in percent.<br>Typical scan tool values:<br>• 2WD = 24%<br>• 4WD High = 5%<br>• 4WD Low = 95%<br>• Neutral = 5% |
| Transfer Case Range Selection Switch | 0.0–5.0 V | 2.0 V (±0.2 V) | This parameter displays the voltage being returned from the transfer case range selection switch.<br>Typical scan tool displays:<br>• 2WD = 2.0 V<br>• 4WD High/Locked = 3.0 V<br>• 4WD Low = 1.5 V<br>• Neutral = 2.5 V |
| Transfer Case Range Selection Switch State | 2WD, 4WD High/Locked, 4WD Low, Neutral or None | 2WD | This parameter displays the current range commanded by the transfer case range selection switch.<br>This parameter displays the transfer case shift control switch mode currently selected by the driver. |
| Transmission Fluid Temperature | °C (°F) | Varies | This parameter displays the transmission fluid temperature in degrees Celsius or Fahrenheit. |
| Transmission Gear | Park, Reverse, Neutral, 1, 2, 3, 4, 5, and 6 | Park or Neutral | This parameter displays the current commanded gear the transmission is in.<br>The scan tool displays Park, Reverse and Neutral when ignition ON and engine OFF. The scan tool displays Park, Reverse, Neutral, 1, 2, 3, 4, 5, and 6 when engine ON. |
| Transmission OSS | RPM | Varies | This parameter displays transmission output shaft speed in revolutions per minute. |
| Variation Allowed Between Transfer Case Range Position Sensor and Range Actuator Position Sensor | ° | Varies | This parameter displays the allowed variation between transfer case range position sensor and the range actuator position sensor. |
| Variation Between Transfer Case Range Position Sensor and Range Actuator Position Sensor | ° | Varies | This parameter displays the actual variation between transfer case range position sensor and the range actuator position sensor. |
| Vehicle Speed | 0–327 km/h (0–204 MPH) | Varies | This parameter displays vehicle speed in kilometers or miles per hour. |
| Vehicle Stability Control Request | % | Varies | Vehicle stability enhancement system coupling request value |
| Vehicle Identification Number | — | Varies | A unique 17 character vehicle identifier |

## Scan Tool Output Controls

| Output Control | Description |
|---|---|
| **Note:** Transmission must be in transmission neutral for any of these output controls to operate.<br>Refer to the scan tool manual for complete scan tool operating instructions. | |
| Front Axle Engagement Actuator | **Note:** Transmission must be in transmission Neutral for this output control to operate.<br>This function allows the technician to command the front axle to engage or disengage. |

| Output Control | Description |
|---|---|
| Range Actuator (if equipped) | This function is intended to activate the range actuator control circuits. The range actuator control circuits can be commanded OFF or ON, in either the clockwise or counter-clockwise direction, to ensure all portions of the control module driver are operational. This device control can be operated with the actuator connected to verify actuator operation, or disconnected for circuit testing. The activation of this control must ensure the range actuator lock is activated as well to ensure actuator movement when the range actuator is plugged in. If the device control is activated with the range actuator plugged in, the range actuator shall return to the nearest legal range position after return to normal control. |
| Range Actuator Lock | **Note:** You may need to perform an ignition OFF in order to recover.<br>This function allows the technician to command the range actuator lock to engage or disengage. |
| Range Actuator Learn | **Note:** This does not work in 2WD High.<br>This function allows the technician to command the transfer case control module to relearn the clutch status after the range actuator, control module, or transfer case has been replaced. |
| Transfer Case Clutch Engagement | This function is used to override the clutch capacity command of the all wheel drive clutch output. |
| Transfer Case Clutch Identifier | This device control is used to program the transfer case clutch identifier. |
| Transfer Case Range | This device control is used to override the transfer case range position. |
| Transfer Case Neutral Range Indicator | This function allows the technician to command the transfer case neutral range indicator, within the transfer case control switch, ON or OFF. |

## K71 Transmission Control Module: Scan Tool Information (10L1000 (MGM, MGU, MKM))

### K71 Transmission Control Module — Scan Tool Parameter

| Parameter | Expected Value | Units |
|---|---|---|
| **Note:** The following scan tool parameter values were taken from a normally operating vehicle. The parameter values on a different vehicle will vary slightly which depends on the following operating conditions:<br>• Altitude<br>• Ambient Air Temperature<br>• Ambient Humidity<br>• Engine Coolant Temperature<br>**Operating Conditions:** Ignition= On— Accessories= Off | | |
| Accelerator Pedal Position | Varies | % |
| Automatic Transmission Auxiliary Fluid Pump Command | On<br>Off | — |
| Automatic Transmission Auxiliary Fluid Pump Control Circuit Low Test Status | Not RunorOkay | — |
| Automatic Transmission Auxiliary Fluid Pump Control Circuit Open Test Status | Not RunorOkay | — |
| Automatic Transmission Auxiliary Fluid Pump Control Circuit High Test Status | Not RunorOkay | — |
| Brake Pedal Position Switch | Brake Pedal Released= Released<br>Brake Pedal Applied= Applied | — |
| Calculated Line Pressure | Ignition On - Engine Off= 550 /80<br>Ignition On - Engine Running= 550 /80<br>48 km/h (30 MPH) = 500 /73<br>80 km/h (50 MPH) = 524 /76 | kPa / PSI |
| Calculated Throttle Position | 0 km/h (0 MPH) = 0<br>48 km/h (30 MPH) = 10<br>80 km/h (50 MPH) = 13 | % |

| Parameter | Expected Value | Units |
|---|---|---|
| Control Module Voltage Signal | Ignition On - Engine Off= 12.60<br>Ignition On - Engine Running= 14.40 | V |
| Current Gear | P = Park<br>R = Reverse<br>N = Neutral<br>D = 1–10<br>L = 1–10 | — |
| Distance Since Diagnostic Trouble Code Cleared | Varies | km / mi |
| Driver Requested Axle Torque | Varies | N·m |
| Driver Shift Control Mode | S3 Transmission Shift Lever — P, R, N, D = Inactive<br>S3 Transmission Shift Lever — L, M, S = Active | — |
| Electronic Transmission Range Select Actual Range | Park<br>Neutral Low<br>Neutral High<br>Drive<br>Reverse<br>Neutral Shift | — |
| Engine Coolant Temperature | Ignition On - Engine Off= 41 /105<br>Ignition On - Engine Running= 52 /126<br>48 km/h (30 MPH) = 87 /189<br>80 km/h (50 MPH) = 94 /201 | °C/°F |
| Engine Speed | Ignition On - Engine Off= 0<br>Ignition On - Engine Running= 582<br>48 km/h (30 MPH) = 1173<br>80 km/h (50 MPH) = 1277 | RPM |
| Engine Torque | Ignition On - Engine Off= −41 /−30<br>Ignition On - Engine Running= 15 /11<br>48 km/h (30 MPH) = 58 /43<br>80 km/h (50 MPH) = 136 /100 | N·m/lb ft |
| Gear Command | P = Park<br>R = Reverse<br>N = Neutral<br>D = 1–10<br>L = 1–10 | — |
| Gear Ratio | 1 = 4.70:1<br>2 = 2.99:1<br>3 = 2.15:1<br>4 = 1.77:1<br>5 = 1.52:1<br>6 = 1.28:1<br>7 = 1.00:1<br>8 = 0.85:1<br>9 = 0.69:1<br>10 = 0.64:1<br>R = 4.87:1 | — |
| High Side Driver Circuit High Test Status | Okay | — |
| High Side Driver Circuit Low Test Status | Okay | — |
| High Side Driver Circuit Open Test Status | Not Run | — |

| Parameter | Expected Value | Units |
|---|---|---|
| High Side Driver Command | Engine ≠Running= Disabled<br>Engine — Running= Enabled | — |
| High Side Driver 2 Circuit High Test Status | Okay | — |
| High Side Driver 2 Circuit Low Test Status | Okay | — |
| High Side Driver 2 Circuit Open Test Status | Not Run | — |
| High Side Driver 2 Command | Engine ≠Running= Off<br>Engine — Running= On | — |
| Ignition and Start Switch Accessory Signal | On | — |
| Ignition and Start Switch Signal | On | — |
| Ignition and Start Signal | Ignition On - Engine Off= 12.6<br>Ignition On - Engine Running= 14.4 | V |
| Input Shaft Speed Sensor | Ignition On - Engine Off= 0<br>Ignition On - Engine Running= 551<br>48 km/h (30 MPH) = 1166<br>80 km/h (50 MPH) = 1184 | RPM |
| Input Speed Sensor Direction | Forward<br>Reverse | — |
| Input Speed Sensor Direction Signal | Forward= 0.05<br>Reverse= 0.18 | ms |
| Intermediate Speed Sensor | 0 km/h (0 MPH) = 0<br>48 km/h (30 MPH) = 1170<br>80 km/h (50 MPH) = 2754 | RPM |
| Intermediate Speed Sensor Direction | Forward<br>Reverse | — |
| Intermediate Speed Sensor Direction Signal | Forward= 0.05<br>Reverse= 0.18 | ms |
| Intermediate Speed Sensor 2 | 0 km/h (0 MPH) = 0<br>48 km/h (30 MPH) = 1166<br>80 km/h (50 MPH) = 2754 | RPM |
| Intermediate Speed Sensor 2 Direction | Forward<br>Reverse | — |
| Intermediate Speed Sensor 2 Direction Signal | Forward= 0.05<br>Reverse= 0.18 | ms |
| Last Shift Time | 0.12 | [s] |
| Output Shaft Speed Sensor | 0 km/h (0 MPH) = 0<br>48 km/h (30 MPH) = 1159<br>80 km/h (50 MPH) = 1720 | RPM |
| Output Speed Sensor Direction | Forward<br>Reverse | — |
| Output Speed Sensor Direction Signal | Forward= 0.05<br>Reverse= 0.18 | ms |
| Park System Status | P = Park<br>R, N, D, L, S = Out of Park | — |
| Power Mode | Off<br>Accessory<br>Run<br>Crank Request | — |

| Parameter | Expected Value | Units |
|---|---|---|
| Propulsion System Status | Engine Running= Active<br>Engine Off= Inactive | Active |
| Shift Limiting Active Reason | None | — |
| Sensor Supply Circuit Status | Okay | — |
| Sensor Supply 2 Circuit Status | Okay | — |
| Torque Converter Clutch Pressure Command | 0.00 | kPa / PSI |
| Torque Converter Clutch Desired Slip Speed | 0.0 | RPM |
| Torque Converter Clutch Slip Speed | Ignition On - Engine Off= 0<br>Ignition On - Engine Running= 30<br>48 km/h (30 MPH) = 1<br>80 km/h (50 MPH) = 47 | RPM |
| Tow/Haul Mode | Inactive<br>Active | — |
| Transmission Clutch 1-6 Return Spring Learn Status | Inactive<br>Learn Inhibited - Transmission Fluid Temperature Too Low<br>Learn Inhibited - Transmission Fluid Temperature Too High<br>Learn inhibited — malfunction present<br>Learn Inhibited - Throttle Position/Engine Torque Unstable<br>Learn Inhibited - Accelerator Pedal Angle Too Small<br>Learn Inhibited - Accelerator Pedal Angle Too Large<br>Learn Inhibited - Engine Speed Too Low<br>Learn Inhibited - Engine Speed Too High<br>Learn Inhibited - Rough Road<br>Learn in Progress | — |
| Transmission Clutch 1-6 Return Spring Learn Required | Yes<br>No | — |
| Transmission Clutch 1-6 Return Spring Learn Driving Maneuver Required | None<br>1-2 Upshift<br>2-3 Upshift<br>2-4 Upshift<br>3-4 Upshift<br>4-5 Upshift<br>5-6 Upshift<br>6-7 Upshift<br>7-8 Upshift<br>8-9 Upshift<br>9-10 Upshift<br>10-9 Downshift<br>9-8 Downshift<br>8-7 Downshift<br>7-6 Downshift<br>6-5 Downshift<br>5-4 Downshift<br>4-3 Downshift<br>3-2 Downshift<br>3-1 Downshift<br>2-1 Downshift | |

| Parameter | Expected Value | Units |
|---|---|---|
| | 1st Gear<br>2nd Gear<br>3rd Gear<br>4th Gear<br>5th Gear<br>6th Gear<br>7th Gear<br>8th Gear<br>9th Gear<br>10th Gear | |
| Transmission Clutch 1-6 Return Spring Learn Progress Counter | Varies | Counts |
| Transmission Clutch 1-6 Volume Learn Status | Inactive<br>Learn Inhibited - Transmission Fluid Temperature Too Low<br>Learn Inhibited - Transmission Fluid Temperature Too High<br>Learn inhibited — malfunction present<br>Learn Inhibited - Throttle Position/Engine Torque Unstable<br>Learn Inhibited - Accelerator Pedal Angle Too Small<br>Learn Inhibited - Accelerator Pedal Angle Too Large<br>Learn Inhibited - Engine Speed Too Low<br>Learn Inhibited - Engine Speed Too High<br>Learn Inhibited - Rough Road<br>Learn in Progress | — |
| Transmission Clutch 1-6 Volume Learn Required | Yes<br>No | — |
| Transmission Clutch 1-6 Volume Learn Progress Counter | Varies | Counts |
| Transmission Clutch 1-6 Volume Learn Driving Maneuver Required | None<br>1-2 Upshift<br>2-3 Upshift<br>2-4 Upshift<br>3-4 Upshift<br>4-5 Upshift<br>5-6 Upshift<br>6-7 Upshift<br>7-8 Upshift<br>8-9 Upshift<br>9-10 Upshift<br>10-9 Downshift<br>9-8 Downshift<br>8-7 Downshift<br>7-6 Downshift<br>6-5 Downshift<br>5-4 Downshift<br>4-3 Downshift<br>3-2 Downshift<br>3-1 Downshift<br>2-1 Downshift<br>1st Gear | — |

| Parameter | Expected Value | Units |
|---|---|---|
| | 2nd Gear<br>3rd Gear<br>4th Gear<br>5th Gear<br>6th Gear<br>7th Gear<br>8th Gear<br>9th Gear<br>10th Gear | |
| Transmission Control Solenoid Valve 1–9 Calibration Data | Valid | — |
| Transmission Control Solenoid Valve 1-9 Control Circuit High Test Status | Not RunorOkay | — |
| Transmission Control Solenoid Valve 1-9 Control Circuit Low Test Status | Not RunorOK | — |
| Transmission Control Solenoid Valve 1–9 Control Circuit Open Test Status | Not RunorOkay | — |
| Transmission Control Solenoid Valve 1 Current | Ignition On - Engine Off= 0.75<br>Ignition On - Engine Running= 0.98<br>48 km/h (30 MPH) = 0.99<br>80 km/h (50 MPH) = 0.98 | A |
| Transmission Control Solenoid Valve 1 Current Command | Ignition On - Engine Off= 0.76<br>Ignition On - Engine Running= 0.98<br>48 km/h (30 MPH) = 1.02<br>80 km/h (50 MPH) = 0.97 | A |
| Transmission Control Solenoid Valve 1 Pressure Command | Ignition On - Engine Off= 0.00 /0.00<br>Ignition On - Engine Running= 136 /20<br>48 km/h (30 MPH) = 0.00 /0.00<br>80 km/h (50 MPH) = 0.00 /0.00 | kPa / PSI |
| Transmission Control Solenoid Valve 2 Current | Ignition On - Engine Off= 0.82<br>Ignition On - Engine Running= 0.98<br>48 km/h (30 MPH) = 0.99<br>80 km/h (50 MPH) = 0.92 | A |
| Transmission Control Solenoid Valve 2 Current Command | Ignition On - Engine Off= 0.83<br>Ignition On - Engine Running= 0.98<br>48 km/h (30 MPH) = 1.02<br>80 km/h (50 MPH) = 0.92 | A |
| Transmission Control Solenoid Valve 2 Pressure Command | Ignition On - Engine Off= 0.00 /0.00<br>Ignition On - Engine Running= 2,206 /320<br>48 km/h (30 MPH) = 0.00 /0.00<br>80 km/h (50 MPH) = 2,206 /320 | kPa / PSI |
| Transmission Control Solenoid Valve 3 Current | Ignition On - Engine Off= 0.75<br>Ignition On - Engine Running= 1.01<br>48 km/h (30 MPH) = 1.05<br>80 km/h (50 MPH) = 0.88 | A |
| Transmission Control Solenoid Valve 3 Current Command | Ignition On - Engine Off= 0.76<br>Ignition On - Engine Running= 1.02<br>48 km/h (30 MPH) = 1.06<br>80 km/h (50 MPH) = 0.89 | A |

| Parameter | Expected Value | Units |
|---|---|---|
| Transmission Control Solenoid Valve 3 Pressure Command | Ignition On - Engine Off= 0.00 /0.00<br>Ignition On - Engine Running= 0.00 /0.00<br>48 km/h (30 MPH) = 2,206 /320<br>80 km/h (50 MPH) = 2,206 /320 | kPa / PSI |
| Transmission Control Solenoid Valve 4 Current | Ignition On - Engine Off= 1.20<br>Ignition On - Engine Running= 0.89<br>48 km/h (30 MPH) = 0.69<br>80 km/h (50 MPH) = 0.88 | A |
| Transmission Control Solenoid Valve 4 Current Command | Ignition On - Engine Off= 1.20<br>Ignition On - Engine Running= 0.89<br>48 km/h (30 MPH) = 0.70<br>80 km/h (50 MPH) = 0.89 | A |
| Transmission Control Solenoid Valve 4 Pressure Command | Ignition On - Engine Off= 0.00 /0.00<br>Ignition On - Engine Running= 0.00 /0.00<br>48 km/h (30 MPH) = 2,206 /320<br>80 km/h (50 MPH) = 173 /25 | kPa / PSI |
| Transmission Control Solenoid Valve 5 Current | Ignition On - Engine Off= 0.04<br>Ignition On - Engine Running= 0.04<br>48 km/h (30 MPH) = 0.46<br>80 km/h (50 MPH) = 0.58 | A |
| Transmission Control Solenoid Valve 5 Current Command | Ignition On - Engine Off= 0.04<br>Ignition On - Engine Running= 0.04<br>48 km/h (30 MPH) = 0.47<br>80 km/h (50 MPH) = 0.59 | A |
| Transmission Control Solenoid Valve 5 Pressure Command | Ignition On - Engine Off= 0.00 /0.00<br>Ignition On - Engine Running= 0.00 /0.00<br>48 km/h (30 MPH) = 2,206 /320<br>80 km/h (50 MPH) = 173 /25 | kPa / PSI |
| Transmission Control Solenoid Valve 6 Current | Ignition On - Engine Off= 0.57<br>Ignition On - Engine Running= 0.54<br>48 km/h (30 MPH) = 0.53<br>80 km/h (50 MPH) = 1.20 | A |
| Transmission Control Solenoid Valve 6 Current Command | Ignition On - Engine Off= 0.57<br>Ignition On - Engine Running= 0.54<br>48 km/h (30 MPH) = 0.54<br>80 km/h (50 MPH) = 1.20 | A |
| Transmission Control Solenoid Valve 6 Pressure Command | Ignition On - Engine Off= 0.00 /0.00<br>Ignition On - Engine Running= 2,206 /320<br>48 km/h (30 MPH) = 2,206 /320<br>80 km/h (50 MPH) = 2,206 /320 | kPa / PSI |
| Transmission Control Solenoid Valve 7 Current | Ignition On - Engine Off= 0.01<br>Ignition On - Engine Running= 0.78<br>48 km/h (30 MPH) = 0.54<br>80 km/h (50 MPH) = 1.20 | A |
| Transmission Control Solenoid Valve 7 Current Command | Ignition On - Engine Off= 0.01<br>Ignition On - Engine Running= 0.78<br>48 km/h (30 MPH) = 0.54<br>80 km/h (50 MPH) = 0.51 | A |

| Parameter | Expected Value | Units |
|---|---|---|
| Transmission Control Solenoid Valve 8 Current | Ignition On - Engine Off= 0.00<br>Ignition On - Engine Running= 0.00<br>48 km/h (30 MPH) = 0.52<br>80 km/h (50 MPH) = 0.50 | A |
| Transmission Control Solenoid Valve 8 Current Command | Ignition On - Engine Off= 0.00<br>Ignition On - Engine Running= 0.78<br>48 km/h (30 MPH) = 0.54<br>80 km/h (50 MPH) = 1.20 | A |
| Transmission Control Solenoid Valve 9 | OfforOn | — |
| Transmission Fluid Temperature Sensor | Ignition On - Engine Off= 33 /91<br>Ignition On - Engine Running= 42 /108<br>48 km/h (30 MPH) = 49 /120<br>80 km/h (50 MPH) = 63 /145 | °C/°F |
| Transmission Hot Mode | No | — |
| Transmission Park Valve Lock Solenoid Actuator | Park= Off<br>Out of Park= On | — |
| Transmission Park Valve Position Sensor | Park= 2.00<br>Out of Park= 0.80 | V |
| Transmission Park Valve Position Sensor Status | Park<br>Out of Park | — |
| Transmission Park Valve Position Sensor 2 | Park= 0.80<br>Out of Park= 1.98 | V |
| Transmission Park Valve Position Sensor 2 Status | Park<br>Out of Park | — |
| Transmission Range Control Valve Position Sensor | Park= 0.80<br>Out of Park= 1.98 | V |
| Transmission Range Control Valve Position Sensor Status | Park= Complete<br>Out of Park= Failed | — |
| Transmission Range Sensor | P = 13<br>R = 47<br>N = 61<br>D = 75<br>L = 86 | % |
| Transmission Range Sensor 2 | P = 87<br>R = 53<br>N = 39<br>D = 25<br>L = 14 | % |
| Up and Down Shift Switch | No Button Pressed= None<br>Upshift» Pressed= Upshift<br>Downshift» Pressed= Downshift | — |
| Vehicle Speed | Varies | km/h/MPH |

### Scan Tool Control Function

| Control Function | Description |
|---|---|
| Automatic Transmission Auxiliary Fluid Pump | Overrides the state of the auxiliary transmission pump relay output |
| High Side Driver& High Side Driver 2 | Overrides the state of the High Side Driver Output |
| Shift Transmission Gear | Overrides the commanded gear output |
| Torque Converter Clutch | Overrides the state of the Torque Converter Clutch Enable and/or Torque Converter Clutch Control Solenoid |
| Transmission Control Solenoid Valve 1–9 | Overrides the state of the Transmission Control Solenoid Valve — On or Off |
| Transmission Control Solenoid Valve 1–8 Current | Overrides the current of the Transmission Control Solenoid Valve — 0–1.2 A |

### Configuration/Reset Functions

| Control Function | Description |
|---|---|
| Transmission Adaptive Pressure Reset | Triggers the reset of the transmission adaptive parameters |
| Transmission Service Fast Learn | This test executes a procedure in the TCM software to re-learn a variety of inputs. |
| Vehicle Speed Detected When Park Range Selected Reset | Triggers the reset of the park at speed detection values |

## K73 Telematic Control Module: Scan Tool Information

### Telematic Control Module Scan Tool Data Parameters

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| **Operating Conditions:** Ignition ON | | | |
| **GPS Data** | | | |
| • Dead Reckoning Calibration Status | — | Calibrated or Not Calibrated | Indicates the dead reckoning calibration status. |
| • Position Calibration Method | — | Varies | Indicates the method used to determine current location. (0) GPS, (1) Wheel Speed Dead Reckoning only, (2) Combined Wheel Speed and GPS, (3) Gyro only, (4) Combined Gyro and GPS, (5) No Fix |
| • Month | — | MM | This displays the current month. |
| • Day | — | DD | This displays the current day of the month. |
| • Year | — | YY | This displays the current year. |
| • Hour | — | HH | This displays the GPS current hour (24 hour format – GMT). |
| • Minute | — | MM | This displays the GPS current minute. |
| • Second | — | SS | This displays the GPS current second. |
| • Number of Satellites Tracked | — | Varies | The scan tool displays the number of satellites being tracked by the Telematic Control Module. |
| **Signal Strength Data** | | | |
| • GSM Signal Strength | — | Varies | The scan tool displays 0–127. This is the Telematic Control Module signal strength. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| • Current Public Land Mobile Network | — | Varies | Identifies the cellular communications network currently in use by the Telematic Control Module. Each network has a unique decimal number assigned to it for identification. |
| **Bluetooth Data** | | | |
| • Bluetooth | — | Enabled | Indicates if the Bluetooth system is enabled or disabled. |
| • Bluetooth Link Status | — | Varies | Indicates the current link status. (0) Unconnected, (1) Connected / Idle, (2) Call active, (3) 3-way calling active |
| • Bluetooth Link Quality | — | Varies | The scan tool displays a decimal value between 0 and 255. |
| • Bluetooth Phone to Telematic Control Module Authentication Status | — | Active or Inactive | Displays the bluetooth phone to Telematic Control Module authentication status. |
| • Bluetooth Phone to Telematic Control Module Communication Status | — | Active or Inactive | Displays the bluetooth phone to Telematic Control Module status. |
| • Bluetooth Phone Voice Recognition Status | — | Active or Inactive | Displays the bluetooth phone to voice recognition status. |
| **WLAN Device Data** | | | |
| Off-Board Navigation | — | Enabled or Disabled | Indicates if Off-Board Navigation is enabled or disabled |
| Wireless LAN | — | Enabled or Disabled | Indicates the capability of the wireless communication of the Telematic Control Module |
| Number of WLAN Devices | — | Varies | Indicates the number of Wireless devices present |
| Active WLAN 2.4GHz Chennel | — | Varies | Indicates the active Wireless channel being used on the 2.4 GHz frequency |
| WLAN Link Status | — | Radio System – Never, Remembered but Not Associated or Associated | Indicates the link status of the Telematic Control Module and Infotainment system |
| GSM Signal Strength | — | Varies | State for Received Signal Strength Indicator |
| Mobile Communication Standard | — | 2G, 3G, 4G or 4G LTE | State for Cellular Data Connection. Indicates the currently used data rate speed |
| WLAN Password | — | Varies | Indicates the Telematic Control Module Wireless Password |
| WLAN SSID (Service Set Identifier) | — | Varies | Indicates the Telematic Control Module Wireless Service Name |
| WLAN Encryption – WPA (Wi–Fi Protected Access) | — | Active or Inactive | Indicates if the WLAN Encryption – WPA (Wi–Fi Protected Access) is Active or Inactive |
| WLAN Encryption – WPA2 (Wi–Fi Protected Access II) | — | Active or Inactive | Indicates if the WLAN Encryption – WPA2 (Wi–Fi Protected Access II) is Active or Inactive |
| WLAN Encryption – AES (Advanced Encryption Standard) | — | Active or Inactive | Indicates if the WLAN Encryption – AES (Advanced Encryption Standard) is Active or Inactive |
| WLAN Encryption – TKIP (Temporal Key Intergrity Protocol) | — | Active or Inactive | Indicates if the WLAN Encryption – TKIP (Temporal Key Integrity Protocol) is Active or Inactive |

### Telematic Control Module Scan Tool Output Controls

| Output Control | Description |
|---|---|
| B1000 Information | This shows the data recorded when DTC B1000 was set in the Telematic Control Module. |
| Green Indicator | The Telematic Control Module illuminates the green LED when ON is selected. |
| Phone Call Test | When ON is selected, Telematic Control Module commands OnStar to connect to the OnStar Center. |
| Red Indicator | The Telematic Control Module illuminates the red LED when ON is selected. |
| Preferred Roaming List Update | The Telematic Control Module performs a preferred roaming list (PRL) update when this is selected. |
| Remote Vehicle Speed Limiting Reset | This function resets the speed limiting feature. |

## K85P Restraints Occupant Classification System Module - Passenger: Scan Tool Information

### Restraint Occupant Classification System Module Scan Tool Data Parameters

| Parameter | Expected Value | Definition |
|---|---|---|
| **Operating Conditions:** Ignition ON | | |
| Base Model Part Number | Varies, 8 Digit Number | The scan tool displays the part number of the ROCSM which is stored in non volatile memory. |
| Battery Voltage | Volts | The scan tool will display battery voltage. |
| Calibration Part Number | Varies, 8 Digit Number | The scan tool displays the part number of the calibration file in the ROCSM. |
| End Model Part Number | Varies, 8 Digit Number | The scan tool displays the part number of the ROCSM in production. |
| Manufacturer's Traceability Number | Varies, 16 Digit Number | The scan tool displays the 16 digit traceability number in the ROCSM. |
| Passenger Air Bag Enable/Disable Request by Restraint Occupant Classification System Module | Disable | The scan tool displays the Passenger Air Bag Enable/ Disable Request by Restraint Occupant Classification System Module. |
| Restraint Occupant Classification Module Primary Key | Hex Value | The scan tool indicates the primary key Hex value. |
| Restraint Occupant Classification System Reporting DTC(s) | Yes/No | The ROCSM will report if there are DTCs set in the Restraint Occupant Classification module. |
| Passenger Seat Occupancy Status | Empty Seat | The scan tool displays Undefined, Empty Seat, Occupied, or Invalid. This is the state of the passenger seat if it is occupied or empty and monitored by the Restraint Occupant Classification System. |
| Power Mode | Off / Accessory / Run / Crank Request | The scan tool will display the power mode of the vehicle. |
| Primary Key Status | Valid/Invalid | The scan tool displays Valid if the primary key matches what is stored to memory in the ROCSM. |
| Received Primary Key | Hex Value | The scan tool displays a Hex value indicating the ROCSM received primary key data. |
| Software Part Number | Varies, 8 Digit Number | The scan tool displays the software part number in the ROCSM. |

## K182 Parking Assist Control Module: Scan Tool Information

**Note:** Due to software and hardware variations, not all information may be applicable.

## Parking Assist Control Module Scan Tool Data Parameters – Identification Information

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| **Operating Conditions:** Ignition ON/Engine OFF/Parking Assist ON | | | |
| Vehicle Identification Number (VIN) | — | Varies | The scan tool displays the Vehicle Identification Number |
| Diagnostic Data Identifier | — | Varies | The scan tool displays the Diagnostic Data Identifier |
| XML Configuration Compatibility Identifier | — | Varies | The scan tool displays the XML Configuration Compatibility Identifier |
| XML Data File Part Number | — | Varies | The scan tool displays the XML Data File Part Number |
| XML Data File Alpha Code | — | Varies | The scan tool displays the XML Data File Alpha Code |
| Module Diagnostic Address | — | Varies | The scan tool displays the Module Diagnostic Address |
| Manufacturer's Traceability Number | — | Varies | The scan tool displays the Manufacturer's Traceability Number |
| Software Part Number | — | Varies | The scan tool displays the Software Part Number |
| Calibration Part Number 2 | — | Varies | The scan tool displays the Calibration Part Number 2 |
| End Model Part Number | — | Varies | The scan tool displays the End Model Part Number |
| Base Model Part Number | — | Varies | The scan tool displays the Base Model Part Number |
| Software Module 1 Identifier Alpha Code | — | Varies | The scan tool displays the Software Module 1 Identifier Alpha Code |
| End Model Part Number Alpha Code | — | Varies | The scan tool displays the End Model Part Number Alpha Code |
| Base Model Part Number Alpha Code | — | Varies | The scan tool displays the Base Model Part Number Alpha Code |
| GMLAN Identification Data - Bus 1 Type | — | Varies | The scan tool displays the GMLAN Identification Data - Bus 1 Type |
| GMLAN Identification Data - Data Dictionary 1 Version | — | Varies | The scan tool displays the GMLAN Identification Data - Data Dictionary 1 Version |
| GMLAN Identification Data - GMLAN Kernel 1 Version | — | Varies | The scan tool displays the GMLAN Identification Data - GMLAN Kernel 1 Version |
| Date Programmed | — | Varies | The scan tool displays the date the module was programmed |

## Parking Assist Control Module Scan Tool Data Parameters – Park Assist System Data

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| **Operating Conditions:** Ignition ON/Engine OFF/Parking Assist ON | | | |
| Power Mode | — | Run | The scan tool displays Off, Accessory, Run or Crank. This is the state of the ignition switch. |
| Battery Voltage | — | 11–14 V | The scan tool displays V. This is the current battery voltage. |
| Parking Assist System Status | — | Enable | The scan tool displays Disable, Enable, Inhibited or Failed. This is the state of the parking assist system. |
| Parking Assist Chime | — | Varies | The scan tool displays On or Off. On is displayed if there is an object within the measuring range of the object sensors. |
| Parking Assist Sensors | — | ON | The scan tool displays On or Off. |
| Calculated Transmission Range | Transmission in reverse | Park | The scan tool displays Park, Reverse, Neutral, Drive or Unknown depending on the state of the commanded gear. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Parking Assist Switch | — | Active/Inactive | The scan tool displays Active or Inactive depending on the state of the parking assist switch. |
| Advanced Parking Assist Switch | — | Active/Inactive | The scan tool displays Active or Inactive depending on the state of the advanced parking assist switch. |
| Parking Assist Sensors Reference Voltage | — | 7.3–12.1 V | The scan tool displays V. This is the amount of voltage being sent to the object sensors. |
| Parking Assist Switch LED | — | Varies | The scan tool displays On or Off depending on the state of the parking assist switch LED. |
| Right Side Object Detection Indicator | — | Varies | The scan tool displays a blank, On or Off depending on the state of the right side object detection indicator command status. |
| Left Side Object Detection Indicator | — | Varies | The scan tool displays a blank, On or Off depending on the state of the left side object detection indicator command status. |
| Advanced Parking Assist Status | — | Standby | The scan tool displays Standby, Active, or Inactive depending on the state of the advanced parking assist. |

### Parking Assist Control Module Scan Tool Data Parameters – Parking Assist Sensor Data

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| **Operating Conditions:** Ignition ON/Engine OFF/Parking Assist ON | | | |
| Parking Assist Sensors | — | ON | The scan tool displays On or Off. |
| Parking Assist Sensors Reference Voltage | — | 7.3–12.1 V | The scan tool displays V. This is the voltage being sent to the object sensors. |
| Left Front Advanced Parking Assist Side Object Sensor | — | 32767 mm | The scan tool displays mm. This is the distance between the parking assist sensor and the nearest object. |
| Left Front Outer Object Sensor Distance to Object | — | 32767 mm | The scan tool displays mm. This is the distance between the parking assist sensor and the nearest object. |
| Left Front Inner Object Sensor Distance to Object | — | 32767 mm | The scan tool displays mm. This is the distance between the parking assist sensor and the nearest object. |
| Right Front Advanced Parking Assist Side Object Sensor | — | 32767 mm | The scan tool displays mm. This is the distance between the parking assist sensor and the nearest object. |
| Right Front Outer Object Sensor Distance to Object | — | 32767 mm | The scan tool displays mm. This is the distance between the parking assist sensor and the nearest object. |
| Right Front Inner Object Sensor Distance to Object | — | 32767 mm | The scan tool displays mm. This is the distance between the parking assist sensor and the nearest object. |
| Left Rear Advanced Parking Assist Side Object Sensor | — | 32767 mm | The scan tool displays mm. This is the distance between the parking assist sensor and the nearest object. |
| Left Rear Outer Object Sensor Distance to Object | — | 32767 mm | The scan tool displays mm. This is the distance between the parking assist sensor and the nearest object. |
| Left Rear Inner Object Sensor Distance to Object | — | 32767 mm | The scan tool displays mm. This is the distance between the parking assist sensor and the nearest object. |
| Right Rear Advanced Parking Assist Side Object Sensor | — | 32767 mm | The scan tool displays mm. This is the distance between the parking assist sensor and the nearest object. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Right Rear Outer Object Sensor Distance to Object | — | 32767 mm | The scan tool displays mm. This is the distance between the parking assist sensor and the nearest object. |
| Right Rear Inner Object Sensor Distance to Object | — | 32767 mm | The scan tool displays mm. This is the distance between the parking assist sensor and the nearest object. |

## Parking Assist Control Module Scan Tool Data Parameters – Parking Assist Disable History 1–4 Data

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| **Operating Conditions:** Ignition ON/Engine OFF/Parking Assist ON | | | |
| Parking Assist Disable History 1 | — | Varies | The scan tool displays None, Manual Disable, Park Brake Applied, Trailer or Other Attached Object, Excessive Speed in Reverse, No or Invalid Sensor Signals, Sensor Disturbance, Sensors Dirty, Sound Signal Return Time Not Plausible. This is the state of the park assist disable history. |
| Parking Assist Disable History 2 | — | Varies | The scan tool displays None, Manual Disable, Park Brake Applied, Trailer or Other Attached Object, Excessive Speed in Reverse, No or Invalid Sensor Signals, Sensor Disturbance, Sensors Dirty, Sound Signal Return Time Not Plausible. This is the state of the park assist disable history. |
| Parking Assist Disable History 3 | — | Varies | The scan tool displays None, Manual Disable, Park Brake Applied, Trailer or Other Attached Object, Excessive Speed in Reverse, No or Invalid Sensor Signals, Sensor Disturbance, Sensors Dirty, Sound Signal Return Time Not Plausible. This is the state of the park assist disable history. |
| Parking Assist Disable History 4 | — | Varies | The scan tool displays None, Manual Disable, Park Brake Applied, Trailer or Other Attached Object, Excessive Speed in Reverse, No or Invalid Sensor Signals, Sensor Disturbance, Sensors Dirty, Sound Signal Return Time Not Plausible. This is the state of the park assist disable history. |

## Parking Assist Control Module Scan Tool Data Parameters – Parking Assist Disable History 5–7 Data

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| **Operating Conditions:** Ignition ON/Engine OFF/Parking Assist ON | | | |
| Parking Assist Disable History 5 | — | Varies | The scan tool displays None, Manual Disable, Park Brake Applied, Trailer or Other Attached Object, Excessive Speed in Reverse, No or Invalid Sensor Signals, Sensor Disturbance, Sensors Dirty, Sound Signal Return Time Not Plausible. This is the state of the park assist disable history. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Parking Assist Disable History 6 | — | Varies | The scan tool displays None, Manual Disable, Park Brake Applied, Trailer or Other Attached Object, Excessive Speed in Reverse, No or Invalid Sensor Signals, Sensor Disturbance, Sensors Dirty, Sound Signal Return Time Not Plausible. This is the state of the park assist disable history. |
| Parking Assist Disable History 7 | — | Varies | The scan tool displays None, Manual Disable, Park Brake Applied, Trailer or Other Attached Object, Excessive Speed in Reverse, No or Invalid Sensor Signals, Sensor Disturbance, Sensors Dirty, Sound Signal Return Time Not Plausible. This is the state of the park assist disable history. |

### Parking Assist Control Module Scan Tool Output Controls

| Output Control | Description |
|---|---|
| Park Assist Switch LED | The parking assist control module illuminates the advanced park assist LED of the when commanded from the scan tool. |
| Clear Disable History Data | The parking assist control module clears the Parking Assist Disable History data when commanded from the scan tool. |
| Clear Side Object Detection Disable History | The parking assist control module clears the Side Object Detection Disable History data when commanded from the scan tool. |
| CAN Bus Configuration Learn | The parking assist control module learns the CAN Bus configuration when commanded from the scan tool. |
| Parking Assist Sensor Learn | The parking assist control module learns the Parking Assist Sensor configuration when commanded from the scan tool. |

## K194 Rear Gate Module: Scan Tool Information

### Rear Gate Module Scan Tool Data Parameters

| Parameter | System State | Expected Value | Definition |
|---|---|---|---|
| **Operating Conditions:** Ignition ON | | | |
| Rear Closure | — | Inactive/Active | Displays active when the power endgate is operating. |
| Rear Gate Latch Unlatch Switch | — | Inactive/Active | Inactive when endgate is closed. Changes to active once the endgate opens. |
| Rear Gate Latch Primary Switch | — | Inactive/Active | Inactive when endgate is closed. Changes to active as soon as the endgate unlatches. |
| Rear Gate Latch Neutral Switch | — | Inactive/Active | Inactive when endgate is closed. Changes briefly to active once endgate unlatches then goes back to inactive. |
| Rear Gate Travel | — | Percentage | Calculated percentage of endgate travel. 0% = Full Close, 100% = Full Open. |
| Rear Gate Obstacle Detection Zone 1 | — | Counts | Displays a counter for each fault detection zone, if an obstruction or excessive resistance is seen by the RGM while power opening or closing the count number will go up for the respective detection zone. |
| Rear Gate Obstacle Detection Zone 2 | — | Counts | Displays a counter for each fault detection zone, if an obstruction or excessive resistance is seen by the RGM while power opening or closing the count number will go up for the respective detection zone. |
| Rear Gate Obstacle Detection Zone 3 | — | Counts | Displays a counter for each fault detection zone, if an obstruction or excessive resistance is seen by the RGM while power opening or closing the count number will go up for the respective detection zone. |

| Parameter | System State | Expected Value | Definition |
|---|---|---|---|
| Rear Gate Obstacle Detection Zone 4 | — | Counts | Displays a counter for each fault detection zone, if an obstruction or excessive resistance is seen by the RGM while power opening or closing the count number will go up for the respective detection zone. |
| Rear Gate Obstacle Detection Zone 5 | — | Counts | Displays a counter for each fault detection zone, if an obstruction or excessive resistance is seen by the RGM while power opening or closing the count number will go up for the respective detection zone. |
| Rear Gate Obstacle Detection Zone 6 | — | Counts | Displays a counter for each fault detection zone, if an obstruction or excessive resistance is seen by the RGM while power opening or closing the count number will go up for the respective detection zone. |
| Rear Gate Obstacle Detection Zone 7 | — | Counts | Displays a counter for each fault detection zone, if an obstruction or excessive resistance is seen by the RGM while power opening or closing the count number will go up for the respective detection zone. |
| Rear Gate Latch Secondary Switch - Left | — | Inactive/Active | Inactive when endgate is closed. Changes to active as soon as the endgate unlatches. |
| Rear Gate Latch Secondary Switch - Right | — | Inactive/Active | Inactive when endgate is closed. Changes to active as soon as the endgate unlatches. |
| Rear Gate Latch Primary Switch - Right | — | Inactive/Active | Inactive when endgate is closed. Changes to active as soon as the endgate unlatches. |
| Rear Gate Latch Unlatch Switch - Right | — | Inactive/Active | Inactive when endgate is closed. Changes to active once the endgate opens. |
| Rear Gate Latch Neutral Switch - Left | — | Inactive/Active | Inactive when endgate is closed. Changes briefly to active once endgate unlatches then goes back to inactive. |

## P16 Instrument Panel Cluster Control Module: Scan Tool Information

### Instrument Cluster Scan Tool Data Parameters

| Parameter | Expected Value | Description |
|---|---|---|
| **Operating Conditions:** Ignition ON | | |
| Battery Voltage | 12–14 V | The scan tool displays Volts. This is the current battery voltage signal. |
| Key in Ignition Status | Active/Inactive | The scan tool displays Active or Inactive. This is the state of the key in ignition switch. |
| Driver Information Center Switch | Varies | The scan tool displays Volts. This is the current driver information center switch input voltage. |
| Driver Information Center Switch | Inactive | The scan tool displays either Inactive, Up, Down, or Menu. This is the state of the driver information center switch. |
| Reset Switch | Active/Inactive | The scan tool displays Active or Inactive. This is the state of the reset switch. |
| Ambient Air Temperature | 15°C | The scan tool displays outside temperature in °C. |
| Washer Fluid Level Switch | Open | The scan tool displays either Open, Closed, or Not Available. |
| Odometer Lock Status | Active/Inactive | The scan tool displays Active or Inactive depending on the state of the odometer. |
| Engine Speed | 0 RPM | The scan tool displays the filtered value of engine speed. |
| Vehicle Speed | 0 km/h | The scan tool displays the filtered vehicle speed value. |
| Fuel Level Sensor | — | The scan tool displays the filtered value of the fuel level. |
| Engine Coolant Temperature | — | The scan tool displays the filtered value of the engine coolant temperature. |

| Parameter | Expected Value | Description |
|---|---|---|
| Engine Oil Pressure | — | The scan tool displays the filtered value of the engine oil pressure. |
| Head-Up Display Dimming Level | percentage | The scan tool displays the current dimming intensity level. |
| Head-Up Display Switch | Head-Up Display Movement, Head Up Page Switch, Head-Up Display Dimming Level | The scan tool displays the current HUD button being pushed. |
| Steering Wheel Control Switches | Left, Select, Right , Volume UP, Volume Down | The scan tool displays the current steering wheel controls button being pushed. |

## Instrument Cluster Scan Tool Output Controls

| Output Control | Description |
|---|---|
| Instrument Cluster Gauge Sweep | This function is used to command the gauges to sweep from minimum to maximum. |
| Driver Information Center Dimming | This function is used to command the dimming of the driver information display to Increase or Decrease by 10%. |
| Instrument Panel Dimmer Switch | This function is used to command the dimming of the instrument cluster to Increase or Decrease by 10%. |
| Driver Information Center Segments | This function is used to command the driver information center segments ON and OFF. |
| All Indicators | This function is used to command all the indicators ON or OFF. |
| Driver Information Center Options | This function is used to command the driver information center buttons using the scan tool. |
| CAN Bus Configuration Learn | This function is used to Reset the source ID for low speed CAN Bus communications. |
| Head Up Display Dimming Level | This function is used to command the dimming of the head up display to Increase or Decrease. |
| Head Up Display Pattern Check | This function is used to command the head up display to display a striped test pattern. |

## T3 Audio Amplifier: Scan Tool Information

## Amplifier Scan Tool Data Parameters

| Parameter | Expected Value | Definition |
|---|---|---|
| **Operating Conditions:** Ignition ON | | |
| Power Mode | Run | The scan tool displays Off, Accessory, Run or Crank Request. This is the vehicle power mode status as received via serial data. |
| Active Noise Cancellation | On | The scan tool displays On or Off. This indicates if the Active Noise Cancellation feature is available and capable of operating. |
| Engine Speed Signal | Normal | The scan tool displays Normal or Malfunction. This is the status of the dedicated engine speed signal circuit. |
| Battery Voltage | Varies | The scan tool displays volts. This is the voltage at the input to the amplifier. |
| Vehicle Speed | 0 km/h | The scan tool displays the vehicle speed received by the amplifier in km/h or mph. |
| Engine Speed | 0 RPM | The scan tool displays the current engine speed received by the amplifier in RPM . |
| Calculated System Temperature | Varies | The scan tool displays the calculated temperature of the amplifier in °C or °F. |
| Active Noise Cancellation Speaker Output | OK | The scan tool displays OK or Malfunction. This is the status of the amplifier speaker outputs. |

| Parameter | Expected Value | Definition |
|---|---|---|
| Cylinder Deactivation System Command | Varies | The scan tool displays 8 Cylinder Active, Transitioning from 8 to 4, 4 Cylinder Active, Transitioning from 4 to 8, or Malfunction. This is the status of the cylinder deactivation mode as received via serial data. Malfunction is displayed when this data is not being received, or when the engine is not running. |
| Microphone Status | Normal | The scan tool displays Normal, Clipped, or Malfunction. |
| Microphone 1 Input Level | Varies | The scan tool displays counts from 0 to 65,535. This is the sound level currently being received by the microphone 1, with higher numbers indicating louder sounds. |
| Microphone 2 Input Level | Varies | The scan tool displays counts from 0 to 65,535. This is the sound level currently being received by the microphone 2, with higher numbers indicating louder sounds. |
| Microphone 3 Input Level | Varies | The scan tool displays counts from 0 to 65,535. This is the sound level currently being received by the microphone 3, with higher numbers indicating louder sounds. |
| Door Status | Varies | The scan tool displays All Closed or One or More Open. This is the current status of the vehicle access door latches as received via serial data. |
| Folding Top Status | Varies | The scan tool displays Closed, Open, Malfunction, or Normal. This is the current position of the vehicle folding top (if equipped) as received via serial data. |
| Calibration Part Number 1 | Varies | The scan tool displays the software calibration part number 1. |
| Calibration Part Number 2 | Varies | The scan tool displays the software calibration part number 2. |
| Calibration Part Number 3 | Varies | The scan tool displays the software calibration part number 3. |
| Calibration Part Number 4 | Varies | The scan tool displays the software calibration part number 4. |
| Calibration Part Number 5 | Varies | The scan tool displays the software calibration part number 5. |
| Calibration Part Number 6 | Varies | The scan tool displays the software calibration part number 6. |
| Calibration Part Number 7 | Varies | The scan tool displays the software calibration part number 7. |
| Calibration Part Number 8 | Varies | The scan tool displays the software calibration part number 8. |
| Calibration Part Number 9 | Varies | The scan tool displays the software calibration part number 9. |
| Calibration Part Number 10 | Varies | The scan tool displays the software calibration part number 10. |
| End Model Part Number | Varies | The scan tool displays the end software module part number. |
| Diagnostic Data Identifier | Varies | Identifies a supplier and system specific data stream used by diagnostic testers to interpret a diagnostic data stream. |

## T22 Wireless Accessory Charging Module: Scan Tool Information

The T22 Wireless Accessory Charging Module scan tool data parameters list contains all automatic level control related parameters that are available on the scan tool. The list is arranged in alphabetical order. A given parameter may appear in any one of the data lists.

### Wireless Accessory Charging Module Scan Tool Data Parameters

| Parameter | System State | Expected Value | Description (Range) |
|---|---|---|---|
| **Operating Conditions:** Ignition ON | | | |
| Alignment Status | — | Varies | The scan tool displays the current condition of Radar Alignment. |
| Charging Current Level | — | Varies | The scan tool displays the state or energy level of charging device being energized by inductive charging coil located under the cup holder (None, Low, Medium, High). |

| Parameter | System State | Expected Value | Description (Range) |
|---|---|---|---|
| Charging Current Value | — | Varies | The scan tool displays the current in mA being energized by inductive charging coil located under cup holder (0–1000mA). |
| Wireless Charging Disable History - 1 | — | Varies | Indicates why the wireless charging system was disabled. |
| Wireless Charging Disable History - 2 | — | Varies | Indicates why the wireless charging system was disabled. |
| Wireless Charging Disable History - 3 | — | Varies | Indicates why the wireless charging system was disabled. |
| Wireless Charging Disable History - 4 | — | Varies | Indicates why the wireless charging system was disabled. |
| Wireless Charging Disable History - 5 | — | Varies | Indicates why the wireless charging system was disabled. |
| Wireless Charging Disable History - 6 | — | Varies | Indicates why the wireless charging system was disabled. |
| Wireless Charging Disable History - 7 | — | Varies | Indicates why the wireless charging system was disabled. |
| Wireless Charging Disable History - 8 | — | Varies | Indicates why the wireless charging system was disabled. |

### K111 Fuel Pump Power Control Module Scan Tool Information

Refer to: *K20 Engine Control Module: Scan Tool Information (L5P) 3-105* *K20 Engine Control Module: Scan Tool Information (L8T) 3-153*.

## Diagnostic Information and Procedures

### Strategy Based Diagnosis

The goal of Strategy Based Diagnosis is to provide guidance when you create a plan of action for each specific diagnostic situation. Following a similar plan for each diagnostic situation, you will achieve maximum efficiency when you diagnose and repair vehicles. Although each of the Strategy Based Diagnosis steps are numbered, you are not required to complete every step in order to successfully diagnose a customer concern. The first step of your diagnostic process should always be Understand and Verify the Customer's Concern. The final step of your diagnostic process should be to Repair and verify the Fix. Refer to the steps listed below for the correct Strategy Based Diagnosis.

**Note:** For additional information on the following steps refer to the corresponding numbered paragraphs listed below.

1. Understand and verify the customers concern.
2. Verify the vehicle is not operating as designed:

⇒ **If the vehicle is operating as designed review the suggestions listed below:**

- Check Identical Vehicle
- Customer Misunderstanding of System – Explain operation to customer or refer to owners or service manual
- Customer dissatisfaction – Submit a Field Product Report

⇓ **If the vehicle is not operating as designed**

3. Perform preliminary checks – Visual inspections and operational

⇒ **If the customers concern is found, refer to step 5**

⇓ **If the customers concern is not found**

4. Perform the Diagnostic System Check – Vehicle, determine the diagnostic service category to perform.

⇒ **If the customers concern is found, refer to step 5**

⇓ **If the customers concern is not found**

5. Check for related Bulletins, Recalls and Preliminary Information.

⇒ **If the customers concern is found, refer to step 7**

⇓ **If the customers concern is not found**

**Note:** If a diagnostic procedure indicates to replace a programmable control module, the control module must be reprogrammed with the latest available software and retested before replacement:

- If updated control module software is available, reprogram the control module and re-test to verify if updated software has corrected the concern. If the updated software has corrected the concern, no further action is required; Do not replace the control module. If the concern persists after programming the control module with the latest software, continue following the diagnostic instructions and replace the control module.

- If updated control module software is not available, continue following the diagnostic instructions and replace the control module if instructed.
- If the scan tool is unable to communicate with the suspected control module, attempt to reestablish communication by removing and reconnecting power to the control module. This may be performed by removing the fuse or fuses powering the control module or by disconnecting the electrical connector(s) at the control module. If communication with the control module is reestablished after removing and reconnecting power, reprogram the control module with the latest software (if available) and re-examine the concern.

6. Follow the diagnostic path listed below:
   6.1. Current DTC – Follow DTC Diagnostics
   6.2. Symptom no DTC – Follow Symptom Diagnostics
   6.3. No published diagnostic – Analyze and develop diagnostics or call Technical Assistance
   6.4. Intermittent/History DTC – See diagnostic detail below
7. Isolate the root cause then repair and verify the fix.
8. Re-examine the concern.

⇒ **If the vehicle is not repaired, refer to step 1**

⇓ **If the vehicle is repaired**

9. All OK.

**Additional Information**

1. Understand and Verify the Customer Concern: The first part of this step is to obtain as much information as possible from the customer. Are there aftermarket accessories on the vehicle? When does the condition occur? Where does the condition occur? How long does the condition last? How often does the condition occur? In order to verify the concern, the technician should be familiar with the normal operation of the system and refer to the owner or service manual for any information needed.
2. Vehicle Operating as Designed: This condition exists when the vehicle is found to operate normally. The condition described by the customer may be normal. Compare with another like vehicle that is operating normally under the same conditions described by the customer. Explain your findings and the operation of the system to the customer. If the customer is dissatisfied submit a Field Product Report.
3. Preliminary Checks: Conduct a thorough visual inspection. Review the service history. Detect unusual sounds or odors. Gather diagnostic trouble code (DTC) information in order to achieve an effective repair.
4. Perform Published Diagnostic System Check-Vehicle: The *Diagnostic System Check - Vehicle 3-255* verifies the proper operation of the system. This will lead the technician in an organized approach to diagnostics and identify what category of diagnostic to perform.
5. Check for related Bulletins, Recalls and Preliminary Information (PI).

**Note:** When diagnosing DTCs and symptoms that involve an control module, updated software may be available. Before replacing an control module, first determine if any software updates are available. If new software is available, reprogram the control module and reevaluate the concern. In many instances, reprogramming the control module with the latest software may correct a software-related fault and resolve the concern without replacement of the control module.

6. Diagnostic categories:
   6.1. Current DTC: Follow the designated DTC diagnostic in order to make an effective repair. Refer to *Diagnostic Trouble Code (DTC) List - Vehicle 3-260*.
   6.2. Symptom - No DTC: Select the appropriate symptom diagnostic. Follow the diagnostic steps or suggestions in order to complete the repair. Refer to *Symptoms - Vehicle 3-318*.
   6.3. No Published Diagnostics: Analyze the Concern. Develop a plan for the diagnostics. The service manual schematics will help you to see system power, ground, input, and output circuits. You can also identify splices and other areas where multiple circuits are tied together. Look at component locations to see if components, connectors or harnesses may be exposed to extreme temperature, moisture, or corrosives (road salt, battery acid, oil or other fluids). Utilize the wiring diagrams, system description and operation, and system circuit description.
   6.4. Intermittent/History DTC: An intermittent condition is one that does not occur continuously, may be difficult to duplicate, and will only occur when certain conditions are met. Generally, an intermittent is caused by faulty electrical connections and wiring, malfunc-

tioning components, electromagnetic/radio frequency interference, driving conditions, or aftermarket equipment. The following approaches/tools may prove to be beneficial in locating and repairing an intermittent condition or history DTC.

- Combining technicians knowledge with the available service information.
- Evaluate the symptoms and conditions described by the customer.

  North America – The GM Customer Concern Verification Sheets have been designed to improve communications between the service customer and the technician. The more clearly the technician understands the concern and its symptoms, the more likely the concern will be fixed right the first time. The blank CCVS can be found in GM Global Connect under Service, Service Forms.
- Follow the suggestions on [Link target (target-id 62112-) not found] .
- Use a tool with data capturing capabilities like scan tool, digital multi-meter, or (if available) a vehicle data recorder.

7. Isolate the Root Cause then Repair and Verify Fix: After isolating the root cause, make the repairs and validate for the correct operation by performing the *Diagnostic Repair Verification 3-319*. Verifying that the DTC or symptom has been corrected may involve road testing the vehicle.
8. Re-examine the Concern: If a technician cannot successfully find or isolate the concern, a re-evaluation is necessary. Re-verify the concern. The concern could be an intermittent or normal condition.

## Diagnostic Procedure Instructions

The following is an instructional overview of all categories which may be included in a diagnostic procedure.

## Diagnostic Instructions

- A link to the *Diagnostic System Check - Vehicle 3-255* is provided here. This procedure should be performed prior to performing other diagnostic procedures, as this prevents misdiagnosis where there are integrated system dependencies.
- A link to the *Strategy Based Diagnosis 3-245* is provided here. This provides an overview on how a technician should diagnose a vehicle.
- A link to the *Diagnostic Procedure Instructions 3-247* is provided here. This information is an instructional overview of all categories which may be included in a diagnostic procedure.

## DTC Descriptor

Lists all DTCs and descriptors that are diagnosed within the procedure.

If the DTC supports symptom bytes they will either be listed with the DTC or there will be a link to the symptom byte list.

## Diagnostic Fault Information

The Diagnostic Fault Information table identifies each circuit that makes up an electrical subsystem and the associated circuit faults. DTCs and symptoms are listed in the table for all circuit fault modes. This information can be used to diagnose an electrical fault, or as a quick visual aid showing how the different DTCs and symptoms apply for the subsystem being diagnosed.

All DTCs and symptoms shown in this table are not necessarily diagnosed during this procedure.

An example table from an engine coolant temperature (ECT) procedure:

| Circuit | Short to Ground | Open/High Resistance | Short to Voltage | Signal Performance |
|---|---|---|---|---|
| Signal | P0117 | P0118, P0119 | P0118*, P0119 | P0128, P111E |
| Low Reference | — | P0118, P0119 | — | P0128 |
| * Internal control module or component damage may occur if the circuit shorts to B+. | | | | |

## Typical Scan Tool Data

The Typical Scan Tool Data table identifies a scan tool data parameter and its value in reference to potential circuit faults.

An example table from an ECT procedure:

**ECT Sensor**

| Circuit | Short to Ground | Open | Short to Voltage |
|---|---|---|---|
| **Operating Conditions:** Engine = Idling— At normal operating temperature.<br>**Parameter Normal Range:** 88 to 105°C (190 to 221°F) | | | |
| Signal | 140°C (248°F) | −40°C (−40°F) | −40°C (−40°F) |
| Low Reference | — | −40°C (−40°F) | — |

## Circuit/System Description

Circuit/System Description identifies circuits, components, and describes how the circuit/system normally functions.

## Conditions for Running the DTC

Conditions for Running the DTC, identifies what conditions must be present to allow the diagnostic to run.

## Conditions for Setting the DTC

Conditions for Setting the DTC, identifies the conditions that must be present in order to fail the diagnostic and when to set the DTC.

## Actions Taken When the DTC Sets

Actions Taken When the DTC sets, identifies the default actions taken when a control module sets a DTC.

## Conditions for Clearing the DTC

Conditions for Clearing the DTC, identifies the conditions that must be met in order to clear the DTC.

## Diagnostic Aids

Diagnostic Aids are suggestions which explain other methods to diagnose the condition. It also provides unique information about the system to assist the technician in finding and repairing a vehicle condition.

## Reference Information

Reference Information includes links providing additional information to be used with the diagnostic procedure.

For example:

- Schematic Reference
- Connector End View Reference
- Component View Reference
- Description and Operation
- Electrical Information Reference
- DTC Type Reference
- Scan Tool Reference
- Special Tools

## Circuit/System Verification

The Circuit/System Verification, when supported, needs to be performed prior to the Circuit/System Testing. It will determine the following conditions:

- If a higher priority concern needs to be addressed first (E.g. other DTCs)
- If other conditions are present (E.g. low fluid level)
- If the condition is current
- If the condition is intermittent
- If the system is all Ok

**Note:** Any diagnostic step that asks if a DTC is “set” refers to a Set, Current, Present, Active DTC status. This does not include any other DTC status. For example History, Not Run, Passed and Failed.

Circuit/System Verification is a non-intrusive procedure outlining how to verify that a system or a portion of a system is functioning correctly. During the verification process, the vehicle is kept intact and tested as a complete system. The verification is used to assist the technician in determining whether a condition is current, intermittent, or not present (All Ok). When a condition is determined to be intermittent a technician can use the [Link target (target-id 62112-) not found] link in Electrical Information Reference for additional testing information.

The technician should be able to identify if the fault is occurring on the input (signal) circuit or on the output (control) circuit when applicable.

**Component Codes**
The component codes are a language independent method of identifying a common component between different areas in the service information. The component codes work regardless on how the actual component name was translated.

The component codes used on the schematics will have the base code with an extension to identify location or quantity. For example the ABS wheel speed sensors are identified on the schematic with a base code (B5) and a location extension (LF, RF, LR, and RR) as seen below:

- B5LF Wheel Speed Sensor - Left Front
- B5RF Wheel Speed Sensor - Right Front
- B5LR Wheel Speed Sensor - Left Rear
- B5LR Wheel Speed Sensor - Left Rear

The diagnostic procedures will use the base code (B5) for a wheel speed sensor but may or may not use the extension identifying location (LF, RF, LR, and RR).

**Example:**
Disconnect the harness connector at the appropriate B5 Wheel Speed Sensor.

Or

Disconnect the appropriate electrical connector: B5 Wheel Speed Sensor

This is done so the diagnostic procedure can be common for all four wheel speed sensors and not have to take into account part location or quantity.

When the diagnostic states "the appropriate" it is up to the technician to identify which component is being diagnosed either by the symptom (Driver's door lock is inoperative) or the DTC descriptor (DTC C0585 04: Left Rear Door Latch Circuit Open).

### Circuit/System Testing

**Note:** Performing the Circuit/System Verification category first will aid in determining if a vehicle condition currently exists.

Circuit/System Testing is a step by step, positive-flow, testing sequence which allows the technician to perform each test step, in sequence, until a fault is detected. If the result of a numbered test step is NOT achieved, the Right Repair Arrow below the failed test will identify what actions need to take place. If the result of a numbered test step is achieved, the normal flow is to proceed to the next numbered test step, as indicated by the Down Pass Arrow.

Intrusive diagnostics are performed to locate the system fault. System harness connections are disconnected from the component or control module to test individual circuit functions. The component or control module will be used to assist in verifying the circuit function. When a test does not pass, the repair steps (Right Repair Arrow) will indicate what circuit faults to test. For example a short to voltage, short to ground, or open/high resistance.

When testing for individual circuit faults, the technician is expected to perform terminal inspections such as connection surfaces and terminal tension at both the harness and the component or control module. When a condition is determined to be intermittent a technician can use the [Link target (target-id 62112-) not found] or [Link target (target-id 62194-) not found] link in Electrical Information Reference for additional information.

The component and control module will also be diagnosed during the test steps. A retest of a component or control module should always be performed before replacement. For example, reconnect all components and control modules and retest the system to verify the condition still exists before replacing components or control modules.

### Component Testing

Component Testing may offer a static and/or dynamic component tests. These tests can be used to verify if a component is operating correctly to avoid unnecessary replacement.

Testing control modules in this category will not be offered. In most cases, the control module is used to verify the harness circuits in the Circuit/System Testing category and a retest of the control module should always be performed before replacement.

### Repair Instructions

Repair Instructions provides a link to *Diagnostic Repair Verification 3-319*. This link describes how to verify the vehicle is repaired.

All links to repair, replacement, or programming procedures are located here.

### Repair Verification

Repair Verification describes how to verify the vehicle is repaired when additional instructions are needed beyond what is in the Diagnostic Repair Verification.

### Diagnostic System Check Instructions

The following is an overview of instructions for the general information and 14 step System Verification included in the Diagnostic System Check - Vehicle procedure.

### Diagnostic Instructions

A link to *Strategy Based Diagnosis 3-245* is provided as an overview on how a technician should diagnose a vehicle.

A link to the Diagnostic System Check Instructions is provided. This provides an overview of instructions and examples for the general information and 14 step System Verification included in the Diagnostic System Check - Vehicle procedure. The examples in this document are intended to give the technician a general idea of what the test step is referring to. They are not intended to list every possible condition or situation.

Diagnostic Systems Check steps are listed by priority to guide the technician to the appropriate diagnostic procedure to correct the customer concern. There are many ways to determine the priority of diagnosing a vehicle concern. Some faults can cause customer perceived symptoms in areas unrelated to the fault. Using an example from the System Check, after reading DTCs, the technician is asked to verify there are no Electronic Control Unit Internal Performance Faults present. It is important that any internal performance issues are addressed prior to continuing through the System Check. There is no benefit addressing other DTCs that could be set due to an internal fault to a control module. If the fault is present, performing the diagnostic procedure for that fault will likely correct the customer perceived concern and possibly eliminate other DTCs that may be set.

Not all steps of the Diagnostic System Check have to be performed. The Diagnostic System Check tries to prioritize the test steps with the highest priority faults first. The technician is then lead to another document to do the actual diagnosis or repair. The strategy is to repair higher level faults that may be the cause of other system or component level symptoms. Additionally, the Diagnostic System Check can only be used for a single fault at a time. If additional faults are present, the technician must perform the diagnostic system check for each concern until all customer concerns are corrected.

Once a repair has been completed, General Motors diagnostic strategy is to always have the technician verify that the customer concern has been corrected. This is to prevent comebacks and to ensure customer satisfaction with their dealership experience. Therefore a link has been provided to *Diagnostic Repair Verification 3-319* procedure for the technician to verify the customer concern has been corrected.

There are some assumptions made when General Motors prepares service information. They include the following areas which are presumed to function as designed:

- The 12-volt battery is fully charged. General Motors assumes the majority of vehicles brought in for repair will be able to start and be driven into the service stall. If the vehicle has a dead battery, it is slow cranking or for any other reason the technician feels the customer concern may be battery related, a link is provided to [Link target (target-id 37781-) not found] . This procedure will guide the technician through inspecting and verifying the battery functions properly.
- Fuses should not be open. General Motors does not call out in diagnostic procedures to verify a fuse. The technician is expected to find an open fuse when the diagnostic test step states to check for an open circuit condition. Therefore a link has been provided to *Power Distribution Schematics 7-820* and *Electrical Center Identification Views 7-30* for technicians to reference power sources and fuse locations if they feel there may be loss of power due to an open fuse condition.
- Ground circuits are clean, tight, and in the correct location. General Motors assumes that the original ground circuits have not been compromised. The technician is expected to find a poor ground connection when the diagnostic test step states to test the ground circuit for an open/high resistance. Therefore a link has been provided to *Ground Distribution Schematics 7-860* and *Harness Routing Views 7-663* for technicians to reference ground locations and which ground circuits may be related to the customer concern.
- All connectors/terminals fully seated in the area of concern. General Motors assumes that all connections are properly installed. The technician is expected to find an open or poor connection when the diagnostic test step asks to test the circuit for an open/high resistance. Therefore a link has been provided to *Master Electrical Component List 7-886* for technicians to reference which connections may be related to the customer concern.
- There are no aftermarket devices that affect the operation of the system. General Motors can only author diagnostic and repair information for vehicle systems and components that are original equipment or genuine GM Accessories. Aftermarket equipment can negatively affect original equipment operation and lead a technician's diagnosis of a concern in the wrong direction. Therefore a link has been provided to [Link target (target-id 310488-) not found] that guides a technician through the possible causes of vehicle problems related to aftermarket accessories.
- The scan tool powers up. General Motors assumes that power is available at the Data Link Connector and the scan tool will power on. Therefore a link has been provided to [Link target (target-id 148078-) not found] if the technician finds that the scan tool does not power on.

## Updating Control Module Software

Control module software is an integral part of the operation and function of the control module. More than just the physical component, numerous corrections and enhancements can be changed in the software that will resolve many different faults. Service Information generally uses the term “software” as an indicator of a portion of the control module soft part that can be changed or updated; More specifically, this may be a boot loader, firmware, software, calibration, or other soft part.

As an overall strategy, reprogramming a control module with the most up-to-date software available is the correct diagnostic operation before replacing the control module. If a diagnostic procedure instructs to replace a control module, first determine if updated software is available. If it is, reprogram the control module with the latest software and retest the vehicle to determine if the fault is still present. Simply updating the software in a control module may resolve the concern without the cost or labor of replacing the control module. If programming the control module with the latest software corrects the concern, take no further action. If new software does not resolve the concern or if the control module already has the latest and most up-to-date software, continue with the corrective action identified in the diagnostic procedure.

## Diagnostic System Check

1. VERIFY CUSTOMER CONCERN — This step is to obtain as much information as possible from the customer. Are there aftermarket accessories on the vehicle? When does the condition occur? Where does the condition occur? How long does the condition last? How often does the condition occur? Review the service history of the vehicle for previous repairs that could help diagnose the current concern.

   Now that the technician understands the customer concern, they should validate the concern on the vehicle. In order to verify the concern, the technician should be familiar with the normal operation of the system and refer to the owner or service manual for any information needed. Inspect the visible system components for obvious damage or conditions that could cause the concern. Conduct a thorough visual inspection. Detect unusual sounds or odors.

   The condition described by the customer may be normal. If the technician finds the vehicle to operate normally, compare with another like vehicle that is operating normally, under the same conditions described by the customer. If this is the case, explain your findings and the operation of the system to the customer. If the customer is dissatisfied, submit a Field Product Report.

2. BULLETIN SEARCH — By searching for related bulletins, recall/field actions and preliminary information documents, a procedure for a known field issue may resolve the customer concern with little or no diagnosis necessary saving the technician diagnostic time.

3. MECHANICAL CONCERNS — This step is designed to take the technician directly to a list of symptom diagnostic procedures. The technician is asked to verify the symptoms exhibited by the system are mechanical in nature and not related to an electrical system, see some examples below. If the technician feels the concern could be related to an electrical system, they should continue through the Diagnostic System Check to verify the electrical functionality of vehicle. If the technician feels the concern is exclusively related to a mechanical system, a link to *Symptoms - Vehicle 3-318* is provided to select the appropriate symptom diagnostic procedure for the customer concern.

   Examples:

   - Brake noise or diagnosing irregular pad wear
   - Water leak diagnosis
   - Engine or transmission fluid leak diagnosis
   - Manual window or door lock diagnosis
   - Vehicle vibration diagnosis
   - Exhaust noise or leak diagnosis

4. VEHICLE POWER UP VERIFICATION — The technician is asked in this step to verify the vehicle powers up. The technician should look for clues that multiple vehicle systems are receiving vehicle power mode messages, such as the cluster waking up, the radio powers on, the HVAC blower is operational, windshield wipers turn on, etc, with the ignition On. This would be a rare condition as both the power mode master and back-up power mode master would have to be inoperable, however, if the vehicle does not power up, a link to [Link target (target-id 148321-) not found] is provided.

5. CONTROL MODULE COMMUNICATION and DTC CHECK — The technician is asked in this step to record the following three pieces of data on the Repair Order; any control module that the scan tool determined is not communicating, any DTC and symptom byte set current or history, and the control module that has set the DTC.

   This is considered a setup step for the rest of the Diagnostic System Check. The technician is not expected to do anything other than record the three pieces of data provided by the scan tool on the Repair Order. This provides the information needed to complete the rest of the diagnostic system check.

To complete this step, the technician is asked to utilize the scan tool Vehicle DTC Information function. This function will query every possible control module on the vehicle requesting all DTCs. During the DTC query, the scan tool will try to establish communication with each control module. If the scan tool can communicate with the control module during the DTC request, it will display PRESENT and provide the number of DTCs set in the control module. If the scan tool cannot communicate with a control module, it will only display NOT COMMUNICATING. Since the scan tool cannot determine if a given control module should be present or not, the technician is asked in a future step to verify that the vehicle was not built with control modules listed as NOT COMMUNICATING.

If the scan tool cannot establish communications with ALL of the vehicles control modules, a link to [Link target (target-id 148085-) not found] is provided. A faulty control module or fault with the serial data circuit can cause no communication with all of the control modules on the vehicle. If any control module communicates on the serial data circuit, continue through the Diagnostic System check, as a future step will address any specific non communicating or group of non communicating control modules.

Once the scan tool has completed the routine, the technician should review each control module that has set a DTC and document them on the Repair Order. When reviewing the DTCs, the technician should take notice if any DTCs are powertrain related, and if so, navigate in the scan tool to the Powertrain area and utilize the Capture Info function. This will upload any Freeze Frame/Failure Records stored in the control module to the scan tool in case the data is lost from the control module. As an example, if the technician commands a Clear DTCs function on a powertrain controller, all diagnostic information stored in the controller is erased. This includes Freeze Frame/Failure Records and Inspection/Maintenance System Status indicators, if required for your region.

6. CONTROL MODULE INTERNAL PERFORMANCE FAULTS — The technician is asked to review the DTCs recorded in step 5 and verify there are no control module internal performance faults set current. This type of fault may be the cause of other symptoms or DTCs displayed by the vehicle. By addressing this fault first, the technician may find the other concerns are resolved. The technician should always follow the diagnostic procedure for these types of faults prior to replacing any control module. If the technician finds a control module has an internal performance fault, a link is provided to *Diagnostic Trouble Code (DTC) List - Vehicle 3-260* to select the appropriate DTC diagnostic procedure.

   Examples:

**Note:** DTC U3000 is used for both high level control module faults and lower level faults. The fault level is determined by the symptom byte set with the DTC. Examples of some DTC U3000 internal performance fault symptoms are shown below.

- U3000 04 Control Module System Internal Malfunction
- U3000 41 Control Module General Checksum Malfunction
- U3000 49 Control Module Internal Malfunction
- P0606 Control Module Internal Performance
- P0607 Control Module Performance

7. CONTROL MODULE COMMUNICATION VERIFICATION — This step is used to ensure the control modules that are NOT COMMUNICATING were not built on the vehicle. If the technician determines that a control module that is NOT COMMUNICATING should be present, the technician is asked to follow the appropriate diagnostic procedure listed in the [Link target (target-id 148085-) not found] document.

8. COMMUNICATION and POWER MODE FAULTS — This step is asking the technician to look for communication DTCs or DTCs related to control modules powering up based on power mode, communication enable or wake-up circuits. See in the below table some examples of the DTCs the technician should diagnose prior to continuing through the Diagnostic System Check. The technician should review the list of DTCs recorded in step 4 and verify that none of these type of DTCs are present. If so, the technician is referred to the *Diagnostic Trouble Code (DTC) List - Vehicle 3-260* to select the appropriate DTC diagnostic procedure.

   Examples:

**Note:** DTC U3000 is used for both high level control module faults and lower level faults. The fault level is determined by the symptom byte set with the DTC. Examples of some DTC U3000 communication and power mode faults are shown below.

- U3000 04 Control Module Bus Signal/Message Malfunction
- U0140 Lost Communication with Body Control Module
- U0164 Lost Communication with Heater and Air Conditioning User Interface Control - Front
- U0184 Lost Communication with Radio

- U0402 Invalid Data Received from Transmission Control Module
- U0452 Invalid Data Received from Restraints Control Module
- U001B Gear Shift Control Module Powertrain Sensor Bus Enable
- U300D Ignition Input On/Start
- B1AA3 Run/Crank Relay Coil Control

9. POWER MODE VERIFICATION — This step verifies the Power Mode Master is receiving the proper output state of the ignition switch/push button switch. The technician should use the main power mode input, this being either the ignition key or, on vehicles equipped with Passive Entry Passive Start, the push button switch. The test should not be performed using a key fob, if the MIL is illuminated the powertrain controller may disable this input. The technician is asked to perform the test with the driver door open. This ensures the retained accessory power mode is inactive during this test which could result in different scan tool readings. The technician is only asked to verify the current Power Mode parameter in the power mode data display list. If the parameter does not match the actual ignition switch position, a link is provided to perform the [Link target (target-id 148321-) not found] diagnostic procedure.
10. SERIAL DATA AUTHENTICATION FAULTS — This step verifies that control modules are able to authenticate and verify the legitimacy of certain critical messages on in-vehicle networks. The technician should review the list of DTCs recorded in step 4 and verify that none of these DTCs are present. If so, the technician is referred to the *Diagnostic Trouble Code (DTC) List - Vehicle 3-260* to select the appropriate DTC diagnostic procedure.

    Examples:

    - U1960 Message Authentication Keys Missing or Incomplete
    - U1961 Control Module Security Hardware Internal Malfunction
    - U1962 Unable to Authenticate Serial Data Message
    - U3034 Message Authentication Keys Missing or Incomplete
    - U3035 Unable to Authenticate Serial Data Message
11. PROACTIVE ALERT IDENTIFIERS— The technician is asked in this step to verify there are no Proactive Alert Identifiers set. These identifiers are displayed on the scan tool and will only appear when the OnStar subscription is active and the customer has opted into the Proactive Alert service.
12. ENGINE CRANK and RUN VERIFICATION — Here the technician is asked to verify that the engine cranks and runs. The technician should use the main power mode input, this being either the ignition key or, on vehicles equipped with Passive Entry Passive Start, the push button switch, to complete this step. The test should not be performed using a key fob, if the MIL is illuminated the powertrain controller may disable this input. The technician should know at this point whether the engine cranks and runs without having to actually performing this test step. One of the follow has probably already occurred and this step can be skipped: The technician drove the vehicle into the stall or verified when checking the Crank and Run parameter in step 8. If the technician has not already somehow verified the engine cranks in previous steps, the technician should perform this test step. Regardless of how this step was performed, if the engine does not crank, a link is provided to *Engine Does Not Crank 3-319* or if the engine cranks but does not run, a link is provided to *Engine Cranks But Does Not Run 3-319* for the technician to choose the correct diagnostic procedure for the actual engine application being used.
13. REMAINING DTC REVIEW — Here the technician is asked to review any remaining DTCs that were not addressed in previous steps. The technician is asked first to verify there are no control module supply voltage, system voltage or 5 V circuit DTCs present. Control modules, systems or components with insufficient or zero voltage can cause one or multiple symptoms to exist on the vehicle. Control module voltage issues could also be the cause of failures during a programming event. The technician should correct voltage issues prior to addressing any programming or configuration DTCs. The technician should then check for any ECU programming, setup or configuration DTCs. By programming software or configuring a control module, the technician could correct the customer concern unobtrusively. The remaining DTCs, which are usually specific system or component faults, are diagnosed last. They can include ECU input and output circuit DTCs or individual circuit faults that usually cause single symptoms or failure modes on the vehicle and can be fixed following the proper DTC diagnostic procedure. In general, the technician should think about what DTCs or faults could be caused by another DTC or fault. A failed sensor may set a component DTC and then the system may set a DTC indicating the system cannot operate properly. By correcting the sensor

fault, the system may now operate properly and the system level DTC will transition to history. Refer to the examples within each category below to understand the differences between these DTCs. If DTCs of these type are current, the technician is referred to *Diagnostic Trouble Code (DTC) List - Vehicle 3-260* to choose the correct DTC diagnostic procedure.

13.1. Voltage DTCs

**Note:** DTC U3000 is used for both high level control module faults and lower level faults. The fault level is determined by the symptom byte set with the DTC. Examples of some DTC U3000 voltage faults are shown below.

- U3000 16 Control Module Circuit Low Voltage
- U3000 17 Control Module Circuit High Voltage
- B19F4 Vehicle 12V Charging System
- P0560 System Voltage
- P0651 Sensor Reference 2 Circuit
- U3006 Control Module Power 1 Circuit

13.2. Programming, Setup, Configuration or Software Performance DTCs

**Note:** DTC U3000 is used for both high level control module faults and lower level faults. The fault level is determined by the symptom byte set with the DTC. Examples of some DTC U3000 programming, setup, configuration, or software faults are shown below.

- U3000 51 Control Module Not Programmed
- U3000 54 Control Module Missing Calibration
- U3000 55 Control Module Not Configured
- C05D4 Brake Master Cylinder Piston Position Sensor Calibration Not Learned
- P0602 Control Module Not Programmed
- P0630 VIN Not Programmed or Mismatched - Powertrain Control Module (PCM)

13.3. Component related DTCs

**Note:** DTC U3000 is used for both high level control module faults and lower level faults. The fault level is determined by the symptom byte set with the DTC. Examples of some DTC U3000 component faults are shown below.

- U3000 4A Control Module Incorrect Component Installed
- B0013 Co-Driver Knee Module High Control
- B15A7 Instrument Panel Accent Lighting Control
- C0502 Left Front Wheel Speed Sensor Circuit Low Input
- P0535 Air Conditioning Evaporator Temperature Sensor Circuit
- P0131 Heated Oxygen Sensor Circuit Low
- P0712 Transmission Fluid Temperature Sensor Circuit Low

13.4. System related DTCs

**Note:** DTC U3000 is used for both high level control module faults and lower level faults. The fault level is determined by the symptom byte set with the DTC. Examples of some DTC U3000 system related faults are shown below.

- U3000 9A Control Module Incorrect Component or System Operating Conditions Exceeded
- B1A04 Front View Camera - Windshield
- C003F Wheel Speed Sensors Direction Correlation
- C2A21 Park Brake Actuator Position Unknown
- P0101 Mass Airflow Sensor Performance
- P175E Transmission Control System - Shift Limiting Active

13.5. Any other remaining DTCs — The technician should diagnose and correct any other DTCs that are left that were not from the categories above.

14. EMISSION RELATED INSPECTION/MAINTENANCE TESTING CONCERNS — Several regions require that a vehicle pass on-board diagnostic system tests and the inspection/maintenance emission tests in order to renew license plates or vehicle registration. This is accomplished by viewing the Inspection/Maintenance System Status display on a scan tool. Using a scan tool, the technician can observe the Inspection/Maintenance System Status in order to verify that the vehicle meets the criteria that comply with the local area requirements. If inspection and maintenance checks are required in your region, and the customer concern is related to not passing an Inspection/Maintenance test, a link is provided to *Inspection/Maintenance System Check 3-319* where the technician can choose the appropriate Inspection/Maintenance System Check for the actual engine application being used.

15. SYMPTOM DIAGNOSIS — At this step, the diagnostics are assuming that the only information the technician has available to diagnose the customer concern are symptoms of a problem.

There are no DTCs set current or history. There may be a Driver Information Center display message or a system indicator to aid in identifying the root cause. The technician should evaluate the symptoms and conditions described by the customer and perform the symptoms diagnostics for the area of customer concern. A link is provided to *Symptoms - Vehicle 3-318* which contains a list of all symptoms related to this service manual publication.

### Diagnostic Starting Point - Vehicle

Begin the system diagnosis with *Diagnostic System Check - Vehicle 3-255*. The Diagnostic System Check - Vehicle will provide a complete strategy to locate and repair a mechanical or electrical vehicle fault. Not following this strategy may cause additional diagnostic time and/or misdiagnosis.

The Diagnostic System Check - Vehicle will provide the following strategy:

- When to verify the customer concern and identify related bulletins, recalls and preliminary information
- When to identify a control module that is not communicating, a control module that has set a DTC, and the DTC diagnostic priority
- When to address power mode concerns
- When to verify the engine cranks and runs
- When to diagnose symptom related concerns

### Diagnostic System Check - Vehicle

### Diagnostic Instructions

- Review *Strategy Based Diagnosis 3-245* for an overview of the diagnostic approach.
- *Diagnostic System Check Instructions 3-249* provides an overview of each diagnostic step.
- Continue through the Diagnostic System Check until you are directed to follow a particular diagnostic or repair procedure. Once a repair has been completed, perform the *Diagnostic Repair Verification 3-319* and verify the customer concern has been corrected.

The diagnostic procedures within this manual are developed on the assumption that the following areas function as designed:

- The 12 V battery is fully charged and cables are clean and tight. Refer to: [Link target (target-id 37781-) not found] .
- Fuses are not open. Refer to: *Power Distribution Schematics 7-820* and *Electrical Center Identification Views 7-30*.
- Ground circuits for the area of customer concern are clean, tight, and in the correct location. Refer to: *Ground Distribution Schematics 7-860* and *Harness Routing Views 7-663*.
- All connectors/terminals fully seated in the area of concern. Refer to: *Master Electrical Component List 7-886*.
- There are no aftermarket devices that affect the operation of the system. Refer to: [Link target (target-id 310488-) not found] .
- The scan tool powers up. Refer to: [Link target (target-id 148078-) not found] .

### Updating Control Module Software

For control modules that are able to be reprogrammed, updated software may become available as a part of normal bug correction, feature updates, and control module diagnostic enhancement. In the course of normal fault diagnosis, if a diagnostic procedure indicates to replace a programmable control module, the control module must first be reprogrammed with the latest available software and retested before replacement:

- If updated control module software is available, reprogram the control module and re-test to verify if updated software has corrected the concern. If the updated software has corrected the concern, no further action is required; Do not replace the control module. If the concern persists after programming the control module with the latest software, continue following the diagnostic instructions.
- If updated control module software is not available, continue following the diagnostic instructions.

### Diagnostic System Check

1. VERIFY CUSTOMER CONCERN — Understand and validate the customer concern. Inspect the visible system components for obvious damage or conditions that may cause the concern.
2. BULLETIN SEARCH — Check for related bulletins, recall/field actions and preliminary information.
3. MECHANICAL CONCERNS — Verify the symptom is not exclusively a mechanical concern.

⇒ **If the symptom is exclusively a mechanical concern**

Refer to: *Symptoms - Vehicle 3-318*.

⇓ **If the symptom is not a mechanical concern**

**Note:**

- Do not clear any DTCs unless instructed to do so by a diagnostic procedure. If any DTC is Powertrain related, select Capture Info to store DTC and Freeze Frame/Failure Records to the scan tool.
- Changes in vehicle power mode can be determined by the indicators on the S38 On/Off Vehicle Switch. The indicator should match the selected power mode and change as the power mode is changed.

4. VEHICLE POWER UP VERIFICATION — Vehicle in Service Mode, verify the vehicle powers up.

⇒ **If the vehicle does not power up**

Refer to: [Link target (target-id 148321-) not found] .

⇓ **If the vehicle powers up**

**Note:** When checking for DTCs and determining what diagnostic actions should be taken, it is important to understand if the DTC is a current DTC or a history DTC. It is not uncommon for vehicles to arrive for service with a DTC that is history and the underlying fault condition no longer present. Refer to *DTC Status Information 3-258* to help determine which DTCs are current and should be diagnosed as such, and which DTCs are not current and should not be considered for diagnosis.

5. CONTROL MODULE COMMUNICATION and DTC CHECK — Using a scan tool, perform the Vehicle DTC Information function and verify at least one control module communicates with the scan tool. Record on the Repair Order the following information:
   - Any control module that is not communicating.
   - Any DTC, including symptom byte, and the control module that has set the DTC.

⇒ **If the scan tool does not communicate with any control module on the vehicle**

Refer to: [Link target (target-id 148085-) not found] .

⇓ **If the scan tool communicates with any control module**

6. CONTROL MODULE INTERNAL PERFORMANCE FAULTS — Verify there are no current control module Internal Hardware Performance DTCs set.

⇒ **If any DTC of this type is set**

Refer to: *Diagnostic Trouble Code (DTC) List - Vehicle 3-260*.

⇓ **If no DTC of this type is set**

**Note:** If the scan tool is unable to communicate with a control module, attempt to reestablish communication by removing and reconnecting power to the control module. This action will typically be performed in the course of normal fault diagnosis but may also be performed by removing the fuse or fuses powering the control module or by disconnecting the electrical connector(s) at the control module. If communication with the control module is reestablished after removing and reconnecting power, reprogram the control module with the latest software (if available) and re-examine the concern. Do not replace the control module without first determining if new software is available and, if so, programming the control module with the new software to determine if the software has corrected the concern.

7. CONTROL MODULE COMMUNICATION VERIFICATION — Verify the vehicle is equipped with any control module identified as not communicating on the scan tool. For a list of all control modules the vehicle may be equipped with, refer to: [Link target (target-id 148085-) not found] . With all non-communicating control module(s) identified, select the appropriate Data Communication schematic to determine the RPO(s) associated with the control module and verify the RPO is or is not present on the vehicle being diagnosed. All control modules should be communicating, as equipped.

⇒ **If the vehicle is equipped with a control module that is not communicating**

Refer to: [Link target (target-id 148085-) not found] . Select the appropriate Scan Tool Does Not Communicate with Device on CAN link in the Diagnostic Procedure column.

⇓ **If all control modules the vehicle is built with are communicating**

8. COMMUNICATION and POWER MODE FAULTS — Verify there are no current control module Power Mode or Communication DTCs set.

⇒ **If any DTC of this type is set**

Refer to: *Diagnostic Trouble Code (DTC) List - Vehicle 3-260*.

⇓ **If no DTC of this type is set**

**Note:** The engine may start during this test. Ensure the vehicle is out of gear and the parking brake is applied. Turn the engine OFF as soon as the crank power mode parameter has been observed.

9. POWER MODE VERIFICATION — Driver door open, observe each scan tool Power Mode data parameter while cycling through all power modes. Verify all Power Mode data parameters match the actual ignition switch/push button switch selection.

⇒ **If any Power Mode data parameter does not match**

Refer to: [Link target (target-id 148321-) not found] .

⇓ **If all Power Mode data parameters match**

10. SERIAL DATA AUTHENTICATION FAULTS - Verify DTC U1960, U1961, U1962, U3034, or U3035 is not set.

⇒ **If any of the DTCs are set**

Refer to: *Diagnostic Trouble Code (DTC) List - Vehicle 3-260*.

⇓ **If none of the DTCs are set**

11. PROACTIVE ALERT IDENTIFIERS — The technician is asked in this step to verify there are no Proactive Alert Identifiers set. These identifiers are displayed on the scan tool and will only appear when the OnStar subscription is active and the customer has opted into the Proactive Alert service.

⇒ **If any Proactive Alert Identifier is set**

Refer to: *Proactive Alerts List 3-320*

⇓ **If no Proactive Alert Identifier is set**

12. ENGINE CRANK and RUN VERIFICATION — Verify that the engine cranks and runs.

⇒ **If the engine does not crank**

Refer to: *Engine Does Not Crank 3-319*.

⇒ **If the engine does not run**

Refer to: *Engine Cranks But Does Not Run 3-319*.

⇓ **If the engine cranks and runs**

13. REMAINING DTC REVIEW — Verify there are no other DTCs set.

⇒ **If other DTCs are set**

Diagnose them in the order listed below. Refer to *Diagnostic Trouble Code (DTC) List - Vehicle 3-260*.

13.1. Voltage DTCs

13.2. Programming, Setup or Configuration or Software Performance DTCs

13.3. Component related DTCs

13.4. System related DTCs

13.5. Any remaining DTCs

⇓ **If no other DTCs are set**

14. EMISSION RELATED INSPECTION/MAINTENANCE TESTING CONCERNS — If inspection and maintenance checks are required in your region, verify the customer concern is not related to inspection/maintenance testing.

⇒ **If the customer concern is related to inspection/maintenance testing**

Refer to: *Inspection/Maintenance System Check 3-319*.

⇓ **If the customer concern is not related to inspection/maintenance testing**

15. SYMPTOM DIAGNOSIS — Diagnose any remaining customer concern. Refer to: *Symptoms - Vehicle 3-318*.

## DTC Status Information

Diagnostic Trouble Codes (DTCs) are status indicators of the vehicle's self-diagnostic and reporting capability. Each DTC represents the status of a particular internal test within a control module. Given appropriate conditions, the control module will begin actively monitoring conditions specified by the diagnostic. These are identified and referred to as Conditions for Running the DTC in service information. Each DTC has an associated status, identifying the state of the control module diagnostic. These statuses are identified when viewing DTC information on the scan tool and are described below.

### DTC Status

| Decoded Value | Description |
|---|---|
| Not Failed | Test has completed at least once this operating cycle and has passed successfully each time |
| Current | Test has completed since the last DTC clear, has met the threshold to be stored in long term memory, and has failed the most recent completed test. Test may not have run yet this operation cycle. |
| History | Test has completed since the last DTC clear, has met the threshold to be stored in long term memory, and has passed the most recent completed test. Test may not have run yet this operation cycle. |
| Pending | Test has completed and failed at least once in the current or previous operation cycle. |
| Test Not Complete this Operating Cycle | Test has completed at least once since DTC clear but has not completed yet this operation cycle. Test may have failed since clear but has not met the threshold to be stored in long term memory. |
| Test Not Complete Since DTC Cleared | Test has not completed successfully since the DTC was last cleared. |
| Failed Since DTC Cleared | Test has completed since the last DTC clear and failed at least once but has not met the threshold to be stored in long term memory and has not failed during the current or previous operation cycle. |

### This Operating Cycle

| Decoded Value | Description |
|---|---|
| Failed | Test has completed at least once this operation cycle and has failed at least once. |
| Not Failed | Test has completed at least once this operation cycle and has passed each time. |
| Passed and Failed | Test has completed and failed at least once this operation cycle, but the most recent test passed. |
| Test Not Complete for this DTC | Test has not completed yet this operation cycle. |

### Last Test

| Decoded Value | Description |
|---|---|
| Passed | Most recent test completed and passed. |
| Failed | Most recent test completed and failed. |
| Not Complete Since DTC Cleared | Test has not completed since DTC clear. |

### Since DTC Clear

| Decoded Value | Description |
|---|---|
| Failed | Test has completed at least once since DTC was cleared and has failed at least once, including the most recent test. |
| Passed and Failed | Test has completed at least once since DTC was cleared and the most recent test passed, but not all tests have passed. |
| Not Failed | Test has completed at least once since DTC was cleared and every test has passed. |
| Test Not Complete for this DTC | Test has not completed yet since DTC was cleared. |

**Warning Indicator**

| Decoded Value | Description |
|---|---|
| Requested | A malfunction indicator has been commanded to be illuminated as a result of this DTC. |
| Not Requested | A malfunction indicator has not been requested as a result of this DTC. |

## Diagnosing History DTCs

It is very important to understand DTC status and its relationship to diagnosing a vehicle. If a DTC status is History, this means that the fault is not currently present on the vehicle. In any instance of a history DTC, diagnosis using a DTC diagnostic procedure in service information should not be attempted if not directly related to the customer complaint. Every diagnostic is written only for an active fault with a current DTC. Following a diagnostic procedure when only a history DTC is present will likely result in a misdiagnosis. This is foundational to *Strategy Based Diagnosis 3-245* and outlined as part of *Diagnostic System Check - Vehicle 3-255*.

If a DTC is only presented as a history DTC and is related to the customer complaint, it may be used as a guide or indicator for replicating the condition that caused the DTC to set. Observing the Conditions for Running the DTC in a DTC diagnostic procedure may help in recreating the conditions necessary for the DTC to run. Information within the DTC diagnostic procedure, such as the Fault Information table or Conditions for Setting the DTC, may also be helpful in recreating an intermittent DTC. Refer to Additional Information in *Strategy Based Diagnosis 3-245* for more detail in diagnosing intermittent concerns.

## Powertrain Diagnostic Trouble Code (DTC) Type Definitions

## Emissions Related DTCs

### Action Taken When the DTC Sets – Type A

- The control module illuminates the malfunction indicator lamp (MIL) when the diagnostic runs and fails.
- The control module records the operating conditions at the time the diagnostic fails. The control module stores this information in the Freeze Frame/Failure Records.

### Action Taken When the DTC Sets – Type B

- The control module illuminates the MIL on the second consecutive ignition cycle that the diagnostic runs and fails.
- The control module records the operating conditions at the time the diagnostic fails. The first time the diagnostic fails, the control module stores this information in the Failure Records. If the diagnostic reports a failure on the second consecutive ignition cycle, the control module records the operating conditions at the time of the failure. The control module writes the operating conditions to the Freeze Frame and updates the Failure Records.
- The following applies to misfire DTCs:
  - If the control module detects a low level or an emission level misfire condition during 2 consecutive trips, the control module illuminates the MIL.
  - If the control module detects a high level or catalyst damaging misfire, the control module flashes the MIL at a rate of once per second.
  - If the control module detects a misfire during 2 non-consecutive trips, the stored conditions are compared with the current conditions. The control module illuminates the MIL when the following conditions occur:
    - The engine load is within 20 percent of the previous test that failed.
    - The engine speed is within 375 RPM of the previous test that failed.
    - The engine coolant temperature is in the same range of the previous test that failed.
- The following applies to fuel trim DTCs:
  - If the control module detects a fuel trim condition during 2 consecutive trips, the control module illuminates the MIL.
  - If the control module detects a fuel trim condition during 2 non-consecutive trips, the stored conditions are compared with the current conditions. The control module illuminates the MIL when the following conditions occur:
    - The engine load is within 20 percent of the previous test that failed.
    - The engine speed is within 375 RPM of the previous test that failed.
    - The engine coolant temperature is in the same range of the previous test that failed.

### Conditions for Clearing the MIL/DTC – Type A or Type B

- The control module turns OFF the MIL after 4 consecutive ignition cycles that the diagnostic runs and does not fail.

- A current DTC, Last Test Failed, clears when the diagnostic runs and passes.
- A history DTC clears after 40 consecutive warm-up cycles, if no failures are reported by this or any other emission related diagnostic.
- Clear the MIL and the DTC with a scan tool.

## Non-Emissions Related DTCs

**Action Taken When the DTC Sets – Type C**

- The control module stores the DTC information into memory when the diagnostic runs and fails.
- The MIL will not illuminate.
- The control module records the operating conditions at the time the diagnostic fails. The control module stores this information in the Failure Records.
- The driver information center, if equipped, may display a message.

**Conditions for Clearing the DTC – Type C**

- A current DTC Last Test Failed clears when the diagnostic runs and passes.
- A history DTC clears after 40 consecutive warm-up cycles, if no failures are reported by this or any other non-emission related diagnostic.
- Clear the DTC with a scan tool.

## Diagnostic Trouble Code (DTC) List - Vehicle

This master list includes all applicable diagnostic trouble codes in alphanumeric order.

**Diagnostic Trouble Code (DTC) List - Vehicle**

| DTC | Diagnostic Procedure |
|---|---|
| B0001 | Supplemental Restraints - [Link target (target-id 289883-) not found] |
| B0002 | Supplemental Restraints - [Link target (target-id 289883-) not found] |
| B0010 | Supplemental Restraints - [Link target (target-id 289884-) not found] |
| B0011 | Supplemental Restraints - [Link target (target-id 289884-) not found] |
| B0021 | Supplemental Restraints - [Link target (target-id 317288-) not found] |
| B0029 | Supplemental Restraints - [Link target (target-id 317288-) not found] |
| B0070 | Supplemental Restraints - [Link target (target-id 317289-) not found] |
| B0072 | Supplemental Restraints - [Link target (target-id 317289-) not found] |
| B007E | Supplemental Restraints - [Link target (target-id 313882-) not found] |
| B007F | Supplemental Restraints - [Link target (target-id 313882-) not found] |
| B0090 | Supplemental Restraints - [Link target (target-id 321881-) not found] |
| B0091 | Supplemental Restraints - [Link target (target-id 321881-) not found] |
| B0092 | Supplemental Restraints - [Link target (target-id 321881-) not found] |
| B0093 | Supplemental Restraints - [Link target (target-id 321881-) not found] |
| B0094 | Supplemental Restraints - [Link target (target-id 321881-) not found] |
| B0095 | Supplemental Restraints - [Link target (target-id 321881-) not found] |
| B0096 | Supplemental Restraints - [Link target (target-id 321881-) not found] |
| B012C | Power Outlets - [Link target (target-id 338801-) not found] |
| B0550 | Displays and Gauges - [Link target (target-id 183623-) not found] |

| DTC | Diagnostic Procedure |
|---|---|
| B0931 | Displays and Gauges - [Link target (target-id 51454-) not found] |
| B094D | Driver Assistance Systems - [Link target (target-id 283746-) not found] |
| B094E | Driver Assistance Systems - [Link target (target-id 283746-) not found] |
| B0987 | Driver Assistance Systems - [Link target (target-id 283704-) not found] |
| B1008 | Horns and Pedestrian Alerts - [Link target (target-id 315457-) not found] |
| B100C | Trailering Systems - [Link target (target-id 326388-) not found] |
| B1015 | Driver Assistance Systems - [Link target (target-id 283664-) not found] |
| B1023 | Wipers and Washers - [Link target (target-id 317708-) not found] |
| B1033 | Cellular, Entertainment, and Navigation - [Link target (target-id 319390-) not found] |
| B1034 | Cellular, Entertainment, and Navigation - [Link target (target-id 319390-) not found] |
| B1038 | Vehicle Access - [Link target (target-id 316927-) not found] |
| B1048 | Lighting - [Link target (target-id 317465-) not found] |
| B1049 | Lighting - [Link target (target-id 317466-) not found] |
| B1066 | Fixed and Moveable Windows - [Link target (target-id 315458-) not found] |
| B107E | Vehicle Access - [Link target (target-id 317528-) not found] |
| B107F | Vehicle Access - [Link target (target-id 317528-) not found] |
| B108E | Lighting - [Link target (target-id 313551-) not found] |
| B1090 | Power Seats - [Link target (target-id 326122-) not found] |
| B1091 | Power Seats - [Link target (target-id 326122-) not found] |
| B1092 | Power Seats - [Link target (target-id 326123-) not found] |
| B1093 | Power Seats - [Link target (target-id 326123-) not found] |
| B1094 | Power Seats - [Link target (target-id 326124-) not found] |
| B1095 | Power Seats - [Link target (target-id 326124-) not found] |
| B1096 | Power Seats - [Link target (target-id 326125-) not found] |
| B1097 | Power Seats - [Link target (target-id 326125-) not found] |
| B1098 | Power Seats - [Link target (target-id 326126-) not found] |
| B109C | Power Seats - [Link target (target-id 326126-) not found] |
| B109D | Power Seats - [Link target (target-id 326128-) not found] |
| B109E | Power Seats - [Link target (target-id 326128-) not found] |
| B10A9 | Trailering Systems - [Link target (target-id 325943-) not found] |
| B10B4 | Supplemental Restraints - [Link target (target-id 317523-) not found] |
| B10FA | HVAC - Automatic - [Link target (target-id 318791-) not found] |
| B1105 | Power Seats - [Link target (target-id 317270-) not found] |
| B110A | Displays and Gauges - [Link target (target-id 312300-) not found] |
| B1114 | Cellular, Entertainment, and Navigation - [Link target (target-id 313041-) not found] |
| B113C | Theft Deterrent - [Link target (target-id 320486-) not found] |
| B1141 | HVAC - Automatic - [Link target (target-id 318791-) not found] |
| B115E | Vehicle Access - [Link target (target-id 317532-) not found] |
| B115F | Vehicle Access - [Link target (target-id 317532-) not found] |
| B1176 | Wipers and Washers - [Link target (target-id 313570-) not found] |
| B11A2 | Vehicle Access - [Link target (target-id 317530-) not found] |
| B11A3 | Vehicle Access - [Link target (target-id 317530-) not found] |

| DTC | Diagnostic Procedure |
|---|---|
| B11A4 | Vehicle Access - [Link target (target-id 317531-) not found] |
| B11A5 | Vehicle Access - [Link target (target-id 317531-) not found] |
| B11D1 | Lighting - [Link target (target-id 317876-) not found] |
| B11D2 | Lighting - [Link target (target-id 317876-) not found] |
| B120C | Supplemental Restraints - [Link target (target-id 317523-) not found] |
| B1236 | Lighting - [Link target (target-id 313554-) not found] |
| B1236 | Image Display Cameras - [Link target (target-id 319392-) not found] |
| B124F | Displays and Gauges - [Link target (target-id 224947-) not found] |
| B125D | Vehicle Access - [Link target (target-id 317533-) not found] |
| B1267 | Wipers and Washers - [Link target (target-id 317709-) not found] |
| B1270 | Driver Assistance Systems - [Link target (target-id 332121-) not found] |
| B1271 | Driver Assistance Systems - [Link target (target-id 332121-) not found] |
| B1274 | Cellular, Entertainment, and Navigation - [Link target (target-id 315515-) not found] |
| B12AC | Displays and Gauges - [Link target (target-id 319398-) not found] |
| B12CC | Seat Heating and Cooling - [Link target (target-id 317279-) not found] |
| B12D4 | Supplemental Restraints - [Link target (target-id 317524-) not found] |
| B12D5 | Supplemental Restraints - [Link target (target-id 317524-) not found] |
| B12FA | Wipers and Washers - [Link target (target-id 316884-) not found] |
| B132B | Parking Assistance Systems - [Link target (target-id 297192-) not found] |
| B132C | Parking Assistance Systems - [Link target (target-id 297192-) not found] |
| B132D | Parking Assistance Systems - [Link target (target-id 297192-) not found] |
| B132E | Parking Assistance Systems - [Link target (target-id 297192-) not found] |
| B1338 | Seat Heating and Cooling - [Link target (target-id 317279-) not found] |
| B1339 | Seat Heating and Cooling - [Link target (target-id 317279-) not found] |
| B133A | Seat Heating and Cooling - [Link target (target-id 317279-) not found] |
| B1346 | Cellular, Entertainment, and Navigation - [Link target (target-id 313801-) not found] |
| B1349 | Parking Assistance Systems - [Link target (target-id 317615-) not found] |
| B137B | Cellular, Entertainment, and Navigation - [Link target (target-id 315515-) not found] |
| B137C | Cellular, Entertainment, and Navigation - [Link target (target-id 315515-) not found] |
| B137D | Cellular, Entertainment, and Navigation - [Link target (target-id 315515-) not found] |
| B1388 | Driver Assistance Systems - [Link target (target-id 331168-) not found] |
| B1389 | Driver Assistance Systems - [Link target (target-id 331168-) not found] |
| B13A9 | Supplemental Restraints - [Link target (target-id 329393-) not found] |
| B13AA | Cellular, Entertainment, and Navigation - [Link target (target-id 313043-) not found] |
| B13AB | Cellular, Entertainment, and Navigation - [Link target (target-id 317598-) not found] |
| B13AC | Driver Assistance Systems - [Link target (target-id 297199-) not found] |
| B13AD | Driver Assistance Systems - [Link target (target-id 297200-) not found] |
| B13AE | Parking Assistance Systems - [Link target (target-id 297196-) not found] |
| B13AF | Parking Assistance Systems - [Link target (target-id 297196-) not found] |
| B13B0 | Parking Assistance Systems - [Link target (target-id 297193-) not found] |
| B13B1 | Parking Assistance Systems - [Link target (target-id 297193-) not found] |
| B13E7 | Horns and Pedestrian Alerts - [Link target (target-id 313548-) not found] |

| DTC | Diagnostic Procedure |
|---|---|
| B13ED | Cellular, Entertainment, and Navigation - [Link target (target-id 326974-) not found] |
| B1442 | Remote Functions - [Link target (target-id 319783-) not found] |
| B1444 | Remote Functions - [Link target (target-id 319784-) not found] |
| B1451 | Remote Functions - [Link target (target-id 319786-) not found] |
| B1491 | Supplemental Restraints - [Link target (target-id 317525-) not found] |
| B1511 | Remote Functions - [Link target (target-id 319787-) not found] |
| B1513 | Remote Functions - [Link target (target-id 319788-) not found] |
| B154A | Mirrors - [Link target (target-id 182228-) not found] |
| B154B | Mirrors - [Link target (target-id 182228-) not found] |
| B1586 | Vehicle Access - [Link target (target-id 347029-) not found] |
| B1589 | Vehicle Access - [Link target (target-id 347544-) not found] |
| B158A | Vehicle Access - [Link target (target-id 347544-) not found] |
| B158B | Vehicle Access - [Link target (target-id 347545-) not found] |
| B1594 | Image Display Cameras - [Link target (target-id 361892-) not found] |
| B1595 | Image Display Cameras - [Link target (target-id 309440-) not found] |
| B1597 | Image Display Cameras - [Link target (target-id 309441-) not found] |
| B1598 | Image Display Cameras - [Link target (target-id 309442-) not found] |
| B15AF | Cellular, Entertainment, and Navigation - [Link target (target-id 313045-) not found] |
| B15BD | Displays and Gauges - [Link target (target-id 312302-) not found] |
| B15DF | Supplemental Restraints - [Link target (target-id 317291-) not found] |
| B15E3 | Supplemental Restraints - [Link target (target-id 317291-) not found] |
| B15EE | Immobilizer - [Link target (target-id 320484-) not found] |
| B1618 | Cellular, Entertainment, and Navigation - [Link target (target-id 313047-) not found] |
| B1619 | Supplemental Restraints - [Link target (target-id 313888-) not found] |
| B161A | Supplemental Restraints - [Link target (target-id 313888-) not found] |
| B16C5 | Vehicle Access - [Link target (target-id 313566-) not found] |
| B170C | Seat Heating and Cooling - [Link target (target-id 317280-) not found] |
| B170E | Seat Heating and Cooling - [Link target (target-id 317280-) not found] |
| B1710 | Vehicle Access - [Link target (target-id 316933-) not found] |
| B1711 | Vehicle Access - [Link target (target-id 316933-) not found] |
| B171C | Vehicle Access - [Link target (target-id 317538-) not found] |
| B172E | Driver Assistance Systems - [Link target (target-id 283653-) not found] |
| B172F | Driver Assistance Systems - [Link target (target-id 283653-) not found] |
| B1737 | Cellular, Entertainment, and Navigation - [Link target (target-id 304104-) not found] |
| B174E | Cellular, Entertainment, and Navigation - [Link target (target-id 324214-) not found] |
| B176A | Vehicle Access - [Link target (target-id 316934-) not found] |
| B178C | Cellular, Entertainment, and Navigation - [Link target (target-id 313049-) not found] |
| B17F0 | Supplemental Restraints - [Link target (target-id 328903-) not found] |
| B17F2 | Supplemental Restraints - [Link target (target-id 328903-) not found] |
| B17FE | Vehicle Access - [Link target (target-id 317538-) not found] |
| B1800 | Vehicle Access - [Link target (target-id 317533-) not found] |
| B1802 | Vehicle Access - [Link target (target-id 317531-) not found] |

| DTC | Diagnostic Procedure |
|---|---|
| B1803 | Vehicle Access - [Link target (target-id 317538-) not found] |
| B1804 | Vehicle Access - [Link target (target-id 317530-) not found] |
| B1805 | Vehicle Access - [Link target (target-id 317533-) not found] |
| B1835 | Lighting - [Link target (target-id 317470-) not found] |
| B1836 | Lighting - [Link target (target-id 317471-) not found] |
| B1837 | Lighting - [Link target (target-id 313557-) not found] |
| B187B | Seat Heating and Cooling - [Link target (target-id 363709-) not found] |
| B187D | Seat Heating and Cooling - [Link target (target-id 363709-) not found] |
| B187E | Trailering Systems - [Link target (target-id 326389-) not found] |
| B1918 | Lighting - [Link target (target-id 317472-) not found] |
| B1952 | Fixed and Moveable Windows - [Link target (target-id 317545-) not found] |
| B1953 | Fixed and Moveable Windows - [Link target (target-id 323948-) not found] |
| B1954 | Fixed and Moveable Windows - [Link target (target-id 323949-) not found] |
| B1955 | Fixed and Moveable Windows - [Link target (target-id 323950-) not found] |
| B1956 | Fixed and Moveable Windows - [Link target (target-id 349387-) not found] |
| B1957 | Fixed and Moveable Windows - [Link target (target-id 349387-) not found] |
| B195A | Lighting - [Link target (target-id 331609-) not found] |
| B1960 | Cellular, Entertainment, and Navigation - [Link target (target-id 319390-) not found] |
| B1960 | Cellular, Entertainment, and Navigation - [Link target (target-id 304095-) not found] |
| B1961 | Cellular, Entertainment, and Navigation - [Link target (target-id 319390-) not found] |
| B1961 | Cellular, Entertainment, and Navigation - [Link target (target-id 304095-) not found] |
| B1962 | Cellular, Entertainment, and Navigation - [Link target (target-id 319390-) not found] |
| B1962 | Cellular, Entertainment, and Navigation - [Link target (target-id 304095-) not found] |
| B1963 | Cellular, Entertainment, and Navigation - [Link target (target-id 319390-) not found] |
| B1963 | Cellular, Entertainment, and Navigation - [Link target (target-id 304095-) not found] |
| B1964 | Cellular, Entertainment, and Navigation - [Link target (target-id 317602-) not found] |
| B1965 | Cellular, Entertainment, and Navigation - [Link target (target-id 313050-) not found] |
| B196D | Power Seats - [Link target (target-id 317272-) not found] |
| B196E | Power Seats - [Link target (target-id 320495-) not found] |
| B196F | Power Seats - [Link target (target-id 317273-) not found] |
| B1970 | Power Seats - [Link target (target-id 320496-) not found] |
| B1977 | Immobilizer - [Link target (target-id 313612-) not found] |
| B197D | Immobilizer - [Link target (target-id 313618-) not found] |
| B197F | Immobilizer - [Link target (target-id 313620-) not found] |
| B1980 | Immobilizer - [Link target (target-id 313621-) not found] |
| B1981 | Immobilizer - [Link target (target-id 313622-) not found] |
| B1987 | Immobilizer - [Link target (target-id 313623-) not found] |
| B1989 | Immobilizer - [Link target (target-id 313625-) not found] |
| B198A | Immobilizer - [Link target (target-id 313626-) not found] |
| B198B | Wipers and Washers - [Link target (target-id 316885-) not found] |
| B198F | Lighting - [Link target (target-id 317877-) not found] |
| B1990 | Lighting - [Link target (target-id 317877-) not found] |

| DTC | Diagnostic Procedure |
|---|---|
| B1991 | Lighting - [Link target (target-id 313648-) not found] |
| B1994 | Lighting - [Link target (target-id 317879-) not found] |
| B1995 | Lighting - [Link target (target-id 317879-) not found] |
| B1996 | Lighting - [Link target (target-id 317880-) not found] |
| B1997 | Lighting - [Link target (target-id 317880-) not found] |
| B1998 | Lighting - [Link target (target-id 317881-) not found] |
| B1999 | Lighting - [Link target (target-id 317881-) not found] |
| B199A | Lighting - [Link target (target-id 317882-) not found] |
| B199B | Lighting - [Link target (target-id 317882-) not found] |
| B199C | Lighting - [Link target (target-id 317883-) not found] |
| B199D | Lighting - [Link target (target-id 317883-) not found] |
| B19A0 | Lighting - [Link target (target-id 313663-) not found] |
| B19A1 | Lighting - [Link target (target-id 317885-) not found] |
| B19A2 | Lighting - [Link target (target-id 317885-) not found] |
| B19A3 | Lighting - [Link target (target-id 313559-) not found] |
| B19A4 | Lighting - [Link target (target-id 313559-) not found] |
| B19B0 | Displays and Gauges - [Link target (target-id 313904-) not found] |
| B19B1 | Cellular, Entertainment, and Navigation - [Link target (target-id 319000-) not found] |
| B19B6 | Power Seats - [Link target (target-id 317276-) not found] |
| B19BA | Lighting - [Link target (target-id 317476-) not found] |
| B19BB | Parking Assistance Systems - [Link target (target-id 297191-) not found] |
| B19BC | Parking Assistance Systems - [Link target (target-id 297191-) not found] |
| B19BD | Parking Assistance Systems - [Link target (target-id 297191-) not found] |
| B19BE | Parking Assistance Systems - [Link target (target-id 297191-) not found] |
| B19C2 | Seat Heating and Cooling - [Link target (target-id 317281-) not found] |
| B19C3 | Seat Heating and Cooling - [Link target (target-id 317281-) not found] |
| B19C5 | Lighting - [Link target (target-id 317886-) not found] |
| B19C6 | Lighting - [Link target (target-id 317886-) not found] |
| B19C8 | Vehicle Access - [Link target (target-id 317262-) not found] |
| B19C9 | Vehicle Access - [Link target (target-id 317262-) not found] |
| B19CA | Seat Heating and Cooling - [Link target (target-id 317282-) not found] |
| B19CB | Seat Heating and Cooling - [Link target (target-id 317282-) not found] |
| B19CC | Seat Heating and Cooling - [Link target (target-id 317282-) not found] |
| B19CD | Seat Heating and Cooling - [Link target (target-id 317282-) not found] |
| B19CE | Seat Heating and Cooling - [Link target (target-id 327580-) not found] |
| B19CF | Seat Heating and Cooling - [Link target (target-id 327580-) not found] |
| B19D0 | Seat Heating and Cooling - [Link target (target-id 327580-) not found] |
| B19D1 | Seat Heating and Cooling - [Link target (target-id 327580-) not found] |
| B19D6 | Seat Heating and Cooling - [Link target (target-id 317283-) not found] |
| B19D7 | Seat Heating and Cooling - [Link target (target-id 327566-) not found] |
| B19D9 | Sunroof - [Link target (target-id 313609-) not found] |
| B19DA | Cellular, Entertainment, and Navigation - [Link target (target-id 313051-) not found] |

| DTC | Diagnostic Procedure |
|---|---|
| B19F2 | Steering Wheel and Column - [Link target (target-id 317603-) not found] |
| B19F4 | Starting, Charging, and Low Voltage Energy Storage - [Link target (target-id 314836-) not found] |
| B1A01 | Driver Assistance Systems - [Link target (target-id 302513-) not found] |
| B1A04 | Driver Assistance Systems - [Link target (target-id 310121-) not found] |
| B1A1B | Data Communications - [Link target (target-id 297097-) not found] |
| B1A1F | Data Communications - [Link target (target-id 317030-) not found] |
| B1A23 | Data Communications - [Link target (target-id 317034-) not found] |
| B1A25 | Data Communications - [Link target (target-id 317036-) not found] |
| B1A2C | HVAC - Automatic - [Link target (target-id 347808-) not found] |
| B1A2C | HVAC - Manual - [Link target (target-id 348702-) not found] |
| B1A2F | Lighting - [Link target (target-id 317490-) not found] |
| B1A30 | Parking Assistance Systems - [Link target (target-id 317616-) not found] |
| B1A33 | Supplemental Restraints - [Link target (target-id 313892-) not found] |
| B1A34 | Supplemental Restraints - [Link target (target-id 317293-) not found] |
| B1A35 | Supplemental Restraints - [Link target (target-id 317294-) not found] |
| B1A36 | Cellular, Entertainment, and Navigation - [Link target (target-id 313052-) not found] |
| B1A37 | Secondary and Configurable Customer Controls - [Link target (target-id 323237-) not found] |
| B1A4B | Power Outlets - [Link target (target-id 338328-) not found] |
| B1A4C | Steering Wheel and Column - [Link target (target-id 317604-) not found] |
| B1A57 | Interior Trim and Paneling - [Link target (target-id 321209-) not found] |
| B1A5E | Image Display Cameras - [Link target (target-id 319520-) not found] |
| B1A62 | Image Display Cameras - [Link target (target-id 361892-) not found] |
| B1A65 | Power Seats - [Link target (target-id 317277-) not found] |
| B1A66 | Power Seats - [Link target (target-id 317277-) not found] |
| B1A67 | Power Seats - [Link target (target-id 317277-) not found] |
| B1A68 | Image Display Cameras - [Link target (target-id 309444-) not found] |
| B1A69 | Image Display Cameras - [Link target (target-id 309445-) not found] |
| B1A6A | Image Display Cameras - [Link target (target-id 309446-) not found] |
| B1A6C | Image Display Cameras - [Link target (target-id 309447-) not found] |
| B1A72 | Trailering Systems - [Link target (target-id 325950-) not found] |
| B1A75 | Trailering Systems - [Link target (target-id 325953-) not found] |
| B1A76 | Wiring Systems and Power Management - [Link target (target-id 317723-) not found] |
| B1A78 | Power Outlets - [Link target (target-id 331014-) not found] |
| B1A79 | Power Outlets - [Link target (target-id 338329-) not found] |
| B1A7A | Supplemental Restraints - [Link target (target-id 317295-) not found] |
| B1A80 | Lighting - [Link target (target-id 359323-) not found] |
| B1A81 | Lighting - [Link target (target-id 313562-) not found] |
| B1A82 | Power Seats - [Link target (target-id 326129-) not found] |
| B1A83 | Power Seats - [Link target (target-id 326129-) not found] |
| B1A84 | Power Seats - [Link target (target-id 326130-) not found] |
| B1A85 | Power Seats - [Link target (target-id 326130-) not found] |
| B1A91 | Cellular, Entertainment, and Navigation - [Link target (target-id 323932-) not found] |

| DTC | Diagnostic Procedure |
|---|---|
| B1A95 | Cellular, Entertainment, and Navigation - [Link target (target-id 323936-) not found] |
| B1A96 | Cellular, Entertainment, and Navigation - [Link target (target-id 323936-) not found] |
| B1A99 | Cellular, Entertainment, and Navigation - [Link target (target-id 323938-) not found] |
| B1A9A | Cellular, Entertainment, and Navigation - [Link target (target-id 323938-) not found] |
| B1A9B | Image Display Cameras - [Link target (target-id 361892-) not found] |
| B1A9C | Image Display Cameras - [Link target (target-id 309449-) not found] |
| B1A9D | Image Display Cameras - [Link target (target-id 309450-) not found] |
| B1A9E | Image Display Cameras - [Link target (target-id 309451-) not found] |
| B1AA3 | Wiring Systems and Power Management - [Link target (target-id 313605-) not found] |
| B1AB0 | Trailering Systems - [Link target (target-id 325955-) not found] |
| B1AB4 | Power Seats - [Link target (target-id 331819-) not found] |
| B1ABB | Vehicle Access - [Link target (target-id 347133-) not found] |
| B1AC1 | Power Seats - [Link target (target-id 348652-) not found] |
| B1AC2 | Wiring Systems and Power Management - [Link target (target-id 313601-) not found] |
| B1AC3 | Wiring Systems and Power Management - [Link target (target-id 313602-) not found] |
| B1AD0 | Starting, Charging, and Low Voltage Energy Storage - [Link target (target-id 327526-) not found] |
| B1AD2 | Seat Belts - [Link target (target-id 330173-) not found] |
| B1AD3 | Seat Belts - [Link target (target-id 317300-) not found] |
| B1ADD | Seat Heating and Cooling - [Link target (target-id 327567-) not found] |
| B1ADE | Seat Heating and Cooling - [Link target (target-id 327567-) not found] |
| B1ADF | Remote Functions - [Link target (target-id 319790-) not found] |
| B1AEE | Remote Functions - [Link target (target-id 319791-) not found] |
| B1B0A | Frame and Underbody - [Link target (target-id 325180-) not found] |
| B1B0B | Frame and Underbody - [Link target (target-id 325180-) not found] |
| B1B0C | Lighting - [Link target (target-id 329962-) not found] |
| B1B0D | Lighting - [Link target (target-id 329962-) not found] |
| B1B12 | Wiring Systems and Power Management - [Link target (target-id 317724-) not found] |
| B1B13 | Fixed and Moveable Windows - [Link target (target-id 332471-) not found] |
| B1B15 | Wiring Systems and Power Management - [Link target (target-id 317726-) not found] |
| B1B19 | Cellular, Entertainment, and Navigation - [Link target (target-id 319001-) not found] |
| B1B2F | Cellular, Entertainment, and Navigation - [Link target (target-id 317735-) not found] |
| B1B42 | Wiring Systems and Power Management - [Link target (target-id 322002-) not found] |
| B1B4B | Vehicle Access - [Link target (target-id 316933-) not found] |
| B1B4D | Image Display Cameras - [Link target (target-id 333111-) not found] |
| B1B4E | Image Display Cameras - [Link target (target-id 332633-) not found] |
| B1B4F | Image Display Cameras - [Link target (target-id 332634-) not found] |
| B1B50 | Image Display Cameras - [Link target (target-id 332635-) not found] |
| B1B51 | Image Display Cameras - [Link target (target-id 332636-) not found] |
| B1B52 | Image Display Cameras - [Link target (target-id 332637-) not found] |
| B1B55 | Trailering Systems - [Link target (target-id 325956-) not found] |
| B1B56 | Trailering Systems - [Link target (target-id 325958-) not found] |
| B1B57 | Trailering Systems - [Link target (target-id 325958-) not found] |

| DTC | Diagnostic Procedure |
|---|---|
| B1B58 | Trailering Systems - [Link target (target-id 325960-) not found] |
| B1B5C | Vehicle Access - [Link target (target-id 333026-) not found] |
| B1B6E | Vehicle Access - [Link target (target-id 333036-) not found] |
| B1B70 | Vehicle Access - [Link target (target-id 333036-) not found] |
| B1B71 | Vehicle Access - [Link target (target-id 333036-) not found] |
| B1B72 | Vehicle Access - [Link target (target-id 333036-) not found] |
| B1B73 | Vehicle Access - [Link target (target-id 333037-) not found] |
| B1B74 | Vehicle Access - [Link target (target-id 333027-) not found] |
| B1B75 | Vehicle Access - [Link target (target-id 333028-) not found] |
| B1B79 | Cellular, Entertainment, and Navigation - [Link target (target-id 333272-) not found] |
| B1B83 | Trailering Systems - [Link target (target-id 325961-) not found] |
| B1B84 | Vehicle Access - [Link target (target-id 333028-) not found] |
| B1BB5 | Trailering Systems - [Link target (target-id 325943-) not found] |
| B1BB6 | Wiring Systems and Power Management - [Link target (target-id 332638-) not found] |
| B1BE7 | Lighting - [Link target (target-id 340107-) not found] |
| B1BE8 | Lighting - [Link target (target-id 340107-) not found] |
| B1C09 | Starting, Charging, and Low Voltage Energy Storage - [Link target (target-id 200414-) not found] |
| B1C0A | Vehicle Access - [Link target (target-id 325974-) not found] |
| B1C0B | Lighting - [Link target (target-id 347534-) not found] |
| B1C0C | Lighting - [Link target (target-id 347534-) not found] |
| B1C0D | Lighting - [Link target (target-id 345993-) not found] |
| B1C57 | Vehicle Access - [Link target (target-id 333039-) not found] |
| B1C58 | Vehicle Access - [Link target (target-id 347133-) not found] |
| B1C59 | Vehicle Access - [Link target (target-id 333036-) not found] |
| B1CC6 | Wiring Systems and Power Management - [Link target (target-id 348761-) not found] |
| B1CC7 | Wiring Systems and Power Management - [Link target (target-id 348761-) not found] |
| B1CC8 | Wiring Systems and Power Management - [Link target (target-id 348761-) not found] |
| B1CC9 | Wiring Systems and Power Management - [Link target (target-id 348761-) not found] |
| B1CCA | Wiring Systems and Power Management - [Link target (target-id 348761-) not found] |
| B1CCB | Wiring Systems and Power Management - [Link target (target-id 348761-) not found] |
| B1CCC | Wiring Systems and Power Management - [Link target (target-id 348761-) not found] |
| B1CCD | Wiring Systems and Power Management - [Link target (target-id 348761-) not found] |
| B1CCE | Wiring Systems and Power Management - [Link target (target-id 348761-) not found] |
| B1CCF | Wiring Systems and Power Management - [Link target (target-id 348761-) not found] |
| B1CD0 | Wiring Systems and Power Management - [Link target (target-id 348761-) not found] |
| B1CD1 | Wiring Systems and Power Management - [Link target (target-id 348761-) not found] |
| B1CD2 | Wiring Systems and Power Management - [Link target (target-id 348761-) not found] |
| B1CD3 | Wiring Systems and Power Management - [Link target (target-id 348761-) not found] |
| B1CD4 | Wiring Systems and Power Management - [Link target (target-id 348761-) not found] |
| B1CD5 | Wiring Systems and Power Management - [Link target (target-id 348761-) not found] |
| B1CD6 | Wiring Systems and Power Management - [Link target (target-id 348761-) not found] |
| B1CD7 | Wiring Systems and Power Management - [Link target (target-id 348761-) not found] |

| DTC | Diagnostic Procedure |
|---|---|
| B1CD8 | Wiring Systems and Power Management - [Link target (target-id 348761-) not found] |
| B1CD9 | Wiring Systems and Power Management - [Link target (target-id 348761-) not found] |
| B1CDA | Wiring Systems and Power Management - [Link target (target-id 348761-) not found] |
| B1CDB | Wiring Systems and Power Management - [Link target (target-id 348761-) not found] |
| B1CDC | Wiring Systems and Power Management - [Link target (target-id 348761-) not found] |
| B1CDD | Wiring Systems and Power Management - [Link target (target-id 348761-) not found] |
| B1CDE | Wiring Systems and Power Management - [Link target (target-id 348761-) not found] |
| B1CDF | Wiring Systems and Power Management - [Link target (target-id 348761-) not found] |
| B1CE0 | Wiring Systems and Power Management - [Link target (target-id 348761-) not found] |
| B1CE1 | Wiring Systems and Power Management - [Link target (target-id 348761-) not found] |
| B1CE2 | Wiring Systems and Power Management - [Link target (target-id 348761-) not found] |
| B1CE3 | Wiring Systems and Power Management - [Link target (target-id 348761-) not found] |
| B272D | Rear Drive Axle - [Link target (target-id 282299-) not found] |
| B2A00 | Vehicle Access - [Link target (target-id 313568-) not found] |
| B2A01 | HVAC - Automatic - [Link target (target-id 320816-) not found] |
| B2A01 | HVAC - Manual - [Link target (target-id 337961-) not found] |
| B2A02 | HVAC - Automatic - [Link target (target-id 320816-) not found] |
| B2A02 | HVAC - Manual - [Link target (target-id 337961-) not found] |
| B2A03 | HVAC - Automatic - [Link target (target-id 320816-) not found] |
| B2A03 | HVAC - Manual - [Link target (target-id 337961-) not found] |
| B2A04 | HVAC - Automatic - [Link target (target-id 320816-) not found] |
| B2A04 | HVAC - Manual - [Link target (target-id 337961-) not found] |
| B2A05 | HVAC - Automatic - [Link target (target-id 320816-) not found] |
| B2A05 | HVAC - Manual - [Link target (target-id 337961-) not found] |
| B2A16 | HVAC - Automatic - [Link target (target-id 320821-) not found] |
| B2A16 | HVAC - Manual - [Link target (target-id 337962-) not found] |
| B2A17 | HVAC - Automatic - [Link target (target-id 320821-) not found] |
| B2A17 | HVAC - Manual - [Link target (target-id 337962-) not found] |
| B2A18 | HVAC - Automatic - [Link target (target-id 320821-) not found] |
| B2A18 | HVAC - Manual - [Link target (target-id 337962-) not found] |
| B2A19 | HVAC - Automatic - [Link target (target-id 320821-) not found] |
| B2A19 | HVAC - Manual - [Link target (target-id 337962-) not found] |
| B2A1A | HVAC - Automatic - [Link target (target-id 320822-) not found] |
| B2A1A | HVAC - Manual - [Link target (target-id 337963-) not found] |
| B2A1B | HVAC - Automatic - [Link target (target-id 320822-) not found] |
| B2A1B | HVAC - Manual - [Link target (target-id 337963-) not found] |
| B2A1C | HVAC - Automatic - [Link target (target-id 320822-) not found] |
| B2A1C | HVAC - Manual - [Link target (target-id 337963-) not found] |
| B2A1D | HVAC - Automatic - [Link target (target-id 320822-) not found] |
| B2A1D | HVAC - Manual - [Link target (target-id 337963-) not found] |
| B2A1E | HVAC - Automatic - [Link target (target-id 320823-) not found] |
| B2A1E | HVAC - Manual - [Link target (target-id 337964-) not found] |

| DTC | Diagnostic Procedure |
|---|---|
| B2A1F | HVAC - Automatic - [Link target (target-id 320823-) not found] |
| B2A1F | HVAC - Manual - [Link target (target-id 337964-) not found] |
| B2A20 | HVAC - Automatic - [Link target (target-id 320823-) not found] |
| B2A20 | HVAC - Manual - [Link target (target-id 337964-) not found] |
| B2A21 | HVAC - Automatic - [Link target (target-id 320823-) not found] |
| B2A21 | HVAC - Manual - [Link target (target-id 337964-) not found] |
| B2A36 | HVAC - Automatic - [Link target (target-id 320829-) not found] |
| B2A37 | HVAC - Automatic - [Link target (target-id 320829-) not found] |
| B2A38 | HVAC - Automatic - [Link target (target-id 320829-) not found] |
| B2A39 | HVAC - Automatic - [Link target (target-id 320829-) not found] |
| B2A3E | HVAC - Automatic - [Link target (target-id 320831-) not found] |
| B2A3F | HVAC - Automatic - [Link target (target-id 320831-) not found] |
| B2A40 | HVAC - Automatic - [Link target (target-id 320831-) not found] |
| B2A41 | HVAC - Automatic - [Link target (target-id 320831-) not found] |
| B2A42 | HVAC - Automatic - [Link target (target-id 320832-) not found] |
| B2A43 | HVAC - Automatic - [Link target (target-id 320832-) not found] |
| B2A44 | HVAC - Automatic - [Link target (target-id 320832-) not found] |
| B2A45 | HVAC - Automatic - [Link target (target-id 320832-) not found] |
| B2A4E | HVAC - Manual - [Link target (target-id 347483-) not found] |
| B2A4F | HVAC - Manual - [Link target (target-id 347483-) not found] |
| B2A50 | HVAC - Manual - [Link target (target-id 347483-) not found] |
| B2A51 | HVAC - Manual - [Link target (target-id 347483-) not found] |
| B2A67 | HVAC - Automatic - [Link target (target-id 320842-) not found] |
| B2A67 | HVAC - Manual - [Link target (target-id 337967-) not found] |
| B2A68 | HVAC - Automatic - [Link target (target-id 320842-) not found] |
| B2A68 | HVAC - Manual - [Link target (target-id 337967-) not found] |
| B2A69 | HVAC - Automatic - [Link target (target-id 320842-) not found] |
| B2A69 | HVAC - Manual - [Link target (target-id 337967-) not found] |
| B2A6A | HVAC - Automatic - [Link target (target-id 320842-) not found] |
| B2A6A | HVAC - Manual - [Link target (target-id 337967-) not found] |
| B2A6B | HVAC - Automatic - [Link target (target-id 320843-) not found] |
| B2A6B | HVAC - Manual - [Link target (target-id 337968-) not found] |
| B2A6C | HVAC - Automatic - [Link target (target-id 320843-) not found] |
| B2A6C | HVAC - Manual - [Link target (target-id 337968-) not found] |
| B2A6D | HVAC - Automatic - [Link target (target-id 320843-) not found] |
| B2A6D | HVAC - Manual - [Link target (target-id 337968-) not found] |
| B2A6E | HVAC - Automatic - [Link target (target-id 320843-) not found] |
| B2A6E | HVAC - Manual - [Link target (target-id 337968-) not found] |
| B2A73 | HVAC - Automatic - [Link target (target-id 320845-) not found] |
| B2A73 | HVAC - Manual - [Link target (target-id 343518-) not found] |
| B2A74 | HVAC - Automatic - [Link target (target-id 320845-) not found] |
| B2A74 | HVAC - Manual - [Link target (target-id 343518-) not found] |

| DTC | Diagnostic Procedure |
| --- | --- |
| B2A75 | HVAC - Automatic - [Link target (target-id 320845-) not found] |
| B2A75 | HVAC - Manual - [Link target (target-id 343518-) not found] |
| B2A76 | HVAC - Automatic - [Link target (target-id 320845-) not found] |
| B2A76 | HVAC - Manual - [Link target (target-id 343518-) not found] |
| B2A7B | HVAC - Automatic - [Link target (target-id 320847-) not found] |
| B2A7B | HVAC - Manual - [Link target (target-id 343519-) not found] |
| B2A7C | HVAC - Automatic - [Link target (target-id 320847-) not found] |
| B2A7C | HVAC - Manual - [Link target (target-id 343519-) not found] |
| B2A7D | HVAC - Automatic - [Link target (target-id 320847-) not found] |
| B2A7D | HVAC - Manual - [Link target (target-id 343519-) not found] |
| B2A7E | HVAC - Automatic - [Link target (target-id 320847-) not found] |
| B2A7E | HVAC - Manual - [Link target (target-id 343519-) not found] |
| B2A86 | HVAC - Automatic - [Link target (target-id 317682-) not found] |
| B2A87 | HVAC - Automatic - [Link target (target-id 320850-) not found] |
| B2A88 | HVAC - Automatic - [Link target (target-id 320850-) not found] |
| B2A89 | HVAC - Automatic - [Link target (target-id 320850-) not found] |
| B2A8A | HVAC - Automatic - [Link target (target-id 320850-) not found] |
| B2A8B | HVAC - Automatic - [Link target (target-id 320851-) not found] |
| B2A8C | HVAC - Automatic - [Link target (target-id 320851-) not found] |
| B2A8D | HVAC - Automatic - [Link target (target-id 320851-) not found] |
| B2A8E | HVAC - Automatic - [Link target (target-id 320851-) not found] |
| B2A8F | HVAC - Automatic - [Link target (target-id 320852-) not found] |
| B2A90 | HVAC - Automatic - [Link target (target-id 320852-) not found] |
| B2A91 | HVAC - Automatic - [Link target (target-id 320852-) not found] |
| B2A92 | HVAC - Automatic - [Link target (target-id 320852-) not found] |
| B2A93 | HVAC - Automatic - [Link target (target-id 320853-) not found] |
| B2A94 | HVAC - Automatic - [Link target (target-id 320853-) not found] |
| B2A95 | HVAC - Automatic - [Link target (target-id 320853-) not found] |
| B2A96 | HVAC - Automatic - [Link target (target-id 320853-) not found] |
| B2A97 | HVAC - Automatic - [Link target (target-id 320854-) not found] |
| B2A98 | HVAC - Automatic - [Link target (target-id 320854-) not found] |
| B2A99 | HVAC - Automatic - [Link target (target-id 320854-) not found] |
| B2A9A | HVAC - Automatic - [Link target (target-id 320854-) not found] |
| B2A9B | HVAC - Automatic - [Link target (target-id 320855-) not found] |
| B2A9C | HVAC - Automatic - [Link target (target-id 320855-) not found] |
| B2A9D | HVAC - Automatic - [Link target (target-id 320855-) not found] |
| B2A9E | HVAC - Automatic - [Link target (target-id 320855-) not found] |
| B2AA7 | HVAC - Manual - [Link target (target-id 347494-) not found] |
| B2AA8 | HVAC - Manual - [Link target (target-id 347494-) not found] |
| B2AA9 | HVAC - Manual - [Link target (target-id 347494-) not found] |
| B2AAA | HVAC - Manual - [Link target (target-id 347494-) not found] |
| B2AEF | HVAC - Automatic - [Link target (target-id 317704-) not found] |

| DTC | Diagnostic Procedure |
|---|---|
| B2AEF | HVAC - Manual - [Link target (target-id 337971-) not found] |
| B2AF0 | HVAC - Automatic - [Link target (target-id 317704-) not found] |
| B2AF0 | HVAC - Manual - [Link target (target-id 337971-) not found] |
| B2AF1 | HVAC - Automatic - [Link target (target-id 317704-) not found] |
| B2AF1 | HVAC - Manual - [Link target (target-id 337971-) not found] |
| B2AF2 | HVAC - Automatic - [Link target (target-id 317704-) not found] |
| B2AF2 | HVAC - Manual - [Link target (target-id 337971-) not found] |
| B2AF3 | HVAC - Automatic - [Link target (target-id 317704-) not found] |
| B2AF3 | HVAC - Manual - [Link target (target-id 337971-) not found] |
| B2AF4 | HVAC - Automatic - [Link target (target-id 317704-) not found] |
| B2AF4 | HVAC - Manual - [Link target (target-id 337971-) not found] |
| B2AF5 | HVAC - Automatic - [Link target (target-id 317705-) not found] |
| B2AF6 | HVAC - Automatic - [Link target (target-id 317705-) not found] |
| B2AF7 | HVAC - Automatic - [Link target (target-id 317705-) not found] |
| B2AF8 | HVAC - Automatic - [Link target (target-id 317705-) not found] |
| B2AF9 | HVAC - Automatic - [Link target (target-id 317705-) not found] |
| B2AFA | HVAC - Automatic - [Link target (target-id 317705-) not found] |
| B2AFB | HVAC - Automatic - [Link target (target-id 317706-) not found] |
| B2AFC | HVAC - Automatic - [Link target (target-id 317706-) not found] |
| B2AFD | HVAC - Automatic - [Link target (target-id 317706-) not found] |
| B2AFE | HVAC - Automatic - [Link target (target-id 317706-) not found] |
| B2AFF | HVAC - Automatic - [Link target (target-id 321874-) not found] |
| B2AFF | HVAC - Manual - [Link target (target-id 337974-) not found] |
| B2B00 | HVAC - Automatic - [Link target (target-id 321874-) not found] |
| B2B00 | HVAC - Manual - [Link target (target-id 337974-) not found] |
| B2B01 | HVAC - Automatic - [Link target (target-id 321874-) not found] |
| B2B01 | HVAC - Manual - [Link target (target-id 337974-) not found] |
| B2B02 | HVAC - Automatic - [Link target (target-id 317701-) not found] |
| B2B02 | HVAC - Manual - [Link target (target-id 337975-) not found] |
| B2B03 | HVAC - Automatic - [Link target (target-id 317701-) not found] |
| B2B03 | HVAC - Manual - [Link target (target-id 337975-) not found] |
| B2B05 | HVAC - Automatic - [Link target (target-id 321289-) not found] |
| B2B05 | HVAC - Manual - [Link target (target-id 337976-) not found] |
| B2B06 | HVAC - Automatic - [Link target (target-id 321290-) not found] |
| B2B07 | HVAC - Automatic - [Link target (target-id 321291-) not found] |
| B2B07 | HVAC - Manual - [Link target (target-id 337978-) not found] |
| B2B09 | HVAC - Automatic - [Link target (target-id 321293-) not found] |
| B2B09 | HVAC - Manual - [Link target (target-id 337979-) not found] |
| B2B0B | HVAC - Automatic - [Link target (target-id 317701-) not found] |
| B2B0B | HVAC - Manual - [Link target (target-id 337975-) not found] |
| B2B0C | HVAC - Automatic - [Link target (target-id 317701-) not found] |
| B2B0C | HVAC - Manual - [Link target (target-id 337975-) not found] |

| DTC | Diagnostic Procedure |
|---|---|
| B2B11 | Starting, Charging, and Low Voltage Energy Storage - [Link target (target-id 303006-) not found] |
| B2B12 | Data Communications - [Link target (target-id 301773-) not found] |
| B2B13 | Data Communications - [Link target (target-id 301773-) not found] |
| B2B22 | HVAC - Automatic - [Link target (target-id 321291-) not found] |
| B2B22 | HVAC - Manual - [Link target (target-id 337978-) not found] |
| B2B23 | HVAC - Automatic - [Link target (target-id 321291-) not found] |
| B2B23 | HVAC - Manual - [Link target (target-id 337978-) not found] |
| B2B24 | HVAC - Automatic - [Link target (target-id 321291-) not found] |
| B2B24 | HVAC - Manual - [Link target (target-id 337978-) not found] |
| B2B28 | HVAC - Automatic - [Link target (target-id 321289-) not found] |
| B2B28 | HVAC - Manual - [Link target (target-id 337976-) not found] |
| B2B29 | HVAC - Automatic - [Link target (target-id 321289-) not found] |
| B2B29 | HVAC - Manual - [Link target (target-id 337976-) not found] |
| B2B2A | HVAC - Automatic - [Link target (target-id 321289-) not found] |
| B2B2A | HVAC - Manual - [Link target (target-id 337976-) not found] |
| B2B2B | HVAC - Automatic - [Link target (target-id 321290-) not found] |
| B2B2C | HVAC - Automatic - [Link target (target-id 321290-) not found] |
| B2B2D | HVAC - Automatic - [Link target (target-id 321290-) not found] |
| B2B2E | HVAC - Automatic - [Link target (target-id 321293-) not found] |
| B2B2E | HVAC - Manual - [Link target (target-id 337979-) not found] |
| B2B2F | HVAC - Automatic - [Link target (target-id 321293-) not found] |
| B2B2F | HVAC - Manual - [Link target (target-id 337979-) not found] |
| B2B30 | HVAC - Automatic - [Link target (target-id 321293-) not found] |
| B2B30 | HVAC - Manual - [Link target (target-id 337979-) not found] |
| B2BA2 | Wiring Systems and Power Management - [Link target (target-id 321482-) not found] |
| B2BA3 | Wiring Systems and Power Management - [Link target (target-id 321482-) not found] |
| B356A | Driver Assistance Systems - [Link target (target-id 283667-) not found] |
| B395D | Driver Assistance Systems - [Link target (target-id 306938-) not found] |
| C0001 | Antilock Brake System - [Link target (target-id 306998-) not found] |
| C0002 | Antilock Brake System - [Link target (target-id 306998-) not found] |
| C0003 | Antilock Brake System - [Link target (target-id 306998-) not found] |
| C0004 | Antilock Brake System - [Link target (target-id 306998-) not found] |
| C0010 | Antilock Brake System - [Link target (target-id 218397-) not found] |
| C0011 | Antilock Brake System - [Link target (target-id 218397-) not found] |
| C0012 | Antilock Brake System - [Link target (target-id 218397-) not found] |
| C0013 | Antilock Brake System - [Link target (target-id 218397-) not found] |
| C0014 | Antilock Brake System - [Link target (target-id 218397-) not found] |
| C0015 | Antilock Brake System - [Link target (target-id 218397-) not found] |
| C0016 | Antilock Brake System - [Link target (target-id 218397-) not found] |
| C0017 | Antilock Brake System - [Link target (target-id 218397-) not found] |
| C0018 | Antilock Brake System - [Link target (target-id 218397-) not found] |
| C0019 | Antilock Brake System - [Link target (target-id 218397-) not found] |

| DTC | Diagnostic Procedure |
|---|---|
| C001C | Antilock Brake System - [Link target (target-id 218397-) not found] |
| C001D | Antilock Brake System - [Link target (target-id 218397-) not found] |
| C0024 | Antilock Brake System - [Link target (target-id 127367-) not found] |
| C003F | Antilock Brake System - [Link target (target-id 302605-) not found] |
| C0049 | Hydraulic Brakes - [Link target (target-id 301650-) not found] |
| C004A | Disc Brakes - [Link target (target-id 313905-) not found] |
| C004B | Hydraulic Brakes - [Link target (target-id 325748-) not found] |
| C0051 | Antilock Brake System - [Link target (target-id 1508-) not found] |
| C0056 | Antilock Brake System - [Link target (target-id 340056-) not found] |
| C0057 | Antilock Brake System - [Link target (target-id 340056-) not found] |
| C0058 | Antilock Brake System - [Link target (target-id 340056-) not found] |
| C0059 | Antilock Brake System - [Link target (target-id 340056-) not found] |
| C0061 | Antilock Brake System - [Link target (target-id 309335-) not found] |
| C0062 | Antilock Brake System - [Link target (target-id 309335-) not found] |
| C0063 | Antilock Brake System - [Link target (target-id 309335-) not found] |
| C006A | Supplemental Restraints - [Link target (target-id 329408-) not found] |
| C006B | Antilock Brake System - [Link target (target-id 200325-) not found] |
| C0072 | Disc Brakes - [Link target (target-id 310755-) not found] |
| C0131 | Antilock Brake System - [Link target (target-id 64893-) not found] |
| C0186 | Antilock Brake System - [Link target (target-id 176323-) not found] |
| C0196 | Antilock Brake System - [Link target (target-id 176323-) not found] |
| C0273 | Antilock Brake System - [Link target (target-id 73137-) not found] |
| C0287 | Antilock Brake System - [Link target (target-id 176323-) not found] |
| C02D5 | Antilock Brake System - [Link target (target-id 349538-) not found] |
| C0500 | Antilock Brake System - [Link target (target-id 302606-) not found] |
| C0501 | Antilock Brake System - [Link target (target-id 302606-) not found] |
| C0502 | Antilock Brake System - [Link target (target-id 302606-) not found] |
| C0503 | Antilock Brake System - [Link target (target-id 302606-) not found] |
| C0504 | Antilock Brake System - [Link target (target-id 302606-) not found] |
| C0505 | Antilock Brake System - [Link target (target-id 302672-) not found] |
| C0506 | Antilock Brake System - [Link target (target-id 302606-) not found] |
| C0507 | Antilock Brake System - [Link target (target-id 302606-) not found] |
| C0508 | Antilock Brake System - [Link target (target-id 302606-) not found] |
| C0509 | Antilock Brake System - [Link target (target-id 302606-) not found] |
| C050A | Antilock Brake System - [Link target (target-id 302606-) not found] |
| C050B | Antilock Brake System - [Link target (target-id 302672-) not found] |
| C050C | Antilock Brake System - [Link target (target-id 302606-) not found] |
| C050D | Antilock Brake System - [Link target (target-id 302606-) not found] |
| C050E | Antilock Brake System - [Link target (target-id 302606-) not found] |
| C050F | Antilock Brake System - [Link target (target-id 302606-) not found] |
| C0510 | Antilock Brake System - [Link target (target-id 302606-) not found] |
| C0511 | Antilock Brake System - [Link target (target-id 302672-) not found] |

| DTC | Diagnostic Procedure |
|---|---|
| C0512 | Antilock Brake System - [Link target (target-id 302606-) not found] |
| C0513 | Antilock Brake System - [Link target (target-id 302606-) not found] |
| C0514 | Antilock Brake System - [Link target (target-id 302606-) not found] |
| C0515 | Antilock Brake System - [Link target (target-id 302606-) not found] |
| C0516 | Antilock Brake System - [Link target (target-id 302606-) not found] |
| C0517 | Antilock Brake System - [Link target (target-id 302672-) not found] |
| C052B | Antilock Brake System - [Link target (target-id 349522-) not found] |
| C052C | Antilock Brake System - [Link target (target-id 349522-) not found] |
| C052D | Antilock Brake System - [Link target (target-id 349522-) not found] |
| C052E | Antilock Brake System - [Link target (target-id 349522-) not found] |
| C052F | Antilock Brake System - [Link target (target-id 349522-) not found] |
| C053B | Antilock Brake System - [Link target (target-id 307000-) not found] |
| C053D | Antilock Brake System - [Link target (target-id 302608-) not found] |
| C053E | Antilock Brake System - [Link target (target-id 302608-) not found] |
| C053F | Antilock Brake System - [Link target (target-id 302608-) not found] |
| C0546 | Data Communications - [Link target (target-id 332895-) not found] |
| C0551 | Antilock Brake System - [Link target (target-id 309335-) not found] |
| C0552 | Antilock Brake System - [Link target (target-id 332586-) not found] |
| C0553 | Antilock Brake System - [Link target (target-id 332586-) not found] |
| C0554 | Antilock Brake System - [Link target (target-id 332586-) not found] |
| C0555 | Antilock Brake System - [Link target (target-id 272226-) not found] |
| C0556 | Antilock Brake System - [Link target (target-id 272226-) not found] |
| C0557 | Antilock Brake System - [Link target (target-id 272226-) not found] |
| C0558 | Antilock Brake System - [Link target (target-id 272226-) not found] |
| C0560 | Antilock Brake System - [Link target (target-id 272227-) not found] |
| C0574 | Antilock Brake System - [Link target (target-id 170998-) not found] |
| C059B | Antilock Brake System - [Link target (target-id 272227-) not found] |
| C05A3 | Antilock Brake System - [Link target (target-id 272230-) not found] |
| C05A4 | Antilock Brake System - [Link target (target-id 272230-) not found] |
| C05D5 | Antilock Brake System - [Link target (target-id 302619-) not found] |
| C05D7 | Shift Lock Control - [Link target (target-id 313637-) not found] |
| C05DD | Transfer Case - MP 1625/1626 - [Link target (target-id 354300-) not found] |
| C05DD | Transfer Case - MP 3023/3024 - [Link target (target-id 325245-) not found] |
| C05FB | Transfer Case - MP 1625/1626 - [Link target (target-id 317413-) not found] |
| C05FB | Transfer Case - MP 3023/3024 - [Link target (target-id 300827-) not found] |
| C05FF | Transfer Case - MP 1625/1626 - [Link target (target-id 327123-) not found] |
| C05FF | Transfer Case - MP 3023/3024 - [Link target (target-id 306749-) not found] |
| C0609 | Park Brake - [Link target (target-id 302982-) not found] |
| C060B | Park Brake - [Link target (target-id 306987-) not found] |
| C0610 | Park Brake - [Link target (target-id 306988-) not found] |
| C0616 | Park Brake - [Link target (target-id 301674-) not found] |
| C0632 | Transfer Case - MP 1625/1626 - [Link target (target-id 347185-) not found] |

| DTC | Diagnostic Procedure |
|---|---|
| C0632 | Transfer Case - MP 3023/3024 - [Link target (target-id 347187-) not found] |
| C0697 | Antilock Brake System - [Link target (target-id 332586-) not found] |
| C0698 | Antilock Brake System - [Link target (target-id 332586-) not found] |
| C0699 | Antilock Brake System - [Link target (target-id 332586-) not found] |
| C0710 | Antilock Brake System - [Link target (target-id 64899-) not found] |
| C107D | Antilock Brake System - [Link target (target-id 320571-) not found] |
| C10BA | Transfer Case - MP 1625/1626 - [Link target (target-id 364462-) not found] |
| C10BA | Transfer Case - MP 3023/3024 - [Link target (target-id 364461-) not found] |
| C10DA | Lighting - [Link target (target-id 317493-) not found] |
| C10EE | Antilock Brake System - [Link target (target-id 304967-) not found] |
| C1114 | Trailering Systems - [Link target (target-id 325998-) not found] |
| C1120 | Antilock Brake System - [Link target (target-id 313580-) not found] |
| C1122 | Antilock Brake System - [Link target (target-id 313580-) not found] |
| C1133 | Frame and Underbody - [Link target (target-id 325183-) not found] |
| C1134 | Frame and Underbody - [Link target (target-id 325183-) not found] |
| C114F | Steering Wheel and Column - [Link target (target-id 347270-) not found] |
| C1158 | Trailering Systems - [Link target (target-id 326009-) not found] |
| C115E | Transfer Case - MP 1625/1626 - [Link target (target-id 354494-) not found] |
| C115E | Transfer Case - MP 3023/3024 - [Link target (target-id 325247-) not found] |
| C1162 | Transfer Case - MP 1625/1626 - [Link target (target-id 354230-) not found] |
| C1162 | Transfer Case - MP 3023/3024 - [Link target (target-id 309874-) not found] |
| C116B | Disc Brakes - [Link target (target-id 301556-) not found] |
| C116C | Disc Brakes - [Link target (target-id 301557-) not found] |
| C116D | Tire Pressure Monitoring - [Link target (target-id 313635-) not found] |
| C116E | Transfer Case - MP 1625/1626 - [Link target (target-id 354493-) not found] |
| C116E | Transfer Case - MP 3023/3024 - [Link target (target-id 325248-) not found] |
| C116F | Transfer Case - MP 1625/1626 - [Link target (target-id 364462-) not found] |
| C116F | Transfer Case - MP 3023/3024 - [Link target (target-id 364461-) not found] |
| C1170 | Transfer Case - MP 1625/1626 - [Link target (target-id 354494-) not found] |
| C1170 | Transfer Case - MP 3023/3024 - [Link target (target-id 325247-) not found] |
| C1171 | Tire Pressure Monitoring - [Link target (target-id 314982-) not found] |
| C1171 | Tire Pressure Monitoring - [Link target (target-id 348697-) not found] |
| C1172 | Tire Pressure Monitoring - [Link target (target-id 314982-) not found] |
| C1172 | Tire Pressure Monitoring - [Link target (target-id 348697-) not found] |
| C1173 | Tire Pressure Monitoring - [Link target (target-id 314982-) not found] |
| C1173 | Tire Pressure Monitoring - [Link target (target-id 348697-) not found] |
| C1174 | Tire Pressure Monitoring - [Link target (target-id 314982-) not found] |
| C1174 | Tire Pressure Monitoring - [Link target (target-id 348697-) not found] |
| C1178 | Steering Wheel and Column - [Link target (target-id 315482-) not found] |
| C1180 | Frame and Underbody - [Link target (target-id 328943-) not found] |
| C1181 | Frame and Underbody - [Link target (target-id 328943-) not found] |
| C1182 | Frame and Underbody - [Link target (target-id 328943-) not found] |

| DTC | Diagnostic Procedure |
|---|---|
| C1183 | Frame and Underbody - [Link target (target-id 328943-) not found] |
| C119C | Transfer Case - MP 1625/1626 - [Link target (target-id 364462-) not found] |
| C119C | Transfer Case - MP 3023/3024 - [Link target (target-id 364461-) not found] |
| C119F | Tire Pressure Monitoring - [Link target (target-id 348697-) not found] |
| C11A0 | Tire Pressure Monitoring - [Link target (target-id 348697-) not found] |
| C11A4 | Transfer Case - MP 1625/1626 - [Link target (target-id 317418-) not found] |
| C11A4 | Transfer Case - MP 3023/3024 - [Link target (target-id 300372-) not found] |
| C11A5 | Rear Drive Axle - [Link target (target-id 282300-) not found] |
| C11A9 | Transfer Case - MP 1625/1626 - [Link target (target-id 347177-) not found] |
| C11A9 | Transfer Case - MP 3023/3024 - [Link target (target-id 327124-) not found] |
| C11AD | Transfer Case - MP 1625/1626 - [Link target (target-id 354365-) not found] |
| C11AD | Transfer Case - MP 3023/3024 - [Link target (target-id 300375-) not found] |
| C11B3 | Transfer Case - MP 1625/1626 - [Link target (target-id 354353-) not found] |
| C11B3 | Transfer Case - MP 3023/3024 - [Link target (target-id 300378-) not found] |
| C11B9 | Transfer Case - MP 1625/1626 - [Link target (target-id 317413-) not found] |
| C11B9 | Transfer Case - MP 3023/3024 - [Link target (target-id 300827-) not found] |
| C1207 | Antilock Brake System - [Link target (target-id 196499-) not found] |
| C1208 | Antilock Brake System - [Link target (target-id 196499-) not found] |
| C1209 | Antilock Brake System - [Link target (target-id 196499-) not found] |
| C120A | Antilock Brake System - [Link target (target-id 196499-) not found] |
| C120B | Antilock Brake System - [Link target (target-id 196499-) not found] |
| C120C | Antilock Brake System - [Link target (target-id 196499-) not found] |
| C120D | Antilock Brake System - [Link target (target-id 196499-) not found] |
| C120E | Antilock Brake System - [Link target (target-id 196499-) not found] |
| C120F | Antilock Brake System - [Link target (target-id 196499-) not found] |
| C1210 | Antilock Brake System - [Link target (target-id 196499-) not found] |
| C1211 | Antilock Brake System - [Link target (target-id 1550-) not found] |
| C1221 | Antilock Brake System - [Link target (target-id 196499-) not found] |
| C1222 | Antilock Brake System - [Link target (target-id 196499-) not found] |
| C1223 | Antilock Brake System - [Link target (target-id 196499-) not found] |
| C1224 | Antilock Brake System - [Link target (target-id 196499-) not found] |
| C1225 | Antilock Brake System - [Link target (target-id 196499-) not found] |
| C1226 | Antilock Brake System - [Link target (target-id 196499-) not found] |
| C1227 | Antilock Brake System - [Link target (target-id 196499-) not found] |
| C1228 | Antilock Brake System - [Link target (target-id 196499-) not found] |
| C122E | Antilock Brake System - [Link target (target-id 186369-) not found] |
| C1232 | Antilock Brake System - [Link target (target-id 196499-) not found] |
| C1233 | Antilock Brake System - [Link target (target-id 196499-) not found] |
| C1234 | Antilock Brake System - [Link target (target-id 196499-) not found] |
| C1235 | Antilock Brake System - [Link target (target-id 196499-) not found] |
| C124F | Antilock Brake System - [Link target (target-id 228994-) not found] |
| C1250 | Antilock Brake System - [Link target (target-id 228994-) not found] |

| DTC | Diagnostic Procedure |
|---|---|
| C1251 | Antilock Brake System - [Link target (target-id 228994-) not found] |
| C1252 | Antilock Brake System - [Link target (target-id 267540-) not found] |
| C1253 | Antilock Brake System - [Link target (target-id 267540-) not found] |
| C1254 | Antilock Brake System - [Link target (target-id 267540-) not found] |
| C1255 | Antilock Brake System - [Link target (target-id 1571-) not found] |
| C1256 | Antilock Brake System - [Link target (target-id 1571-) not found] |
| C1304 | Lighting - [Link target (target-id 317495-) not found] |
| C1309 | Rear Drive Axle - [Link target (target-id 282303-) not found] |
| C158C | Power Steering - [Link target (target-id 273702-) not found] |
| C1595 | Trailering Systems - [Link target (target-id 326013-) not found] |
| C1596 | Trailering Systems - [Link target (target-id 326014-) not found] |
| C159A | Rear Drive Axle - [Link target (target-id 282305-) not found] |
| C159C | Trailering Systems - [Link target (target-id 326015-) not found] |
| C159D | Trailering Systems - [Link target (target-id 326016-) not found] |
| C159E | Trailering Systems - [Link target (target-id 326016-) not found] |
| C159F | Trailering Systems - [Link target (target-id 326016-) not found] |
| C15A0 | Trailering Systems - [Link target (target-id 326016-) not found] |
| C15A1 | Trailering Systems - [Link target (target-id 326016-) not found] |
| C15A2 | Trailering Systems - [Link target (target-id 326016-) not found] |
| C15A3 | Parking Assistance Systems - [Link target (target-id 310221-) not found] |
| C15A6 | Trailering Systems - [Link target (target-id 326017-) not found] |
| C15A9 | Transfer Case - MP 1625/1626 - [Link target (target-id 354353-) not found] |
| C15A9 | Transfer Case - MP 3023/3024 - [Link target (target-id 300378-) not found] |
| C15AA | Transfer Case - MP 1625/1626 - [Link target (target-id 354365-) not found] |
| C15AA | Transfer Case - MP 3023/3024 - [Link target (target-id 300375-) not found] |
| C15AB | Transfer Case - MP 1625/1626 - [Link target (target-id 317413-) not found] |
| C15AB | Transfer Case - MP 3023/3024 - [Link target (target-id 300827-) not found] |
| C15AC | Transfer Case - MP 1625/1626 - [Link target (target-id 327123-) not found] |
| C15AC | Transfer Case - MP 3023/3024 - [Link target (target-id 306749-) not found] |
| C15C1 | Transfer Case - MP 1625/1626 - [Link target (target-id 317413-) not found] |
| C15C1 | Transfer Case - MP 3023/3024 - [Link target (target-id 300827-) not found] |
| C15C6 | Antilock Brake System - [Link target (target-id 307843-) not found] |
| C15C8 | Power Steering - [Link target (target-id 310817-) not found] |
| C15DD | Park Brake - [Link target (target-id 319157-) not found] |
| C2A07 | Antilock Brake System - [Link target (target-id 302623-) not found] |
| C2A08 | Antilock Brake System - [Link target (target-id 309963-) not found] |
| C2A08 | Antilock Brake System - [Link target (target-id 302624-) not found] |
| C2A09 | Antilock Brake System - [Link target (target-id 302624-) not found] |
| C2A0A | Antilock Brake System - [Link target (target-id 302624-) not found] |
| C2A15 | Antilock Brake System - [Link target (target-id 307845-) not found] |
| C2A16 | Antilock Brake System - [Link target (target-id 307845-) not found] |
| C2A21 | Antilock Brake System - [Link target (target-id 307848-) not found] |

| DTC | Diagnostic Procedure |
|---|---|
| C2A3D | Antilock Brake System - [Link target (target-id 324294-) not found] |
| P0010 | Engine Controls and Fuel - 6.6L - [Link target (target-id 294312-) not found] |
| P0011 | Engine Controls and Fuel - 6.6L - [Link target (target-id 294312-) not found] |
| P0016 | Engine Controls and Fuel - 6.6L - [Link target (target-id 228017-) not found] |
| P0016 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 186657-) not found] |
| P0030 | Engine Controls and Fuel - 6.6L - [Link target (target-id 228057-) not found] |
| P0031 | Engine Controls and Fuel - 6.6L - [Link target (target-id 228057-) not found] |
| P0032 | Engine Controls and Fuel - 6.6L - [Link target (target-id 228057-) not found] |
| P0036 | Engine Controls and Fuel - 6.6L - [Link target (target-id 228057-) not found] |
| P0037 | Engine Controls and Fuel - 6.6L - [Link target (target-id 228057-) not found] |
| P0038 | Engine Controls and Fuel - 6.6L - [Link target (target-id 228057-) not found] |
| P003A | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 327766-) not found] |
| P0046 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 333291-) not found] |
| P0050 | Engine Controls and Fuel - 6.6L - [Link target (target-id 228057-) not found] |
| P0051 | Engine Controls and Fuel - 6.6L - [Link target (target-id 228057-) not found] |
| P0052 | Engine Controls and Fuel - 6.6L - [Link target (target-id 228057-) not found] |
| P0053 | Engine Controls and Fuel - 6.6L - [Link target (target-id 228057-) not found] |
| P0054 | Engine Controls and Fuel - 6.6L - [Link target (target-id 228057-) not found] |
| P0056 | Engine Controls and Fuel - 6.6L - [Link target (target-id 228057-) not found] |
| P0057 | Engine Controls and Fuel - 6.6L - [Link target (target-id 228057-) not found] |
| P0058 | Engine Controls and Fuel - 6.6L - [Link target (target-id 228057-) not found] |
| P0059 | Engine Controls and Fuel - 6.6L - [Link target (target-id 228057-) not found] |
| P005A | Engine Controls and Fuel - 6.6L - [Link target (target-id 228057-) not found] |
| P005B | Engine Controls and Fuel - 6.6L - [Link target (target-id 228057-) not found] |
| P005C | Engine Controls and Fuel - 6.6L - [Link target (target-id 228057-) not found] |
| P005D | Engine Controls and Fuel - 6.6L - [Link target (target-id 228057-) not found] |
| P005E | Engine Controls and Fuel - 6.6L - [Link target (target-id 228057-) not found] |
| P005F | Engine Controls and Fuel - 6.6L - [Link target (target-id 228057-) not found] |
| P0060 | Engine Controls and Fuel - 6.6L - [Link target (target-id 228057-) not found] |
| P0068 | Engine Controls and Fuel - 6.6L - [Link target (target-id 333303-) not found] |
| P0070 | Displays and Gauges - [Link target (target-id 272557-) not found] |
| P0071 | Displays and Gauges - [Link target (target-id 268233-) not found] |
| P0072 | Displays and Gauges - [Link target (target-id 268233-) not found] |
| P0073 | Displays and Gauges - [Link target (target-id 268233-) not found] |
| P0074 | Displays and Gauges - [Link target (target-id 268233-) not found] |
| P007B | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 321214-) not found] |
| P007C | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 321215-) not found] |
| P007D | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 321215-) not found] |
| P007E | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 321215-) not found] |
| P0087 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 348339-) not found] |
| P0089 | Engine Controls and Fuel - 6.6L - [Link target (target-id 297085-) not found] |
| P0089 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 348339-) not found] |

| DTC | Diagnostic Procedure |
|---|---|
| P0090 | Engine Controls and Fuel - 6.6L - [Link target (target-id 329292-) not found] |
| P0090 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 348346-) not found] |
| P0091 | Engine Controls and Fuel - 6.6L - [Link target (target-id 329292-) not found] |
| P0091 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 348346-) not found] |
| P0092 | Engine Controls and Fuel - 6.6L - [Link target (target-id 329292-) not found] |
| P0092 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 348346-) not found] |
| P0096 | Engine Controls and Fuel - 6.6L - [Link target (target-id 228194-) not found] |
| P0096 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 305002-) not found] |
| P0097 | Engine Controls and Fuel - 6.6L - [Link target (target-id 306991-) not found] |
| P0097 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 348727-) not found] |
| P0098 | Engine Controls and Fuel - 6.6L - [Link target (target-id 306991-) not found] |
| P0098 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 348727-) not found] |
| P0099 | Engine Controls and Fuel - 6.6L - [Link target (target-id 306991-) not found] |
| P0099 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 348727-) not found] |
| P00AF | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 285263-) not found] |
| P00C6 | Engine Controls and Fuel - 6.6L - [Link target (target-id 297085-) not found] |
| P00C7 | Engine Controls and Fuel - 6.6L - [Link target (target-id 266248-) not found] |
| P00C7 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 348347-) not found] |
| P00C9 | Engine Controls and Fuel - 6.6L - [Link target (target-id 329292-) not found] |
| P00C9 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 348346-) not found] |
| P00CA | Engine Controls and Fuel - 6.6L - [Link target (target-id 329292-) not found] |
| P00CA | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 348346-) not found] |
| P00E9 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 305002-) not found] |
| P00EA | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 283936-) not found] |
| P00EB | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 283936-) not found] |
| P00EC | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 283936-) not found] |
| P00F4 | Engine Controls and Fuel - 6.6L - [Link target (target-id 306991-) not found] |
| P00F4 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 348727-) not found] |
| P00F5 | Engine Controls and Fuel - 6.6L - [Link target (target-id 306991-) not found] |
| P00F5 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 348727-) not found] |
| P00F6 | Engine Controls and Fuel - 6.6L - [Link target (target-id 306991-) not found] |
| P00F6 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 348727-) not found] |
| P00FF | Engine Controls and Fuel - 6.6L - [Link target (target-id 276019-) not found] |
| P00FF | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 306778-) not found] |
| P0101 | Engine Controls and Fuel - 6.6L - [Link target (target-id 333303-) not found] |
| P0101 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 186664-) not found] |
| P0102 | Engine Controls and Fuel - 6.6L - [Link target (target-id 362305-) not found] |
| P0102 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 355448-) not found] |
| P0103 | Engine Controls and Fuel - 6.6L - [Link target (target-id 362305-) not found] |
| P0103 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 355448-) not found] |
| P0106 | Engine Controls and Fuel - 6.6L - [Link target (target-id 333303-) not found] |
| P0106 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 305004-) not found] |

| DTC | Diagnostic Procedure |
|---|---|
| P0107 | Engine Controls and Fuel - 6.6L - [Link target (target-id 228008-) not found] |
| P0107 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 305004-) not found] |
| P0108 | Engine Controls and Fuel - 6.6L - [Link target (target-id 228008-) not found] |
| P0108 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 305004-) not found] |
| P0111 | Engine Controls and Fuel - 6.6L - [Link target (target-id 228194-) not found] |
| P0111 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 305002-) not found] |
| P0112 | Engine Controls and Fuel - 6.6L - [Link target (target-id 306991-) not found] |
| P0112 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 348727-) not found] |
| P0113 | Engine Controls and Fuel - 6.6L - [Link target (target-id 306991-) not found] |
| P0113 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 348727-) not found] |
| P0114 | Engine Controls and Fuel - 6.6L - [Link target (target-id 306991-) not found] |
| P0114 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 348727-) not found] |
| P0116 | Engine Controls and Fuel - 6.6L - [Link target (target-id 301554-) not found] |
| P0117 | Engine Controls and Fuel - 6.6L - [Link target (target-id 301554-) not found] |
| P0118 | Engine Controls and Fuel - 6.6L - [Link target (target-id 301554-) not found] |
| P0119 | Engine Controls and Fuel - 6.6L - [Link target (target-id 301554-) not found] |
| P0121 | Engine Controls and Fuel - 6.6L - [Link target (target-id 333303-) not found] |
| P0122 | Engine Controls and Fuel - 6.6L - [Link target (target-id 332809-) not found] |
| P0123 | Engine Controls and Fuel - 6.6L - [Link target (target-id 332809-) not found] |
| P0128 | Engine Controls and Fuel - 6.6L - [Link target (target-id 301562-) not found] |
| P0131 | Engine Controls and Fuel - 6.6L - [Link target (target-id 227954-) not found] |
| P0132 | Engine Controls and Fuel - 6.6L - [Link target (target-id 227954-) not found] |
| P0135 | Engine Controls and Fuel - 6.6L - [Link target (target-id 228057-) not found] |
| P0137 | Engine Controls and Fuel - 6.6L - [Link target (target-id 227954-) not found] |
| P0138 | Engine Controls and Fuel - 6.6L - [Link target (target-id 227954-) not found] |
| P013A | Engine Controls and Fuel - 6.6L - [Link target (target-id 299054-) not found] |
| P013B | Engine Controls and Fuel - 6.6L - [Link target (target-id 299054-) not found] |
| P013C | Engine Controls and Fuel - 6.6L - [Link target (target-id 299054-) not found] |
| P013D | Engine Controls and Fuel - 6.6L - [Link target (target-id 299054-) not found] |
| P013E | Engine Controls and Fuel - 6.6L - [Link target (target-id 299054-) not found] |
| P013F | Engine Controls and Fuel - 6.6L - [Link target (target-id 299054-) not found] |
| P0141 | Engine Controls and Fuel - 6.6L - [Link target (target-id 228057-) not found] |
| P014A | Engine Controls and Fuel - 6.6L - [Link target (target-id 299054-) not found] |
| P014B | Engine Controls and Fuel - 6.6L - [Link target (target-id 299054-) not found] |
| P0151 | Engine Controls and Fuel - 6.6L - [Link target (target-id 227954-) not found] |
| P0152 | Engine Controls and Fuel - 6.6L - [Link target (target-id 227954-) not found] |
| P0155 | Engine Controls and Fuel - 6.6L - [Link target (target-id 228057-) not found] |
| P0157 | Engine Controls and Fuel - 6.6L - [Link target (target-id 227954-) not found] |
| P0158 | Engine Controls and Fuel - 6.6L - [Link target (target-id 227954-) not found] |
| P015A | Engine Controls and Fuel - 6.6L - [Link target (target-id 299054-) not found] |
| P015B | Engine Controls and Fuel - 6.6L - [Link target (target-id 299054-) not found] |
| P015C | Engine Controls and Fuel - 6.6L - [Link target (target-id 299054-) not found] |

| DTC | Diagnostic Procedure |
|---|---|
| P015D | Engine Controls and Fuel - 6.6L - [Link target (target-id 299054-) not found] |
| P0161 | Engine Controls and Fuel - 6.6L - [Link target (target-id 228057-) not found] |
| P0171 | Engine Controls and Fuel - 6.6L - [Link target (target-id 227792-) not found] |
| P0172 | Engine Controls and Fuel - 6.6L - [Link target (target-id 227792-) not found] |
| P0174 | Engine Controls and Fuel - 6.6L - [Link target (target-id 227792-) not found] |
| P0175 | Engine Controls and Fuel - 6.6L - [Link target (target-id 227792-) not found] |
| P0178 | Engine Controls and Fuel - 6.6L - [Link target (target-id 333292-) not found] |
| P0179 | Engine Controls and Fuel - 6.6L - [Link target (target-id 333292-) not found] |
| P0181 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 278967-) not found] |
| P0182 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 278967-) not found] |
| P0183 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 278967-) not found] |
| P0184 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 278967-) not found] |
| P0186 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 346921-) not found] |
| P018B | Engine Controls and Fuel - 6.6L - [Link target (target-id 227846-) not found] |
| P018B | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 278968-) not found] |
| P018C | Engine Controls and Fuel - 6.6L - [Link target (target-id 227846-) not found] |
| P018C | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 278968-) not found] |
| P018D | Engine Controls and Fuel - 6.6L - [Link target (target-id 227846-) not found] |
| P018D | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 278968-) not found] |
| P0191 | Engine Controls and Fuel - 6.6L - [Link target (target-id 316948-) not found] |
| P0191 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 346921-) not found] |
| P0192 | Engine Controls and Fuel - 6.6L - [Link target (target-id 316948-) not found] |
| P0192 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 346921-) not found] |
| P0193 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 346921-) not found] |
| P0196 | Displays and Gauges - [Link target (target-id 309839-) not found] |
| P0197 | Displays and Gauges - [Link target (target-id 309839-) not found] |
| P0198 | Displays and Gauges - [Link target (target-id 309839-) not found] |
| P0199 | Displays and Gauges - [Link target (target-id 309839-) not found] |
| P01CB | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 298335-) not found] |
| P01CC | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 298335-) not found] |
| P01CD | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 298335-) not found] |
| P01CE | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 298335-) not found] |
| P01CF | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 298335-) not found] |
| P01D0 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 298335-) not found] |
| P01D1 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 298335-) not found] |
| P01D2 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 298335-) not found] |
| P01D3 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 298335-) not found] |
| P01D4 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 298335-) not found] |
| P01D5 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 298335-) not found] |
| P01D6 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 298335-) not found] |
| P01D7 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 298335-) not found] |
| P01D8 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 298335-) not found] |

| DTC | Diagnostic Procedure |
|---|---|
| P01D9 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 298335-) not found] |
| P01DA | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 298335-) not found] |
| P01F0 | Engine Controls and Fuel - 6.6L - [Link target (target-id 301562-) not found] |
| P0201 | Engine Controls and Fuel - 6.6L - [Link target (target-id 324174-) not found] |
| P0201 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 317856-) not found] |
| P0202 | Engine Controls and Fuel - 6.6L - [Link target (target-id 324174-) not found] |
| P0202 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 317856-) not found] |
| P0203 | Engine Controls and Fuel - 6.6L - [Link target (target-id 324174-) not found] |
| P0203 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 317856-) not found] |
| P0204 | Engine Controls and Fuel - 6.6L - [Link target (target-id 324174-) not found] |
| P0204 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 317856-) not found] |
| P0205 | Engine Controls and Fuel - 6.6L - [Link target (target-id 324174-) not found] |
| P0205 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 317856-) not found] |
| P0206 | Engine Controls and Fuel - 6.6L - [Link target (target-id 324174-) not found] |
| P0206 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 317856-) not found] |
| P0207 | Engine Controls and Fuel - 6.6L - [Link target (target-id 324174-) not found] |
| P0207 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 317856-) not found] |
| P0208 | Engine Controls and Fuel - 6.6L - [Link target (target-id 324174-) not found] |
| P0208 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 317856-) not found] |
| P020A | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 278970-) not found] |
| P020B | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 278970-) not found] |
| P020C | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 278970-) not found] |
| P020D | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 278970-) not found] |
| P020E | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 278970-) not found] |
| P020F | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 278970-) not found] |
| P0216 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 278971-) not found] |
| P021A | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 278970-) not found] |
| P021B | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 278970-) not found] |
| P0222 | Engine Controls and Fuel - 6.6L - [Link target (target-id 332809-) not found] |
| P0223 | Engine Controls and Fuel - 6.6L - [Link target (target-id 332809-) not found] |
| P0234 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 290825-) not found] |
| P0261 | Engine Controls and Fuel - 6.6L - [Link target (target-id 324174-) not found] |
| P0261 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 317856-) not found] |
| P0262 | Engine Controls and Fuel - 6.6L - [Link target (target-id 324174-) not found] |
| P0262 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 317856-) not found] |
| P0264 | Engine Controls and Fuel - 6.6L - [Link target (target-id 324174-) not found] |
| P0264 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 317856-) not found] |
| P0265 | Engine Controls and Fuel - 6.6L - [Link target (target-id 324174-) not found] |
| P0265 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 317856-) not found] |
| P0267 | Engine Controls and Fuel - 6.6L - [Link target (target-id 324174-) not found] |
| P0267 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 317856-) not found] |
| P0268 | Engine Controls and Fuel - 6.6L - [Link target (target-id 324174-) not found] |

| DTC | Diagnostic Procedure |
|---|---|
| P0268 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 317856-) not found] |
| P026A | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 196096-) not found] |
| P026B | Engine Controls and Fuel - 6.6L - [Link target (target-id 324290-) not found] |
| P026B | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 324077-) not found] |
| P026C | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 224204-) not found] |
| P026D | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 224204-) not found] |
| P0270 | Engine Controls and Fuel - 6.6L - [Link target (target-id 324174-) not found] |
| P0270 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 317856-) not found] |
| P0271 | Engine Controls and Fuel - 6.6L - [Link target (target-id 324174-) not found] |
| P0271 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 317856-) not found] |
| P0273 | Engine Controls and Fuel - 6.6L - [Link target (target-id 324174-) not found] |
| P0273 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 317856-) not found] |
| P0274 | Engine Controls and Fuel - 6.6L - [Link target (target-id 324174-) not found] |
| P0274 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 317856-) not found] |
| P0276 | Engine Controls and Fuel - 6.6L - [Link target (target-id 324174-) not found] |
| P0276 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 317856-) not found] |
| P0277 | Engine Controls and Fuel - 6.6L - [Link target (target-id 324174-) not found] |
| P0277 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 317856-) not found] |
| P0279 | Engine Controls and Fuel - 6.6L - [Link target (target-id 324174-) not found] |
| P0279 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 317856-) not found] |
| P0280 | Engine Controls and Fuel - 6.6L - [Link target (target-id 324174-) not found] |
| P0280 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 317856-) not found] |
| P0282 | Engine Controls and Fuel - 6.6L - [Link target (target-id 324174-) not found] |
| P0282 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 317856-) not found] |
| P0283 | Engine Controls and Fuel - 6.6L - [Link target (target-id 324174-) not found] |
| P0283 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 317856-) not found] |
| P0299 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 290825-) not found] |
| P02CC | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 278973-) not found] |
| P02CD | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 278973-) not found] |
| P02CE | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 278973-) not found] |
| P02CF | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 278973-) not found] |
| P02D0 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 278973-) not found] |
| P02D1 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 278973-) not found] |
| P02D2 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 278973-) not found] |
| P02D3 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 278973-) not found] |
| P02D4 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 278973-) not found] |
| P02D5 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 278973-) not found] |
| P02D6 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 278973-) not found] |
| P02D7 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 278973-) not found] |
| P02D8 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 278973-) not found] |
| P02D9 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 278973-) not found] |
| P02DA | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 278973-) not found] |

| DTC | Diagnostic Procedure |
|---|---|
| P02DB | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 278973-) not found] |
| P02E0 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 349316-) not found] |
| P02E1 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 297156-) not found] |
| P02E2 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 349316-) not found] |
| P02E3 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 349316-) not found] |
| P02E5 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 297156-) not found] |
| P02E8 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 319639-) not found] |
| P02E9 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 319639-) not found] |
| P02EB | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 349316-) not found] |
| P02EE | Engine Controls and Fuel - 6.6L - [Link target (target-id 348558-) not found] |
| P02EF | Engine Controls and Fuel - 6.6L - [Link target (target-id 348558-) not found] |
| P02F0 | Engine Controls and Fuel - 6.6L - [Link target (target-id 348558-) not found] |
| P02F1 | Engine Controls and Fuel - 6.6L - [Link target (target-id 348558-) not found] |
| P02F2 | Engine Controls and Fuel - 6.6L - [Link target (target-id 348558-) not found] |
| P02F3 | Engine Controls and Fuel - 6.6L - [Link target (target-id 348558-) not found] |
| P02F4 | Engine Controls and Fuel - 6.6L - [Link target (target-id 348558-) not found] |
| P02F5 | Engine Controls and Fuel - 6.6L - [Link target (target-id 348558-) not found] |
| P0300 | Engine Controls and Fuel - 6.6L - [Link target (target-id 227972-) not found] |
| P0300 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 186686-) not found] |
| P0301 | Engine Controls and Fuel - 6.6L - [Link target (target-id 227972-) not found] |
| P0301 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 186686-) not found] |
| P0302 | Engine Controls and Fuel - 6.6L - [Link target (target-id 227972-) not found] |
| P0302 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 186686-) not found] |
| P0303 | Engine Controls and Fuel - 6.6L - [Link target (target-id 227972-) not found] |
| P0303 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 186686-) not found] |
| P0304 | Engine Controls and Fuel - 6.6L - [Link target (target-id 227972-) not found] |
| P0304 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 186686-) not found] |
| P0305 | Engine Controls and Fuel - 6.6L - [Link target (target-id 227972-) not found] |
| P0305 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 186686-) not found] |
| P0306 | Engine Controls and Fuel - 6.6L - [Link target (target-id 227972-) not found] |
| P0306 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 186686-) not found] |
| P0307 | Engine Controls and Fuel - 6.6L - [Link target (target-id 227972-) not found] |
| P0307 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 186686-) not found] |
| P0308 | Engine Controls and Fuel - 6.6L - [Link target (target-id 227972-) not found] |
| P0308 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 186686-) not found] |
| P0315 | Engine Controls and Fuel - 6.6L - [Link target (target-id 227702-) not found] |
| P0315 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 203866-) not found] |
| P0324 | Engine Controls and Fuel - 6.6L - [Link target (target-id 227713-) not found] |
| P0325 | Engine Controls and Fuel - 6.6L - [Link target (target-id 227713-) not found] |
| P0326 | Engine Controls and Fuel - 6.6L - [Link target (target-id 227713-) not found] |
| P0327 | Engine Controls and Fuel - 6.6L - [Link target (target-id 227713-) not found] |
| P0328 | Engine Controls and Fuel - 6.6L - [Link target (target-id 227713-) not found] |

| DTC | Diagnostic Procedure |
|---|---|
| P0330 | Engine Controls and Fuel - 6.6L - [Link target (target-id 227713-) not found] |
| P0331 | Engine Controls and Fuel - 6.6L - [Link target (target-id 227713-) not found] |
| P0332 | Engine Controls and Fuel - 6.6L - [Link target (target-id 227713-) not found] |
| P0333 | Engine Controls and Fuel - 6.6L - [Link target (target-id 227713-) not found] |
| P0335 | Engine Controls and Fuel - 6.6L - [Link target (target-id 227797-) not found] |
| P0335 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 186688-) not found] |
| P0336 | Engine Controls and Fuel - 6.6L - [Link target (target-id 227797-) not found] |
| P0336 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 186688-) not found] |
| P0340 | Engine Controls and Fuel - 6.6L - [Link target (target-id 227862-) not found] |
| P0340 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 186691-) not found] |
| P0341 | Engine Controls and Fuel - 6.6L - [Link target (target-id 227862-) not found] |
| P0341 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 186691-) not found] |
| P0351 | Engine Controls and Fuel - 6.6L - [Link target (target-id 254362-) not found] |
| P0352 | Engine Controls and Fuel - 6.6L - [Link target (target-id 254362-) not found] |
| P0353 | Engine Controls and Fuel - 6.6L - [Link target (target-id 254362-) not found] |
| P0354 | Engine Controls and Fuel - 6.6L - [Link target (target-id 254362-) not found] |
| P0355 | Engine Controls and Fuel - 6.6L - [Link target (target-id 254362-) not found] |
| P0356 | Engine Controls and Fuel - 6.6L - [Link target (target-id 254362-) not found] |
| P0357 | Engine Controls and Fuel - 6.6L - [Link target (target-id 254362-) not found] |
| P0358 | Engine Controls and Fuel - 6.6L - [Link target (target-id 254362-) not found] |
| P037A | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 306997-) not found] |
| P037B | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 306997-) not found] |
| P037E | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 348340-) not found] |
| P037F | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 348340-) not found] |
| P0381 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 306997-) not found] |
| P0420 | Engine Controls and Fuel - 6.6L - [Link target (target-id 227870-) not found] |
| P0430 | Engine Controls and Fuel - 6.6L - [Link target (target-id 227870-) not found] |
| P0442 | Engine Controls and Fuel - 6.6L - [Link target (target-id 302583-) not found] |
| P0443 | Engine Controls and Fuel - 6.6L - [Link target (target-id 253845-) not found] |
| P0446 | Engine Controls and Fuel - 6.6L - [Link target (target-id 227750-) not found] |
| P0449 | Engine Controls and Fuel - 6.6L - [Link target (target-id 253846-) not found] |
| P0451 | Engine Controls and Fuel - 6.6L - [Link target (target-id 227716-) not found] |
| P0452 | Engine Controls and Fuel - 6.6L - [Link target (target-id 227716-) not found] |
| P0453 | Engine Controls and Fuel - 6.6L - [Link target (target-id 227716-) not found] |
| P0454 | Engine Controls and Fuel - 6.6L - [Link target (target-id 227716-) not found] |
| P0455 | Engine Controls and Fuel - 6.6L - [Link target (target-id 302583-) not found] |
| P0458 | Engine Controls and Fuel - 6.6L - [Link target (target-id 253845-) not found] |
| P0459 | Engine Controls and Fuel - 6.6L - [Link target (target-id 253845-) not found] |
| P0461 | Displays and Gauges - [Link target (target-id 192567-) not found] |
| P0462 | Displays and Gauges - [Link target (target-id 192567-) not found] |
| P0463 | Displays and Gauges - [Link target (target-id 192567-) not found] |
| P0464 | Displays and Gauges - [Link target (target-id 192567-) not found] |

| DTC | Diagnostic Procedure |
| --- | --- |
| P0496 | Engine Controls and Fuel - 6.6L - [Link target (target-id 227884-) not found] |
| P0498 | Engine Controls and Fuel - 6.6L - [Link target (target-id 253846-) not found] |
| P0499 | Engine Controls and Fuel - 6.6L - [Link target (target-id 253846-) not found] |
| P04DB | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 320806-) not found] |
| P04E2 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 320806-) not found] |
| P04E3 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 320806-) not found] |
| P04FB | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 320806-) not found] |
| P0506 | Engine Controls and Fuel - 6.6L - [Link target (target-id 227941-) not found] |
| P0506 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 186701-) not found] |
| P0507 | Engine Controls and Fuel - 6.6L - [Link target (target-id 227941-) not found] |
| P0507 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 186701-) not found] |
| P050D | Engine Controls and Fuel - 6.6L - [Link target (target-id 229167-) not found] |
| P0513 | Immobilizer - [Link target (target-id 156476-) not found] |
| P0521 | Displays and Gauges - [Link target (target-id 161095-) not found] |
| P0522 | Displays and Gauges - [Link target (target-id 161095-) not found] |
| P0523 | Displays and Gauges - [Link target (target-id 161095-) not found] |
| P0532 | HVAC - Automatic - [Link target (target-id 69299-) not found] |
| P0532 | HVAC - Manual - [Link target (target-id 75796-) not found] |
| P0533 | HVAC - Automatic - [Link target (target-id 69299-) not found] |
| P0533 | HVAC - Manual - [Link target (target-id 75796-) not found] |
| P0535 | HVAC - Automatic - [Link target (target-id 317707-) not found] |
| P0535 | HVAC - Manual - [Link target (target-id 337981-) not found] |
| P0537 | HVAC - Automatic - [Link target (target-id 317707-) not found] |
| P0537 | HVAC - Manual - [Link target (target-id 337981-) not found] |
| P0538 | HVAC - Automatic - [Link target (target-id 317707-) not found] |
| P0538 | HVAC - Manual - [Link target (target-id 337981-) not found] |
| P054E | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 224999-) not found] |
| P054F | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 224999-) not found] |
| P0560 | Starting, Charging, and Low Voltage Energy Storage - [Link target (target-id 303008-) not found] |
| P0561 | Starting, Charging, and Low Voltage Energy Storage - [Link target (target-id 303008-) not found] |
| P0562 | Starting, Charging, and Low Voltage Energy Storage - [Link target (target-id 303008-) not found] |
| P0563 | Starting, Charging, and Low Voltage Energy Storage - [Link target (target-id 303008-) not found] |
| P0564 | Cruise Control - [Link target (target-id 355188-) not found] |
| P0565 | Cruise Control - [Link target (target-id 355188-) not found] |
| P0567 | Cruise Control - [Link target (target-id 355188-) not found] |
| P0568 | Cruise Control - [Link target (target-id 355188-) not found] |
| P056C | Cruise Control - [Link target (target-id 355188-) not found] |
| P057B | Engine Controls and Fuel - 6.6L - [Link target (target-id 272841-) not found] |
| P057B | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 285204-) not found] |
| P057C | Engine Controls and Fuel - 6.6L - [Link target (target-id 272841-) not found] |
| P057C | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 285204-) not found] |
| P057D | Engine Controls and Fuel - 6.6L - [Link target (target-id 272841-) not found] |

| DTC | Diagnostic Procedure |
|---|---|
| P057D | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 285204-) not found] |
| P057E | Engine Controls and Fuel - 6.6L - [Link target (target-id 272841-) not found] |
| P057E | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 285204-) not found] |
| P0580 | Cruise Control - [Link target (target-id 355188-) not found] |
| P0581 | Cruise Control - [Link target (target-id 355188-) not found] |
| P0589 | Cruise Control - [Link target (target-id 355188-) not found] |
| P058A | Starting, Charging, and Low Voltage Energy Storage - [Link target (target-id 314847-) not found] |
| P058B | Starting, Charging, and Low Voltage Energy Storage - [Link target (target-id 314847-) not found] |
| P058C | Starting, Charging, and Low Voltage Energy Storage - [Link target (target-id 314847-) not found] |
| P058D | Starting, Charging, and Low Voltage Energy Storage - [Link target (target-id 314847-) not found] |
| P058E | Starting, Charging, and Low Voltage Energy Storage - [Link target (target-id 314847-) not found] |
| P058F | Starting, Charging, and Low Voltage Energy Storage - [Link target (target-id 314847-) not found] |
| P0592 | Cruise Control - [Link target (target-id 355188-) not found] |
| P0593 | Cruise Control - [Link target (target-id 355188-) not found] |
| P059F | Bumpers and Fascias - [Link target (target-id 354234-) not found] |
| P05D1 | Secondary and Configurable Customer Controls - [Link target (target-id 323238-) not found] |
| P05D2 | Secondary and Configurable Customer Controls - [Link target (target-id 323238-) not found] |
| P05D3 | Secondary and Configurable Customer Controls - [Link target (target-id 323238-) not found] |
| P05EC | Engine Controls and Fuel - 6.6L - [Link target (target-id 324290-) not found] |
| P05EC | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 324077-) not found] |
| P0601 | Engine Controls and Fuel - 6.6L - [Link target (target-id 324290-) not found] |
| P0601 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 324077-) not found] |
| P0601 | Data Communications - [Link target (target-id 272300-) not found] |
| P0601 | Automatic Transmission - 10L1000 - [Link target (target-id 347965-) not found] |
| P0602 | Engine Controls and Fuel - 6.6L - [Link target (target-id 324290-) not found] |
| P0602 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 324077-) not found] |
| P0602 | Data Communications - [Link target (target-id 272300-) not found] |
| P0602 | Automatic Transmission - 10L1000 - [Link target (target-id 347965-) not found] |
| P0603 | Engine Controls and Fuel - 6.6L - [Link target (target-id 324290-) not found] |
| P0603 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 324077-) not found] |
| P0603 | Data Communications - [Link target (target-id 272300-) not found] |
| P0603 | Automatic Transmission - 10L1000 - [Link target (target-id 347965-) not found] |
| P0604 | Engine Controls and Fuel - 6.6L - [Link target (target-id 324290-) not found] |
| P0604 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 324077-) not found] |
| P0604 | Data Communications - [Link target (target-id 272300-) not found] |
| P0604 | Automatic Transmission - 10L1000 - [Link target (target-id 347965-) not found] |
| P0605 | Engine Controls and Fuel - 6.6L - [Link target (target-id 324290-) not found] |
| P0605 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 324077-) not found] |
| P0605 | Data Communications - [Link target (target-id 272300-) not found] |
| P0606 | Engine Controls and Fuel - 6.6L - [Link target (target-id 324290-) not found] |
| P0606 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 324077-) not found] |
| P0606 | Data Communications - [Link target (target-id 272300-) not found] |

| DTC | Diagnostic Procedure |
|---|---|
| P0606 | Automatic Transmission - 10L1000 - [Link target (target-id 347965-) not found] |
| P0607 | Engine Controls and Fuel - 6.6L - [Link target (target-id 324290-) not found] |
| P0607 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 324077-) not found] |
| P0607 | Data Communications - [Link target (target-id 272300-) not found] |
| P0607 | Automatic Transmission - 10L1000 - [Link target (target-id 347965-) not found] |
| P060A | Engine Controls and Fuel - 6.6L - [Link target (target-id 324290-) not found] |
| P060A | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 324077-) not found] |
| P060A | Data Communications - [Link target (target-id 272300-) not found] |
| P060B | Engine Controls and Fuel - 6.6L - [Link target (target-id 324290-) not found] |
| P060B | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 324077-) not found] |
| P060B | Data Communications - [Link target (target-id 272300-) not found] |
| P060C | Engine Controls and Fuel - 6.6L - [Link target (target-id 324290-) not found] |
| P060C | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 324077-) not found] |
| P060C | Data Communications - [Link target (target-id 272300-) not found] |
| P060C | Automatic Transmission - 10L1000 - [Link target (target-id 347965-) not found] |
| P060D | Engine Controls and Fuel - 6.6L - [Link target (target-id 324290-) not found] |
| P060D | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 324077-) not found] |
| P0610 | Engine Controls and Fuel - 6.6L - [Link target (target-id 324290-) not found] |
| P0610 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 324077-) not found] |
| P0610 | Data Communications - [Link target (target-id 272300-) not found] |
| P0615 | Starting, Charging, and Low Voltage Energy Storage - [Link target (target-id 147526-) not found] |
| P0616 | Starting, Charging, and Low Voltage Energy Storage - [Link target (target-id 147526-) not found] |
| P0617 | Starting, Charging, and Low Voltage Energy Storage - [Link target (target-id 147526-) not found] |
| P061C | Engine Controls and Fuel - 6.6L - [Link target (target-id 324290-) not found] |
| P061C | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 324077-) not found] |
| P0621 | Starting, Charging, and Low Voltage Energy Storage - [Link target (target-id 37806-) not found] |
| P0622 | Starting, Charging, and Low Voltage Energy Storage - [Link target (target-id 37807-) not found] |
| P0627 | Engine Controls and Fuel - 6.6L - [Link target (target-id 327483-) not found] |
| P0627 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 325238-) not found] |
| P0628 | Engine Controls and Fuel - 6.6L - [Link target (target-id 327483-) not found] |
| P0628 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 325238-) not found] |
| P0629 | Engine Controls and Fuel - 6.6L - [Link target (target-id 327483-) not found] |
| P0629 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 325238-) not found] |
| P062B | Engine Controls and Fuel - 6.6L - [Link target (target-id 324290-) not found] |
| P062B | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 324077-) not found] |
| P062D | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 297105-) not found] |
| P062F | Engine Controls and Fuel - 6.6L - [Link target (target-id 324290-) not found] |
| P062F | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 324077-) not found] |
| P062F | Data Communications - [Link target (target-id 272300-) not found] |
| P062F | Automatic Transmission - 10L1000 - [Link target (target-id 347965-) not found] |
| P0630 | Engine Controls and Fuel - 6.6L - [Link target (target-id 324290-) not found] |
| P0630 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 324077-) not found] |

| DTC | Diagnostic Procedure |
|---|---|
| P0630 | Data Communications - [Link target (target-id 272300-) not found] |
| P0633 | Immobilizer - [Link target (target-id 142528-) not found] |
| P0634 | Data Communications - [Link target (target-id 272300-) not found] |
| P0641 | Antilock Brake System - [Link target (target-id 359723-) not found] |
| P0641 | Engine Controls and Fuel - 6.6L - [Link target (target-id 227878-) not found] |
| P0641 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 286418-) not found] |
| P0641 | Wiring Systems and Power Management - [Link target (target-id 327177-) not found] |
| P0645 | HVAC - Automatic - [Link target (target-id 69300-) not found] |
| P0645 | HVAC - Manual - [Link target (target-id 119567-) not found] |
| P0646 | HVAC - Automatic - [Link target (target-id 69300-) not found] |
| P0646 | HVAC - Manual - [Link target (target-id 119567-) not found] |
| P0647 | HVAC - Automatic - [Link target (target-id 69300-) not found] |
| P0647 | HVAC - Manual - [Link target (target-id 119567-) not found] |
| P064D | Engine Controls and Fuel - 6.6L - [Link target (target-id 324290-) not found] |
| P064D | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 324077-) not found] |
| P064E | Engine Controls and Fuel - 6.6L - [Link target (target-id 324290-) not found] |
| P064E | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 324077-) not found] |
| P064F | Engine Controls and Fuel - 6.6L - [Link target (target-id 324290-) not found] |
| P064F | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 324077-) not found] |
| P064F | Data Communications - [Link target (target-id 272300-) not found] |
| P0651 | Antilock Brake System - [Link target (target-id 359723-) not found] |
| P0651 | Engine Controls and Fuel - 6.6L - [Link target (target-id 227878-) not found] |
| P0651 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 286418-) not found] |
| P0651 | Wiring Systems and Power Management - [Link target (target-id 327177-) not found] |
| P0658 | Automatic Transmission - 10L1000 - [Link target (target-id 315059-) not found] |
| P0659 | Automatic Transmission - 10L1000 - [Link target (target-id 315059-) not found] |
| P066A | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 278975-) not found] |
| P066B | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 278975-) not found] |
| P066C | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 278975-) not found] |
| P066D | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 278975-) not found] |
| P066E | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 278975-) not found] |
| P066F | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 278975-) not found] |
| P0671 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 278975-) not found] |
| P0672 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 278975-) not found] |
| P0673 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 278975-) not found] |
| P0674 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 278975-) not found] |
| P0675 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 278975-) not found] |
| P0676 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 278975-) not found] |
| P0677 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 278975-) not found] |
| P0678 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 278975-) not found] |
| P067A | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 278975-) not found] |
| P067B | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 278975-) not found] |

| DTC | Diagnostic Procedure |
|---|---|
| P067C | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 278975-) not found] |
| P067D | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 278975-) not found] |
| P067E | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 278975-) not found] |
| P067F | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 278975-) not found] |
| P0685 | Engine Controls and Fuel - 6.6L - [Link target (target-id 319596-) not found] |
| P0685 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 354217-) not found] |
| P0686 | Engine Controls and Fuel - 6.6L - [Link target (target-id 319596-) not found] |
| P0686 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 354217-) not found] |
| P0687 | Engine Controls and Fuel - 6.6L - [Link target (target-id 319596-) not found] |
| P0687 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 354217-) not found] |
| P0689 | Engine Controls and Fuel - 6.6L - [Link target (target-id 319596-) not found] |
| P0689 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 354217-) not found] |
| P068C | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 278975-) not found] |
| P068D | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 278975-) not found] |
| P068E | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 278975-) not found] |
| P068F | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 278975-) not found] |
| P0690 | Engine Controls and Fuel - 6.6L - [Link target (target-id 319596-) not found] |
| P0690 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 354217-) not found] |
| P0697 | Antilock Brake System - [Link target (target-id 359723-) not found] |
| P0697 | Engine Controls and Fuel - 6.6L - [Link target (target-id 227878-) not found] |
| P0697 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 286418-) not found] |
| P0697 | Wiring Systems and Power Management - [Link target (target-id 327177-) not found] |
| P069E | Engine Controls and Fuel - 6.6L - [Link target (target-id 276019-) not found] |
| P069E | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 306778-) not found] |
| P06A3 | Antilock Brake System - [Link target (target-id 359723-) not found] |
| P06A3 | Engine Controls and Fuel - 6.6L - [Link target (target-id 227878-) not found] |
| P06A3 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 286418-) not found] |
| P06A3 | Wiring Systems and Power Management - [Link target (target-id 327177-) not found] |
| P06AF | Engine Controls and Fuel - 6.6L - [Link target (target-id 327557-) not found] |
| P06B6 | Engine Controls and Fuel - 6.6L - [Link target (target-id 227713-) not found] |
| P06B7 | Engine Controls and Fuel - 6.6L - [Link target (target-id 227713-) not found] |
| P06B8 | Data Communications - [Link target (target-id 272300-) not found] |
| P06C5 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 278976-) not found] |
| P06C6 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 278976-) not found] |
| P06C7 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 278976-) not found] |
| P06C8 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 278976-) not found] |
| P06C9 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 278976-) not found] |
| P06CA | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 278976-) not found] |
| P06CB | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 278976-) not found] |
| P06CC | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 278976-) not found] |
| P06D1 | Engine Controls and Fuel - 6.6L - [Link target (target-id 324290-) not found] |
| P06D1 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 324077-) not found] |

| DTC | Diagnostic Procedure |
|---|---|
| P06DA | Engine Mechanical - 6.6L - [Link target (target-id 294343-) not found] |
| P06DB | Engine Mechanical - 6.6L - [Link target (target-id 294343-) not found] |
| P06DC | Engine Mechanical - 6.6L - [Link target (target-id 294343-) not found] |
| P06DD | Engine Mechanical - 6.6L - [Link target (target-id 294343-) not found] |
| P06EC | Engine Controls and Fuel - 6.6L - [Link target (target-id 276019-) not found] |
| P06EC | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 306778-) not found] |
| P0700 | Engine Controls and Fuel - 6.6L - [Link target (target-id 276019-) not found] |
| P0700 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 306778-) not found] |
| P0707 | Automatic Transmission - 10L1000 - [Link target (target-id 315244-) not found] |
| P0708 | Automatic Transmission - 10L1000 - [Link target (target-id 315244-) not found] |
| P0711 | Automatic Transmission - 10L1000 - [Link target (target-id 315060-) not found] |
| P0712 | Automatic Transmission - 10L1000 - [Link target (target-id 315060-) not found] |
| P0713 | Automatic Transmission - 10L1000 - [Link target (target-id 315060-) not found] |
| P0716 | Automatic Transmission - 10L1000 - [Link target (target-id 315124-) not found] |
| P0717 | Automatic Transmission - 10L1000 - [Link target (target-id 315124-) not found] |
| P0721 | Automatic Transmission - 10L1000 - [Link target (target-id 319777-) not found] |
| P0722 | Automatic Transmission - 10L1000 - [Link target (target-id 319777-) not found] |
| P0723 | Automatic Transmission - 10L1000 - [Link target (target-id 319777-) not found] |
| P0741 | Automatic Transmission - 10L1000 - [Link target (target-id 315229-) not found] |
| P0746 | Automatic Transmission - 10L1000 - [Link target (target-id 315082-) not found] |
| P0747 | Automatic Transmission - 10L1000 - [Link target (target-id 315082-) not found] |
| P0776 | Automatic Transmission - 10L1000 - [Link target (target-id 315079-) not found] |
| P0777 | Automatic Transmission - 10L1000 - [Link target (target-id 315079-) not found] |
| P077C | Automatic Transmission - 10L1000 - [Link target (target-id 319777-) not found] |
| P077D | Automatic Transmission - 10L1000 - [Link target (target-id 319777-) not found] |
| P0796 | Automatic Transmission - 10L1000 - [Link target (target-id 315074-) not found] |
| P0797 | Automatic Transmission - 10L1000 - [Link target (target-id 315074-) not found] |
| P07BF | Automatic Transmission - 10L1000 - [Link target (target-id 315124-) not found] |
| P07C0 | Automatic Transmission - 10L1000 - [Link target (target-id 315124-) not found] |
| P0800 | Engine Controls and Fuel - 6.6L - [Link target (target-id 276019-) not found] |
| P0800 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 306778-) not found] |
| P0815 | Automatic Transmission - 10L1000 - [Link target (target-id 351897-) not found] |
| P0816 | Automatic Transmission - 10L1000 - [Link target (target-id 351897-) not found] |
| P0826 | Automatic Transmission - 10L1000 - [Link target (target-id 351897-) not found] |
| P0856 | Antilock Brake System - [Link target (target-id 165434-) not found] |
| P08FF | Engine Controls and Fuel - 6.6L - [Link target (target-id 324290-) not found] |
| P08FF | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 324077-) not found] |
| P0960 | Automatic Transmission - 10L1000 - [Link target (target-id 315234-) not found] |
| P0962 | Automatic Transmission - 10L1000 - [Link target (target-id 315234-) not found] |
| P0963 | Automatic Transmission - 10L1000 - [Link target (target-id 315234-) not found] |
| P0964 | Automatic Transmission - 10L1000 - [Link target (target-id 315061-) not found] |
| P0966 | Automatic Transmission - 10L1000 - [Link target (target-id 315061-) not found] |

| DTC | Diagnostic Procedure |
|---|---|
| P0967 | Automatic Transmission - 10L1000 - [Link target (target-id 315061-) not found] |
| P0968 | Automatic Transmission - 10L1000 - [Link target (target-id 315024-) not found] |
| P0970 | Automatic Transmission - 10L1000 - [Link target (target-id 315024-) not found] |
| P0971 | Automatic Transmission - 10L1000 - [Link target (target-id 315024-) not found] |
| P0A7B | Engine Controls and Fuel - 6.6L - [Link target (target-id 276019-) not found] |
| P0A7B | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 306778-) not found] |
| P0AC4 | Engine Controls and Fuel - 6.6L - [Link target (target-id 276019-) not found] |
| P0AC4 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 306778-) not found] |
| P0CA1 | Engine Controls and Fuel - 6.6L - [Link target (target-id 276019-) not found] |
| P0CA1 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 306778-) not found] |
| P0F34 | Engine Controls and Fuel - 6.6L - [Link target (target-id 349585-) not found] |
| P0F35 | Engine Controls and Fuel - 6.6L - [Link target (target-id 349585-) not found] |
| P0F36 | Engine Controls and Fuel - 6.6L - [Link target (target-id 349585-) not found] |
| P0F37 | Engine Controls and Fuel - 6.6L - [Link target (target-id 349586-) not found] |
| P0F38 | Engine Controls and Fuel - 6.6L - [Link target (target-id 349586-) not found] |
| P1002 | Starting, Charging, and Low Voltage Energy Storage - [Link target (target-id 313528-) not found] |
| P1005 | Engine Controls and Fuel - 6.6L - [Link target (target-id 309964-) not found] |
| P1005 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 293625-) not found] |
| P1007 | Engine Controls and Fuel - 6.6L - [Link target (target-id 309965-) not found] |
| P1007 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 278977-) not found] |
| P100B | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 327766-) not found] |
| P100C | Starting, Charging, and Low Voltage Energy Storage - [Link target (target-id 280530-) not found] |
| P100D | Starting, Charging, and Low Voltage Energy Storage - [Link target (target-id 280530-) not found] |
| P1029 | Engine Controls and Fuel - 6.6L - [Link target (target-id 327484-) not found] |
| P1029 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 348341-) not found] |
| P102A | Engine Controls and Fuel - 6.6L - [Link target (target-id 327484-) not found] |
| P102A | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 348341-) not found] |
| P102B | Engine Controls and Fuel - 6.6L - [Link target (target-id 327484-) not found] |
| P102B | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 348341-) not found] |
| P1037 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 278984-) not found] |
| P103D | Engine Controls and Fuel - 6.6L - [Link target (target-id 316955-) not found] |
| P103D | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 348714-) not found] |
| P1089 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 224205-) not found] |
| P10BC | Engine Controls and Fuel - 6.6L - [Link target (target-id 333002-) not found] |
| P10C6 | Engine Controls and Fuel - 6.6L - [Link target (target-id 316955-) not found] |
| P10C6 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 348714-) not found] |
| P10CD | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 348402-) not found] |
| P10CE | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 348402-) not found] |
| P10D5 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 321214-) not found] |
| P10D6 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 321215-) not found] |
| P10D7 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 321215-) not found] |
| P10D8 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 321215-) not found] |

| DTC | Diagnostic Procedure |
|---|---|
| P10F4 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 320805-) not found] |
| P10F5 | Engine Controls and Fuel - 6.6L - [Link target (target-id 316955-) not found] |
| P10F5 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 348714-) not found] |
| P1100 | Displays and Gauges - [Link target (target-id 280600-) not found] |
| P1101 | Engine Controls and Fuel - 6.6L - [Link target (target-id 333303-) not found] |
| P1176 | Engine Controls and Fuel - 6.6L - [Link target (target-id 304085-) not found] |
| P1177 | Engine Controls and Fuel - 6.6L - [Link target (target-id 304085-) not found] |
| P117A | Engine Controls and Fuel - 6.6L - [Link target (target-id 316955-) not found] |
| P117A | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 348714-) not found] |
| P1199 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 348347-) not found] |
| P11FF | Engine Controls and Fuel - 6.6L - [Link target (target-id 316955-) not found] |
| P11FF | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 348714-) not found] |
| P1200 | Displays and Gauges - [Link target (target-id 280601-) not found] |
| P122B | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 349316-) not found] |
| P122C | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 349316-) not found] |
| P122D | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 203884-) not found] |
| P1248 | Engine Controls and Fuel - 6.6L - [Link target (target-id 324174-) not found] |
| P1248 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 317856-) not found] |
| P1249 | Engine Controls and Fuel - 6.6L - [Link target (target-id 324174-) not found] |
| P1249 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 317856-) not found] |
| P124A | Engine Controls and Fuel - 6.6L - [Link target (target-id 324174-) not found] |
| P124A | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 317856-) not found] |
| P124B | Engine Controls and Fuel - 6.6L - [Link target (target-id 324174-) not found] |
| P124B | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 317856-) not found] |
| P124C | Engine Controls and Fuel - 6.6L - [Link target (target-id 324174-) not found] |
| P124C | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 317856-) not found] |
| P124D | Engine Controls and Fuel - 6.6L - [Link target (target-id 324174-) not found] |
| P124D | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 317856-) not found] |
| P124E | Engine Controls and Fuel - 6.6L - [Link target (target-id 324174-) not found] |
| P124E | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 317856-) not found] |
| P124F | Engine Controls and Fuel - 6.6L - [Link target (target-id 324174-) not found] |
| P124F | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 317856-) not found] |
| P1255 | Engine Controls and Fuel - 6.6L - [Link target (target-id 227882-) not found] |
| P1255 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 278986-) not found] |
| P127C | Engine Controls and Fuel - 6.6L - [Link target (target-id 316948-) not found] |
| P127C | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 346921-) not found] |
| P127D | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 346921-) not found] |
| P128A | Engine Controls and Fuel - 6.6L - [Link target (target-id 316948-) not found] |
| P128B | Engine Controls and Fuel - 6.6L - [Link target (target-id 316948-) not found] |
| P128C | Engine Controls and Fuel - 6.6L - [Link target (target-id 316955-) not found] |
| P128C | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 348714-) not found] |
| P128D | Engine Controls and Fuel - 6.6L - [Link target (target-id 316955-) not found] |

| DTC | Diagnostic Procedure |
|---|---|
| P128D | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 348714-) not found] |
| P128F | Engine Controls and Fuel - 6.6L - [Link target (target-id 316955-) not found] |
| P128F | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 348714-) not found] |
| P129B | Starting, Charging, and Low Voltage Energy Storage - [Link target (target-id 182379-) not found] |
| P129C | Starting, Charging, and Low Voltage Energy Storage - [Link target (target-id 182379-) not found] |
| P129D | Engine Controls and Fuel - 6.6L - [Link target (target-id 309965-) not found] |
| P129D | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 278977-) not found] |
| P129F | Engine Controls and Fuel - 6.6L - [Link target (target-id 227990-) not found] |
| P129F | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 278988-) not found] |
| P12A6 | Engine Controls and Fuel - 6.6L - [Link target (target-id 327483-) not found] |
| P12A6 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 325238-) not found] |
| P134C | Engine Controls and Fuel - 6.6L - [Link target (target-id 324290-) not found] |
| P134C | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 324077-) not found] |
| P135A | Engine Controls and Fuel - 6.6L - [Link target (target-id 228219-) not found] |
| P135B | Engine Controls and Fuel - 6.6L - [Link target (target-id 228219-) not found] |
| P135C | Engine Controls and Fuel - 6.6L - [Link target (target-id 316955-) not found] |
| P135C | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 348714-) not found] |
| P1400 | Engine Controls and Fuel - 6.6L - [Link target (target-id 227952-) not found] |
| P1425 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 349316-) not found] |
| P1434 | Displays and Gauges - [Link target (target-id 280602-) not found] |
| P143E | Displays and Gauges - [Link target (target-id 280603-) not found] |
| P1465 | Starting, Charging, and Low Voltage Energy Storage - [Link target (target-id 304031-) not found] |
| P1466 | Starting, Charging, and Low Voltage Energy Storage - [Link target (target-id 304031-) not found] |
| P14A0 | Engine Controls and Fuel - 6.6L - [Link target (target-id 316955-) not found] |
| P14A0 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 348714-) not found] |
| P14B6 | Engine Controls and Fuel - 6.6L - [Link target (target-id 316955-) not found] |
| P14B6 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 348714-) not found] |
| P14CD | Engine Controls and Fuel - 6.6L - [Link target (target-id 316955-) not found] |
| P14CD | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 348714-) not found] |
| P14D4 | Engine Controls and Fuel - 6.6L - [Link target (target-id 316955-) not found] |
| P14D4 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 348714-) not found] |
| P14D5 | Engine Controls and Fuel - 6.6L - [Link target (target-id 316955-) not found] |
| P14D5 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 348714-) not found] |
| P14D6 | Engine Controls and Fuel - 6.6L - [Link target (target-id 316955-) not found] |
| P14D6 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 348714-) not found] |
| P14E7 | Power Take-Off - [Link target (target-id 320478-) not found] |
| P14E8 | Power Take-Off - [Link target (target-id 320478-) not found] |
| P14E9 | Power Take-Off - [Link target (target-id 320479-) not found] |
| P14EA | Power Take-Off - [Link target (target-id 320479-) not found] |
| P14EB | Power Take-Off - [Link target (target-id 320479-) not found] |
| P14EC | Power Take-Off - [Link target (target-id 320479-) not found] |
| P14ED | Power Take-Off - [Link target (target-id 320479-) not found] |

| DTC | Diagnostic Procedure |
|---|---|
| P150C | Engine Controls and Fuel - 6.6L - [Link target (target-id 316955-) not found] |
| P150C | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 348714-) not found] |
| P1516 | Engine Controls and Fuel - 6.6L - [Link target (target-id 227727-) not found] |
| P153B | HVAC - Automatic - [Link target (target-id 317707-) not found] |
| P153B | HVAC - Manual - [Link target (target-id 337981-) not found] |
| P155A | Cruise Control - [Link target (target-id 355188-) not found] |
| P155B | Cruise Control - [Link target (target-id 355188-) not found] |
| P155C | Cruise Control - [Link target (target-id 355188-) not found] |
| P157A | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 327162-) not found] |
| P158F | Power Take-Off - [Link target (target-id 280594-) not found] |
| P159A | Power Take-Off - [Link target (target-id 359800-) not found] |
| P159C | Power Take-Off - [Link target (target-id 164885-) not found] |
| P159D | Power Take-Off - [Link target (target-id 265884-) not found] |
| P15F6 | Driver Assistance Systems - [Link target (target-id 283689-) not found] |
| P15F8 | Antilock Brake System - [Link target (target-id 227356-) not found] |
| P15FD | Antilock Brake System - [Link target (target-id 272641-) not found] |
| P15FF | Starting, Charging, and Low Voltage Energy Storage - [Link target (target-id 272217-) not found] |
| P160A | Engine Controls and Fuel - 6.6L - [Link target (target-id 324290-) not found] |
| P160A | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 324077-) not found] |
| P160D | Engine Controls and Fuel - 6.6L - [Link target (target-id 324290-) not found] |
| P160D | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 324077-) not found] |
| P160E | Engine Controls and Fuel - 6.6L - [Link target (target-id 324290-) not found] |
| P160E | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 324077-) not found] |
| P161C | Engine Controls and Fuel - 6.6L - [Link target (target-id 324290-) not found] |
| P161C | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 324077-) not found] |
| P162B | Immobilizer - [Link target (target-id 184943-) not found] |
| P162C | Cruise Control - [Link target (target-id 355188-) not found] |
| P1631 | Immobilizer - [Link target (target-id 59387-) not found] |
| P163A | Engine Controls and Fuel - 6.6L - [Link target (target-id 329292-) not found] |
| P163A | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 348346-) not found] |
| P163B | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 348346-) not found] |
| P1649 | Immobilizer - [Link target (target-id 159966-) not found] |
| P1682 | Engine Controls and Fuel - 6.6L - [Link target (target-id 319596-) not found] |
| P1682 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 354217-) not found] |
| P16A7 | Engine Controls and Fuel - 6.6L - [Link target (target-id 319596-) not found] |
| P16A7 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 354217-) not found] |
| P16AF | Engine Controls and Fuel - 6.6L - [Link target (target-id 319596-) not found] |
| P16AF | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 354217-) not found] |
| P16B3 | Engine Controls and Fuel - 6.6L - [Link target (target-id 319596-) not found] |
| P16B3 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 354217-) not found] |
| P16BC | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 354217-) not found] |
| P16BD | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 354217-) not found] |

| DTC | Diagnostic Procedure |
|---|---|
| P16BF | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 354217-) not found] |
| P16D4 | Starting, Charging, and Low Voltage Energy Storage - [Link target (target-id 314848-) not found] |
| P16D5 | Starting, Charging, and Low Voltage Energy Storage - [Link target (target-id 314848-) not found] |
| P16D6 | Starting, Charging, and Low Voltage Energy Storage - [Link target (target-id 314848-) not found] |
| P16D7 | Engine Controls and Fuel - 6.6L - [Link target (target-id 327488-) not found] |
| P16D7 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 327162-) not found] |
| P16D8 | Engine Controls and Fuel - 6.6L - [Link target (target-id 327488-) not found] |
| P16D8 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 327162-) not found] |
| P16D9 | Engine Controls and Fuel - 6.6L - [Link target (target-id 327488-) not found] |
| P16D9 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 327162-) not found] |
| P16E1 | Starting, Charging, and Low Voltage Energy Storage - [Link target (target-id 314850-) not found] |
| P16E2 | Starting, Charging, and Low Voltage Energy Storage - [Link target (target-id 314850-) not found] |
| P16E3 | Starting, Charging, and Low Voltage Energy Storage - [Link target (target-id 314850-) not found] |
| P16E9 | Engine Controls and Fuel - 6.6L - [Link target (target-id 324290-) not found] |
| P16E9 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 324077-) not found] |
| P16E9 | Data Communications - [Link target (target-id 272300-) not found] |
| P16EA | Engine Controls and Fuel - 6.6L - [Link target (target-id 324290-) not found] |
| P16EA | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 324077-) not found] |
| P16EA | Data Communications - [Link target (target-id 272300-) not found] |
| P16EB | Engine Controls and Fuel - 6.6L - [Link target (target-id 324290-) not found] |
| P16EB | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 324077-) not found] |
| P16EB | Data Communications - [Link target (target-id 272300-) not found] |
| P16EC | Engine Controls and Fuel - 6.6L - [Link target (target-id 324290-) not found] |
| P16EC | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 324077-) not found] |
| P16EC | Data Communications - [Link target (target-id 272300-) not found] |
| P16ED | Engine Controls and Fuel - 6.6L - [Link target (target-id 324290-) not found] |
| P16ED | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 324077-) not found] |
| P16ED | Data Communications - [Link target (target-id 272300-) not found] |
| P16EE | Engine Controls and Fuel - 6.6L - [Link target (target-id 324290-) not found] |
| P16EE | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 324077-) not found] |
| P16EE | Data Communications - [Link target (target-id 272300-) not found] |
| P16EF | Engine Controls and Fuel - 6.6L - [Link target (target-id 324290-) not found] |
| P16EF | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 324077-) not found] |
| P16EF | Data Communications - [Link target (target-id 272300-) not found] |
| P16F0 | Engine Controls and Fuel - 6.6L - [Link target (target-id 324290-) not found] |
| P16F0 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 324077-) not found] |
| P16F0 | Data Communications - [Link target (target-id 272300-) not found] |
| P16F1 | Data Communications - [Link target (target-id 272300-) not found] |
| P16F2 | Data Communications - [Link target (target-id 272300-) not found] |
| P16F3 | Engine Controls and Fuel - 6.6L - [Link target (target-id 324290-) not found] |
| P16F3 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 324077-) not found] |
| P16F3 | Data Communications - [Link target (target-id 272300-) not found] |

| DTC | Diagnostic Procedure |
|---|---|
| P16F9 | Data Communications - [Link target (target-id 272300-) not found] |
| P16FD | Data Communications - [Link target (target-id 272300-) not found] |
| P16FE | Data Communications - [Link target (target-id 272300-) not found] |
| P1700 | Engine Controls and Fuel - 6.6L - [Link target (target-id 276019-) not found] |
| P1700 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 306778-) not found] |
| P172A | Automatic Transmission - 10L1000 - [Link target (target-id 319777-) not found] |
| P175E | Automatic Transmission - 10L1000 - [Link target (target-id 315224-) not found] |
| P1762 | Engine Controls and Fuel - 6.6L - [Link target (target-id 316955-) not found] |
| P1762 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 348714-) not found] |
| P176B | Automatic Transmission - 10L1000 - [Link target (target-id 315007-) not found] |
| P176C | Automatic Transmission - 10L1000 - [Link target (target-id 315007-) not found] |
| P176D | Automatic Transmission - 10L1000 - [Link target (target-id 315007-) not found] |
| P1783 | Automatic Transmission - 10L1000 - [Link target (target-id 315124-) not found] |
| P178F | Automatic Transmission - 10L1000 - [Link target (target-id 315007-) not found] |
| P17C5 | Automatic Transmission - 10L1000 - [Link target (target-id 315098-) not found] |
| P17C6 | Automatic Transmission - 10L1000 - [Link target (target-id 315098-) not found] |
| P17CC | Automatic Transmission - 10L1000 - [Link target (target-id 315098-) not found] |
| P17CD | Automatic Transmission - 10L1000 - [Link target (target-id 315098-) not found] |
| P17CE | Automatic Transmission - 10L1000 - [Link target (target-id 315124-) not found] |
| P17D3 | Automatic Transmission - 10L1000 - [Link target (target-id 315007-) not found] |
| P17D4 | Transfer Case - MP 1625/1626 - [Link target (target-id 302593-) not found] |
| P17D4 | Transfer Case - MP 3023/3024 - [Link target (target-id 302595-) not found] |
| P17D6 | Automatic Transmission - 10L1000 - [Link target (target-id 315098-) not found] |
| P185F | Transfer Case - MP 1625/1626 - [Link target (target-id 302593-) not found] |
| P185F | Transfer Case - MP 3023/3024 - [Link target (target-id 302595-) not found] |
| P188B | Engine Controls and Fuel - 6.6L - [Link target (target-id 316955-) not found] |
| P188B | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 348714-) not found] |
| P1951 | Power Take-Off - [Link target (target-id 359801-) not found] |
| P1952 | Power Take-Off - [Link target (target-id 359801-) not found] |
| P1953 | Power Take-Off - [Link target (target-id 359801-) not found] |
| P1954 | Power Take-Off - [Link target (target-id 359801-) not found] |
| P1E00 | Engine Controls and Fuel - 6.6L - [Link target (target-id 276019-) not found] |
| P1E00 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 306778-) not found] |
| P2066 | Displays and Gauges - [Link target (target-id 192567-) not found] |
| P2067 | Displays and Gauges - [Link target (target-id 192567-) not found] |
| P2068 | Displays and Gauges - [Link target (target-id 192567-) not found] |
| P2088 | Engine Controls and Fuel - 6.6L - [Link target (target-id 294312-) not found] |
| P2089 | Engine Controls and Fuel - 6.6L - [Link target (target-id 294312-) not found] |
| P2096 | Engine Controls and Fuel - 6.6L - [Link target (target-id 228221-) not found] |
| P2097 | Engine Controls and Fuel - 6.6L - [Link target (target-id 228221-) not found] |
| P2098 | Engine Controls and Fuel - 6.6L - [Link target (target-id 228221-) not found] |
| P2099 | Engine Controls and Fuel - 6.6L - [Link target (target-id 228221-) not found] |

| DTC | Diagnostic Procedure |
|---|---|
| P20CB | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 348402-) not found] |
| P20CD | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 348402-) not found] |
| P20CE | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 348402-) not found] |
| P20FF | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 320805-) not found] |
| P2101 | Engine Controls and Fuel - 6.6L - [Link target (target-id 227727-) not found] |
| P2119 | Engine Controls and Fuel - 6.6L - [Link target (target-id 227727-) not found] |
| P2122 | Engine Controls and Fuel - 6.6L - [Link target (target-id 227773-) not found] |
| P2122 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 186726-) not found] |
| P2123 | Engine Controls and Fuel - 6.6L - [Link target (target-id 227773-) not found] |
| P2123 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 186726-) not found] |
| P2127 | Engine Controls and Fuel - 6.6L - [Link target (target-id 227773-) not found] |
| P2127 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 186726-) not found] |
| P2128 | Engine Controls and Fuel - 6.6L - [Link target (target-id 227773-) not found] |
| P2128 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 186726-) not found] |
| P2135 | Engine Controls and Fuel - 6.6L - [Link target (target-id 332809-) not found] |
| P2138 | Engine Controls and Fuel - 6.6L - [Link target (target-id 227773-) not found] |
| P2138 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 186726-) not found] |
| P2147 | Engine Controls and Fuel - 6.6L - [Link target (target-id 324174-) not found] |
| P2147 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 317856-) not found] |
| P2148 | Engine Controls and Fuel - 6.6L - [Link target (target-id 324174-) not found] |
| P2148 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 317856-) not found] |
| P2150 | Engine Controls and Fuel - 6.6L - [Link target (target-id 324174-) not found] |
| P2150 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 317856-) not found] |
| P2151 | Engine Controls and Fuel - 6.6L - [Link target (target-id 324174-) not found] |
| P2151 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 317856-) not found] |
| P2153 | Engine Controls and Fuel - 6.6L - [Link target (target-id 324174-) not found] |
| P2153 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 317856-) not found] |
| P2154 | Engine Controls and Fuel - 6.6L - [Link target (target-id 324174-) not found] |
| P2154 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 317856-) not found] |
| P2156 | Engine Controls and Fuel - 6.6L - [Link target (target-id 324174-) not found] |
| P2156 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 317856-) not found] |
| P2157 | Engine Controls and Fuel - 6.6L - [Link target (target-id 324174-) not found] |
| P2157 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 317856-) not found] |
| P215B | Transfer Case - MP 1625/1626 - [Link target (target-id 302593-) not found] |
| P215B | Transfer Case - MP 3023/3024 - [Link target (target-id 302595-) not found] |
| P216B | Engine Controls and Fuel - 6.6L - [Link target (target-id 324174-) not found] |
| P216C | Engine Controls and Fuel - 6.6L - [Link target (target-id 324174-) not found] |
| P216E | Engine Controls and Fuel - 6.6L - [Link target (target-id 324174-) not found] |
| P216F | Engine Controls and Fuel - 6.6L - [Link target (target-id 324174-) not found] |
| P2176 | Engine Controls and Fuel - 6.6L - [Link target (target-id 227727-) not found] |
| P217B | Engine Controls and Fuel - 6.6L - [Link target (target-id 324174-) not found] |
| P217C | Engine Controls and Fuel - 6.6L - [Link target (target-id 324174-) not found] |

| DTC | Diagnostic Procedure |
|---|---|
| P217E | Engine Controls and Fuel - 6.6L - [Link target (target-id 324174-) not found] |
| P217F | Engine Controls and Fuel - 6.6L - [Link target (target-id 324174-) not found] |
| P2199 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 188060-) not found] |
| P219A | Engine Controls and Fuel - 6.6L - [Link target (target-id 227966-) not found] |
| P219B | Engine Controls and Fuel - 6.6L - [Link target (target-id 227966-) not found] |
| P2227 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 283923-) not found] |
| P2228 | Engine Controls and Fuel - 6.6L - [Link target (target-id 333002-) not found] |
| P2228 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 283923-) not found] |
| P2229 | Engine Controls and Fuel - 6.6L - [Link target (target-id 333002-) not found] |
| P2229 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 283923-) not found] |
| P222A | Engine Controls and Fuel - 6.6L - [Link target (target-id 333002-) not found] |
| P222A | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 283923-) not found] |
| P222B | Engine Controls and Fuel - 6.6L - [Link target (target-id 333002-) not found] |
| P222B | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 283923-) not found] |
| P222C | Engine Controls and Fuel - 6.6L - [Link target (target-id 333002-) not found] |
| P222C | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 283923-) not found] |
| P222D | Engine Controls and Fuel - 6.6L - [Link target (target-id 333002-) not found] |
| P222D | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 283923-) not found] |
| P222E | Engine Controls and Fuel - 6.6L - [Link target (target-id 333002-) not found] |
| P222E | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 283923-) not found] |
| P222F | Engine Controls and Fuel - 6.6L - [Link target (target-id 333002-) not found] |
| P222F | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 283923-) not found] |
| P2230 | Engine Controls and Fuel - 6.6L - [Link target (target-id 333002-) not found] |
| P2230 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 283923-) not found] |
| P2264 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 348344-) not found] |
| P2269 | Engine Controls and Fuel - 6.6L - [Link target (target-id 333292-) not found] |
| P2269 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 348344-) not found] |
| P2270 | Engine Controls and Fuel - 6.6L - [Link target (target-id 299054-) not found] |
| P2271 | Engine Controls and Fuel - 6.6L - [Link target (target-id 299054-) not found] |
| P2272 | Engine Controls and Fuel - 6.6L - [Link target (target-id 299054-) not found] |
| P2273 | Engine Controls and Fuel - 6.6L - [Link target (target-id 299054-) not found] |
| P227B | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 283924-) not found] |
| P227C | Engine Controls and Fuel - 6.6L - [Link target (target-id 333002-) not found] |
| P227C | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 283924-) not found] |
| P227D | Engine Controls and Fuel - 6.6L - [Link target (target-id 333002-) not found] |
| P227D | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 283924-) not found] |
| P227E | Engine Controls and Fuel - 6.6L - [Link target (target-id 333002-) not found] |
| P227E | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 283924-) not found] |
| P228A | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 348339-) not found] |
| P228B | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 348339-) not found] |
| P228C | Engine Controls and Fuel - 6.6L - [Link target (target-id 297085-) not found] |
| P228C | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 348339-) not found] |

| DTC | Diagnostic Procedure |
|---|---|
| P228D | Engine Controls and Fuel - 6.6L - [Link target (target-id 297085-) not found] |
| P228D | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 348339-) not found] |
| P2293 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 348339-) not found] |
| P2294 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 348346-) not found] |
| P2295 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 348346-) not found] |
| P2296 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 348346-) not found] |
| P2300 | Engine Controls and Fuel - 6.6L - [Link target (target-id 254362-) not found] |
| P2301 | Engine Controls and Fuel - 6.6L - [Link target (target-id 254362-) not found] |
| P2303 | Engine Controls and Fuel - 6.6L - [Link target (target-id 254362-) not found] |
| P2304 | Engine Controls and Fuel - 6.6L - [Link target (target-id 254362-) not found] |
| P2306 | Engine Controls and Fuel - 6.6L - [Link target (target-id 254362-) not found] |
| P2307 | Engine Controls and Fuel - 6.6L - [Link target (target-id 254362-) not found] |
| P2309 | Engine Controls and Fuel - 6.6L - [Link target (target-id 254362-) not found] |
| P2310 | Engine Controls and Fuel - 6.6L - [Link target (target-id 254362-) not found] |
| P2312 | Engine Controls and Fuel - 6.6L - [Link target (target-id 254362-) not found] |
| P2313 | Engine Controls and Fuel - 6.6L - [Link target (target-id 254362-) not found] |
| P2315 | Engine Controls and Fuel - 6.6L - [Link target (target-id 254362-) not found] |
| P2316 | Engine Controls and Fuel - 6.6L - [Link target (target-id 254362-) not found] |
| P2318 | Engine Controls and Fuel - 6.6L - [Link target (target-id 254362-) not found] |
| P2319 | Engine Controls and Fuel - 6.6L - [Link target (target-id 254362-) not found] |
| P2321 | Engine Controls and Fuel - 6.6L - [Link target (target-id 254362-) not found] |
| P2322 | Engine Controls and Fuel - 6.6L - [Link target (target-id 254362-) not found] |
| P233E | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 348346-) not found] |
| P233F | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 348346-) not found] |
| P24D6 | Engine Controls and Fuel - 6.6L - [Link target (target-id 349584-) not found] |
| P24D7 | Engine Controls and Fuel - 6.6L - [Link target (target-id 349584-) not found] |
| P24D8 | Engine Controls and Fuel - 6.6L - [Link target (target-id 349584-) not found] |
| P250A | Displays and Gauges - [Link target (target-id 211596-) not found] |
| P251A | Power Take-Off - [Link target (target-id 265885-) not found] |
| P251E | Power Take-Off - [Link target (target-id 265886-) not found] |
| P251F | Power Take-Off - [Link target (target-id 265886-) not found] |
| P2534 | Wiring Systems and Power Management - [Link target (target-id 221459-) not found] |
| P2535 | Wiring Systems and Power Management - [Link target (target-id 221459-) not found] |
| P2544 | Engine Controls and Fuel - 6.6L - [Link target (target-id 316955-) not found] |
| P2544 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 348714-) not found] |
| P2561 | Engine Controls and Fuel - 6.6L - [Link target (target-id 276019-) not found] |
| P2561 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 306778-) not found] |
| P257D | Vehicle Access - [Link target (target-id 208940-) not found] |
| P257E | Vehicle Access - [Link target (target-id 208940-) not found] |
| P257F | Vehicle Access - [Link target (target-id 208940-) not found] |
| P258E | Power Take-Off - [Link target (target-id 265885-) not found] |
| P2599 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 333291-) not found] |

| DTC | Diagnostic Procedure |
|---|---|
| P25A2 | Engine Controls and Fuel - 6.6L - [Link target (target-id 276019-) not found] |
| P25A2 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 306778-) not found] |
| P25AF | Engine Controls and Fuel - 6.6L - [Link target (target-id 276019-) not found] |
| P25AF | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 306778-) not found] |
| P25BD | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 257241-) not found] |
| P25C6 | Hydraulic Brakes - [Link target (target-id 272270-) not found] |
| P25C7 | Hydraulic Brakes - [Link target (target-id 272270-) not found] |
| P25C9 | Engine Controls and Fuel - 6.6L - [Link target (target-id 276019-) not found] |
| P25C9 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 306778-) not found] |
| P260A | Power Take-Off - [Link target (target-id 164889-) not found] |
| P260B | Power Take-Off - [Link target (target-id 164889-) not found] |
| P260C | Power Take-Off - [Link target (target-id 164889-) not found] |
| P2610 | Engine Controls and Fuel - 6.6L - [Link target (target-id 324290-) not found] |
| P2610 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 324077-) not found] |
| P262B | Engine Controls and Fuel - 6.6L - [Link target (target-id 324290-) not found] |
| P262B | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 324077-) not found] |
| P262B | Data Communications - [Link target (target-id 272300-) not found] |
| P2632 | Engine Controls and Fuel - 6.6L - [Link target (target-id 228061-) not found] |
| P2632 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 203923-) not found] |
| P2633 | Engine Controls and Fuel - 6.6L - [Link target (target-id 228061-) not found] |
| P2633 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 203923-) not found] |
| P2634 | Engine Controls and Fuel - 6.6L - [Link target (target-id 228061-) not found] |
| P2634 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 203923-) not found] |
| P264F | Engine Controls and Fuel - 6.6L - [Link target (target-id 324290-) not found] |
| P264F | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 324077-) not found] |
| P2670 | Automatic Transmission - 10L1000 - [Link target (target-id 315243-) not found] |
| P2671 | Automatic Transmission - 10L1000 - [Link target (target-id 315243-) not found] |
| P2687 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 278998-) not found] |
| P2688 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 278998-) not found] |
| P2689 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 278998-) not found] |
| P268C | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 186747-) not found] |
| P268D | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 186747-) not found] |
| P268E | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 186747-) not found] |
| P268F | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 186747-) not found] |
| P2690 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 186747-) not found] |
| P2691 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 186747-) not found] |
| P2692 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 186747-) not found] |
| P2693 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 186747-) not found] |
| P26C8 | Engine Controls and Fuel - 6.6L - [Link target (target-id 276019-) not found] |
| P26C8 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 306778-) not found] |
| P26C9 | Engine Controls and Fuel - 6.6L - [Link target (target-id 276019-) not found] |
| P26C9 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 306778-) not found] |

| DTC | Diagnostic Procedure |
|---|---|
| P26FA | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 349325-) not found] |
| P2714 | Automatic Transmission - 10L1000 - [Link target (target-id 315042-) not found] |
| P2715 | Automatic Transmission - 10L1000 - [Link target (target-id 315042-) not found] |
| P2718 | Automatic Transmission - 10L1000 - [Link target (target-id 315011-) not found] |
| P2720 | Automatic Transmission - 10L1000 - [Link target (target-id 315011-) not found] |
| P2721 | Automatic Transmission - 10L1000 - [Link target (target-id 315011-) not found] |
| P2723 | Automatic Transmission - 10L1000 - [Link target (target-id 315233-) not found] |
| P2724 | Automatic Transmission - 10L1000 - [Link target (target-id 315233-) not found] |
| P2727 | Automatic Transmission - 10L1000 - [Link target (target-id 315075-) not found] |
| P2729 | Automatic Transmission - 10L1000 - [Link target (target-id 315075-) not found] |
| P2730 | Automatic Transmission - 10L1000 - [Link target (target-id 315075-) not found] |
| P2732 | Automatic Transmission - 10L1000 - [Link target (target-id 315065-) not found] |
| P2733 | Automatic Transmission - 10L1000 - [Link target (target-id 315065-) not found] |
| P2736 | Automatic Transmission - 10L1000 - [Link target (target-id 315066-) not found] |
| P2738 | Automatic Transmission - 10L1000 - [Link target (target-id 315066-) not found] |
| P2739 | Automatic Transmission - 10L1000 - [Link target (target-id 315066-) not found] |
| P279A | Transfer Case - MP 1625/1626 - [Link target (target-id 302593-) not found] |
| P279A | Transfer Case - MP 3023/3024 - [Link target (target-id 302595-) not found] |
| P279B | Transfer Case - MP 1625/1626 - [Link target (target-id 302593-) not found] |
| P279B | Transfer Case - MP 3023/3024 - [Link target (target-id 302595-) not found] |
| P279C | Transfer Case - MP 1625/1626 - [Link target (target-id 302593-) not found] |
| P279C | Transfer Case - MP 3023/3024 - [Link target (target-id 302595-) not found] |
| P27A7 | Automatic Transmission - 10L1000 - [Link target (target-id 315008-) not found] |
| P27A8 | Automatic Transmission - 10L1000 - [Link target (target-id 315008-) not found] |
| P27A9 | Automatic Transmission - 10L1000 - [Link target (target-id 315008-) not found] |
| P27AA | Automatic Transmission - 10L1000 - [Link target (target-id 315008-) not found] |
| P27AB | Automatic Transmission - 10L1000 - [Link target (target-id 315008-) not found] |
| P27AC | Automatic Transmission - 10L1000 - [Link target (target-id 315008-) not found] |
| P27AD | Automatic Transmission - 10L1000 - [Link target (target-id 315008-) not found] |
| P27AE | Automatic Transmission - 10L1000 - [Link target (target-id 315008-) not found] |
| P27B5 | Engine Controls and Fuel - 6.6L - [Link target (target-id 324290-) not found] |
| P27B5 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 324077-) not found] |
| P2802 | Automatic Transmission - 10L1000 - [Link target (target-id 315244-) not found] |
| P2803 | Automatic Transmission - 10L1000 - [Link target (target-id 315244-) not found] |
| P2805 | Automatic Transmission - 10L1000 - [Link target (target-id 315244-) not found] |
| P2812 | Automatic Transmission - 10L1000 - [Link target (target-id 315067-) not found] |
| P2814 | Automatic Transmission - 10L1000 - [Link target (target-id 315067-) not found] |
| P2815 | Automatic Transmission - 10L1000 - [Link target (target-id 315067-) not found] |
| P2817 | Automatic Transmission - 10L1000 - [Link target (target-id 315229-) not found] |
| P2818 | Automatic Transmission - 10L1000 - [Link target (target-id 315229-) not found] |
| P281B | Automatic Transmission - 10L1000 - [Link target (target-id 315235-) not found] |
| P281D | Automatic Transmission - 10L1000 - [Link target (target-id 315235-) not found] |

| DTC | Diagnostic Procedure |
|---|---|
| P281E | Automatic Transmission - 10L1000 - [Link target (target-id 315235-) not found] |
| P2820 | Automatic Transmission - 10L1000 - [Link target (target-id 314990-) not found] |
| P2824 | Automatic Transmission - 10L1000 - [Link target (target-id 319380-) not found] |
| P2826 | Automatic Transmission - 10L1000 - [Link target (target-id 319380-) not found] |
| P2827 | Automatic Transmission - 10L1000 - [Link target (target-id 319380-) not found] |
| P2957 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 349316-) not found] |
| P2958 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 333291-) not found] |
| P2B08 | Engine Controls and Fuel - 6.6L - [Link target (target-id 348558-) not found] |
| P2B09 | Engine Controls and Fuel - 6.6L - [Link target (target-id 348558-) not found] |
| P2B0A | Engine Controls and Fuel - 6.6L - [Link target (target-id 348558-) not found] |
| P2B0B | Engine Controls and Fuel - 6.6L - [Link target (target-id 348558-) not found] |
| P2B0C | Engine Controls and Fuel - 6.6L - [Link target (target-id 348558-) not found] |
| P2B0D | Engine Controls and Fuel - 6.6L - [Link target (target-id 348558-) not found] |
| P2B0E | Engine Controls and Fuel - 6.6L - [Link target (target-id 348558-) not found] |
| P2B0F | Engine Controls and Fuel - 6.6L - [Link target (target-id 348558-) not found] |
| P2B95 | Engine Controls and Fuel - 6.6L - [Link target (target-id 348558-) not found] |
| P2BA0 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 349325-) not found] |
| P2C1E | Engine Controls and Fuel - 6.6L - [Link target (target-id 297085-) not found] |
| P2C1F | Engine Controls and Fuel - 6.6L - [Link target (target-id 297085-) not found] |
| P2C1F | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 348339-) not found] |
| P2C20 | Engine Controls and Fuel - 6.6L - [Link target (target-id 297085-) not found] |
| P2C20 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 348339-) not found] |
| P2C48 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 349325-) not found] |
| P30D4 | Engine Controls and Fuel - 6.6L - [Link target (target-id 348558-) not found] |
| P30D6 | Engine Controls and Fuel - 6.6L - [Link target (target-id 324290-) not found] |
| P30D6 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 324077-) not found] |
| P30D6 | Data Communications - [Link target (target-id 272300-) not found] |
| P30D7 | Engine Controls and Fuel - 6.6L - [Link target (target-id 324290-) not found] |
| P30D7 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 324077-) not found] |
| P30D7 | Data Communications - [Link target (target-id 272300-) not found] |
| P30D8 | Engine Controls and Fuel - 6.6L - [Link target (target-id 324290-) not found] |
| P30D8 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 324077-) not found] |
| P30D8 | Data Communications - [Link target (target-id 272300-) not found] |
| P30D9 | Engine Controls and Fuel - 6.6L - [Link target (target-id 324290-) not found] |
| P30D9 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 324077-) not found] |
| P30D9 | Data Communications - [Link target (target-id 272300-) not found] |
| P30DA | Engine Controls and Fuel - 6.6L - [Link target (target-id 324290-) not found] |
| P30DA | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 324077-) not found] |
| P30DA | Data Communications - [Link target (target-id 272300-) not found] |
| P30DB | Engine Controls and Fuel - 6.6L - [Link target (target-id 324290-) not found] |
| P30DB | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 324077-) not found] |
| P30DB | Data Communications - [Link target (target-id 272300-) not found] |

| DTC | Diagnostic Procedure |
|---|---|
| P30DC | Engine Controls and Fuel - 6.6L - [Link target (target-id 324290-) not found] |
| P30DC | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 324077-) not found] |
| P30DC | Data Communications - [Link target (target-id 272300-) not found] |
| P30DD | Engine Controls and Fuel - 6.6L - [Link target (target-id 324290-) not found] |
| P30DD | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 324077-) not found] |
| P30DD | Data Communications - [Link target (target-id 272300-) not found] |
| P30DE | Engine Controls and Fuel - 6.6L - [Link target (target-id 316955-) not found] |
| P30DE | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 348714-) not found] |
| P314E | Engine Controls and Fuel - 6.6L - [Link target (target-id 316955-) not found] |
| P314E | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 348714-) not found] |
| P3186 | Engine Controls and Fuel - 6.6L - [Link target (target-id 324290-) not found] |
| P3186 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 324077-) not found] |
| P3186 | Data Communications - [Link target (target-id 272300-) not found] |
| P3187 | Engine Controls and Fuel - 6.6L - [Link target (target-id 327505-) not found] |
| P3187 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 348345-) not found] |
| P3188 | Engine Controls and Fuel - 6.6L - [Link target (target-id 327505-) not found] |
| P3188 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 348345-) not found] |
| P3191 | Engine Controls and Fuel - 6.6L - [Link target (target-id 324290-) not found] |
| P3191 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 324077-) not found] |
| P3196 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 349325-) not found] |
| P3198 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 349325-) not found] |
| P3199 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 349325-) not found] |
| P31ED | Power Take-Off - [Link target (target-id 359802-) not found] |
| P3261 | Engine Controls and Fuel - 6.6L - [Link target (target-id 321208-) not found] |
| P3261 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 320536-) not found] |
| P3262 | Engine Controls and Fuel - 6.6L - [Link target (target-id 321208-) not found] |
| P3262 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 320536-) not found] |
| P3263 | Engine Controls and Fuel - 6.6L - [Link target (target-id 321208-) not found] |
| P3263 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 320536-) not found] |
| U0073 | Data Communications - [Link target (target-id 148027-) not found] |
| U0074 | Data Communications - [Link target (target-id 168614-) not found] |
| U0075 | Data Communications - [Link target (target-id 219671-) not found] |
| U0076 | Data Communications - [Link target (target-id 225597-) not found] |
| U0077 | Data Communications - [Link target (target-id 206829-) not found] |
| U0079 | Data Communications - [Link target (target-id 313798-) not found] |
| U007B | Data Communications - [Link target (target-id 274046-) not found] |
| U007E | Data Communications - [Link target (target-id 277590-) not found] |
| U00C0 | Data Communications - [Link target (target-id 353509-) not found] |
| U0100-U02FF | Data Communications - [Link target (target-id 148031-) not found] |
| U010C | Data Communications - [Link target (target-id 354860-) not found] |
| U0212 | Data Communications - [Link target (target-id 329087-) not found] |
| U029D | Data Communications - [Link target (target-id 329021-) not found] |

| DTC | Diagnostic Procedure |
|---|---|
| U029E | Data Communications - [Link target (target-id 329022-) not found] |
| U02A3 | Data Communications - [Link target (target-id 329024-) not found] |
| U03C1 | Engine Controls and Fuel - 6.6L - [Link target (target-id 362305-) not found] |
| U03C1 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 355448-) not found] |
| U0400-U05FF | Data Communications - [Link target (target-id 179843-) not found] |
| U0600-U06FF | Data Communications - [Link target (target-id 276055-) not found] |
| U0606 | Engine Controls and Fuel - 6.6L - [Link target (target-id 332809-) not found] |
| U0607 | Engine Controls and Fuel - 6.6L - [Link target (target-id 332809-) not found] |
| U060F | Engine Controls and Fuel - 6.6L - [Link target (target-id 362305-) not found] |
| U060F | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 355448-) not found] |
| U0625 | Engine Controls and Fuel - 6.6L - [Link target (target-id 316948-) not found] |
| U062F | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 349325-) not found] |
| U0654 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 319639-) not found] |
| U1002 | Data Communications - [Link target (target-id 265917-) not found] |
| U1004 | Data Communications - [Link target (target-id 317042-) not found] |
| U1005 | Data Communications - [Link target (target-id 317043-) not found] |
| U1006 | Data Communications - [Link target (target-id 317044-) not found] |
| U1008 | Data Communications - [Link target (target-id 317046-) not found] |
| U1009 | Data Communications - [Link target (target-id 317047-) not found] |
| U1014 | Data Communications - [Link target (target-id 349501-) not found] |
| U101A | Data Communications - [Link target (target-id 317051-) not found] |
| U101B | Engine Controls and Fuel - 6.6L - [Link target (target-id 316948-) not found] |
| U1109 | Data Communications - [Link target (target-id 329043-) not found] |
| U110A | Data Communications - [Link target (target-id 329044-) not found] |
| U111B | Data Communications - [Link target (target-id 329051-) not found] |
| U1121 | Lighting - [Link target (target-id 366194-) not found] |
| U1121 | Data Communications - [Link target (target-id 329054-) not found] |
| U1122 | Data Communications - [Link target (target-id 329055-) not found] |
| U112D | Data Communications - [Link target (target-id 329059-) not found] |
| U1133 | Data Communications - [Link target (target-id 329064-) not found] |
| U113B | Data Communications - [Link target (target-id 329070-) not found] |
| U1145 | Data Communications - [Link target (target-id 329073-) not found] |
| U1146 | Data Communications - [Link target (target-id 329074-) not found] |
| U118A | Data Communications - [Link target (target-id 335269-) not found] |
| U11FD | Data Communications - [Link target (target-id 349284-) not found] |
| U1300-U1344 | Data Communications - [Link target (target-id 317053-) not found] |
| U1345-U1349 | Data Communications - [Link target (target-id 317756-) not found] |
| U134A-U14FF | Data Communications - [Link target (target-id 317053-) not found] |
| U1378 | Engine Controls and Fuel - 6.6L Diesel - [Link target (target-id 349325-) not found] |
| U1500-U15FF | Data Communications - [Link target (target-id 179844-) not found] |
| U1602 | Data Communications - [Link target (target-id 328899-) not found] |
| U1603 | Data Communications - [Link target (target-id 328900-) not found] |

| DTC | Diagnostic Procedure |
|---|---|
| U1604 | Data Communications - [Link target (target-id 317757-) not found] |
| U1605 | Data Communications - [Link target (target-id 317758-) not found] |
| U1607 | Data Communications - [Link target (target-id 328512-) not found] |
| U1608 | Data Communications - [Link target (target-id 328513-) not found] |
| U1609 | Data Communications - [Link target (target-id 328514-) not found] |
| U160B | Data Communications - [Link target (target-id 328516-) not found] |
| U160C | Data Communications - [Link target (target-id 328517-) not found] |
| U160F | Data Communications - [Link target (target-id 328518-) not found] |
| U1610 | Data Communications - [Link target (target-id 328519-) not found] |
| U1611 | Data Communications - [Link target (target-id 319395-) not found] |
| U1643 | Data Communications - [Link target (target-id 332932-) not found] |
| U164A | Data Communications - [Link target (target-id 332934-) not found] |
| U164B | Data Communications - [Link target (target-id 335271-) not found] |
| U164E | Data Communications - [Link target (target-id 332935-) not found] |
| U164F | Data Communications - [Link target (target-id 332936-) not found] |
| U1650 | Data Communications - [Link target (target-id 184700-) not found] |
| U1651 | Data Communications - [Link target (target-id 184702-) not found] |
| U166A | Data Communications - [Link target (target-id 332946-) not found] |
| U1818 | Data Communications - [Link target (target-id 168622-) not found] |
| U18A2 | Data Communications - [Link target (target-id 225598-) not found] |
| U18D5 | Data Communications - [Link target (target-id 301775-) not found] |
| U18D7 | Data Communications - [Link target (target-id 301776-) not found] |
| U18DC | Data Communications - [Link target (target-id 302552-) not found] |
| U1960-U1962 | Data Communications - [Link target (target-id 315363-) not found] |
| U1961 | Image Display Cameras - [Link target (target-id 364463-) not found] |
| U1967 | Cellular, Entertainment, and Navigation - [Link target (target-id 319002-) not found] |
| U1973 | Displays and Gauges - [Link target (target-id 309457-) not found] |
| U1977 | Data Communications - [Link target (target-id 317061-) not found] |
| U1978 | Data Communications - [Link target (target-id 317062-) not found] |
| U197B | Data Communications - [Link target (target-id 317065-) not found] |
| U197C | Data Communications - [Link target (target-id 317066-) not found] |
| U197D | Data Communications - [Link target (target-id 317067-) not found] |
| U197E | Displays and Gauges - [Link target (target-id 317153-) not found] |
| U197F | Displays and Gauges - [Link target (target-id 317154-) not found] |
| U1982-U1984 | Data Communications - [Link target (target-id 320510-) not found] |
| U198B | Data Communications - [Link target (target-id 349296-) not found] |
| U2000-U20FF | Data Communications - [Link target (target-id 317070-) not found] |
| U2110-U2117 | Data Communications - [Link target (target-id 317071-) not found] |
| U216A | Data Communications - [Link target (target-id 297676-) not found] |
| U2203 | Data Communications - [Link target (target-id 328595-) not found] |
| U2204 | Data Communications - [Link target (target-id 328622-) not found] |
| U2205 | Data Communications - [Link target (target-id 328623-) not found] |

| DTC | Diagnostic Procedure |
|---|---|
| U2209 | Data Communications - [Link target (target-id 328624-) not found] |
| U220C | Data Communications - [Link target (target-id 328626-) not found] |
| U220E | Data Communications - [Link target (target-id 328628-) not found] |
| U220F | Data Communications - [Link target (target-id 328629-) not found] |
| U2211 | Data Communications - [Link target (target-id 328630-) not found] |
| U2212 | Data Communications - [Link target (target-id 328631-) not found] |
| U2213 | Data Communications - [Link target (target-id 328632-) not found] |
| U221E | Data Communications - [Link target (target-id 349505-) not found] |
| U2413 | Data Communications - [Link target (target-id 301778-) not found] |
| U2418 | Data Communications - [Link target (target-id 328636-) not found] |
| U2419 | Data Communications - [Link target (target-id 328637-) not found] |
| U241C | Data Communications - [Link target (target-id 328638-) not found] |
| U241D | Data Communications - [Link target (target-id 328639-) not found] |
| U2A90 | Displays and Gauges - [Link target (target-id 322010-) not found] |
| U2A91 | Displays and Gauges - [Link target (target-id 322011-) not found] |
| U2AE6-U2AE9 | Power Take-Off - [Link target (target-id 359804-) not found] |
| U2C91 | Data Communications - [Link target (target-id 349297-) not found] |
| U3000 | Displays and Gauges - [Link target (target-id 324190-) not found] |
| U3000 | Image Display Cameras - [Link target (target-id 327503-) not found] |
| U3000 | Data Communications - [Link target (target-id 229188-) not found] |
| U3000 | Driver Assistance Systems - [Link target (target-id 317614-) not found] |
| U3000 | Parking Assistance Systems - [Link target (target-id 320659-) not found] |
| U3000 | Power Seats - [Link target (target-id 352062-) not found] |
| U3000 | Power Steering - [Link target (target-id 317740-) not found] |
| U3002 | Antilock Brake System - [Link target (target-id 309495-) not found] |
| U3002 | Data Communications - [Link target (target-id 280674-) not found] |
| U3003 | Starting, Charging, and Low Voltage Energy Storage - [Link target (target-id 205272-) not found] |
| U3006-U3009 | Starting, Charging, and Low Voltage Energy Storage - [Link target (target-id 311937-) not found] |
| U300D | Wiring Systems and Power Management - [Link target (target-id 319488-) not found] |
| U3012 | Data Communications - [Link target (target-id 266129-) not found] |
| U3018 | Starting, Charging, and Low Voltage Energy Storage - [Link target (target-id 297157-) not found] |
| U3019 | Starting, Charging, and Low Voltage Energy Storage - [Link target (target-id 297157-) not found] |
| U301A-U301C | Data Communications - [Link target (target-id 349521-) not found] |
| U3023 | Starting, Charging, and Low Voltage Energy Storage - [Link target (target-id 327359-) not found] |
| U3034 | Data Communications - [Link target (target-id 315363-) not found] |
| U3035 | Data Communications - [Link target (target-id 315363-) not found] |
| U3501-U3588 | Starting, Charging, and Low Voltage Energy Storage - [Link target (target-id 297157-) not found] |
| U35B9 | Data Communications - [Link target (target-id 332964-) not found] |

## Symptom Byte List

### Symptom Byte List

| Symptom Byte | Symptom Byte Description | Symptom Byte Definition |
|---|---|---|
| 00 | No Sub Type Information | This sub type is used for failures where the base DTC text string provides the complete description of the failure itself. |
| 01 | General Electrical Failure | This sub type is used for General Electrical Failures that cannot be assigned to a specific sub type. |
| 02 | General Signal Failure | This sub type is used for General Signal Failures that cannot be assigned to a specific sub type. |
| 03 | FM (Frequency Modulated) / PWM (Pulse Width Modulated) Failure | This sub type is used for FM / PWM Failures that cannot be assigned to a specific sub type. |
| 04 | System Internal Failure | This sub type is used for control module Internal Failures that cannot be assigned to a specific sub type. |
| 05 | System Programming Failure | This sub type is used for System Programming Failures that cannot be assigned to a specific sub type. |
| 06 | Algorithm Based Failure | This sub type is used for Algorithm Based Failures that cannot be assigned to a specific sub type. |
| 07 | Mechanical Failure | This sub type is used for Mechanical Failures that cannot be assigned to a specific sub type. |
| 08 | Bus Signal / Message Failure | This sub type is used for Bus Signal / Message Failures that cannot be assigned to a specific sub type. |
| 09 | Component Failure | This sub type is used for Component Failures that cannot be assigned to a specific sub type. |
| 0A | General Electric Failures — 2 | This range specifies the standard wiring failure modes (i.e., shorts and opens), and direct current (DC) quantities related by Ohm's Law. |
| 0B | Reserved | — |
| 0C | Reserved | — |
| 0D | Reserved | — |
| 0E | Reserved | — |
| 0F | Reserved | — |
| 10 | Reserved | — |
| 11 | Circuit Short To Ground | This sub type is used for failures where the control module measures ground (battery negative) potential for greater than a specified time period or when some other value less than the low voltage limit DTC Sub Type is measured. |
| 12 | Circuit Short To Battery | This sub type is used for failures, where the control module measures vehicle system (battery positive) potential for greater than a specified time period or when some other value higher than the high voltage limit DTC Sub Type is measured. |
| 13 | Circuit Open | This sub type is used for failures, where the control module determines an open circuit via lack of bias voltage, low current flow, no change in the state of an input in response to an output, etc. |
| 14 | Circuit Short To Ground or Open | This sub type is used for failures, where the condition detected by the control module is the same for either indicated failure mode. |
| 15 | Circuit Short To Battery or Open | This sub type is used for failures, where the condition detected by the control module is the same for either indicated failure mode. |
| 16 | Circuit Voltage Below Threshold | This sub type is used for failures, where the control module measures a voltage below a specified range. |
| 17 | Circuit Voltage Above Threshold | This sub type is used for failures, where the control module measures a voltage above a specified range. |

| Symptom Byte | Symptom Byte Description | Symptom Byte Definition |
|---|---|---|
| 18 | Circuit Current Below Threshold | This sub type is used for failures, where the control module measures current flow below a specified range. |
| 19 | Circuit Current Above Threshold | This sub type is used for failures, where the control module measures current flow above a specified range. |
| 1A | Circuit Resistance Below Threshold | This sub type is used for failures, where the control module infers a circuit resistance below a specified range. |
| 1B | Circuit Resistance Above Threshold | This sub type is used for failures, where the control module infers a circuit resistance above a specified range. |
| 1C | Circuit Voltage Out of Range | This sub type is used for failures, where the control module measures a voltage outside the expected range but not identified as too high or too low. |
| 1D | Circuit Current Out of Range | This sub type is used for failures, where the control module measures a current outside the expected range but not identified as too high or too low. |
| 1E | Circuit Resistance Out of Range | This sub type is used for failures, where the control module measures a resistance outside the expected range but not identified as too high or too low. |
| 1F | Circuit Intermittent | This sub type is used for failures, where the control module momentarily detects one of the conditions defined above, but not long enough to set a specific sub type. |
| 20 | Reserved | — |
| 21 | Signal Amplitude < Minimum | This sub type is used for failures where the control module measures a signal voltage amplitude below a specified range (e.g., low gain). |
| 22 | Signal Amplitude > Maximum | This sub type is used for failures where the control module measures a signal voltage amplitude above a specified range (e.g., gain too high). |
| 23 | Signal Stuck Low | This sub type is used for failures where the control module measures a signal that remains low when transitions are expected. |
| 24 | Signal Stuck High | This sub type is used for failures where the control module measures a signal that remains high when transitions are expected. |
| 25 | Signal Shape / Waveform Failure | This sub type is used for failures where the shape of the signal (plot of the amplitude with respect to time) is not correct, e.g., improper circuit impedance. |
| 26 | Signal Rate of Change Below Threshold | This sub type is used for failures where the signal transitions more slowly than the specified limit. |
| 27 | Signal Rate of Change Above Threshold | This sub type is used for failures where the signal transitions more quickly than the specified limit. |
| 28 | Signal Bias Level Out of Range / Zero Adjustment Failure | This sub type is used for failures where the control module applies a bias voltage or a zero signal level to a circuit upon which is superimposed a signal voltage (e.g., bias voltage to an Oxygen Sensor circuit, or a filtered digital m/sec2 signal while vehicle stands still for a lateral accelerator sensor module.) |
| 29 | Signal Invalid | This sub type is used for failures where the value of the signal is not plausible given the operating conditions. |
| 2A | Signal Stuck In Range | This sub type is used for failures where the value of the signal is in the normal operating range, but not correct for current operating conditions. |
| 2B | Signal Cross Coupled | This sub type is used when a signal is found to be incorrectly correlated to another signal that the control module is also monitoring, indicating that the signals are shorted together |
| 2C | Reserved | — |
| 2D | Reserved | — |
| 2E | Reserved | — |

| Symptom Byte | Symptom Byte Description | Symptom Byte Definition |
|---|---|---|
| 2F | Signal Erratic | This sub type is used for failures where the signal is momentarily implausible (not long enough for "signal invalid") or discontinuous. |
| 30 | Reserved | — |
| 31 | No Signal | This sub type is used for failures where the control module does not detect a signal which ought to be present (e.g., wheel speed signals present for three of the four wheels and brakes not applied.) |
| 32 | Signal Low Time < Minimum | This sub type is used for failures where the control module detects the low pulse is too narrow with respect to time. |
| 33 | Signal Low Time > Maximum | This sub type is used for failures where the control module detects the low pulse is too wide with respect to time. |
| 34 | Signal High Time < Minimum | This sub type is used for failures where the control module detects the high pulse is too narrow with respect to time. |
| 35 | Signal High Time > Maximum | This sub type is used for failures where the control module detects the high pulse is too wide with respect to time. |
| 36 | Signal Frequency Too Low | This sub type is used for failures where the control module detects excessive duration for one cycle of the output across a specified sample size. |
| 37 | Signal Frequency Too High | This sub type is used for failures where the control module detects insufficient duration for one cycle of the output across a specified sample size. |
| 38 | Signal Frequency Incorrect | This sub type is used for failures where the control module measures an incorrect number of cycles in a given time period. |
| 39 | Signal Has Too Few Pulses | This sub type is used for failures where the control module measures too few pulses (e.g., position is calibrated in counts from one extreme to the other). |
| 3A | Signal Has Too Many Pulses | This sub type is used for failures where the control module measures too many pulses (e.g., position is calibrated in counts from one extreme to the other). |
| 3B | Reserved | — |
| 3C | Reserved | — |
| 3D | Reserved | — |
| 3E | Reserved | — |
| 3F | Reserved | — |
| 40 | Reserved | — |
| 41 | General Checksum Failure | This sub type is used by the control module to indicate an incorrect checksum calculation where memory type is not specified. |
| 42 | General Memory Failure | This sub type is used by the control module to indicate a memory failure where memory type is not specified. |
| 43 | Special Memory Failure | This sub type is used by the control module to indicate a memory failure where the specific memory type is not defined in this category. |
| 44 | Data Memory Failure | This sub type is used by the control module to indicate a data (or working) memory failure for embedded systems using FLASH memory. This is equivalent to RAM in RAM/ROM/EEPROM embedded systems. |
| 45 | Program Memory Failure | This sub type is used by the control module to indicate a program memory failure for embedded systems using FLASH memory. This is equivalent to ROM in RAM/ROM/EEPROM embedded systems. |
| 46 | Calibration / Parameter Memory Failure | This sub type is used by the control module to indicate a calibration / parameter memory failure for embedded systems using FLASH memory. This is equivalent to EEPROM in RAM/ROM/EEPROM embedded systems. |

| Symptom Byte | Symptom Byte Description | Symptom Byte Definition |
|---|---|---|
| 47 | Watchdog / Safety μC Failure | This sub type is used by the control module to indicate a watchdog / safety μC failure, or a failure in the execution of operational software. |
| 48 | Supervision Software Failure | This sub type is used by the control module to indicate a supervision software failure. |
| 49 | Internal Electronic Failure | This sub type is used by the control module to indicate the detection of an internal circuit failure. |
| 4A | Incorrect Component Installed | This sub type is used by the control module to indicate a mismatch between the hardware connected to the control module and the hardware expected by the control module. |
| 4B | Over Temperature | This sub type is used by the control module to indicate the detection of an internal temperature above the expected range. |
| 4C | Reserved | — |
| 4D | Reserved | — |
| 4E | Reserved | — |
| 4F | Reserved | — |
| 50 | Reserved | — |
| 51 | Not Programmed | This sub type is used by the control module to indicate that programming is required. |
| 52 | Not Activated | This sub type is used by the control module to indicate that some portion of the program has not been enabled. |
| 53 | Deactivated | This sub type is used by the control module to indicate that that some portion of the program has been disabled. |
| 54 | Missing Setup/Learn | This sub type is used by the control module to indicate that an operational range, etc., for a sensor or actuator must be taught to the control module, e.g. by programming or learning. |
| 55 | Not Configured | This sub type is used by the control module to indicate the need to enter (program) the sub system option content or the vehicle option content. |
| 56 | Invalid / Incompatible Configuration | This sub type indicates a control module or system configuration that cannot be valid, e.g. to have mutually exclusive options set on at the same time, or a set up that is not supported by the currently installed hardware/software. |
| 57 | Invalid / Incompatible Software Component | This sub type is used by the control module to indicate that a software component (calibration or program) has been identified as invalid for the control module or incompatible with other hardware or software identified by the control module, e.g. a downloaded calibration software component is incompatible with a permanent or downloaded strategy software component. |
| 58 | Reserved | — |
| 59 | Reserved | — |
| 5A | Reserved | — |
| 5B | Reserved | — |
| 5C | Reserved | — |
| 5D | Reserved | — |
| 5E | Reserved | — |
| 5F | Reserved | — |
| 60 | Reserved | — |
| 61 | Signal Calculation Failure | This sub type is used for algorithm based calculation failures where the calculated value is outside the expected range. |
| 62 | Signal Compare Failure | This sub type is used for failures where the control module compares two or more input parameters for plausibility but cannot specifically identify the component that is faulted. |

| Symptom Byte | Symptom Byte Description | Symptom Byte Definition |
|---|---|---|
| 63 | Circuit / Component Protection Time-Out | This sub type is used for failures where the control module detects a function is active for greater than a specified time period. |
| 64 | Signal Plausibility Failure | This sub type is used for failures where the control module detects a single input parameter is operating outside the plausible range. |
| 65 | Signal Has Too Few Transitions / Events | This sub type is used for failures where the control module monitors a parameter over time within specified limits and detects fewer than the expected number of transitions. |
| 66 | Signal Has Too Many Transitions / Events | This sub type is used for failures where the control module monitors a parameter over time within specified limits and detects more than the expected number of transitions. |
| 67 | Signal Incorrect After Event | This sub type is used for failures where the control module does not see the correct change of a parameter or group of parameters in response to a particular event. |
| 68 | Event Information | This sub type is used by the control module to indicate the detection of a system event that was not caused by the control module itself but forces the control module to store a DTC (e.g. missing functionality from another system/control module). |
| 69 | Reserved | — |
| 6A | Reserved | — |
| 6B | Reserved | — |
| 6C | Reserved | — |
| 6D | Reserved | — |
| 6E | Reserved | — |
| 6F | Reserved | — |
| 70 | Reserved | — |
| 71 | Actuator Stuck | This sub type is used for failures where the control module does not detect any mechanical motion in response to energizing a motor, solenoid, relay, etc. |
| 72 | Actuator Stuck Open | This sub type is used for failures where the control module does not detect any mechanical motion upon commanding the operation of a motor, solenoid, relay, etc., to close some piece of equipment. |
| 73 | Actuator Stuck Closed | This sub type is used for failures where the control module does not detect any mechanical motion upon commanding the operation of a motor, solenoid, relay, etc., to open some piece of equipment. |
| 74 | Actuator Slipping | This sub type is used for failures where the control module detects excessive duration to command a motor, solenoid, relay, etc., to move a piece of equipment to a desired position. |
| 75 | Emergency Position Not Reachable | This sub type is used for failures where the control module is unable to command a motor, solenoid, relay, etc., to move a piece of equipment to the emergency position. |
| 76 | Wrong Mounting Position | This sub type is used for failures where the control module detects incorrectly mounted components, e.g., acceleration sensor showing a position error of 90°. |
| 77 | Commanded Position Not Reachable | This sub type is used for failures where the control module is unable to command a motor, solenoid, relay, etc., to move a piece of equipment to the commanded position either due to a failure in the actuator or its mechanical environment. |
| 78 | Alignment or Adjustment Incorrect | This sub type is used for failures where the control module detects incorrectly adjusted or aligned components. |
| 79 | Mechanical Linkage Failure | This sub type is used for failures where the control module detects that the actuator is operational but the driven device is not operating, e.g., drive cable for power sliding door broken. |

| Symptom Byte | Symptom Byte Description | Symptom Byte Definition |
|---|---|---|
| 7A | Fluid Leak or Seal Failure | This sub type is used for failures where the control module detects that a mechanical component has an unexpected gas or liquid flow in, out, or through the component. |
| 7B | Low Fluid Level | This sub type is used for failures where the control module detects that a fluid level is too low for proper operation of the system. |
| 7C | Slow Response | This sub type is used where control module has detected a response that is longer than expected or a degraded rate of change in the monitored component or system. |
| 7D | Reserved | — |
| 7E | Actuator Stuck On | This sub type is used for failures where the control module detects the actuator mechanical function is fixed in the ON / applied state |
| 7F | Actuator Stuck Off | This sub type is used for failures where the control module detects the actuator mechanical function is fixed in the OFF / Released state. |
| 80 | Reserved | — |
| 81 | Invalid Serial Data Received | This sub type is used by the control module to indicate a signal was received with the corresponding validity bit equal to "invalid" or post processing of the signal determines it is invalid. |
| 82 | Alive / Sequence Counter Incorrect / Not Updated | This sub type is used by the control module to indicate that a signal was received without the corresponding rolling count value being properly updated. |
| 83 | Value of Signal Protection Calculation Incorrect | This sub type is used by the control module to indicate, that a message was processed with an incorrect protection (checksum) calculation. |
| 84 | Signal Below Allowable Range | This sub type is used for failures where some circuit quantity, reported via serial data, is below a specified range. |
| 85 | Signal Above Allowable Range | This sub type is used for failures where some circuit quantity, reported via serial data, is above a specified range. |
| 86 | Signal Invalid | This sub type is used for failures where some circuit quantity, reported via serial data, is not plausible given the operating conditions. |
| 87 | Missing Message | This sub type is used for failures where one (or more) expected message(s) is not received, e.g., periodic transmission where the repetition time is too high, or message not received as a result of unforeseen reset events of the concerning component (e.g. engine control unit communicating with ABS). |
| 88 | Bus off | This sub type is used for failures where a data bus is not available. |
| 89 | Data Transfer Failure | This subtype is for failures where an ECU requests a data transfer from an external source (off-board, on-board, or another ECU) and the data transfer initiates but fails to complete. |
| 8A | Reserved | — |
| 8B | Reserved | — |
| 8C | Reserved | — |
| 8D | Reserved | — |
| 8E | Reserved | — |
| 8F | Erratic | This sub type is used for failures where the signal, reported via serial data, is momentarily implausible or discontinuous. |
| 90 | Reserved | — |
| 91 | Parametric | This sub type is used for failures where the control module has detected that a component parameter (e.g., capacitance or inductance) is outside its expected range. |

| Symptom Byte | Symptom Byte Description | Symptom Byte Definition |
|---|---|---|
| 92 | Performance or Incorrect Operation | This sub type is used for failures where the control module has detected that the component performance is outside its expected range or operating in an incorrect way. |
| 93 | No Operation | This sub type is used for failures where the control module has detected that the component is not operating. |
| 94 | Unexpected Operation | This sub type is used for failures where the control module has detected that the component is operating in a way or at a time that it has not been commanded to operate. |
| 95 | Incorrect Assembly | This sub type is used for failures where the control module has detected that the component has been incorrectly installed (e.g., hydraulic pipes crossed over, circuits cross wired) or polarity errors. |
| 96 | Component Internal Failure | This sub type is used for failures where the control module has received an indication about the component that indicates a failure (e.g., an intelligent actuator or sensor) is indicating an internal fault. |
| 97 | Component or System Operation Obstructed or Blocked | This sub type is used for failures where the control module has detected that the operation of a component is prevented by an obstruction, e.g., advanced cruise system radar beam obstructed. |
| 98 | Component or System Over Temperature | This sub type is used for failures where the control module has detected that the temperature is too high for the correct operation of the component or system. |
| 99 | Exceeded Learning Limit | This sub type is used for failures where the control module has detected that the component or system has exceeded the expected range allowed for learning component tolerances. |
| 9A | Component or System Operating Conditions | This sub type is used for failures where the control module has detected that environmental or other operating conditions are either temporarily or permanently outside the design limits for correct operation such that all or part of a component function is inhibited or fails, e.g. a radio is disabled because its LCD display or its CD mechanism cannot operate at a low ambient temperature. |
| 9B | High/Excessive Flow | This sub type is used for failures where the control module has detected that the component or system is operating above the expected flow range flow, e.g. too much EGR at idle. |
| 9C | Low/Insufficient Flow | This sub type is used for failures where the control module has detected that the component or system is operating below the expected flow range flow, e.g. too little EGR at part throttle. |
| 9D | Component or System Under Temperature | This sub type is used for failures where the control module has detected that the temperature is too low for the correct operation of the component or system. |
| 9E | Stuck On | This sub type is used for failures where the control module detects the electrical circuit or switch is fixed in the ON / Applied state |
| 9F | Stuck Off | This sub type is used for failures where the control module detects the electrical circuit or switch is fixed in the OFF / Released state. |
| A0 | Reserved | — |
| A1 | System Voltage | This sub type is used for failures, where the control module system voltage is outside the expected range but not identified as too high or too low. |
| A2 | System Voltage Low | This sub type is used for failures where the control module system voltage is below a specified range. |
| A3 | System Voltage High | This sub type is used for failures where the control module system voltage is above a specified range. |
| A4 | Reserved | — |
| A5 | Reserved | — |

| Symptom Byte | Symptom Byte Description | Symptom Byte Definition |
|---|---|---|
| A6 | Reserved | — |
| A7 | Reserved | — |
| A8 | Reserved | — |
| A9 | Reserved | — |
| AA | Reserved | — |
| AB | Reserved | — |
| AC | Reserved | — |
| AD | Reserved | — |
| AE | Reserved | — |
| AF | Reserved | — |
| B0 | Reserved | — |
| B1 | Reserved | — |
| B2 | Reserved | — |
| B3 | Reserved | — |
| B4 | Reserved | — |
| B5 | Reserved | — |
| B6 | Reserved | — |
| B7 | Reserved | — |
| B8 | Reserved | — |
| B9 | Reserved | — |
| BA | Reserved | — |
| BB | Reserved | — |
| BC | Reserved | — |
| BD | Reserved | — |
| BE | Reserved | — |
| BF | Reserved | — |
| C0 | Reserved | — |
| C1 | Reserved | — |
| C2 | Reserved | — |
| C3 | Reserved | — |
| C4 | Reserved | — |
| C5 | Reserved | — |
| C6 | Reserved | — |
| C7 | Reserved | — |
| C8 | Reserved | — |
| C9 | Reserved | — |
| CA | Reserved | — |
| CB | Reserved | — |
| CC | Reserved | — |
| CD | Reserved | — |
| CE | Reserved | — |
| CF | Reserved | — |

| Symptom Byte | Symptom Byte Description | Symptom Byte Definition |
|---|---|---|
| D0 | Reserved | — |
| D1 | Reserved | — |
| D2 | Reserved | — |
| D3 | Reserved | — |
| D4 | Reserved | — |
| D5 | Reserved | — |
| D6 | Reserved | — |
| D7 | Reserved | — |
| D8 | Reserved | — |
| D9 | Reserved | — |
| DA | Reserved | — |
| DB | Reserved | — |
| DC | Reserved | — |
| DD | Reserved | — |
| DE | Reserved | — |
| DF | Reserved | — |
| E0 | Reserved | — |
| E1 | Reserved | — |
| E2 | Reserved | — |
| E3 | Reserved | — |
| E4 | Reserved | — |
| E5 | Reserved | — |
| E6 | Reserved | — |
| E7 | Reserved | — |
| E8 | Reserved | — |
| E9 | Reserved | — |
| EA | Reserved | — |
| EB | Reserved | — |
| EC | Reserved | — |
| ED | Reserved | — |
| EE | Reserved | — |
| EF | Reserved | — |
| F0 | Manufacturer Defined | This value is reserved for vehicle manufacturer/system supplier use. |
| F1 | Manufacturer Defined | This value is reserved for vehicle manufacturer/system supplier use. |
| F2 | Manufacturer Defined | This value is reserved for vehicle manufacturer/system supplier use. |
| F3 | Manufacturer Defined | This value is reserved for vehicle manufacturer/system supplier use. |
| F4 | Manufacturer Defined | This value is reserved for vehicle manufacturer/system supplier use. |
| F5 | Manufacturer Defined | This value is reserved for vehicle manufacturer/system supplier use. |

| Symptom Byte | Symptom Byte Description | Symptom Byte Definition |
|---|---|---|
| F6 | Manufacturer Defined | This value is reserved for vehicle manufacturer/system supplier use. |
| F7 | Manufacturer Defined | This value is reserved for vehicle manufacturer/system supplier use. |
| F8 | Manufacturer Defined | This value is reserved for vehicle manufacturer/system supplier use. |
| F9 | Manufacturer Defined | This value is reserved for vehicle manufacturer/system supplier use. |
| FA | Manufacturer Defined | This value is reserved for vehicle manufacturer/system supplier use. |
| FB | Manufacturer Defined | This value is reserved for vehicle manufacturer/system supplier use. |
| FC | Manufacturer Defined | This value is reserved for vehicle manufacturer/system supplier use. |
| FD | Manufacturer Defined | This value is reserved for vehicle manufacturer/system supplier use. |
| FE | Manufacturer Defined | This value is reserved for vehicle manufacturer/system supplier use. |
| FF | Manufacturer Defined | This value is reserved for vehicle manufacturer/system supplier use. |

## Symptoms - Vehicle

### Body Repair

- [Link target (target-id 266613-) not found]
- [Link target (target-id 263864-) not found]

### Body Systems

- [Link target (target-id 157990-) not found]
- [Link target (target-id 48522-) not found]
- [Link target (target-id 157988-) not found]
- [Link target (target-id 157992-) not found]
- [Link target (target-id 157994-) not found]
- [Link target (target-id 61936-) not found]

### Brakes

- [Link target (target-id 1496-) not found]
- [Link target (target-id 302729-) not found]
- [Link target (target-id 50306-) not found]
- [Link target (target-id 54639-) not found]

### Driveline/Axle

- [Link target (target-id 64694-) not found]
- [Link target (target-id 64690-) not found]
- [Link target (target-id 150354-) not found]
- [Link target (target-id 64697-) not found]

### Driver Information and Entertainment

- [Link target (target-id 149620-) not found]
- [Link target (target-id 47032-) not found]
- [Link target (target-id 158155-) not found]
- [Link target (target-id 284269-) not found]
- [Link target (target-id 158091-) not found]

### Engine

- [Link target (target-id 37791-) not found]
- [Link target (target-id 10846-) not found]
- [Link target (target-id 227894-) not found] – 6.6L (L8T) engine
- [Link target (target-id 186748-) not found] – 6.6L (L5P) Diesel engine
- [Link target (target-id 37429-) not found]
- [Link target (target-id 226061-) not found] – 6.6L (L8T) engine
- [Link target (target-id 203627-) not found] – 6.6L (L5P) Diesel engine
- [Link target (target-id 37994-) not found]

### General Information

[Link target (target-id 62604-) not found]

### HVAC

- [Link target (target-id 169242-) not found]
- [Link target (target-id 49126-) not found]
- [Link target (target-id 49993-) not found]

### Power and Signal Distribution

- [Link target (target-id 159675-) not found]
- [Link target (target-id 259572-) not found]
- [Link target (target-id 121150-) not found]
- [Link target (target-id 62211-) not found]

### Roof

[Link target (target-id 56634-) not found]

### Safety and Security

- [Link target (target-id 284270-) not found]
- [Link target (target-id 158595-) not found]
- [Link target (target-id 284271-) not found]
- [Link target (target-id 158156-) not found]
- [Link target (target-id 346599-) not found]
- [Link target (target-id 56800-) not found]
- [Link target (target-id 57885-) not found]
- [Link target (target-id 151732-) not found]

### Seats

- [Link target (target-id 160302-) not found]
- [Link target (target-id 160303-) not found]

### Steering

- [Link target (target-id 55202-) not found]
- [Link target (target-id 65643-) not found]

### Suspension

- [Link target (target-id 62585-) not found]
- [Link target (target-id 59474-) not found]

### Transmission/Transaxle

- [Link target (target-id 315006-) not found]
- [Link target (target-id 57472-) not found]
- [Link target (target-id 161458-) not found] – MP 1625/1626 (NQF) transfer case
- [Link target (target-id 161481-) not found] – MP 3023/3024 (NQH) transfer case

### Engine Does Not Crank

Refer to the appropriate diagnostic procedure below for the symptom observed.

- Starter Malfunction
- Engine Cranks Slowly

### Engine Cranks But Does Not Run

Refer to the appropriate diagnostic procedure below for the vehicle being serviced.

- [Link target (target-id 227835-) not found] – 6.6L (L8T) engine
- [Link target (target-id 186752-) not found] – 6.6L (L5P) Diesel engine

### Inspection/Maintenance System Check

Refer to the appropriate diagnostic procedure below for the vehicle being serviced.

- [Link target (target-id 228015-) not found] – 6.6L (L8T) engine
- [Link target (target-id 186892-) not found] – 6.6L (L5P) Diesel engine

### Diagnostic Repair Verification

**Note:** After a repair has been made, some DTCs require the ignition to be turned Off and then back On before the scan tool function will clear the DTC.

1. Ignition/Vehicle » Off
2. Install any components or connectors that have been removed or replaced during diagnosis.
3. Perform any adjustment, programming or setup procedures that are required when a component or module is removed or replaced.
4. Perform the following action:
   4.1. Ignition » On / Vehicle » In Service Mode
   4.2. Clear the DTCs.
   4.3. Ignition/Vehicle » Off
   4.4. Driver Door» Open& Close
   4.5. Wait for greater than 2 min. orInstrument Panel = Off
5. Perform the Circuit/System Verification and verify the result ends with an All OK — If available

   or

   If the repair was related to a DTC, duplicate the Conditions for Running the DTC and use the Freeze Frame/Failure Records, if applicable, in order to verify the DTC does not set. If the DTC sets or another DTC is present » Refer to: *Diagnostic Trouble Code (DTC) List - Vehicle 3-260*

   or

   If the repair was symptom related, duplicate the conditions under which the customer concern occurred to verify the repair. If the customer concern reoccurs or another symptom is present » Refer to: *Symptoms - Vehicle 3-318*

### Proactive Alerts List

This master list includes all applicable Proactive Alert Identifiers in alphanumeric order.

Proactive alert identifiers are stored in the K73 Telematics Communication Interface Module and can only be cleared using a scan tool.

**Note:** If the concern is still present after following the steps for Diagnostics in any of the Proactive Alert Identifiers, contact GM TAC for further assistance. The GM TAC Agent will arrange for the stuck Proactive Alert to be cleared from OnStar Back Office.

**Proactive Alerts List**

| Proactive Alert Service Message | Diagnostic Procedure |
|---|---|
| SAC001 | 12 V Starting and Charging- [Link target (target-id 276794-) not found] |
| SAC002 | 12 V Starting and Charging- [Link target (target-id 276795-) not found] |
| SAC003 | 12 V Starting and Charging- [Link target (target-id 276796-) not found] |
| SAC004 | 12 V Starting and Charging- [Link target (target-id 276797-) not found] |
| SAC005 | 12 V Starting and Charging- [Link target (target-id 276798-) not found] |

## Description and Operation

### Proactive Alerts Description and Operation

### Proactive Alert System Overview

**Note:** The customer must enroll their vehicle in this program through the OnStar website or with an OnStar advisor to receive Proactive Alerts. When the customer enrolls their vehicle, they select their notification preferences (email address, in-vehicle alert, and/or text message). They also identify their preferred service provider which is often the selling dealer.

This feature collects and stores specific system performance data each ignition cycle. The data is then transmitted via the cellular system (OnStar) when the On/Off Vehicle Switch has been in Run or Accessory power mode for ten minutes. The transmitted data is stored off-board the vehicle and analyzed by special algorithms to detect degraded performance. When monitored system performance degrades to predetermined levels, the off-board system sends a Proactive Alert identifier. The affected system is identified within the alert.

When a Proactive Alert is set, one or more of the following may occur:

- E-mail and/or text message is sent to the customer
- E-mail is sent to the preferred service provider (Customer Experience Manager at GM Dealers)
- A message is sent to the vehicle through the cellular system

When the vehicle receives the Proactive Alert identifier, it is stored in the Communication Interface Module. When stored, the Communication Interface Module may request a specific identifier to display on the radio and/or play an audio message. Each identifier is displayed and/or played one time only when the vehicle is started after the Alert has been set. If there is no performance improvement detected within seven days and then again at fourteen days, the system will send a reminder which contains the same identifier as the original.

When the collected data indicates component performance is normal again, no reminder alerts are sent and the system continues to monitor as before the active alert.

Proactive Alert identifiers stored in the Communication Interface Module will clear once the system is repaired. They can also be cleared using a scan tool, if desired. Ask the customer if they can produce the E-mail and check the date it was sent if you suspect that it is not active. If the customer is unable to provide the documentation, the Proactive Alert can be verified utilizing the scan tool: “Vehicle Diagnostics” >> “Vehicle Proactive Alerts”, or Service Workbench Alerts.

Note: The identifier will not be retained if the Communication Interface Module is replaced.

**Note:** If the concern is still present after following the steps for Diagnostics in any of the Proactive Alert Identifiers, contact GM TAC for further assistance. The GM TAC Agent will arrange for the stuck Proactive Alert to be cleared from OnStar Back Office.

### Power of Green Overview

**Note:** Power of Green is only available for vehicles that are enrolled in Proactive Alerts.

“Power of Green” utilizes available vehicle data collected through OnStar to establish a history of 12V battery health and determine a Battery Condition. The history is based on Battery voltage, current, and other prognostic-related data, which is collected onboard during every ignition cycle. The current Battery Condition can be accessed for enrolled vehicles via the Dashboard in Techline Connect (TLC). Battery Condition will include a timestamp (date/time) with the OnStar logo if valid.

Battery Condition will be one of the following four statuses:

**Green**

- “OnStar monitoring indicated good battery condition.”
- No fault detected internal to Battery
- It is unlikely that the Battery will require replacement at this time

**Red**

- “Battery replacement recommended.”
- SAC001 – Battery Low Cranking Capability Due to Shorted Cell
- Battery testing is NOT required, therefore a print out of the Warranty Code when the battery is replaced for SAC001 is not required.
- Follow SI procedure for Proactive Alert Identifier SAC001

**Yellow**

- “Starting and Charging proactive alerts detected. Please consult Service Information to diagnose the concern.”
- One of the following:
  - SAC002 – Low Cranking Capability Due to Battery High Resistance
  - SAC003 – Low Cranking Capability Due to Battery Low State of Charge
  - SAC004 – Low Cranking Capability Due to High Resistance in Starter System
  - SAC005 – Low Cranking Capability Due to High Resistance in Battery or Short in Starter System
- Follow SI procedure for appropriate Proactive Alert Identifier

**Grey**

- “Not enough data available to determine battery condition.”
- One of the following:
  - Vehicle is not enrolled in OnStar Proactive Alerts
  - Inability to contact the Power of Green data service
  - Insufficient recent ignition cycles to make a Red/Yellow/Green determination
- If a Battery issue is suspected, proceed to Battery Inspection/Test

Updated Battery Condition data may be obtained by selecting “Refresh” button next to the timestamp.

Note: Since the Green status is dependent on a history of battery health, the Battery Condition may not update immediately and turn Green if the battery is replaced.

While the vehicle is being serviced, the Battery Condition may change from Green depending on Service actions (e.g. if battery is disconnected or becomes discharged, status may change).

# Section 4

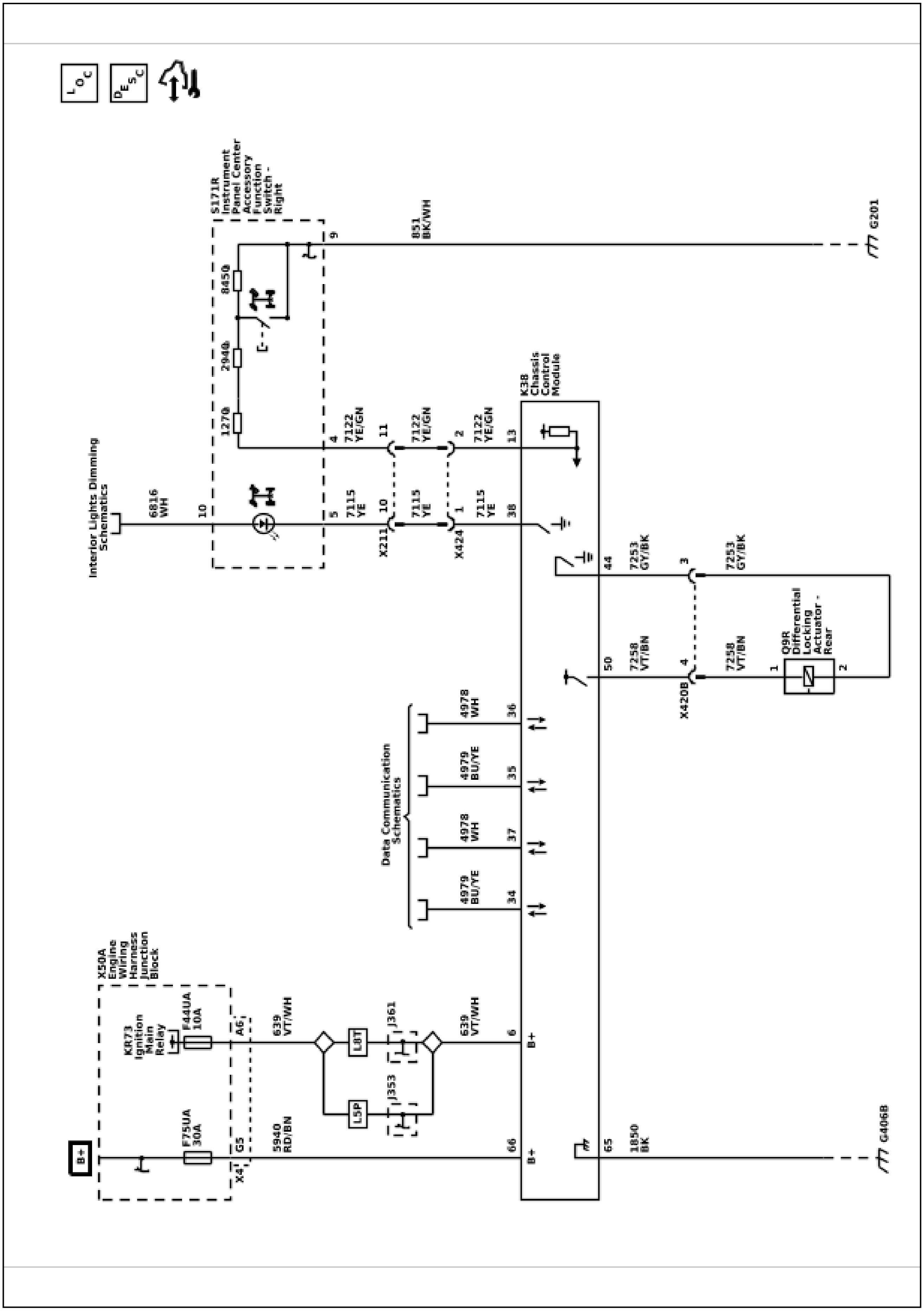
# Driveline/Axle

# Driveline/Axle

## Rear Drive Axle

### Schematic and Routing Diagrams

## Rear Axle Schematics (Locking Differential (G94))



# Description and Operation

## Locking Differential Description and Operation

The locking differential consists of the following components:

- Differential case – 1 or 2 piece
- Locking differential spider – 2 piece case only
- Pinion gear shaft – 1 piece case only
- Differential pinion gear shaft lock bolt – 1 piece case only
- Two clutch discs sets
- Locking differential side gear
- Thrust block
- Locking differential clutch disc guides
- Differential side gear shim
- Locking differential clutch disc thrust washer
- Locking differential governor
- Latching bracket
- Cam plate assembly
- Differential pinion gears
- Differential pinion gear thrust washers

The optional locking differential (RPO G80) enhances the traction capability of the rear axle by combining the characteristics of a limited-slip differential and the ability of the axle shafts to “lock” together when uneven traction surfaces exist. The differential accomplishes this in 2 ways. First by having a series of clutch plates at each side of the differential case to limit the amount of slippage between each wheel. Second, by using a mechanical locking mechanism to stop the rotation of the right differential side gear, in order to transfer the rotating torque of the wheel without traction to the wheel with traction. Each of these functions occur under different conditions.

### Limited-Slip Function

Under normal conditions, when the differential is not locked, a small amount of limited-slip action occurs. The gear separating force developed in the right-hand clutch pack is primarily responsible for this.

The operation of how the limited-slip function of the unit works can be explained when the vehicle makes a right-hand turn. Since the left wheel travels farther than the right wheel, it must rotate faster than the ring gear and differential case assembly. This results in the left axle and left side gear rotating faster than the differential case. The faster rotation of the left-side gear causes the pinion gears to rotate on the pinion shaft. This causes the right-side gear to rotate slower than the differential case.

Although the side gear spreading force produced by the pinion gears compresses the clutch packs, primarily the right side, the friction between the tires and the road surface is sufficient to overcome the friction of the clutch packs. This prevents the side gears from being held to the differential case.

### Locking Function

Locking action occurs through the use of some special parts:

- A governor mechanism with 2 flyweights
- A latching bracket
- The left side cam plate and cam side gear

When the wheel-to-wheel speed difference is 100 RPM or more, the flyweights of the governor will fling out and one of them will contact an edge of the latching bracket. This happens because the left cam side gear and cam plate are rotating at a speed different, either slower or faster, than that of the ring gear and differential case assembly. The cam plate has teeth on its outer diameter surface in mesh with teeth on the shaft of the governor.

As the side gear rotates at a speed different than that of the differential case, the shaft of the governor rotates with enough speed to force the flyweights outward against spring tension. One of the flyweights catches its edge on the closest edge of the latching bracket, which is stationary in the differential case. This latching process triggers a chain of events.

When the governor latches, it stops rotating. A small friction clutch inside the governor allows rotation, with resistance, of the governor shaft while one flyweight is held to the differential case through the latching bracket. The purpose of the governor's latching action is to slow the rotation of the cam plate as compared to the cam side gear. This will cause the cam plate to move out of its detent position.

The cam plate normally is held in its detent position by a small wave spring and detent humps resting in matching notches of the cam side gear. At this point, the ramps of the cam plate ride up on the ramps of the cam side gear, and the cam plate compresses the left clutch pack with a self-energizing action.

As the left clutch pack is compressed, it pushes the cam plate and cam side gear slightly toward the right side of the differential case. This movement of the cam side gear pushes the thrust block which compresses the right-hand side gear clutch pack.

At this point, the force of the self-energizing clutches and the side gear separating force combine to hold the side gears to the differential case in the locking stage.

The entire locking process occurs in less than 1 second. The process works with either the left or right wheel spinning, due to the design of the governor and cam mechanism. A torque reversal of any kind will unlatch the governor, causing the cam plate to ride back down to its detent position. Cornering or deceleration during a transmission shift will cause a torque reversal of this type. The differential unit returns to its limited-slip function.

The self-energizing process would not occur if it were not for the action of one of the left clutch discs. This energizing disc provides the holding force of the ramping action to occur. It is the only disc which is splined to the cam plate itself. The other splined discs fit on the cam side gear.

If the rotating speed of the ring gear and differential case assembly is high enough, the latching bracket will pivot due to centrifugal force. This will move the flyweights so that no locking is permitted. During vehicle driving, this happens at approximately 32 km/h (20 mph) and continues at faster speeds.

When comparing the effectiveness of the locking differential, in terms of percent-of-grade capability to open and limited-slip units, the locking differential has nearly 3 times the potential of the limited-slip unit under the same conditions.

**Locking Differential Torque-Limiting Disc**

The locking differential design was modified in mid-1986 to include a load-limiting feature to reduce the chance of breaking an axle shaft under abusive driving conditions. The number of tangs on the energizing disc in the left-hand clutch pack was reduced allowing these tangs to shear in the event of a high-torque engagement of the differential locking mechanism.

At the time of failure of the load-limiting disc, there will be a loud bang in the rear axle and the differential will operate as a standard differential with some limited-slip action of the clutch packs at low torques.

The service procedure, when the disc tangs shear, involves replacing the left-hand clutch plates and the wave spring. It is also necessary to examine the axle shafts for twisting because at high torques it is possible to not only shear the load-limiting disc, but to also twist the axle shafts.

## Rear Drive Axle Description and Operation

Rear axles for this vehicle consist of the following primary components:

- Axle Shaft – Left
- Axle Shaft – Right
- Differential
- Differential Drive Pinion Gear
- Differential Drive Ring Gear
- Rear Axle Housing
- Wheel Hub – Left
- Wheel Hub – Right

The rear axle is a full-floating axle. The full-floating axle shafts are splined into the differential and are retained by 8 bolts that connect the axle shaft to the wheel hub assembly. The rear axle can be identified by the stamping on the right side axle tube. The rear axle may also be identified by the ring gear size. The ring gear sizes include 11.50 and 12.00 inch axles. The rear axle differential can be an open differential or limited slip/locking differential. For a description and operation of the limited slip/locking differentials refer to: *Locking Differential Description and Operation 4-4*.

An open differential has 2 types of gears, pinion gears and side gears. There are 2 side gears within the differential that the axle shafts spline into, so each side gear and axle shaft rotate together. Typically there are 2 pinion gears, but some differentials have more than 2 pinion gears. The pinion gears are mounted on a differential pinion shaft, and the gears are free to rotate around this shaft. The pinion shaft(s) is fitted into a bore in the differential case and is at a right angle to the axle shafts.

Power is transmitted through the differential as follows: The differential drive pinion rotates the differential ring gear. The ring gear, being bolted to the differential case, rotates the case. As the pinion gears and pinion shaft are located in the case they are rotated by the case, forcing the pinion gears into the side gears causing the side gears to rotate. The side gears, being splined to the axle shafts and in mesh with the pinion gears, rotate the axle shafts.

When both wheels have equal traction and when the vehicle is driving in a straight line, the pinion gears do not rotate on the pinion shaft because the input force on the pinion gear is equally divided between the two side gears. Therefore, the pinion gears revolve with the pinion shaft, but do not rotate around the shaft itself.

When the vehicle turns a corner or when the wheels do not have equal traction, the one wheel turns slower than the other wheel, in turn slowing one rear axle side gear (as the axle shaft splines into the side gear). The rear axle pinion gears will roll around the slower rear axle side gear, driving the other rear axle side gear faster.

## Rear Axle Electronic Locking Differential Description and Operation

The electronic locking differential functions as an open differential when not engaged while providing the capability to fully lock the differential based on driver request and vehicle engagement conditions. Locking of the rear differential provides 100% of the available torque to both ends of the axle forcing the left and right wheels to rotate at the same speed.

The rear axle differential lock is available in 2 H, 4 Auto, 4 High or 4 Lo. The Normal/Off-Road mode switch provides an input to the Body Control Module (BCM) which sends the selected vehicle mode to the K38 Chassis Control Module through the High Speed GMLAN. The K38 Chassis Control Module uses this message to determine rear locker engagement/disengagement based upon vehicle speed

- Normal mode engagement allowed if vehicle speed is less than 30 km/h (19 mph)
- Off road mode engagement allowed if vehicle speed is less than 30 km/h (19 mph)

In addition to engagement/disengagement of the differentials, the mode switch signal is used to disable the ABS and ESC features when the front axle is locked in Normal mode. The momentary Rear Lock switch provides an K38 Chassis Control Module input to energize the rear axle differential lock high control and low control . This provides power to energize an electromagnetic actuator within the rear differential. As the electromagnet is energized, torque is created on a drag plate which actuates a ramping mechanism. The ramping mechanism translates this rotational force into the axial motion of a locking mechanism. The locking mechanism engages the differential side gear which locks side gear rotation to the differential housing, providing a fully locked differential.

The K38 Chassis Control Module uses wheel speed sensor signals from the Electronic Brake Control Module (EBCM) and a steering angle sensor signal from the Power Steering Control Module (PSCM) to determine if the axle is locked. The K38 Chassis Control Module will illuminate the rear axle lock switch indicator and send a Rear Axle Locked indicator request to the K9 Body Control Module which transfers the message request to the Instrument Panel Cluster (IPC). The IPC will display a rear axle locked state on the Off Road DIC screen. The rear axle will remain in the locked position until one of the following events occur:

- A driver request to disengage
- Vehicle speed is greater than 40 km/h (25 mph) in Normal Mode
- Vehicle speed is greater than 160 km/h (100 mph) in Off-Road Mode
- An ABS or ESC event in OFF Road Mode and vehicle speed is greater than 40 km/h (25 mph)

When the locking differential is deactivated, the ICCM will de-energize the rear axle differential lock high control and low control. With the electromagnetic actuator deenergized, a series of return springs within the differential lock assembly forces the locking mechanism to disengage and the differential again operates as a fully open differential.

# Section 5

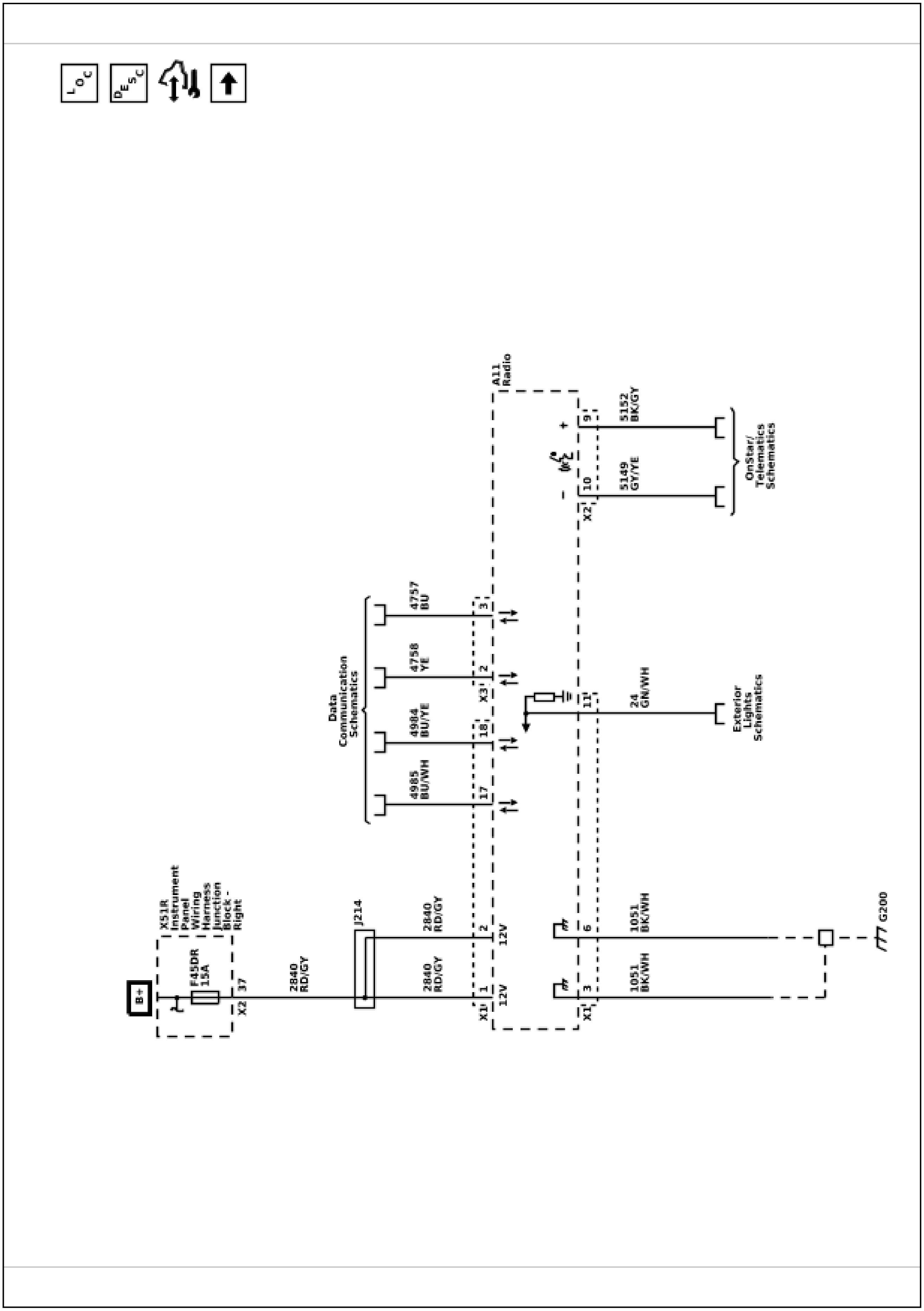
# Driver Information and Entertainment

# Driver Information and Entertainment

## Cellular, Entertainment, and Navigation

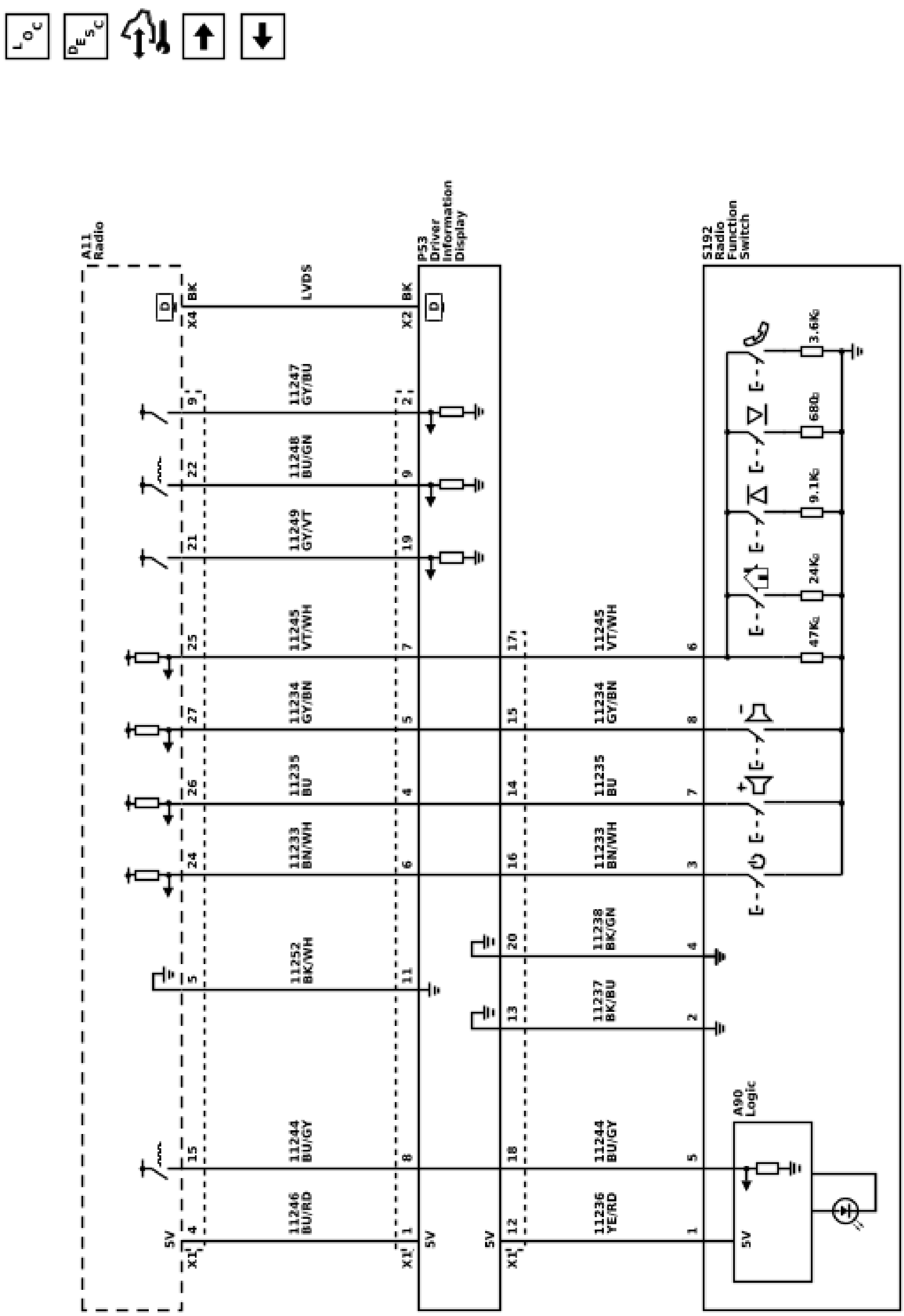
### Schematic and Routing Diagrams

## Radio/Navigation System Schematics (IOR) (Power, Ground, Serial Data, Microphone and Subsystem References)



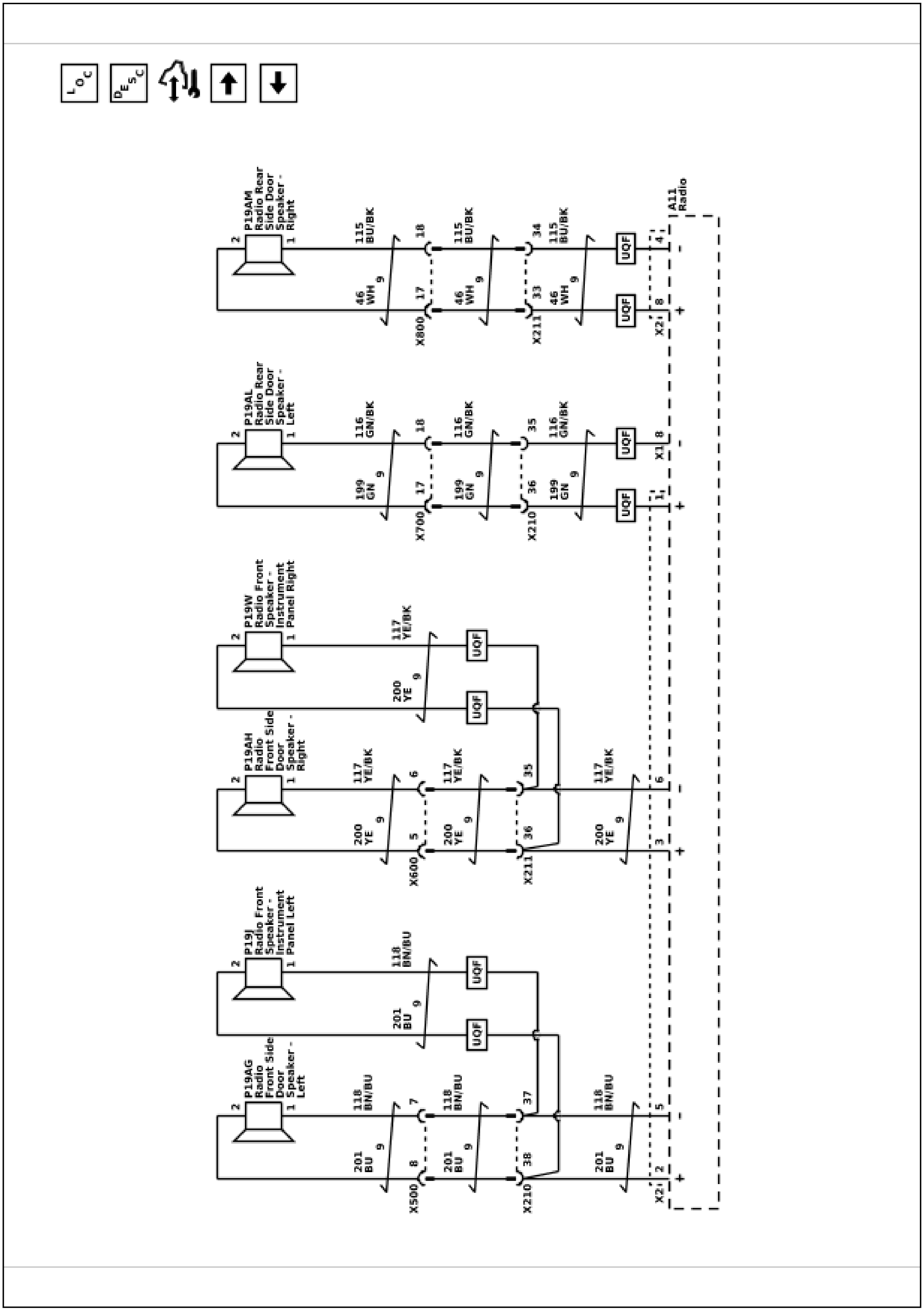

6845834

## Radio/Navigation System Schematics (IOR) (Infotainment Display and Radio Controls (UIR))



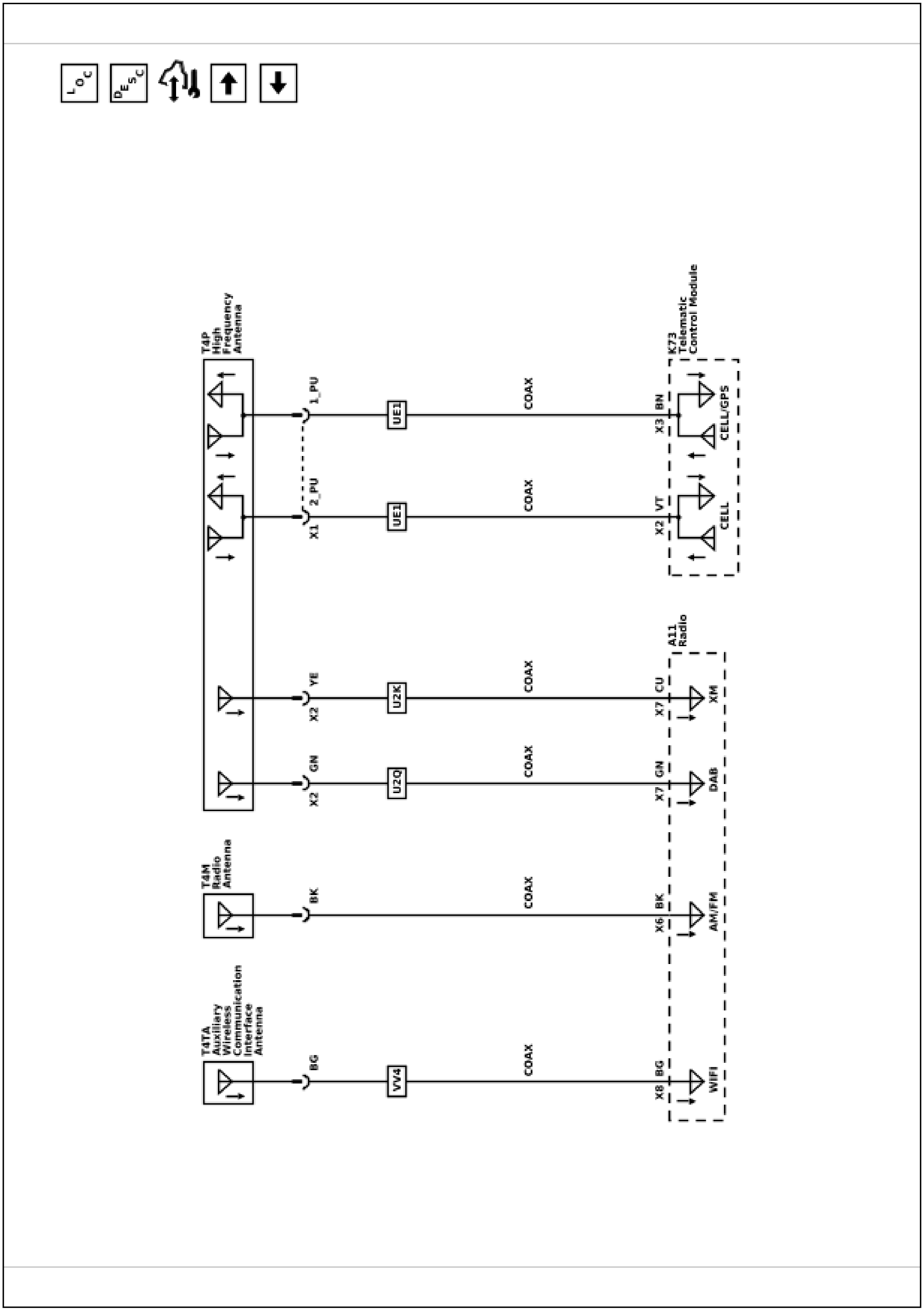

6845835

## Radio/Navigation System Schematics (IOR) (Speakers)




6845836

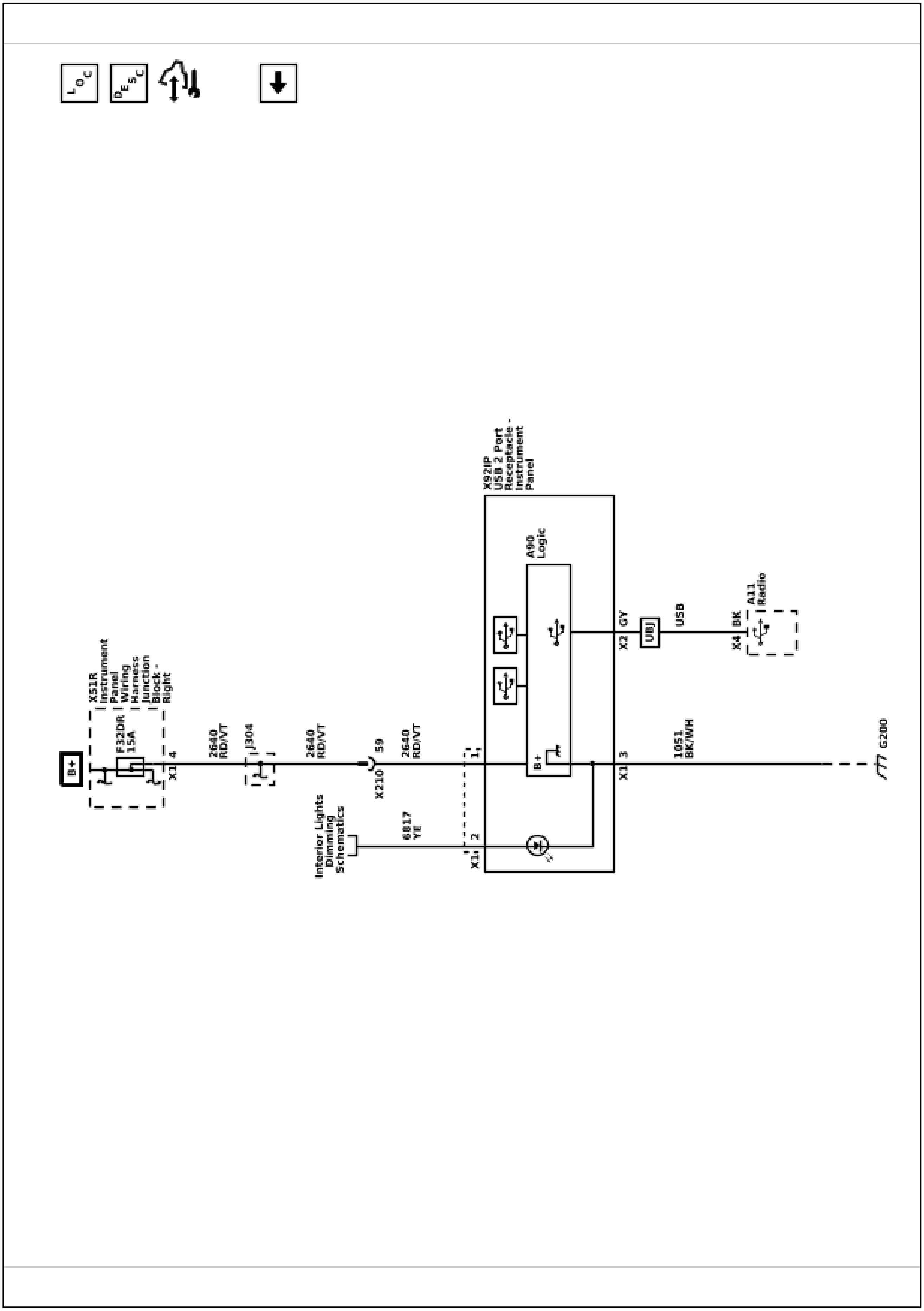
## Radio/Navigation System Schematics (IOR) (Antennas)



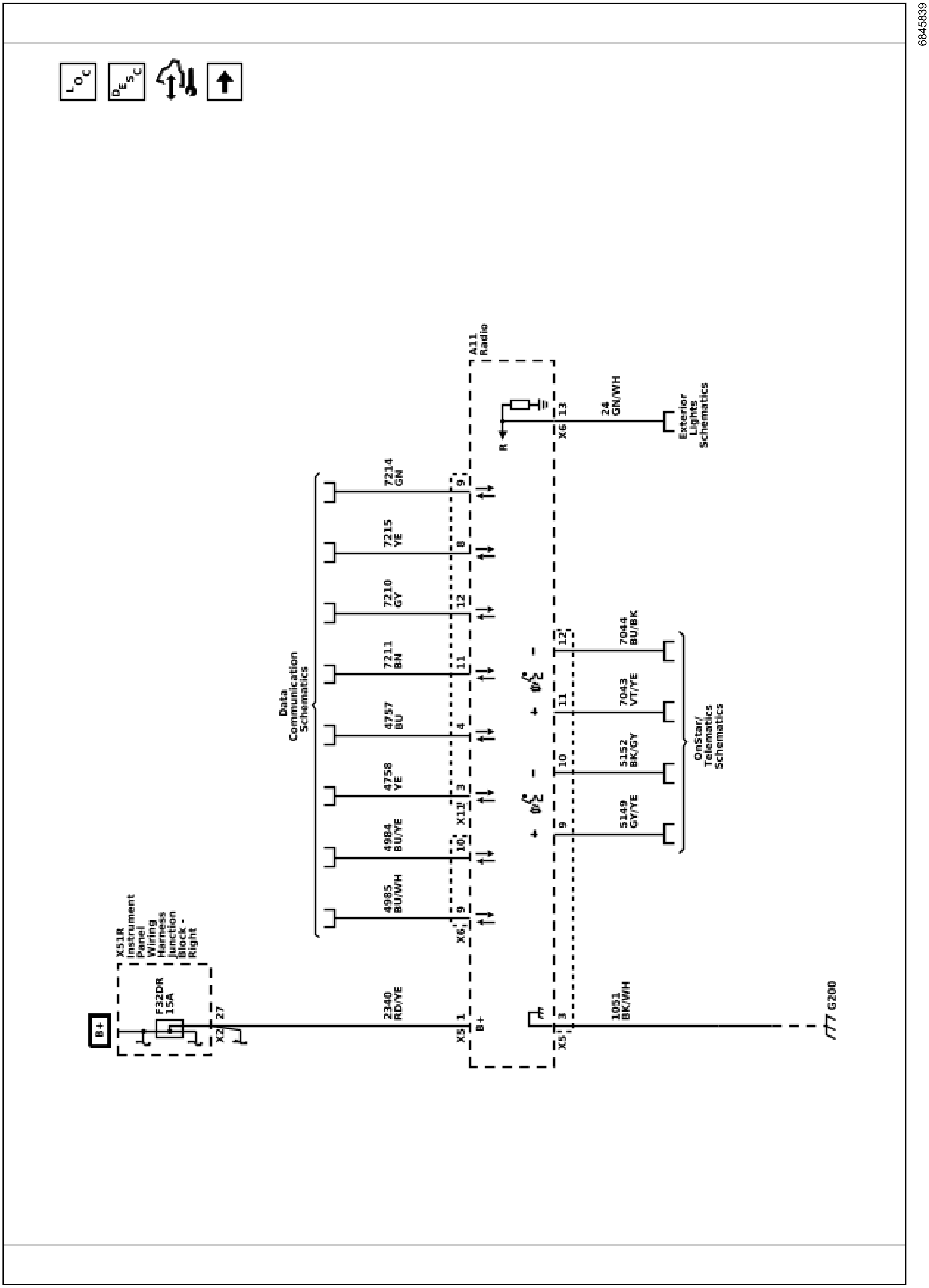

6845837

## Radio/Navigation System Schematics (IOR) (Auxiliary Inputs)

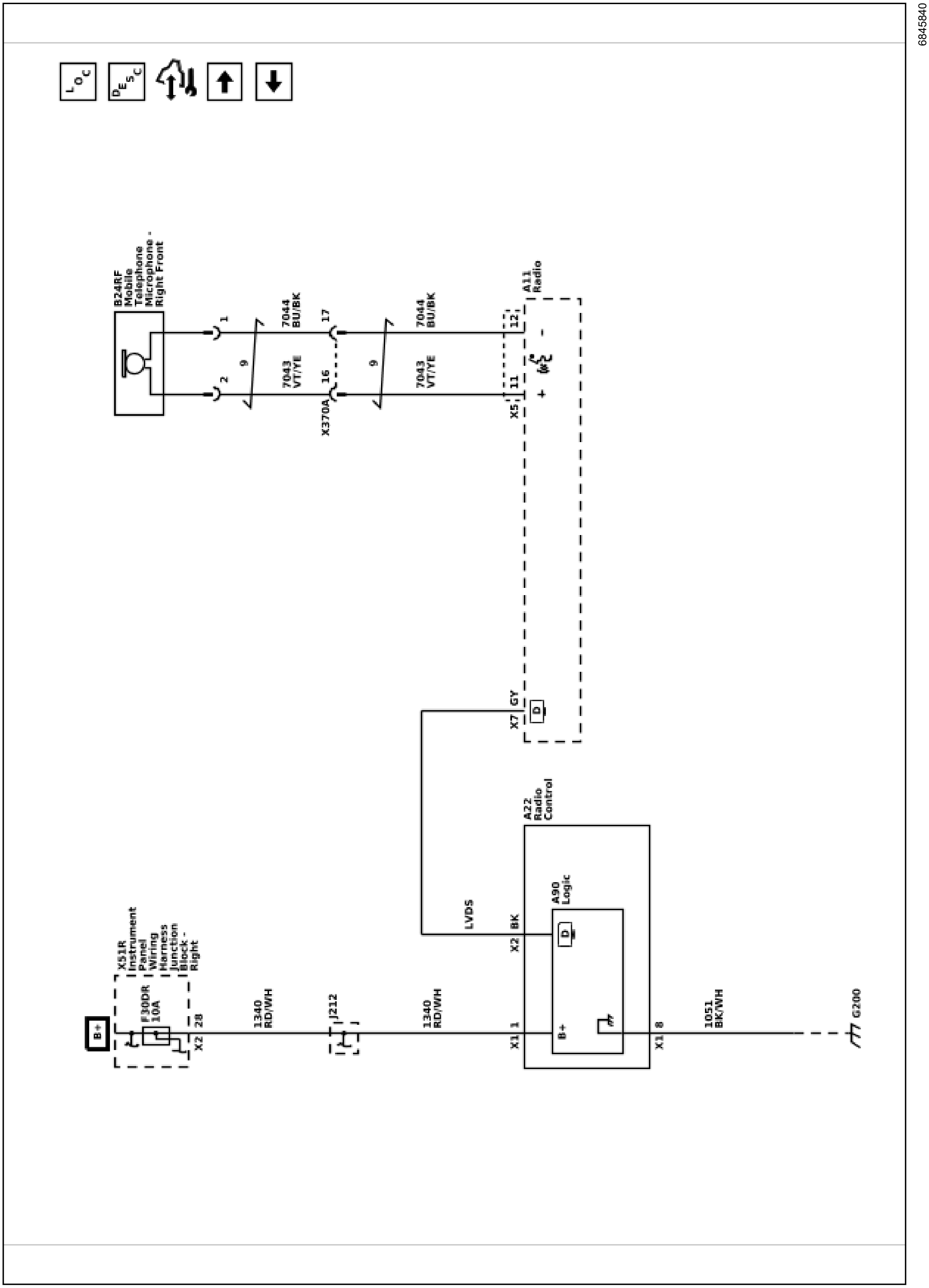
6845838



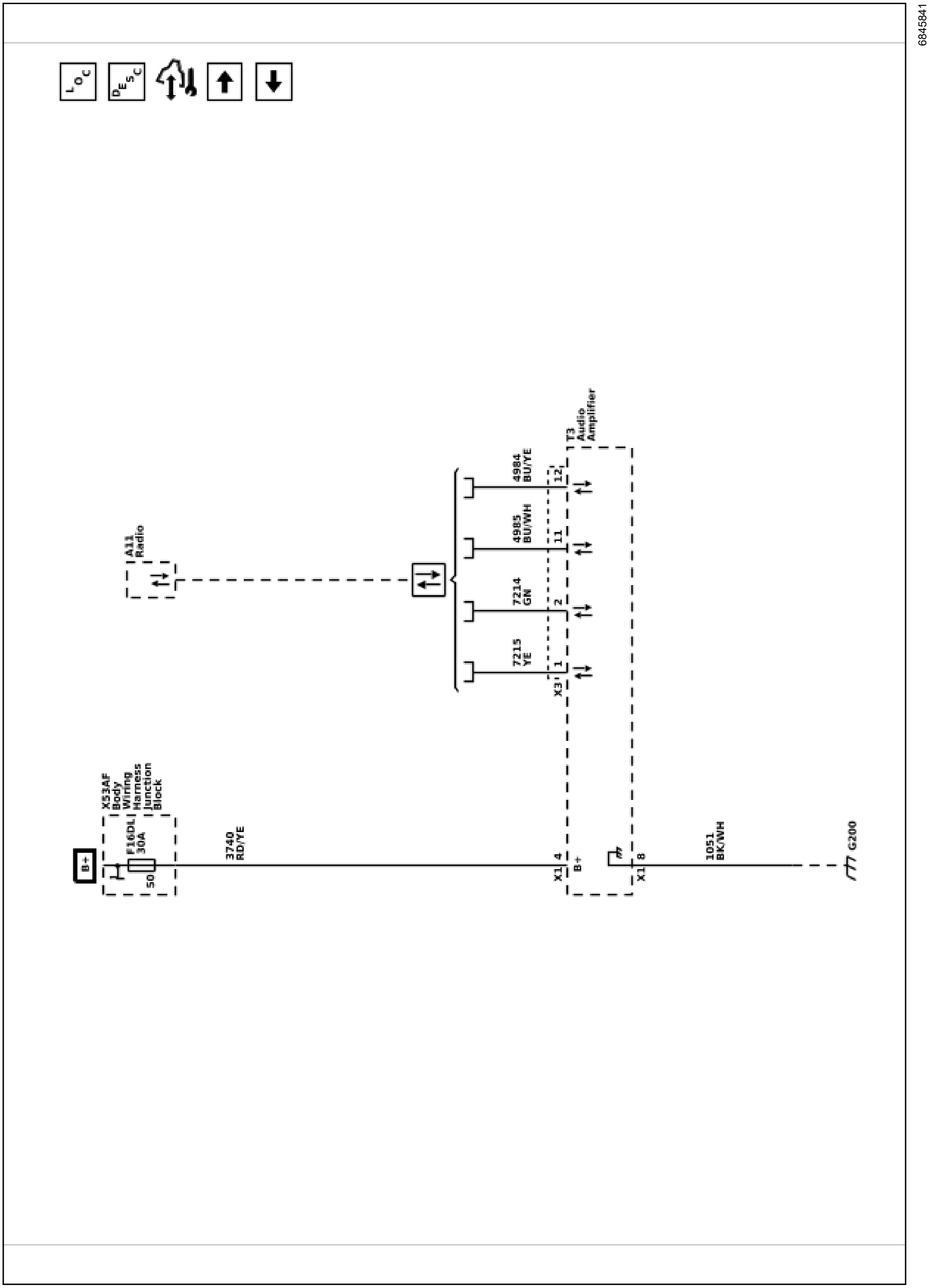
## Radio/Navigation System Schematics (IOK) (Radio, Power, Ground, Serial Data, Microphone and Subsystem References)



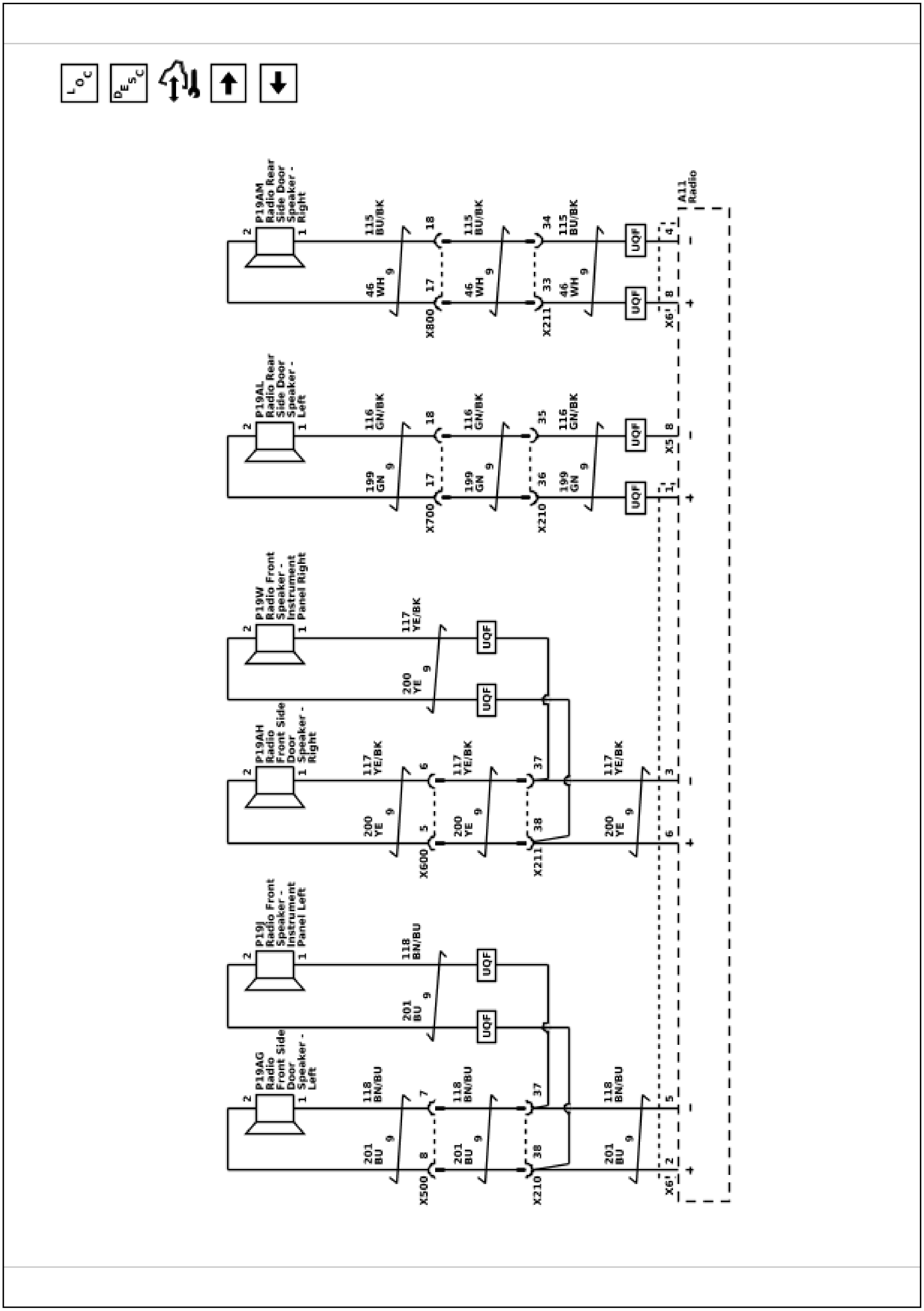
## Radio/Navigation System Schematics (IOK) (Radio Controls and Microphones)



## Radio/Navigation System Schematics (IOK) (Audio Amplifier Power, Ground and Serial Data (UQA / UQS))



## Radio/Navigation System Schematics (IOK) (Speakers (U95 / UQF))

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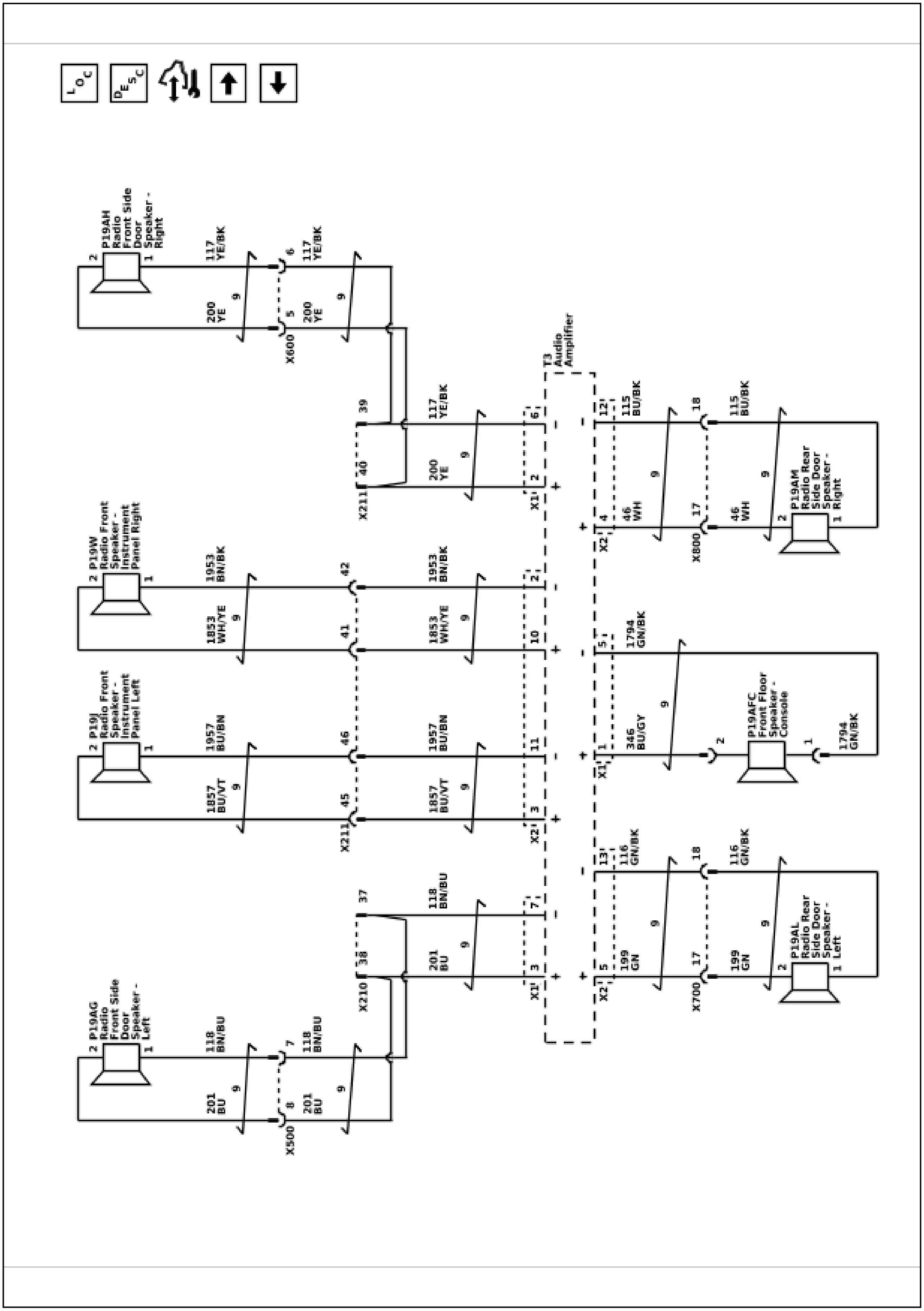
## Radio/Navigation System Schematics (IOK) (Speakers (UQA))

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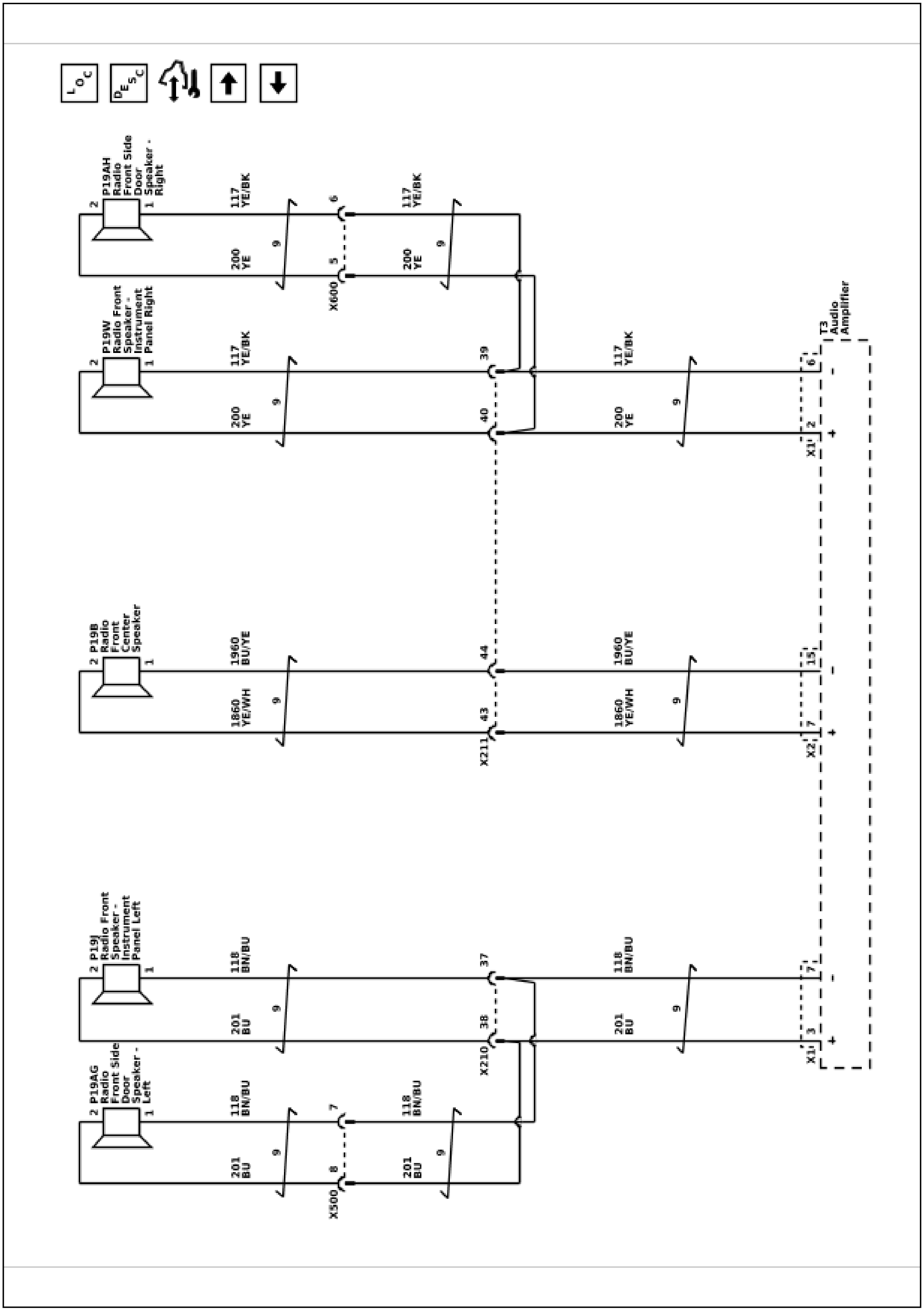
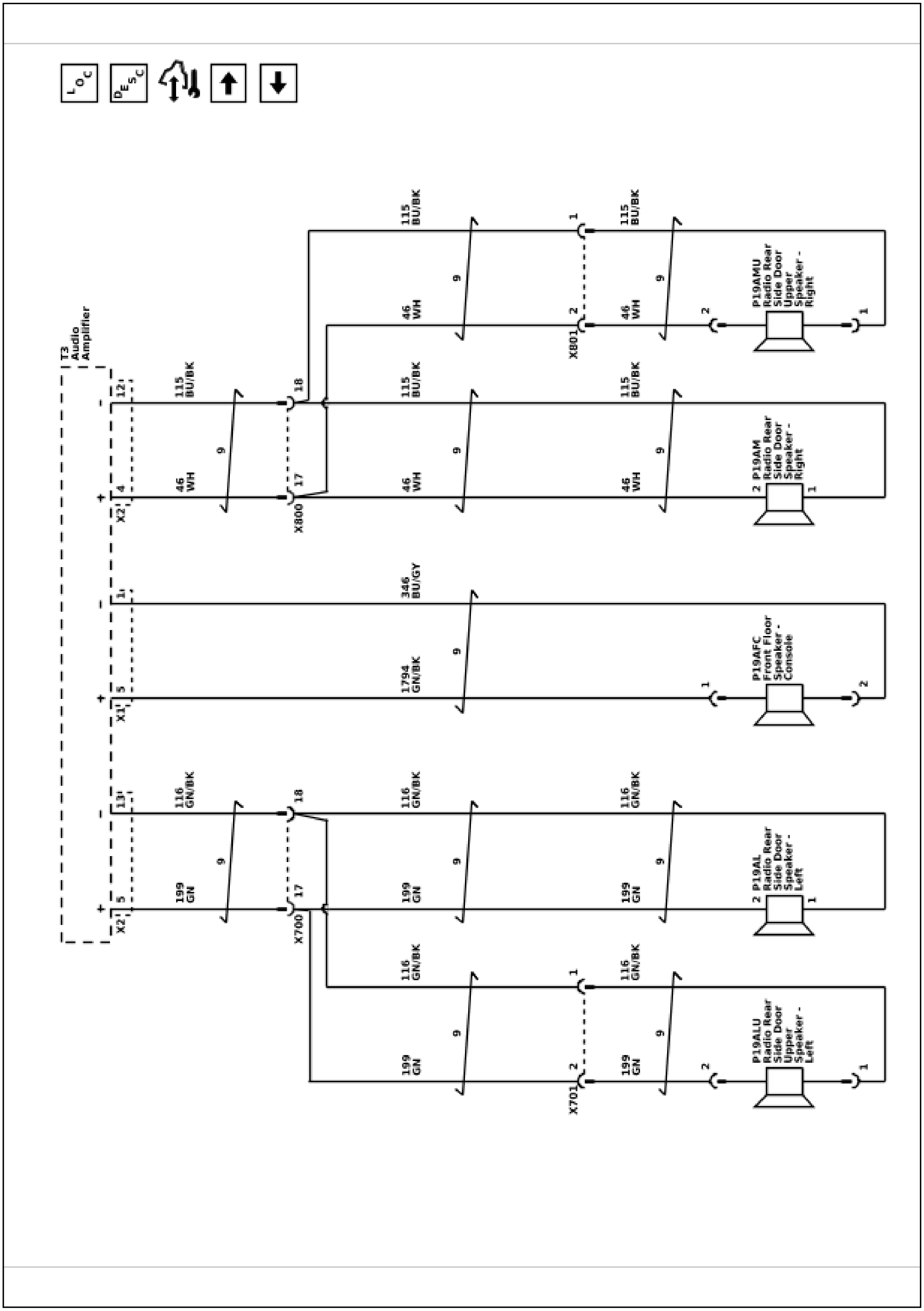
## Radio/Navigation System Schematics (IOK) (Speakers - Front (UQS))




6845844

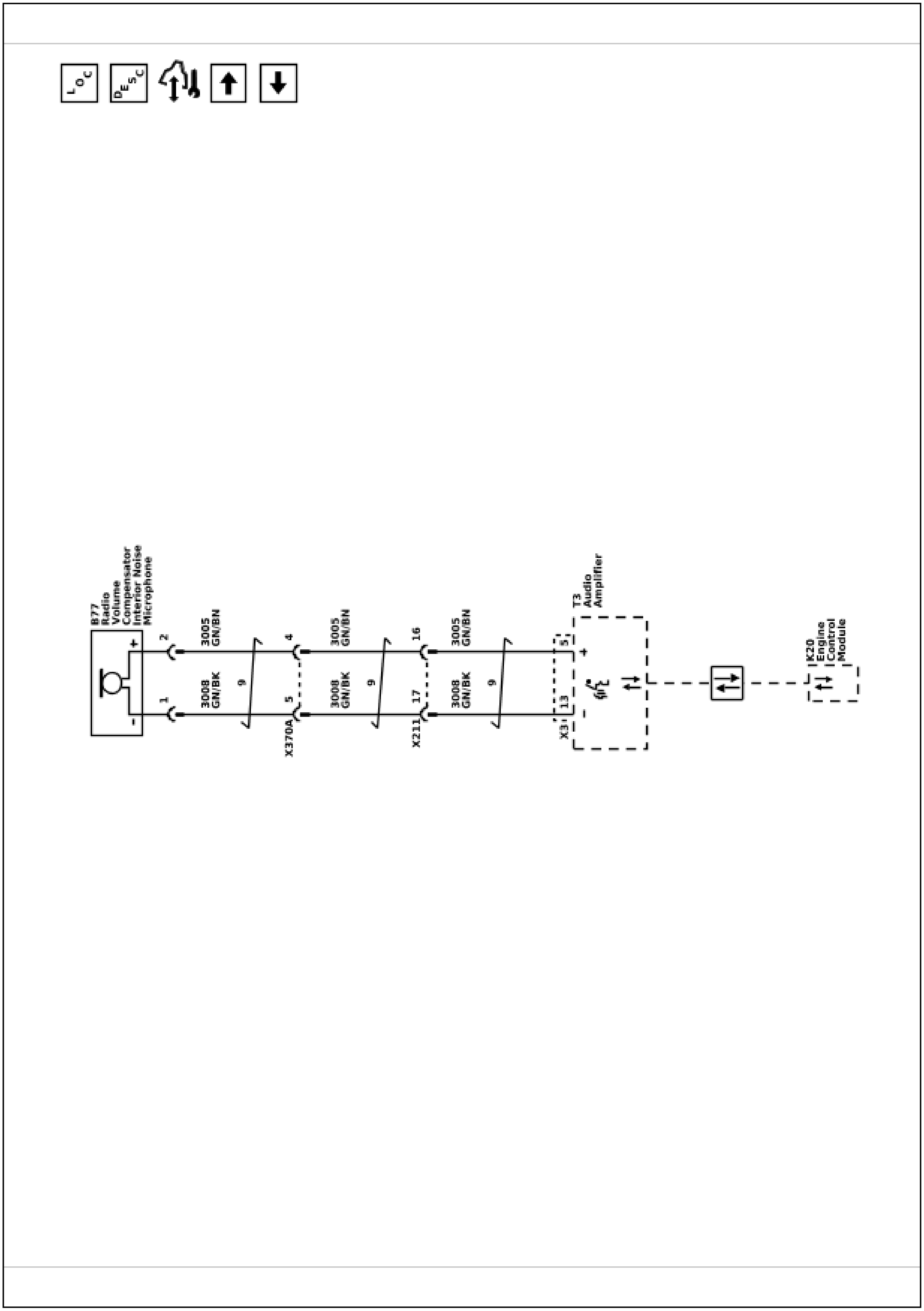
Radio/Navigation System Schematics (IOK) (Speakers - Floor Console and Rear (UQS))




6845845

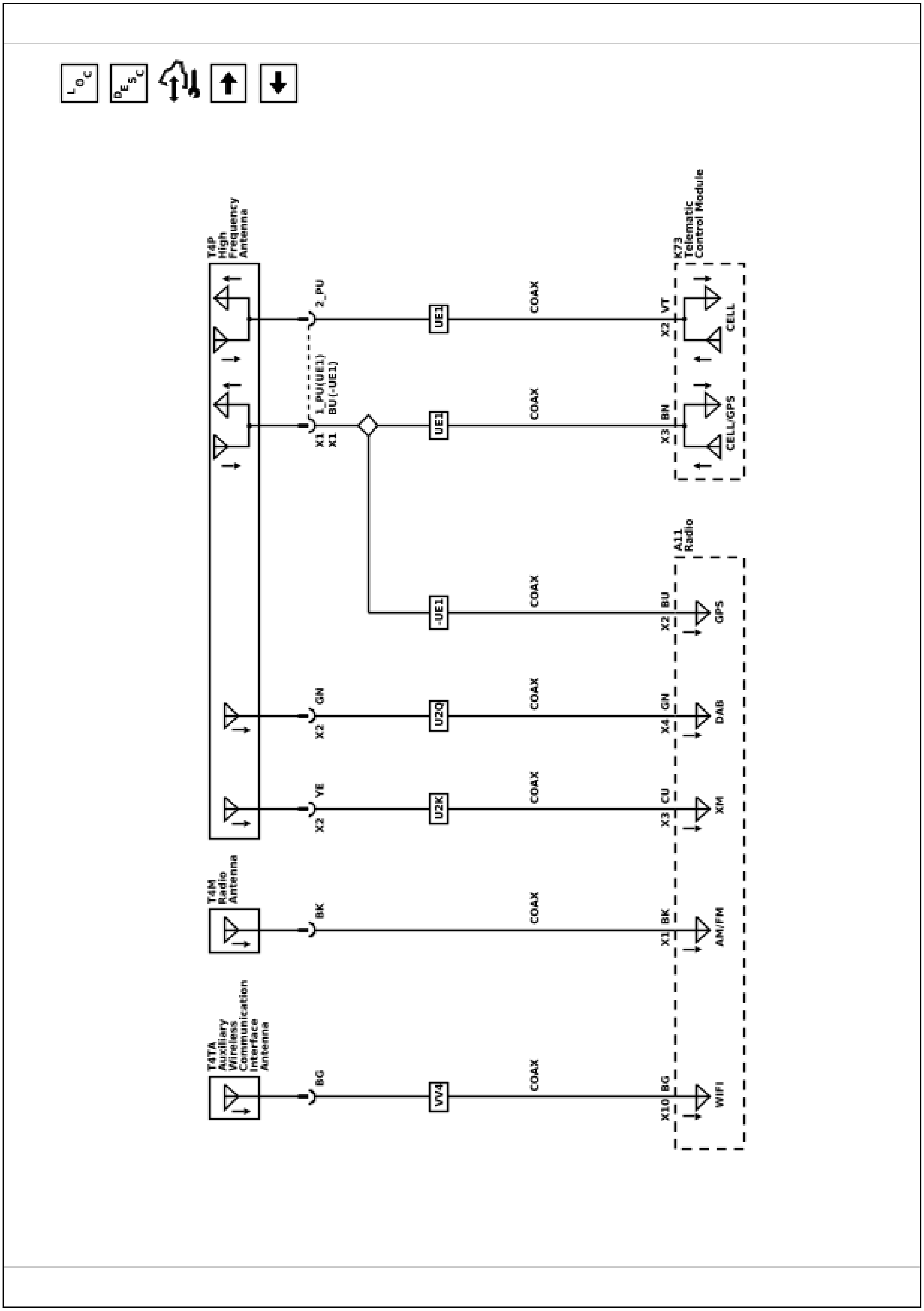
## Radio/Navigation System Schematics (IOK) (Active Noise Cancellation (UQS))

6845846

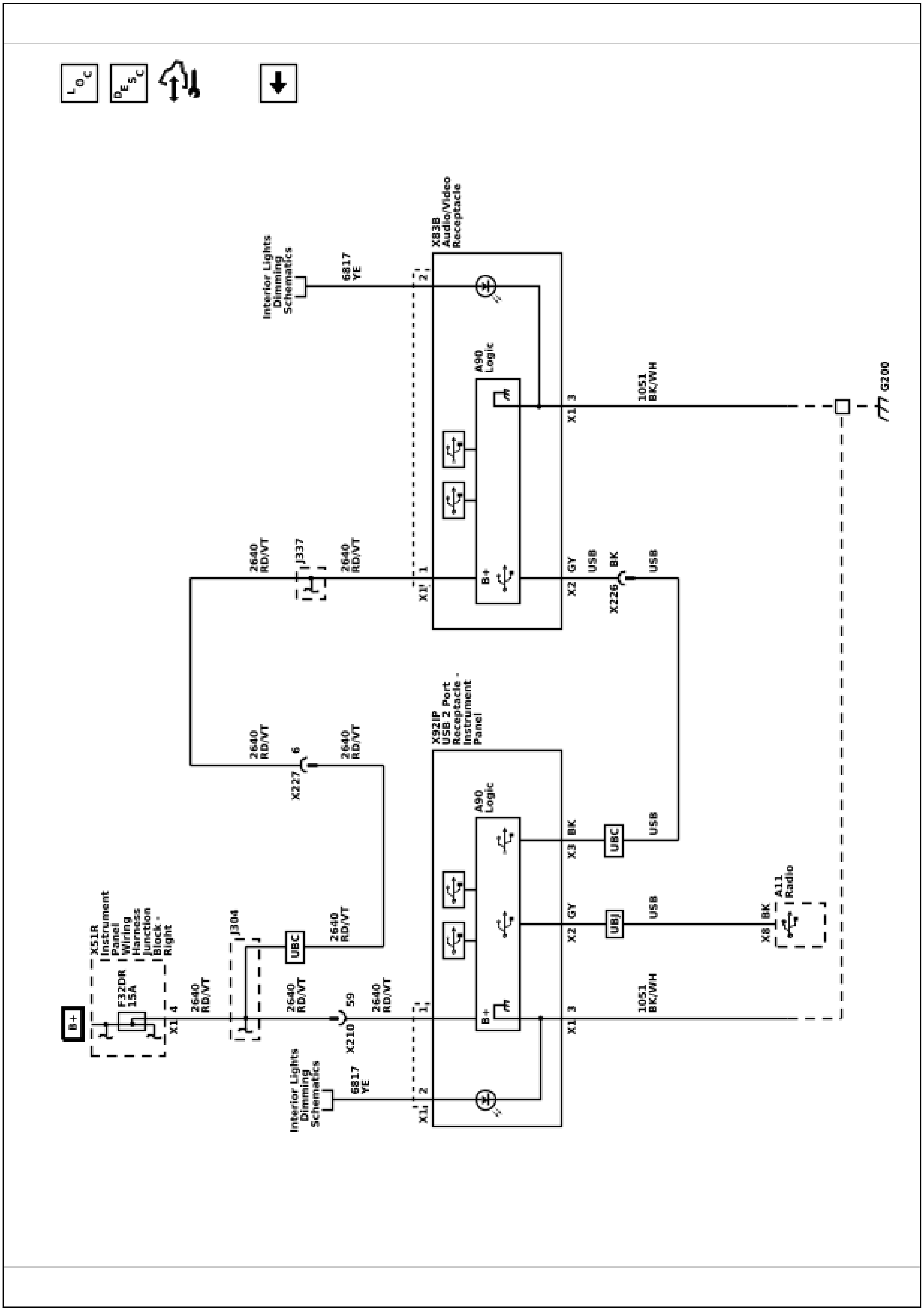


## Radio/Navigation System Schematics (IOK) (Antennas)

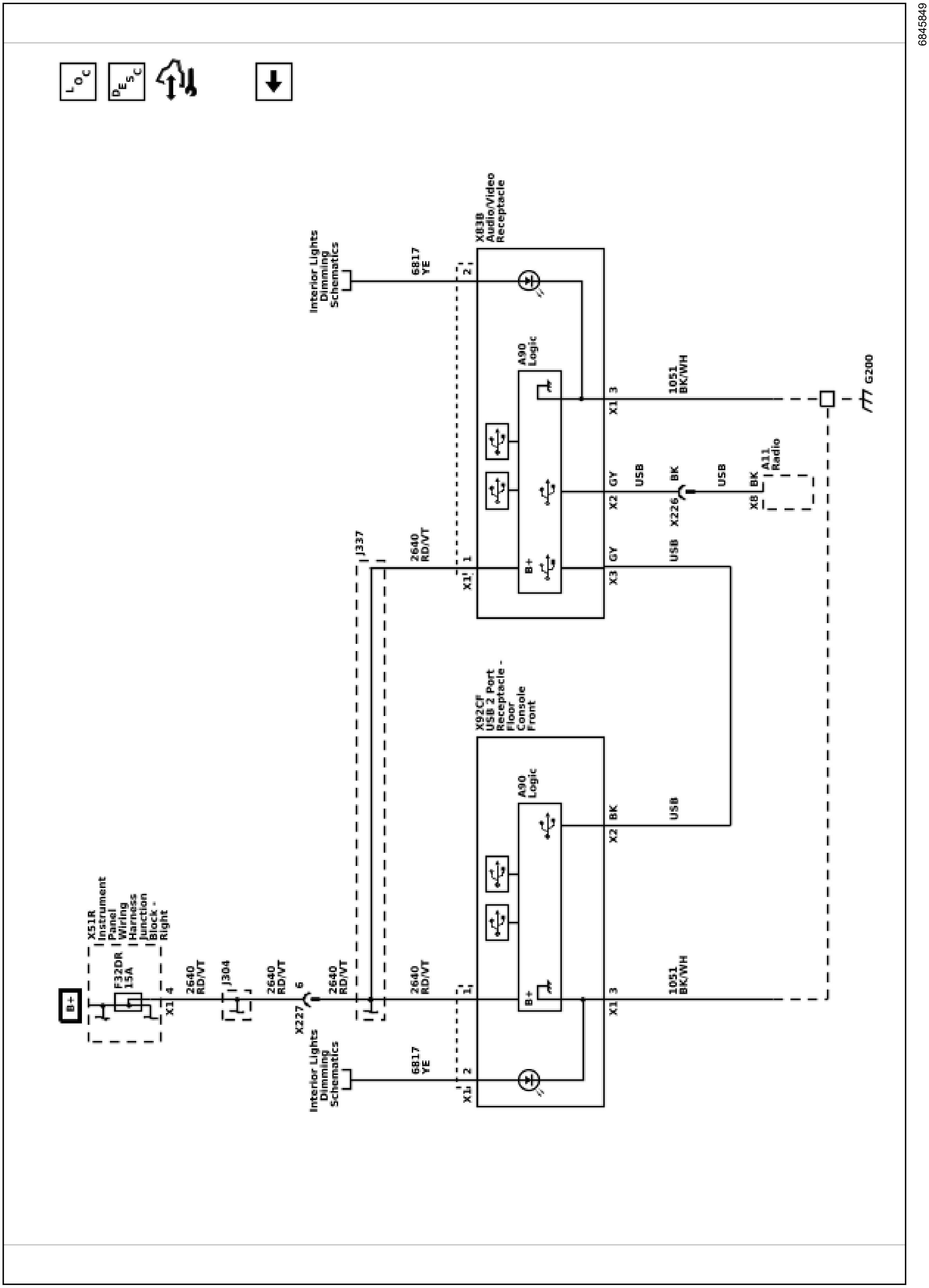
6845847



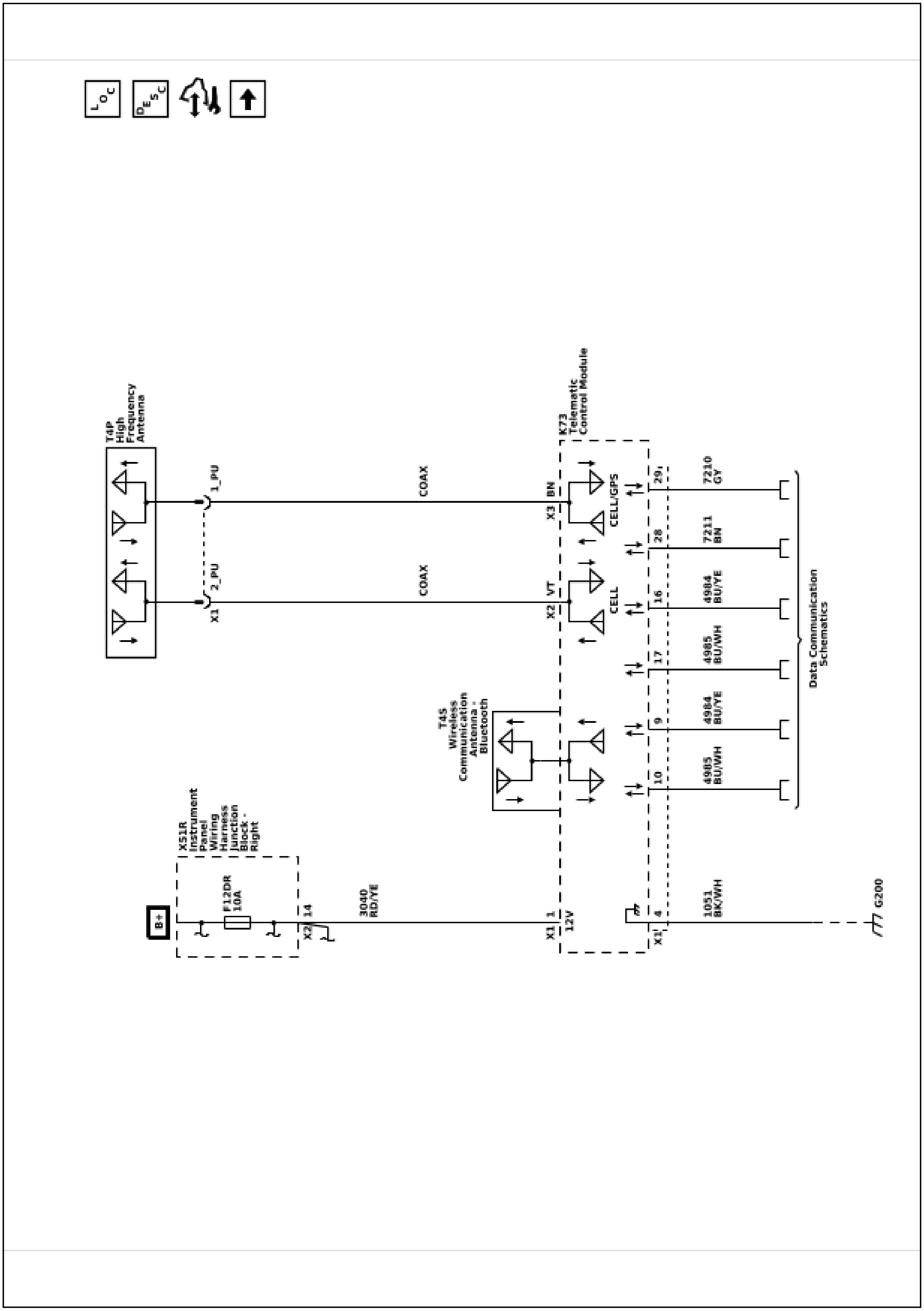
## Radio/Navigation System Schematics (IOK) (Auxiliary Inputs (UBJ/UBC))



## Radio/Navigation System Schematics (IOK) (Auxiliary Inputs (UBD))

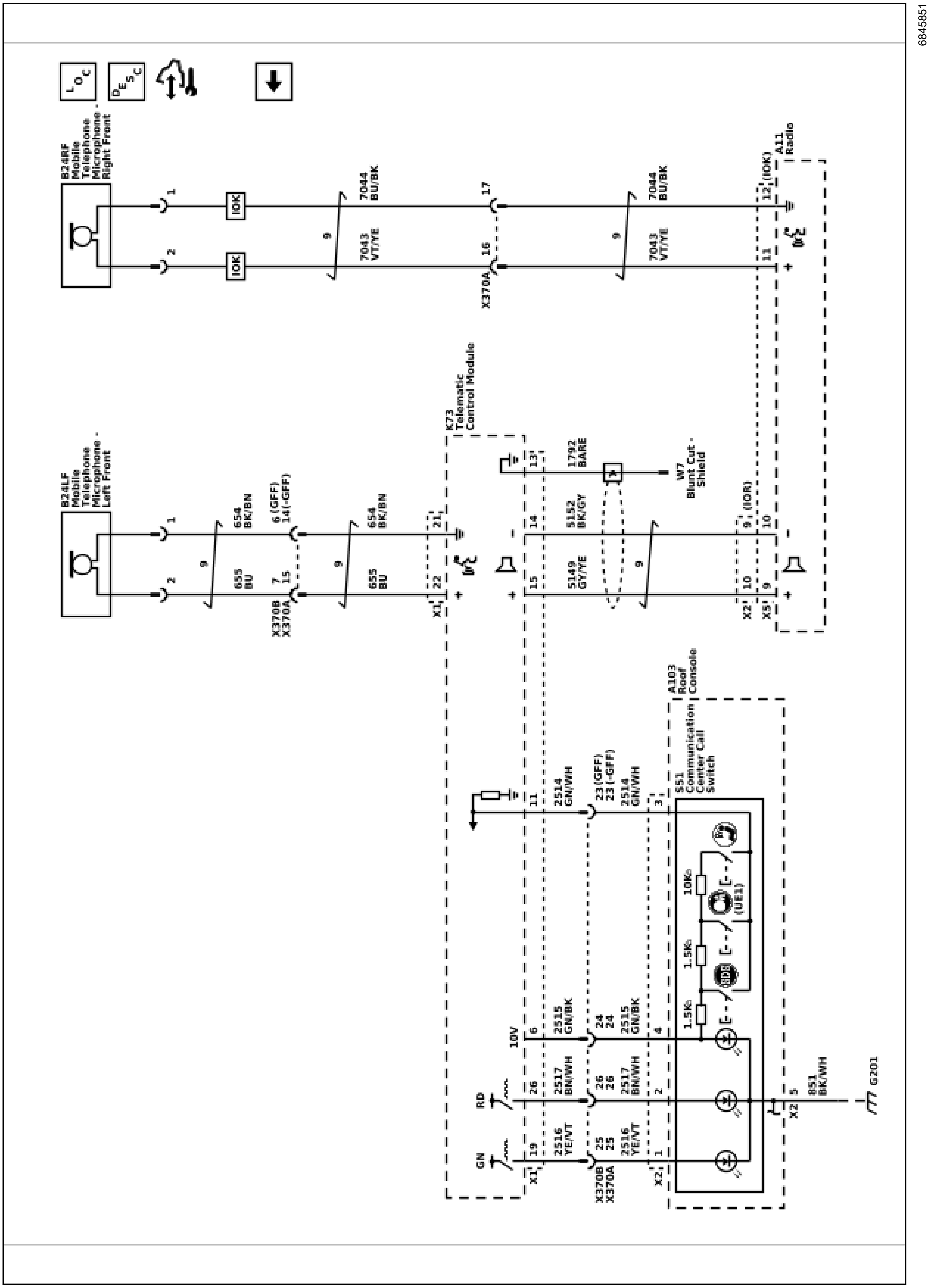


## OnStar/Telematics Schematics (Power, Ground, Serial Data and Antenna)




6845850

## OnStar/Telematics Schematics (Controls and Audio Signal)



# Description and Operation

## OnStar Description and Operation

This OnStar® system consists of the following components:

- Telematics Communication Module
- OnStar® three button assembly
- Microphones
- Cellular antenna
- Navigation antenna
- Back up battery
- WiFi Support
- TTY (Teletypewriter)

This system also interfaces with the factory installed vehicle audio system.

## Telematics Communication Module

The OnStar Telecommunications Platform (TCP) system communicates with various infotainment components via Ethernet. The OnStar TCP uses Global System for Mobile Communication (GSM) to communicate data and voice signals over the national cellular network. The Telematics Communication Module supports entertainment WiFi hotspots by providing a connection to the cellular network for internet access. The module is capable of up to 4G LTE speeds and houses two technology systems, one to process Global Positioning System (GPS) data, and another for cellular information. The module sends and receives all cellular communications over two cellular antennas and cellular antenna coax cables.

The OnStar TCP system has two antenna inputs, a primary cellular signal and a combined GPS/secondary cellular signal. OnStar can receive signals from multiple global navigation satellite systems, including the United States developed GPS and Russian developed Global Navigation Satellite System (GLONASS).

The module also has the capability of activating certain features such as, the horn, remote engine starting, initiating door lock/unlock, or activating the exterior lamps using the serial data circuits. These functions can be commanded by the OnStar® Call Center per a customer request or mobile device app depending on vehicle and customer subscription.

Dedicated circuits are used to connect the Telematics Communication Module to a microphone, the button assembly, and radio. When equipped, the Telematics Communication Module may contain a back up battery (BUB) which is internal to the control module and replaceable through an access cover. The Telematics Communication Module communicates with the rest of the vehicle over the serial data bus and Ethernet.

Power is provided by a dedicated, fused B+ circuit. Ground is provided through the vehicle wiring harness attached to the module. The power mode state is determined by the Telematics Communication Module through serial data messaging.

For China Only Battery Electric Vehicles- The Vehicle Data Monitor module collects vehicle and electrification state of health messages and sends this data to the Telematics Communication Module. The TCM is then responsible for sending the data to a SGM/government server via the 4G network.

## OnStar® Three Button Assembly

- The OnStar® button assembly may be part of the rearview mirror, or a separate, stand alone unit. The button assembly is comprised of 3 buttons or 3 capacitive touch buttons and status LED’s or an error indicator. The buttons are defined as follows:
  - The answer/end button, which is black with a white phone icon or a white driver figure seated with voice signals near its face, allows the user to answer and end calls or initiate speech recognition.
  - The blue OnStar® call center button, which displays the OnStar® logo, allows the user to connect to the OnStar® call center.
  - The emergency button, which displays white letters “SOS” with red background, sends a high priority emergency call to the OnStar® call center when pressed.

If the LED does not illuminate, this may indicate that the customers OnStar® subscription is not active or has expired. Push the blue OnStar button to connect to an advisor who can then verify the account status.

The Telematics Communication Module supplies 10 volts to the OnStar® button assembly on the keypad supply voltage circuit. When pressed, each button completes a circuit across a resistor allowing a specific voltage to be returned to the Telematics Communication Module on the keypad signal circuit. Depending upon the voltage range returned the Telematics Communication Module is able to identify which button has been pressed.

The OnStar® status LED or error indicator is located near the buttons. The LED is green when the system is ON and operating normally. When any indicator is illuminated and flashing, it is an indication that a call is in progress. When the LED is red, this indicates a system malfunction is present. In the event there is a system malfunction and the OnStar® system is still able to make a call, the LED will flash red during the call.

Each LED or error indicator is controlled by either the Telematics Communication Module over dedicated LED signal circuits or by low speed GM LAN serial data depending on the inside rearview mirror option. Ground for the LED is provided by the wiring harness attached to the button assembly.

### Secondary OnStar® Controls

Some vehicles may have an additional button that when pushed can engage the OnStar® system. The button may be a symbol of a face with sound waves, or may say MUTE, or be a symbol of a radio speaker with a slash through it.

By engaging the OnStar® system with this feature, the user can interact with the system by use of voice commands. A complete list of these commands is supplied in the information provided to the customer. If the information is not available for reference, at any command prompt the user can say "HELP" and the Telematics Communication Module will return an audible list of available commands.

### Microphones

This system utilizes two hands free audio microphones, the primary microphone on the driver side and a secondary/reference microphone for the front passenger side. The primary microphone is connected directly to the Telematics Communication Module. It is also connected by an analog pass-through circuit to the radio from the Telematics Communication Module. The secondary microphone is connected directly to the radio.

The primary microphone is used for emergency and OnStar calls. During normal operating conditions it also provides Bluetooth calls and speech recognition to the radio. The secondary microphone is used as a reference for the primary microphone for passenger interference cancellation during speech recognition and also to enhance the driver side hands free calls. For MY18 and beyond the secondary microphone can also be used for front passenger hands free phone calls.

The front passenger secondary microphone is never used as a direct source for an OnStar call. The second microphone input modifies the primary microphone input to reduce background noise and other interference. An OnStar call requires the microphone to be directly connected to the Telematics Communication Module. During a normal (non-emergency) OnStar call the Telematics Communication Module receives an audio signal from the primary microphone and sends the signal to the radio via the Ethernet connection. The radio processes the OnStar call audio and sends it back to the Telematics Communication Module via the Ethernet connection. During an emergency button call the Telematics Communication Module contacts the OnStar call center directly and does not send the signal to the radio.

### Cellular and GPS Antennas

The combination antenna will have any of the following antenna elements when equipped with OnStar:

- Primary cellular element
- Secondary cellular element
- GPS element
- Digital radio element
- AM/FM element

The OnStar® TCP system uses two cellular antenna elements to send and receive cellular data, the primary cellular element and the secondary cellular element. The primary cellular signal is carried by a coax cable that connects the antenna directly to the Telematics Communication Module. Details of the secondary cellular signal are further described below.

The GPS antenna element is used to collect the signals of the orbiting GPS satellites. GPS signals are output from the Telematics Communication Module on Ethernet. Other modules on Ethernet may use the GPS latitude, longitude and satellite time data broadcast by the Telematics Communication Module. Using positioning information from the vehicle Ethernet avoids the use of a coaxial signal splitter to pass the analog GPS signal to other modules. Within the antenna is housed a low noise amplifier that allows for a more broad and precise reception of this data. Also housed within the antenna is circuitry to combine the GPS signal and the secondary cellular signal. The combination GPS/secondary cellular signal is carried by a coax cable that connects directly to the Telematics Communication Module. The cable also provides a path for DC current for powering the antenna.

### Compass Heading

The Telematics Communication Module has a compass feature to calculate vehicle direction which is displayed via the instrument panel cluster or designated display. The compass heading is determined by dead reckoning until the GPS 3D fix is established. The dead reckoning is accomplished by using the yaw rate sensors and wheel ticks to determine heading changes from a GPS known heading. The GPS 3D fix heading is determined by the deferential of two locations.

### Bluetooth®

With the OnStar TCP system Bluetooth® resides in the radio. Refer to Radio/Audio System Description and Operation for further details.

### Phantom Phone Calls

A customer may report that the OnStar® system is attempting and/or completing phone calls which the operator of the vehicle did not initiate.

It is important to know which type of reported phantom phone call the operator is reporting. Some phone calls of this nature are considered normal and cannot be addressed other than through education, while others may require some remedial action to resolve. When attempting resolve, it is very important to determine under which circumstances the reported Phantom Phone call resulted.

The following are different scenarios:

- The vehicle may receive an incoming call just like any other phone. Typically the customer will hear the phone ringing in the vehicle. This scenario also includes incoming Bluetooth calls.
- Because the button assembly and associated wiring feeds voltage back to the OnStar® system based on the amount of voltage drop through each of the buttons, should the return line be partially shorted to voltage the system could interpret this voltage as a key press. If one of the buttons voltage is simulated, such as the Blue button. The system will make a phone call just as if the button had been pressed by the operator of the vehicle. Refer to the OnStar Button Malfunction document for diagnostics.
- Internal module fault. Some customers may report a condition where ″Phone Unavailable″ message is heard after the vehicle door is opened or key is cycled. The technician may find a DTC stored in the Telematics module (example: U1500 or B1000). Refer to diagnostics for the DTC making sure to follow any applicable Bulletins or PIs.
- Unwanted Hands free calling activation. A customer may report that the ″Ready!″ or ″OnStar® Ready!″ message is heard while driving. The customer may also advise that this seems to happen mostly while making a turn. In some cases it has been found that the customer is inadvertently pressing the ″push to talk″ button on the steering wheel controls. On rare occasions, other issues in the steering column or Steering Wheel Control system may induce this event.

The majority of reported Phantom Phone Calls can be attributed to accidental button presses or customer induced concern. In some cases an incoming call may be mistaken as a phantom call concern. It is important to verify all aspects of the customer concern in order to properly duplicate and diagnose the condition. If the concern points to normal operation and customer induced concern, please communicate to the customer this condition is a normal operating characteristic of their vehicle.

### Back-up Battery

In some vehicles, the OnStar system is equipped with a Back-Up Battery (BUB) installed inside the Telematics Communication Module . This battery is a two-cell lithium-ion rechargeable battery assembly, connected with a short electrical harness, to the circuit board in the module. Contained within this two-cell battery package are a temperature-sensing thermistor, automatic-resetting circuit-overload protection, and a low-pressure vent valve. Nominal voltage of the battery pack is 7.3 Volts.

The BUB is only switched into service when the OnStar system is in normal On condition, vehicle power mode of either Run or On, and main vehicle battery power (B+) at the Telematics Communication Module suddenly becomes near-zero. At this time BUB power is connected to the main circuit board power using solid-state power switching circuits. After initiating BUB for module power, the CAN bus is monitored for a message confirming a collision-event, or near-collision event, has occurred. If a confirmation message is received, the Telematics Communication Module continues to use BUB as the power supply until it is depleted. If a confirmation message is not received within 10 seconds, the BUB power circuits are internally disconnected, preventing inadvertent discharge of the battery.

Charging circuitry within the Telematics Communication Module maintains the state of charge of the BUB. BUB charging occurs as determined by the module software, primarily based on temperature and state of charge. Battery state of charge is measured by the Telematics Communication Module circuitry, and remaining energy capacity calculated by the module software. On-board diagnostic tests check for circuit faults, over-temperature conditions, and low-energy capacity. Current DTCs will set for each of these conditions. No component checks are required, and are not recommended, for BUB diagnosis.

### WiFi Support

The Telematics Communication Module supports entertainment WiFi hotspots by providing a connection to the cellular network for internet access. The radio acts as the central WiFi router and connects hardwire Ethernet to the Telematics Communication Module. The Telematics Communication Module completes the connection to the internet through the cellular network. It has the ability to connect up to 7 devices at one time.

### Audio System Interface

When OnStar® requires audio output, a serial data message is sent to the audio system to mute all radio functions and transmit OnStar® originated audio. The OnStar® audio is transmitted to the vehicle audio system by Ethernet and circuitry .

The audio system will mute and an audible ring will be heard though the speakers if the vehicle receives a call with the radio ON.

On some vehicles, the HVAC blower speed may be reduced when the OnStar® system is active to aid in reducing interior noise. When the system is no longer active, the blower speed will return to its previous setting.

### OnStar® Sleep Cycle

The OnStar® system uses a unique sleep cycle to allow the system to receive cellular calls while the ignition is in the OFF position and retained accessory power mode has ended. This cycle enables the Telematics Communication Module to perform remote functions, such as door unlock, as commanded over the air by the OnStar® Call Center, and to continue to maintain an acceptable level of battery electrical drain.

The OnStar® system uses 4 states of readiness, depending upon the type of cellular market the vehicle is in when the ignition is put into the OFF state:

- High power
- Low power
- Sleep
- Digital standby

The high power state is in effect whenever the ignition is in the ON or RUN position, or retained accessory power is enabled, and the OnStar® system is sending or receiving calls or when the system is performing a remote function.

The low power state is in effect when the OnStar® system is idle with the ignition in the ON or RUN position, or with retained accessory power enabled.

The digital standby power state is entered after the vehicle has been shut off and the retained accessory power has timed out while in a digital cellular area. When in digital standby mode, the OnStar® module is able to perform all remote functions as commanded by an OnStar® advisor at any time, for a continuous 120 hours. After 120 hours, the Telematics Communication Module will go into sleep mode until a wake up signal from the vehicle is seen by the Telematics Communication Module. If the Telematics Communication Module loses the digital cellular signal it will revert to analog mode and follow the standard sleep state (9 minutes OFF, 1 minute standby) based on the time of the GPS signals, this will continue until a digital cellular signal is again received.

If the OnStar® system loses battery power while the system is in a standby or sleep mode, the system will remain OFF until battery power is restored and the ignition is turned to the ON or RUN position.

### Features

#### Turn by Turn Navigation (if equipped)

Turn by Turn Navigation allows the driver to contact OnStar® to obtain directions for driving from a current location to a desired location. The Turn by Turn Navigation system stores your planned route and continually checks your position along that route. When you deviate from the planned route, the system will recognize this and prompt the driver with verbal prompts for how to proceed.

### Teletypewriter (TTY) Users

OnStar has the ability to communicate to deaf, hard-of-hearing, or speech-impaired customers while in the vehicle. The available dealer-installed TTY system can provide in-vehicle access to all of the OnStar services, except Virtual Advisor and OnStar Turn-by-Turn Navigation.

### Deactivated OnStar® Accounts

In the event a customer has not renewed their OnStar® account after expiration or the account was never activated, OnStar® will make a discrete cellular call to the vehicle to deactivate the OnStar® system. Before taking this action, customers are notified that the OnStar® system in their vehicle will be deactivated unless they elect to renew the account. After the OnStar® account has been deactivated, customers will experience the following:

- The OnStar® status LED will not illuminate.
- The OnStar® system will NOT attempt to connect to the OnStar® Call Center in the event of a collision or if the vehicle's front air bags deploy for any other reason.
- An emergency button press will play a demo message indicating the service has been deactivated.
- An OnStar® Call Center button press will connect the customer with a dedicated sales team who can sell an OnStar® subscription and reactivate the vehicle. Depending on the type of OnStar® hardware in the vehicle, the customer may first hear a demonstration message stating there is no current OnStar® subscription for the vehicle, and directing the customer what to do to activate services.
- OnStar® personal calling will not be available, as this feature requires the customer to have a current OnStar® account. Attempts to use this feature may result in cellular connection failure messages and the inability to connect to the number dialed.

Certain vehicles that have never had an active OnStar® account, or that have been deactivated, may be unable to establish a connection with the OnStar® Call Center. When normal published diagnostic procedures do not indicate a possible cause for the no connect concern, the vehicle may have been deactivated. For deactivated vehicles, a no connect response should be considered normal operation. Further diagnosis and subsequent repair is only necessary should the customer elect to become an active OnStar® subscriber or renew the account subscription.

### OnStar® Cellular, GPS, and Diagnostic Limitations

The proper operation of the OnStar® System is dependent on several elements outside the components integrated into the vehicle. These include the National Cellular Network Infrastructure, the cellular telephone carriers within the network, and the GPS.

The cellular operation of the OnStar® system may be inhibited by factors such as the users range from an analog or digital cellular tower, the state of the cellular carrier’s equipment, and the location where the call is placed. Making an OnStar® key press in areas that lack sufficient cellular coverage or have a temporary equipment failure will result in either the inability of a call to complete with a data transfer or the complete inability to connect to the OnStar® Call Center. The OnStar® system may also experience connection issues if the identification numbers for the module, station identification number, electronic serial number or manufacturers electronic ID, are not recognized by the cellular carriers local signal receiving towers.

The satellites that orbit Earth providing the OnStar system with GPS data have almost no failures associated with them. In the event of a no GPS concern, the failure will likely lie with the inability of the system to gain GPS signals because of its location, i.e. in a parking structure, hardware failure, or being mistaken with an OnStar® call which has reached the Call Center without vehicle data.

During diagnostic testing of the OnStar® system, the technician should ensure the vehicle is located in an area that has a clear unobstructed view of the open sky, and preferably, an area where analog or digital cellular calls have been successfully placed. These areas can be found by successfully making an OnStar® keypress in a known good OnStar® equipped vehicle and confirming success with the OnStar® Call Center advisor. Such places can be used as a permanent reference for future OnStar® testing.

### Mobile Identification Number and Mobile Directory Number

The Telematics Communication Module utilizes two numbers for cellular device identification, call routing and connection, a mobile identification number and a mobile directory number. The mobile identification number represents the number used by the cellular carrier for call routing purposes while the mobile directory number represents the number dialed to reach the cellular device.

### Radio/Audio System Description and Operation

The entertainment system on this vehicle may have several different configurations available to it. To determine the specific configuration of the vehicle, please see the Service Parts ID Label, and refer to *RPO Code List 0-2*.

Each item in the list below represents topics covered in detail below.

- Demo Mode
- Data Communications

- Remote Radio Receiver
- Speaker Operation
- Antenna System
- Radio Reception
- Active Noise Cancellation/Auto Volume Control (If equipped)
- Microphones
- Bluetooth ® (if equipped)
- WiFi
- Back Office Registration
- Applications (if equipped)
- Speech Recognition
- Navigation System Components and Features (if equipped)
- Locations Services
- Valet Mode
- Teen Driver
- Passenger Mode
- Theft Deterrent
- Audio Amplifier (if equipped)
- Infotainment Controls and Display
- Steering Wheel Controls (If equipped)
- SD Card Reader, USB and Auxiliary port
- OnStar ®
- OTA (Over The Air) Programming
- GAS (Google Automotive Services) if equipped
- Compass Data
- Media Disc Player (if equipped)
- Digital Rearview Camera (if equipped)

## Demo Mode

The radio on new unsold vehicles received at the dealer will be in Demo Mode. In Demo Mode a phone will only stay paired for the current key cycle and lose pairing to the radio after the vehicle shuts down and restarted after 10 min. Additional operational characteristics of Demo Mode include no retention of the following:

- Stored favorites
- Last station tuned
- Bluetooth synced devices
- Volume level
- Last app or screen view
- Audio/equalizer settings

**Note:** If a device was originally paired while in Demo Mode, a similar condition could occur that randomly continues to drop Bluetooth pairing after exiting Demo Mode. If the vehicle is not in Demo Mode, but it is believed the device was originally paired while in Demo Mode, then delete the device from the radio, delete the radio from the device, and perform the pairing process again.

Loss of functionality on the above items may be due to the design intent of the vehicle while in Demo Mode, no correction is needed for these conditions. This is the normal operating characteristic of the Demo Mode of the vehicle. Once the vehicle is sold, select the option labeled “Not a Demo Vehicle” to exit Demo Mode.

## Data Communications

The infotainment system communicates with other devices on multiple serial data networks during operation.

**Ethernet AVB**
At the core of the infotainment system is the Radio Ethernet AVB (Audio Video Bridging) switch, which communicates directly to each contributing Infotainment module terminator. The Ethernet harness consists of twisted pair wires from point to point. Each module on the Ethernet infotainment system sends/receives data at 100 megabit per second (Mbps) to/from a specified port at the Radio. Some system configurations support a 1 Gigabit per second (Gbps) connection at the Radio to/from the TCP (Telematics) module. The Radio/Ethernet will also be used to program USB software update files to the modules connected to the Ethernet ports. Some of the data services performed over Ethernet AVB include: Chime, Service Programming via Over-The-Air updates, OnStar Turn-by-Turn directions and all other OnStar data services.

**Local Interconnect Network (LIN)**
The Local Interconnect Network (LIN) Bus is a single wire communication system. This bus is used to exchange information between a master control module and other smart devices which provide supporting functionality.

The Remote Radio Receiver, Information Display, Infotainment Controls and the Multifunction (tunnel) Controls all communicate on the LIN bus.

**Controller Area Network (CAN)**
The Radio will communicate with other modules and systems in the vehicle via CAN and CAN5. Diagnostic Trouble Codes will be read on CAN/CAN5 to diagnose Ethernet, LIN and system faults. CAN will also be used for programming calibrations using Tech Line Connect (TLC)/SPS. CAN takes the place of GMLAN on Global-B architecture systems. CAN5 is a sub-system of the entire CAN network on a vehicle and is the specific network that connects the Infotainment modules on the vehicle.

For additional information refer to Data Link Communications Description and Operation 7-26

**Automotive Audio Bus (A2B)**
The Automotive Audio Bus (A2B) uses a radio and one or more amplifiers. It is a private, digital, and high speed serial bus. The system contains a master (radio) and one or more slaves (amplifiers) connected by an unshielded twisted pair (UTP) wiring harness. Diagnostic Trouble Codes (DTCs) are set within the master node for all errors in the system, if the bus is up and communicating. The system operates on full duplex, where communication is possible over a single wire if the other wire is damaged or open. The network is daisy chained. A and B ports are isolated by the A2B transceiver. The A2B bus line doesn’t require any terminator. The last device is configured as end node by the A2B master processor during the network discovery process.

## Remote Radio Receiver

### Overview

The Radio is the Ethernet master. The radio also communicates with other components and systems within the vehicle via CAN/CAN5 and LIN. The remote radio receiver communicates with the info display module via the LIN bus for control information, touch communications and dimming level. Digital video data is sent to the display through a dedicated video cable.

The Radio receiver contains internal antennas for Bluetooth ® and WiFi. The Radio also has an external WiFi antenna (on applicable systems) that is used to receive local WiFi signals at increased distances. This is mainly used to support Over-the-Air updates. The Radio must be mounted properly to obtain proper wireless signals and GPS position. The remote radio receiver is responsible for receiving all broadcast audio bands. Broadcast signals from AM, FM, XM and DAB bands are transmitted to the radio via the vehicle antenna systems. The remote radio receiver is also responsible for the following: Video for the infotainment display, Bluetooth ®, USB, memory card reader, and speech recognition functions.

The Radio has phone projection capabilities that can transmit information directly to the vehicle infotainment system through Bluetooth or a USB connection. Downloadable applications will be available based on distracted driver safety requirements.

**Radio Power**
The radio receives battery power and ground from the vehicle harness.

The radio does not use a discrete ignition feed circuit for power moding. The power mode master provides the system power mode to the radio via serial data messages. The power mode master determines the system power mode by processing power mode information from ignition switch inputs. Serial data power modes supported by the radio are OFF, ACCESSORY, RUN, and CRANK REQUEST.

The radio can be turned ON with the ignition OFF. After 10 minutes of inactivity the radio will power down. If any setting (e.g. changing the station) or volume has been changed or if the radio has been powered OFF than back ON the 10 minute timer will reset from that point.

**Radio Audio Outputs**
When not equipped with an amplifier, the radio outputs all audio signals to the speakers via the vehicle wiring harness.

When equipped with an amplifier, the radio outputs all audio signals digitally over Ethernet.

## Speaker Operation

Speakers turn electrical energy into mechanical energy to move air, using a permanent magnet and an electromagnet. The electromagnet is energized when the radio or amplifier (if equipped) delivers current to the voice coil on the speaker. The voice coil will form a north and south pole that will cause the voice coil and the speaker cone to move in relation to the permanent magnet. The current delivered to the speaker is rapidly changing alternating current (A/C). This causes the speaker cone to move in two directions producing sound.

## Antenna System

**Multi-Band Antenna**
The multi-band antenna is located on the roof of the vehicle. This type of antenna may be used with the AM/FM radio, but is primarily for cellular, GPS signals, and XM, if the vehicle has these features. Keep this antenna clear of snow and ice for clear reception. If the vehicle has a sunroof, the performance of the system may be affected if the sunroof is open. Loading items onto the roof of the vehicle can interfere with the performance of the system. Ensure the multi-band antenna is not obstructed.

**Diversity Antenna**
The diversity antenna system can use up to two antenna amplifiers and an AM/FM element that is part of the rear end spoiler assembly or applied as appliqués to the rear glass. With two antennas the right antenna 1 receives both AM and FM signals, while the left antenna 2 may receive FM and Digital Audio Broadcast (DAB) signals only. The antenna amplifier receives the signals from the rear end spoiler antenna element or from the glass antenna element. Each antenna amplifier is connected to the radio by a coaxial cable.

The radio antenna amplifier is enabled when the radio is turned on. The radio provides battery voltage to the antenna amplifier using the center conductor of the antenna coaxial cable. When a 12 V signal is seen by the amplifier on the center conductor of the antenna coax, the received signals are amplified.

With a two antenna amplifier system when the AM band is selected on the radio, the antenna 1 amplifier connects the AM antenna to the radio. When the FM band is selected, both antenna amplifiers provide FM signals to the radio. The radio switches between the two FM antennas, monitoring the signal strength and combines the signals to create one stronger signal.

**Global Positioning System (GPS) Antenna**
The global positioning system (GPS) antenna is part of the multi-band antenna located on the roof of the vehicle. The GPS antenna is used to collect the signals of the orbiting GPS satellites. Within the antenna is housed a low noise amplifier that allows for a more broad and precise reception of this data. The GPS antenna amplifier is powered through the coaxial cable.

The GPS antenna is connected to the telematics communication interface control module via a coax cable. The GPS signal is sent to the navigation radio via an Ethernet harness.

**External WiFi Antenna**
On some system configurations, an external WiFi antenna is connected to the radio to support longer range reception, compared to the internal Wifi antenna. Over-the-air updates is the main feature supported by this antenna. Data transfers used for consumer media will also be supported by this antenna when connected to a local network. The antenna is connected to the radio via coaxial cable.

## Radio Reception

**AM/FM Radio Signal**
The radio signal is sent from a broadcast station and is then received by an antenna. The strength of the signal received depends on the following:

- The power output (wattage) of the broadcasting station
- The location of the vehicle (or receiver) relative to the broadcast tower.
- Height of the broadcast antenna
- Height of the receiving antenna
- Obstacles between the tower and the receiver
- Atmospheric conditions
- What band (AM or FM) the station is broadcasting
- Type of antenna and the ground plane

**Sirius XM (SXM) Digital Radio Receiver (If equipped)**
A service fee is required in order to receive the XM service.

The XM satellite receiver is integrated into the radio. XM satellite radio provides digital radio reception. The XM signal is broadcast from two satellites and, where necessary, terrestrial repeaters. The high power satellites allow the antenna to receive the XM signal even when foliage and other partial obstructions block the antennas view of the satellite. Terrestrial repeaters are used in dense urban areas. These repeaters will receive the satellite signal and re-broadcast them at much higher power levels in order to ensure reception in areas with densely packed tall buildings. Even with repeaters the signal can be compromised resulting in loss of XM.

**SiriusXM 360L**
SiriusXM with 360L interface has enhanced in-vehicle listening experience for subscribers. The experience now offers more categories and system learned recommendations toward discovering more personalized content.

To use the full SiriusXM 360L program, including streaming content and listening recommendations, OnStar Connected Access is required. Connected vehicle services vary by model and require a complete working electrical system, cell reception, and GPS signal. An active OnStar connected plan is required, if the customer declines OnStar Terms and Conditions the following message can be displayed: Connection Unavailable, Please call OnStar Agent.

Reference the SiriusXM user guide for use and subscription information.

**SiriusXM Tune Start**
SiriusXM Tune Start is a feature that begins playing the current song from the beginning when you tune to a SiriusXM music channel in the stored Favorites. This feature can be enabled/disabled through the radio Settings menu.

When equipped, Tune Start works with most SiriusXM music channels when the channel has been saved as a Favorite in the radio. The SiriusXM app in the radio also has a list of Favorites. Saving a SiriusXM music channel as a Favorite automatically saves it in the hidden SiriusXM Favorites list. If a SiriusXM music channel is not working in Tune Start ensure the channel exists in the SiriusXM Favorites list. SiriusXM Favorites can be found in the SiriusXM Settings menu under Listener Options. Note that SiriusXM channels stored by default in new vehicles are not stored in the SiriusXM Favorites list. These channels would need to be stored as Favorites by the user for them to appear in the SiriusXM Favorites list. The radio may require a sleep cycle before Tune Start will begin to function on newly saved Favorites. Tune Start will only begin to record SiriusXM Favorites with the Ignition On, so some buffering time is required before Tune Start can function after the vehicle is started.

Tune Start is a SiriusXM feature. Reference the SiriusXM user guide, or contact SiriusXM for use and subscription information.

**High Definition (HD) Radio (If equipped)**
HD Radio delivers subscription free local broadcasting in a digital format which may include song title, artist name, album art, weather, traffic data, etc., on AM/FM bands. Up to four stations could be available on a single frequency for e.g. if radio station is 96.9 FM, the HD enabled radio would have additional broadcasts on 96.9 HD1, HD2, HD3 and HD4. The digital technology allows for clear reception quality and additional information.

## Active Noise Cancellation/Auto Volume Control (If equipped)

Active Noise Cancellation (or sometimes referred to as Auto Volume Control) may have several different configurations. To determine the specific configuration of the vehicle, please see the Service Parts ID Label, and refer to *RPO Code List 0-2*.

The main components of the Active Noise Cancellation system are:

- Microphones in the vehicle headliner. Use schematics to determine the number of microphones in each vehicle.
- An engine speed (RPM) signal from the engine control module to the amplifier/active noise cancellation module/radio.
- Active Noise Cancellation electronics and software integrated into the audio amplifier/active noise cancellation module/radio.
- The vehicle speaker system, connected to the amplifier/active noise cancellation module/radio, to output the desired cancellation frequencies.

The Active Noise Cancellation system is operational under the following conditions:

- The amplifier/active noise cancellation module/radio has passed all self diagnostic checks.
- All doors are closed.
- Battery voltage is between 9.5 V and 16 V.
- The vehicle cabin temperature is less than 140°F (60°C).
- For internal combustion engines- Engine speed is between 550 and 3000 RPM

The Active Noise Cancellation/Auto Volume Control system is a method used to reduce the perception of certain undesirable sounds generated by the engine into the vehicle cabin. The systems uses microphone and engine speed signals, software integrated into the amplifier/active noise cancellation module/radio, and the vehicle speakers to determine and generate the correct frequencies needed to achieve the desired reduction.

The microphones are located in the headliner to monitor noise/sounds in the vehicle cabin, and are directly connected to the amplifier/active noise cancellation module/radio. For internal combustion engines the amplifier/active noise cancellation module/radio also receives an engine speed (RPM) signal from the engine control module. The amplifier/active noise cancellation module/radio processes these inputs to determine the frequency of the undesirable sound. The amplifier/active noise cancellation module/radio then calculates the appropriate cancellation frequency and outputs a cancellation signal (audio tone) to the vehicle speakers to reduce the perception of undesirable sounds by the vehicle occupants so the vehicle cabin appears quieter and without vibration.

### Microphones

This system utilizes two hands free audio microphones, the primary microphone on the driver side and a secondary/reference microphone for the front passenger side. The primary microphone is connected directly to the Telematics Control Module. It is also connected by an analog pass-through circuit to the radio from the Telematics Control Module. Without OnStar the primary microphone is connected directly to the radio. The secondary microphone is always connected directly to the radio.

The primary microphone is used for emergency and OnStar calls. During normal operating conditions it also provides Bluetooth calls and speech recognition to the radio. The secondary microphone is used as a reference for the primary microphone for Barge-in and Passenger Interference Cancellation during speech recognition and also to enhance the driver side hands free calls. For MY18 and beyond the secondary microphone can also be used for front passenger hands free phone calls. Barge-in allows a user to speak over the system prompts. Passenger Interference Cancellation ignores unwanted inputs from cabin noise that is not related to the prompts given by the user.

The front passenger secondary microphone is never used as a direct source for an OnStar call. The second microphone input modifies the primary microphone input to reduce background noise and other interference. An OnStar call requires the microphone to be directly connected to the Telematics Control Module. During a normal (non-emergency) OnStar call the Telematics Control Module receives an audio signal from the primary microphone and sends the signal to the radio via the Ethernet connection. The radio processes the OnStar call audio and sends it back to the Telematics Control Module via the Ethernet connection. During an emergency button call the Telematics Control Module contacts the OnStar call center directly and does not send the signal to the radio.

## Bluetooth ® (If equipped)

Bluetooth ® wireless technology is a short-range communications technology intended to replace the cables connecting portable and/or fixed devices while maintaining high levels of security. The operating range of the signal is approximately 30 feet.

The available features and functions are determined by the type of device and the software within the devices being used. For a feature or function to operate, it must be supported in both devices.

The first connection between devices is established through a process called pairing. In order to pair two devices, a password (passkey) has to be exchanged between the two devices. One device will generate the password, the other device accepts the password to complete the process. Once the devices are paired, future connections between the devices will occur automatically when the devices are on and within range of each other.

The Bluetooth ® hardware is internal to the Remote Radio Receiver. The antenna is internal to the Remote Radio Receiver. The Remote Radio Receiver supports streaming of data (music, voice, information) from cellular phones and other mobile devices that support those features. The Remote Radio Receiver is also capable of interfacing with cellular phones for hands-free features.

- The device must be paired to the system to use the available Bluetooth ® feature(s). The pairing process must only be performed once for each device, unless that device's information is deleted.
- Depending on model year up to 10 devices can be paired, refer to owners manual for details.
- Streaming Audio allows playing music from the mobile device wirelessly. Music stored on the mobile device can be viewed and controlled from the display.
- To stream audio from a mobile device, the device must be unlocked, and any additional applications should be closed.

Refer to the owners manual, supplements, and the device manufacturers information for pairing instructions.

## WiFi

The WiFi hardware is internal to the Remote Radio Receiver. The WiFi or WLAN antenna is called the Wireless Communication Antenna which is connected to the Remote Radio Receiver. WiFi expands the abilities of the vehicle as described below:

- Connect to home WiFi to update software.
- When used with OnStar 4G LTE HotSpot service, it provides internet access to devices in the vehicle when connected to the HotSpot. This requires the purchase of OnStar WiFi data plan.
- Enables in-vehicle networking between passengers' devices, like home WiFi network.
- Allows remote access to external connected device application data for vehicle internet application use.

## Back Office Registration

The Radio must be registered with the GM Back Office in order to receive downloaded information such as approved applications, module software updates, weather and traffic information for current location. The vehicle must have a Cellular or WiFi connection to complete the initial registration process. This process will verify the assembly plant factory feed data from the BCM, CGM and Radio serial numbers to the VIN and if the security checks are met, then the user must complete the registration process by entering email and required personal information. The registration status can be verified through the Radio "Setting – About" selection.

When any of these secured ECU's are replaced, a new serial number will be recorded during the service calibration process and appended to the vehicles history data for uninterrupted back office connection.

If the Radio is replaced, the user can recover settings/applications by reregistering the email account. During the initial registration process the user will enter an email/password. The user will then be sent a follow up verification email link to setup the account completely. If the complete account setup is not performed the password reset security questions will not be entered, which will prevent reregistering this email account in the future if the password is forgotten. The radio will operate in Demo Mode or as Guest until a user profile has been set up.

## Applications (If equipped)

**Note:** For vehicles equipped with Google Automotive Services (GAS) refer to that section below.

When the system is equipped with Bluetooth® or WiFI, the system is capable of using applications, commonly referred to as apps.

The term application refers to any piece of software that works on a system (hardware) that is being operated by it's own software. Applications are typically small software programs which uses the hardware to perform a specific task, as opposed to operating the entire system.

- For an application to be used, it must be installed on both the vehicle infotainment system and a compatible mobile device.
- The device must be connected to the system. this may be done wirelessly via Bluetooth®, WiFi, or via the vehicle USB port. Refer to the device manufacturers information for the proper connection method.
- When the device is connected, the vehicle infotainment system is used to remotely access and control the application on the mobile device.
- The application must work correctly on the device to work with the vehicle infotainment system.
- The user may be required to log-in to the application on the mobile device before using the application from the vehicle controls.
- Using applications will use the device's data plan.
- The device must be unlocked, and any additional applications should be closed.

Refer to the owners manual and supplements for information on mobile devices, control, and operation.

## Speech Recognition

The Speech Recognition feature is implemented only in a Mid/High System Radio module. There is no Speech Recognition in a Low System. Speech Recognition allows the user to command various features of the radio via voice commands. For addition information refer to the owners manual. For model year 2018 (and forward) Mid/High systems, part of the speech recognition functionality is controlled via off-board cloud connection. A speech icon in the radio allows user to see if an utterance has been received by the off-board cloud. Points-of-interest (POIs) data are also stored off-board. Any disruption in the connection to the cloud will cause a partial loss of functionality for these systems.

For model year 2018 (and forward) there will also be a new speech recognition feature called Barge-in. This allows the user to speak over the voice prompts generated by the system. This feature is turned off by default from the factory and must be enabled by the user.

## Navigation System Components and Features (if equipped)

There are two different navigation systems- SD card based where the map data is stored on the SD card or through the Google Maps app which is a subscription based service (depending on available options).

The navigation system provides the following:

- A global positioning system (GPS) signal, which provides the vehicle location information.
- Map data for navigation and map route guidance.
- Route guidance with verbal prompts to the operator.
- Traffic and weather information for display on the navigation system map (with active subscription, where available).
- For SD card navigation periodic Map updates can be performed by inserting an updated SD card.

GPS signals are an output from the telematics communication interface control module on Ethernet. Other modules on Ethernet, such as the radio may use the GPS latitude, longitude and satellite time data broadcast by the telematics communication interface control module.

The On-board navigation feature (SD card based) uses an on-board navigation engine with an optimized map display that is calculated and rendered locally.

### Route Guidance

The map will display the route to the selected destination. Voice prompts alert the operator of upcoming events (turns) and arrivals at the destination. The navigation system will automatically recalculate if the route is not followed. The remote radio receiver uses data received from the global positioning system (GPS) satellites, the vehicle speed signal, and serial data information to accurately display the current position of the vehicle.

**Points of Interest**

The map database provides point of interest information. Points of interests are locations that are frequently visited. Points of interest can be can be displayed on the map or set as a destination. The following are some of the available Points of interests:

- Gas Station
- Restaurant
- College
- Police Station

### Locations Services

“Locations Services Off” also referred to as Location Masking, is a feature in select 2019 and beyond Infotainment 3 systems that allows customers to enable or disable location services in their vehicle. This allows customers to control what data is being sent from their vehicle, and has important implications for other connected services.

The default setting is “Locations Services On”, however, customers can enable or disable Locations Masking in two ways:

1. Press and hold the white button next to the blue OnStar® button in the overhead console.
2. In the Setting menu, select System>Privacy>Location Services>ON or OFF.

- Look for the white LOCATIONS SERVICES icon in the status bar on the Home Screen, next to the clock and outside temperature in the lower right corner of the screen.
- When Locations Services are On, there will be no circle around the icon.
- When the Locations Services are Off, the icon will be circled in red.

Certain functions that require the vehicle’s location may not operate properly when Location Services are Off, including:

- Connected Navigation services, if equipped and active, will not work (the system will operate as a non-connected Navigation system).
- Speech recognition may not offer full functionality.
- OnStar advisors will be unable to provide Turn-by-Turn Navigation services.
- Customers may receive error messages in their myChevrolet, myBuick, myGMC, or myCadillac mobile app when trying to use Vehicle Locate.
- Some features of Smart Driver may be inoperable or not work properly, including the score being replaced by dashes.

**Note:** Emergency services, such as Automatic Crash Notification and Stolen Vehicle Assistance, are NOT impacted by Location Masking.

### Valet Mode (If equipped)

Valet Mode is a customer enabled feature of the infotainment system, found in the settings menu, if equipped. The customer creates and inputs a four digit code using the infotainment controls. Confirming the code and selecting LOCK will lock the infotainment system, steering wheel controls and other vehicle features, dependent on vehicle equipment. The vehicle will remain in valet mode until the same four digit code is re-entered.

In the event that the four digit code is forgotten, it can be reset with the scan tool under BCM.

### Teen Driver

The teen driver feature puts the vehicle into a mode that can only be unlocked with a valid PIN. It allows various restrictive features for safer driving. Some of the features include Speed Limiter, Speed Warning, Register Key, Report Card, etc. For additional information refer to owners manual.

In the event that the four digit code is forgotten, it can be reset with the scan tool under BCM.

### Passenger Mode

A “Passenger Mode Disable Lockouts Y/N” message may appear on the center display when there is a front seat passenger sensed in the seat. Disabling the driving lockouts allows for the passenger to accomplish some tasks that a driver should not while the vehicle is in motion.

### Theft Deterrent

The radio theft deterrent system is intended to disable or limit radio functionality if incorrect vehicle information is received by the radio. The radio disables functionality if the VIN information received by the radio does not match the VIN information that has been learned by the radio. The radio receives this information via serial data. A possible cause of incorrect VIN info could be the radio was originally installed in another vehicle.

The radio has the following theft operating modes as part of the theft deterrent system:

- Normal Mode: The radio has learned a correct VIN sequence and the VIN information received via serial data matches the learned VIN sequence. In this mode the radio has full functionality.
- No VIN Mode: The radio has not received or learned a correct VIN sequence. In this mode the radio has limited functionality.
- Theft Detected Mode: The radio has learned a correct VIN sequence and the VIN information received via serial data does NOT match the learned VIN sequence. In this mode the radio may be disabled or have limited functionality. The radio display will indicate that theft protection is active.

## Audio Amplifier (If equipped)

**Amplifier Interface**
A fused battery voltage circuit provides the main amplifier power. The audio amplifier (when equipped) is a participant on the Ethernet bus. The audio amplifier receives audio signals and control information from the Radio. The Amplifier receives battery power and ground from the vehicle harness.

**Amplifier Operation**
The purpose of the amplifier is to increase the power of a voltage or current signal. The output signal of an amplifier may consist of the same frequencies as the input signal or it may consist of only a portion of the frequencies as in the case of a subwoofer or midrange speaker. The audio amplifier amplifies the signal and sends it to the appropriate speakers.

Each of the audio output channel circuits (+) and (−), at the audio amplifier have a DC bias voltage that is approximately one half of the battery voltage. When using a DMM, each of the audio output channel circuits will measure approximately 6.5V DC. The audio being played on the system is produced by a varying AC voltage that is centered around the DC bias voltage on the same circuit. The AC voltage is what causes the speaker cone to move and produce sound. Both the DC bias voltage and the AC voltage signals are needed for the audio system to properly produce sound.

The audio amplifier is also responsible for operation of active noise cancellation if equipped. Refer to Active Noise Cancellation Description and Operation for more information.

## Infotainment Controls and Display

The infotainment display and controls are a separate component from the radio, combined into an assembly. The assembly contains the control knobs and buttons for all audio and HVAC functions and the information display. The assembly is supplied battery voltage and ground from the vehicle harness.

Control information, touch communications and dimming level for the display are communicated via a Low Speed serial data circuit or LVDS cable to the Radio.

The remote radio receiver sends the display digital video data for on-screen display through a dedicated video cable.

The information display provides a feedback on the touch screen and certain controls.

The controls communicate via a Low Speed serial data circuit or LVDS cable with the remote radio receiver. Messages communicated include the following:

- Wake-up/power state messages
- Diagnostic information
- Button presses/knob rotations
- Commands for the state of indicators
- Back-lighting dimming level

## Steering Wheel Controls (If equipped)

Some audio functions are available using the steering wheel controls. The steering wheel controls duplicate the function of the primary controls available on the radio.

For additional information on steering wheel controls, refer to Steering Wheel Controls Description and Operation.

## USB Port, SD Card Reader and Auxiliary port (If equipped)

The infotainment system may contain an assembly that has either a USB port, Auxiliary port, and may even have an SD card reader located within the drivers reach. The assembly interfaces with a hub device, internal to the auxiliary jack, USB, and memory card receptacle assembly. The auxiliary jack, USB, and memory card receptacle assembly receives fused battery voltage and ground from the harness to power the internal hub device as well as providing additional amperage to power USB devices.

The internal hub device interfaces directly with the remote radio receiver via a standard USB cable. A Mini type USB connector is used to connect the cable at the USB port and at the remote radio receiver and at the auxiliary jack, USB, and memory card receptacle. Standard USB male to female connections are typically used for connecting USB cables together where an in-line connection is required. An in-line cable connection is typically found between the console and I/P harness.

**USB Port**
The USB port allows connectivity to the infotainment system from portable media players or a USB storage device (memory stick/ flash drive). When a device is

connected to the USB port, the device can be controlled from the radio controls.

Not all portable media player devices or file types are compatible. Connection to USB hub devices is not supported.

To ensure a USB drive is compatible, it should be formatted as either FAT32 or exFAT. FAT32 is widely compatible and recommended for drives 32GB and smaller, while exFAT is better for larger drives.

Formatting will erase all data on the USB drive, so back up any important files before proceeding.

Supported music file types: MP3, OGG, ACC, and 3GP audio file formats.

**SD Card Reader (if equipped)**
On certain Navigation vehicles the SD card will contain the Map information for the vehicle region. The Map data will be updated either by replacing the SD card with the latest release or in regions that support it, OTA wireless updates via WiFi on MY18> vehicles.

Refer to the owners manual for information on the Navigation system.

**Auxiliary Audio Input Jack (if equipped)**
The infotainment system may have a 3.5mm (1/8 in.) auxiliary audio input jack located in the center console. The auxiliary audio input jack interfaces directly with the radio. When a portable audio playback device is connected to the auxiliary jack, an internal switch detects the connection and the radio will switch to AUX as the audio source. Audio signals from the device are sent to the radio from the auxiliary jack via USB.

- When a device is first connected to the 3.5mm (1/8 in.) input jack the infotainment system automatically switches to that device. If an auxiliary device has already been connected, press the AUX or CD/AUX button to select the device.
- Playback of an audio device that is connected to the 3.5mm jack can only be controlled using the controls on the device.
- The volume control on the device may need to be adjusted eo ensure sufficient playback volume through the infotainment system.

## OnStar ® (If equipped)

When OnStar is activated, a serial data message is sent to the radio that activates default audio settings. The fade will be set to the front, Bass and Treble are set to the mid range, the outputs are mono, when the audio source is OnStar. OnStar takes priority over any other audio source.

For additional OnStar information, refer to OnStar Description and Operation.

## Over The Air Programming

The Over The Air Programming feature was designed to reflash software remotely. Remote reflash is an in-vehicle feature that enables the installation of a software package to update the infotainment system without requiring service test equipment to be physically connected to the vehicle. Remote reflash will utilize a long range or short range connection from the host module to a remote IT system. There must be an active OnStar account to receive Over The Air programming or updates. To verify the status of the account perform a blue button press and verify the account is active and connects with data and location. Customers need to accept the OnStar terms and conditions, and must have an active OnStar account to receive any Over The Air programming or updates.

**Note:** A data plan is not required to receive Over The Air programming or updates. Also the programming or updates do not consume a customers available data.

**Note:** Fleet vehicles must be activated as a Fleet account (not a business account) and require a separate Terms and Conditions agreement to be completed. Please see your fleet administrator for assistance with completing this agreement.

## GAS (Google Assistant Services) if equipped

Some of the GAS features are:

- Maps – Benchmark maps, navigation, traffic and point of interest data and legal speed limit sign information.
- Assistant – Voice assistant cloud services with vehicle integration (e.g., radio, HVAC).
- Play Store – Access to favorite media streaming apps plus first party GM apps.
- Keyguard – similar to a code to unlock your cell phone. When this feature is enabled a customer created lock (pattern, PIN or password) will need to be entered to unlock the radio at every ignition cycle. When the radio is locked SPS diagnostics will be unavailable. To utilize SPS diagnostics when the radio is locked enter the “Guest Mode” feature.

A connectivity package needs to be purchased to have the full experience. Refer to the Owner Manual for further information on Google Automotive Services.

### Compass Data

With the Base Radio the Telematics Control module provides compass and GPS position information on the Info-CAN bus when it is present.

In a Mid / High Radio System configuration without a Telematics Control Module and equipped with GPS, the radio shall provide the GPS and heading information on Info-CAN as shown below.

An external Remote Compass Module (RCM) is required to transmit the heading and position information on Info-CAN if either:

- The Base Radio is present in a system configuration with no Telematics control module.
- The radio variant without GPS is present in a system configuration with no Telematics control module.

### Media Disc Player (if equipped)

The Remote Media Player feature sends information through a USB connection to the Rear Seat Infotainment and outputs digital audio/video to vehicle displays and to the Radio over the Ethernet bus. The Rear Seat Infotainment system also has a USB hub with an auxiliary port for digital media file access.

The media disc player receives battery power and ground from the vehicle harness.

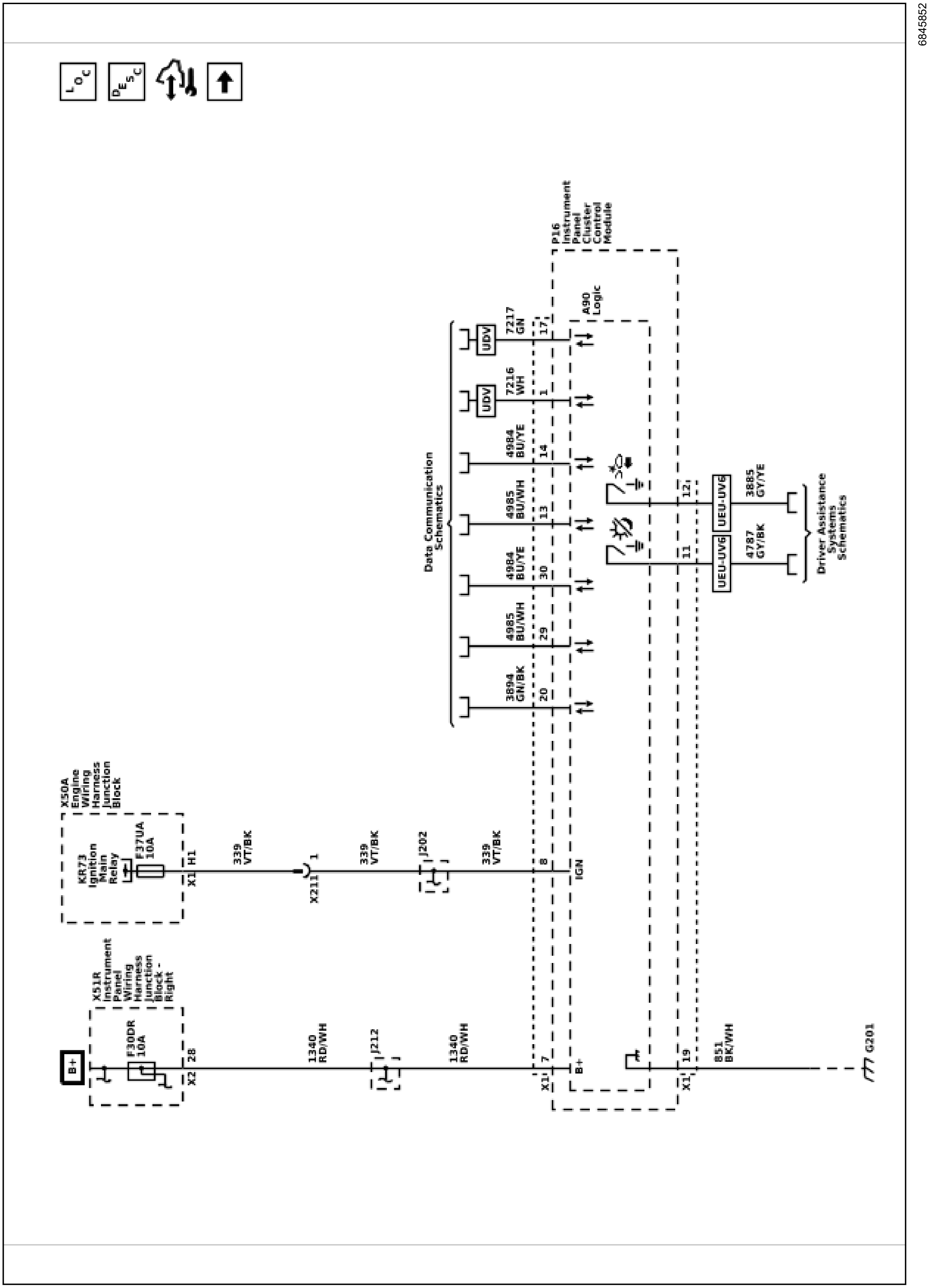
### Digital Rearview Camera (if equipped)

For model year 2018 (and forward), the digital rearview camera is a direct input to the radio via coaxial cable. Camera and image activation are driven by reverse gear signal from the reverse lamp input. This function is used for reverse guidance. For radio systems that manage the camera signal, the system does not have video bypass module, as this functionality is managed onboard the radio.

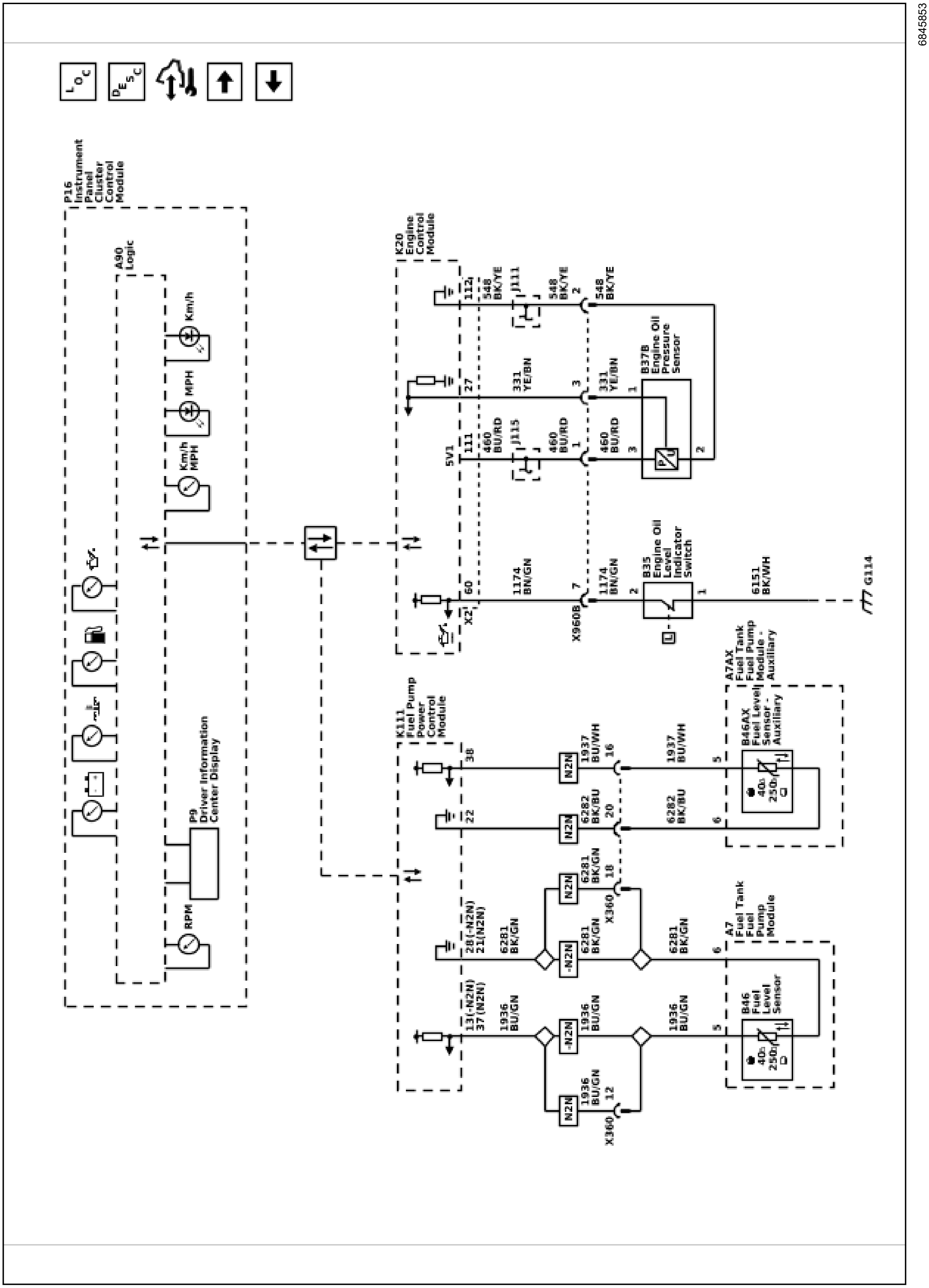
# Displays and Gauges

## Schematic and Routing Diagrams

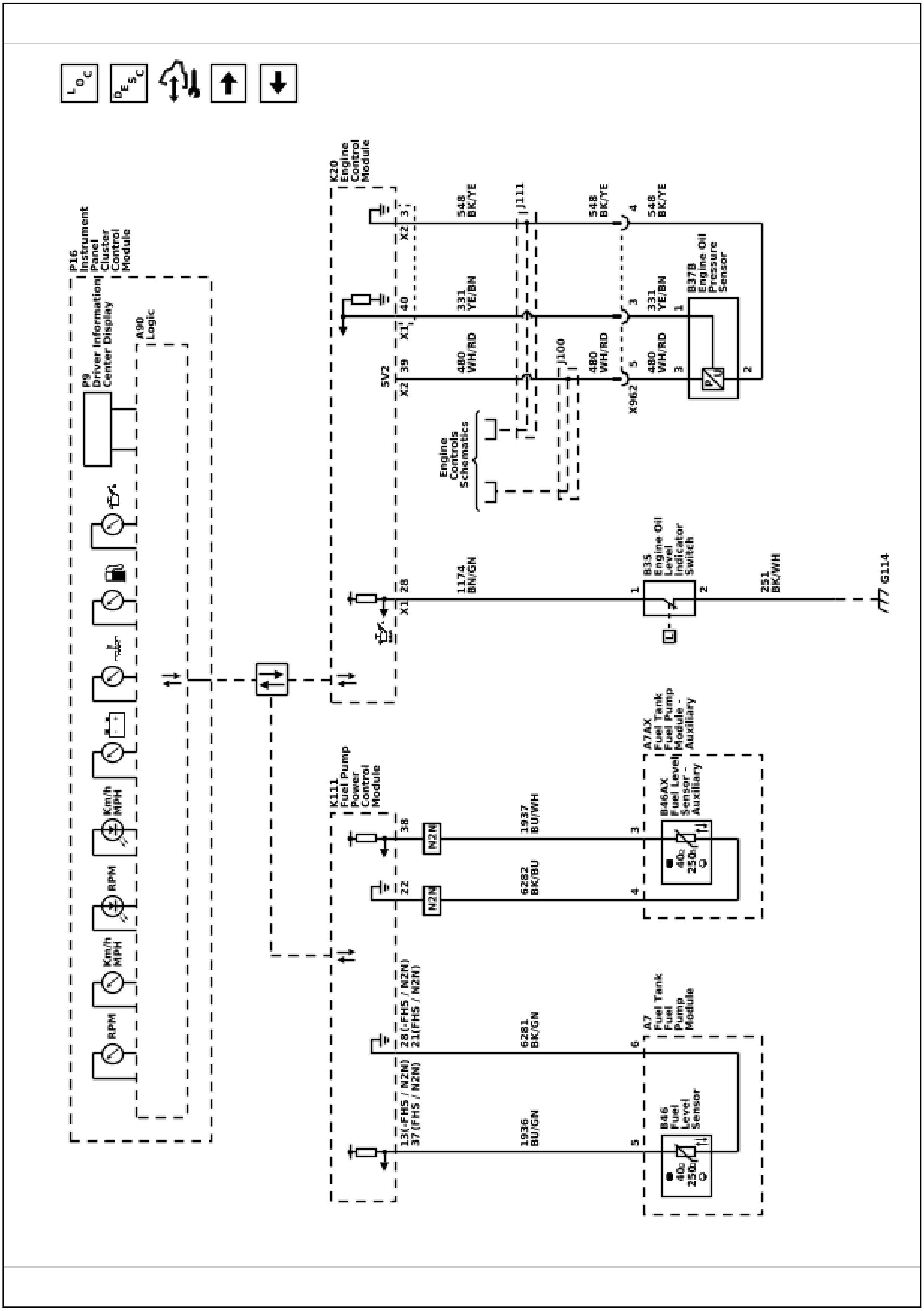
## Instrument Cluster Schematics (Power, Ground and Serial Data)



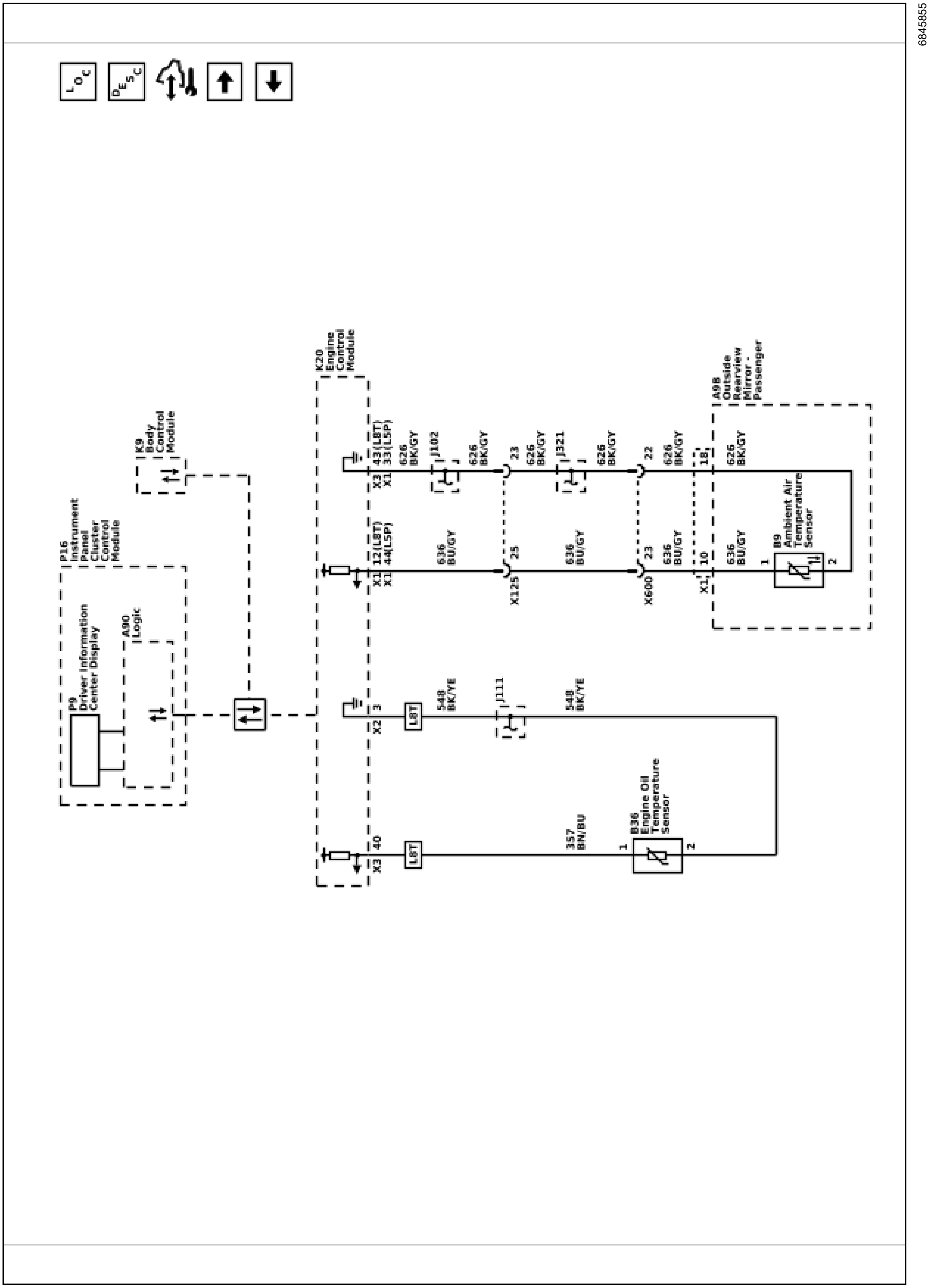
## Instrument Cluster Schematics (Gauges (L5P))



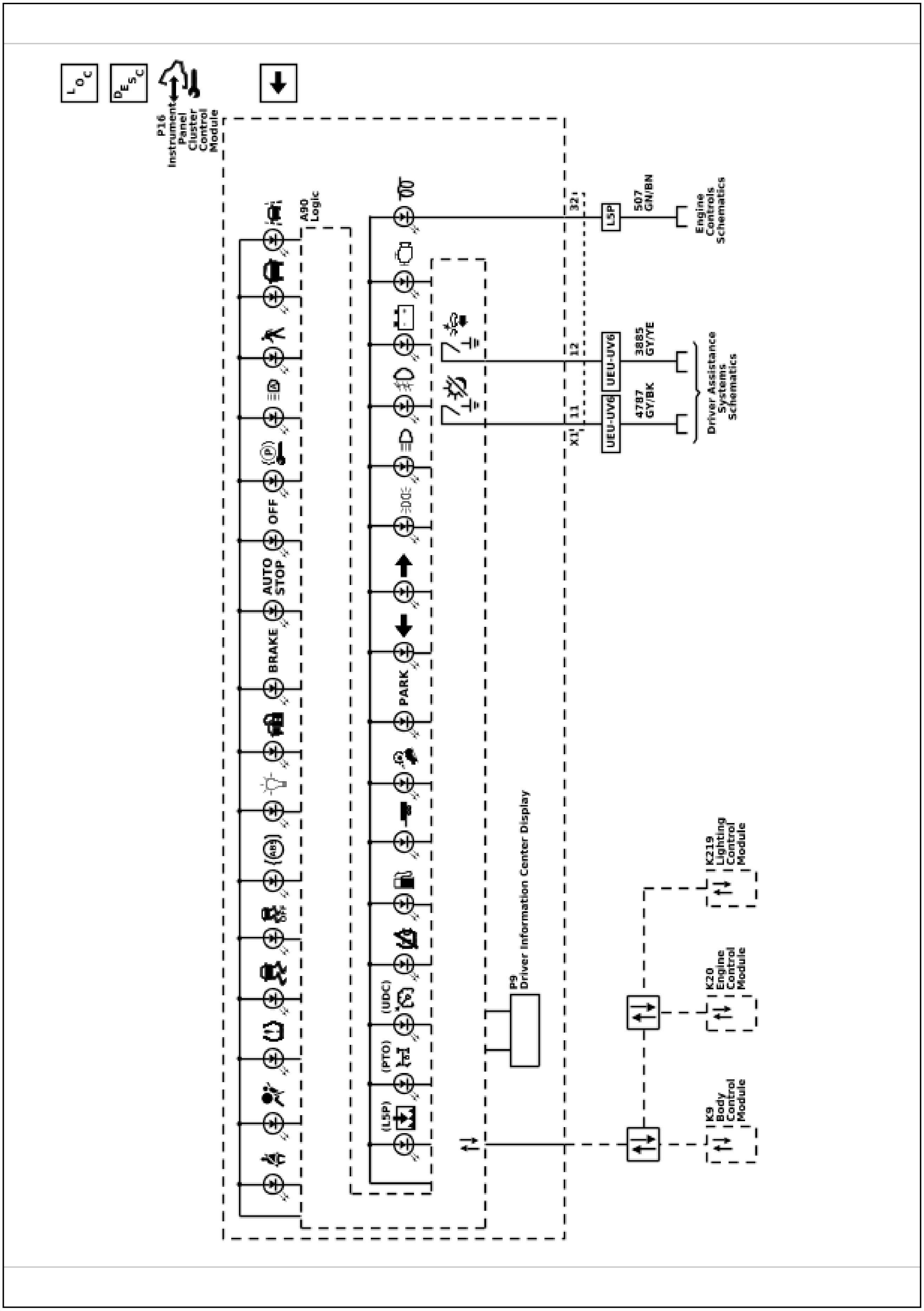
## Instrument Cluster Schematics (Gauges (L8T))



## Instrument Cluster Schematics (Engine Oil Temperature and Ambient Temperature)



## Instrument Cluster Schematics (Indicators)

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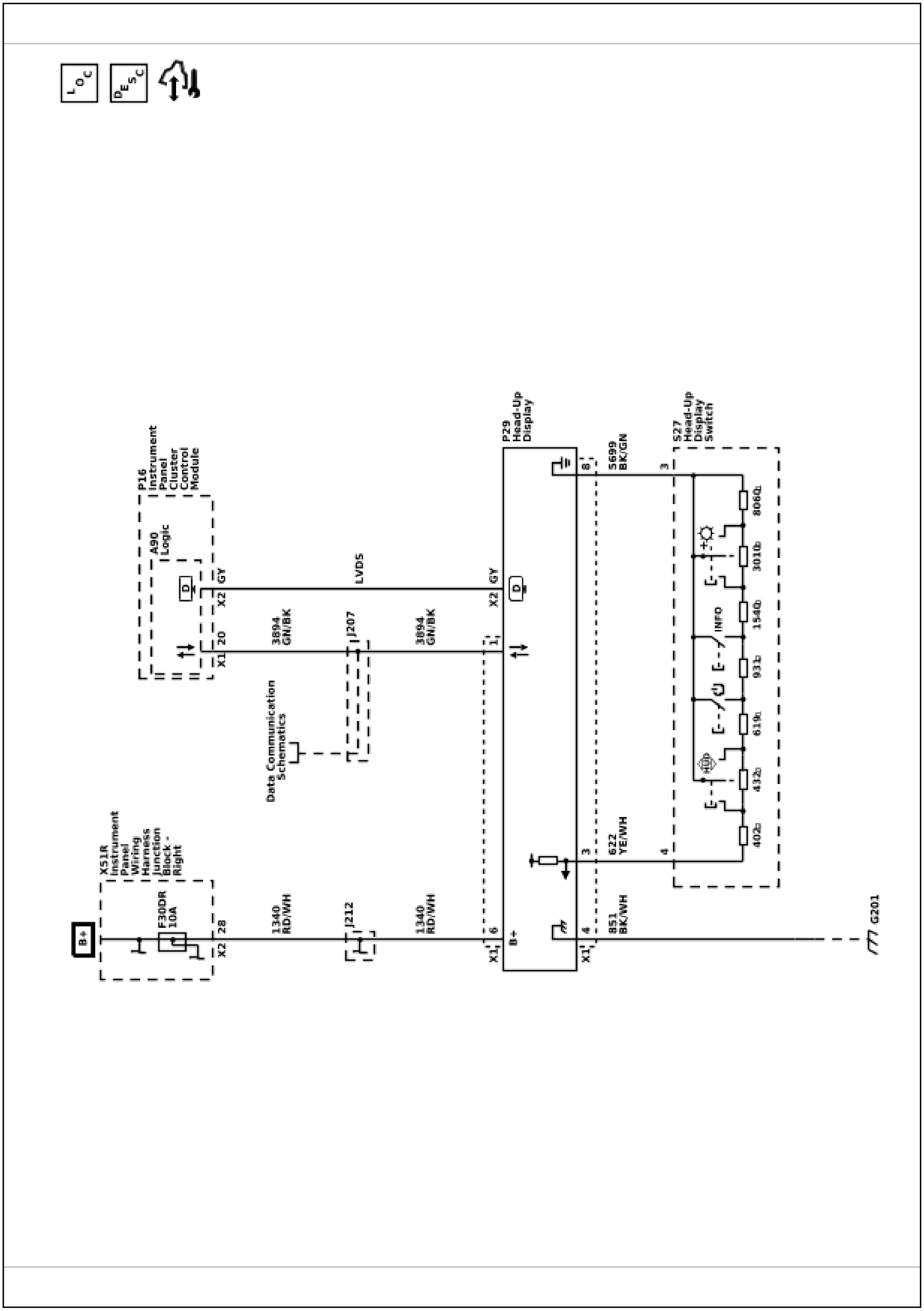
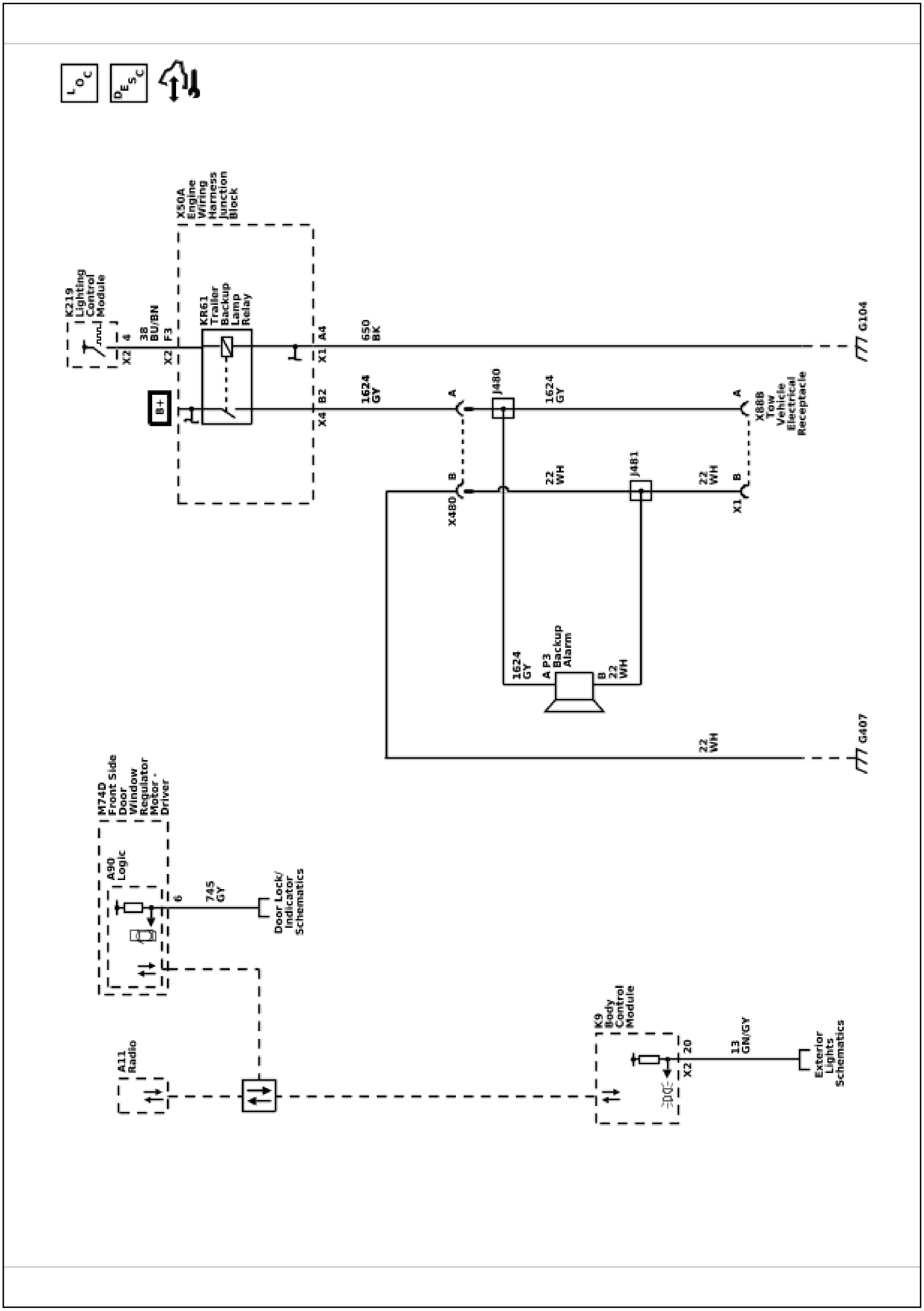
## Head-Up Display Schematics (Head-Up Display (UV6))



## Audible Warnings Schematics (Audible Warnings)

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# Description and Operation

## Audible Warnings Description and Operation

The audible warnings alert the driver of a system concern or a critical vehicle condition. If equipped with an serial data communicating audio amplifier, the audio amplifier generates the audible warnings through the speakers. If not equipped with an audio amplifier, the radio generates the audible warnings through the speakers. The radio or audio amplifier receives audible warning requests via serial data. If the radio or audio amplifier receives multiple audible warning requests, the warning with the highest priority sounds first. Different audible warnings may sound with a different frequency or a different chime pattern, depending on the system or module making the request. The chime volume may be selectable through vehicle personalization.

## Audible Warnings or Chimes

The following is a list of common audible warnings or chimes that may be present on the vehicle. For additional chimes or complete system description, refer to the appropriate system's Description and Operation or the vehicle owner's manual.

- Driver Seat Belt Reminder – If the vehicle is started and the seat belt is unbuckled, the BCM requests the radio or audio amplifier sound a chime to indicated that the belt is unbuckled. This is accompanied by a flashing driver seat belt indicator on the instrument cluster. If the belt remains unbuckled, the chime cycle may continue multiple times if the vehicle is driven and the indicator will remain on solid.
- Passenger Seat Belt Reminder – If the passenger presence system determines that their is an occupant in the passenger seat and the vehicle is started with the passenger seat belt unbuckled, the BCM requests the radio or audio amplifier sound a chime to indicated that the belt is unbuckled. This is accompanied by a flashing passenger seat belt indicator. If the belt remains unbuckled, the chime cycle may continue multiple times if the vehicle is driven and the indicator will remain on solid. If an object is placed on the passenger seat, the passenger presence system may interpret this as a passenger occupying the seat. Because the passenger seat belt is unbuckled, the passenger seat belt reminder chime will sound. To correct this, remove the object from the passenger seat.
- Exterior Lamps On Warning – If the exterior lamps are left on after the ignition is turned off and the driver door is opened, the BCM will request the radio or audio amplifier sound a chime as an indicator that the exterior lamps are on.
- Electric Parking Brake (if equipped) – If the electric parking brake switch is pressed while the vehicle is in motion, the parking brake control module will request the radio or audio amplifier sound a chime. To release the parking brake, the brake pedal must be pressed when the electric parking brake switch is pressed. If the brake pedal is not pressed, the parking brake control module will request the radio or audio amplifier sound a chime. A message will also appear on the driver information center.
- Delayed Locking – If the keyless entry transmitter is not in the vehicle and the door lock switch is pressed with the driver door open, the BCM will request the radio or audio amplifier sound a chime three times to indicate that the vehicle has entered a delayed locking state. The doors will automatically lock five seconds after the last door is closed.
- Object Detection – The object detection system sends various chime requests to the radio or audio amplifier during normal operation.
- REAR SEAT REMINDER LOOK IN REAR SEAT displays under certain conditions indicating there may be an item or passenger in the rear seat. This feature will activate when a second-row door is opened while the vehicle is on or up to 10 minutes before the vehicle is turned on. There will be an alert when the vehicle is turned off. The alert does not directly detect objects in the rear seat; instead, under certain conditions, it detects when a rear door is opened and closed, indicating that there may be something in the rear seat.

## Additional Warnings

The following warnings have an associated instrument cluster indicator or driver information center message:

- Turn Signal Indicators – The radio or audio amplifier activates the audible warning as requested by the BCM.
- Vehicle Overspeed Message – The radio or audio amplifier activates the audible warning as requested by the BCM.
- Fuel Level Low Message – The radio or audio amplifier activates the audible warning as requested by the BCM.
- Oil Pressure Indicator – The radio or audio amplifier activates the audible warning as requested by the BCM.
- Tire Pressure Low Indicator – The radio or audio amplifier activates the audible warning as requested by the BCM.
- Antilock Brake Indicator – The radio or audio amplifier activates the audible warning as requested by the electronic brake control module.

- Engine Cooling System Messages – The radio or audio amplifier activates the audible warning as requested by the engine control module.
- Transmission Messages – The radio or audio amplifier activates the audible warning as requested by the transmission control module.

## Backup Alarm (with 8S3)

When transmission placed in reverse, the Body Control Module (BCM) activates the KR61 Trailer Backup Lamps Relay which supplies 12V to the reverse lamps and the Backup Alarm simultaneously.

## Head-Up Display Description and Operation

The head-up display projects an image on the windshield that is viewed from the driver seat. Information that is relevant to what the drive is currently doing is displayed, as well as any safety-critical information as it is happening.

The components of the head-up display are:

- Head-Up Display
- Instrument Cluster
- Head-Up Display Switch

## Head-Up Display

The head-up display is a slave device to the instrument cluster. The head-up display is powered through ignition voltage and ground. It communicates directly with instrument cluster via serial data and only has limited self-diagnosis capacity. Head-up display DTCs are reported through the instrument cluster.

The head-up display projects a full color image onto the windshield and is only viewable from the driver seat. The image location and brightness is adjustable using the head-up display switch. The image information is received from the instrument cluster through a video cable.

On some models, the head-up display image rotation is also adjustable in the DIC customizations using the steering wheel controls.

## Instrument Cluster

The instrument cluster sends the image information to the head-up display via a discrete video cable. The image sent to the head-up display is closely related to the information currently being displayed on the instrument cluster or driver information center. For example, if an incoming phone call is displayed in the cluster, this information will be displayed on the head-up display. If a navigation alert is shown in the cluster, then a turn-by-turn alert will display on the head-up display. When the operator interacts with the instrument cluster using the steering wheel mounted driver information center switch, the head-up display also responds to the interaction. If the operator dismisses the navigation alert on the instrument cluster, it is also removed from the head-up display.

## Head-Up Display Switch

The head-up display switch is a multiplexed switch that controls the head-up display based on driver inputs. The head-up display provides the switch with a low reference and monitors a signal circuit. The head-up display switch is made up of a resistor ladder and three switches: Dim +/-, Up/Down, and Page. When a switch is pressed, the signal voltage is pulled low through the resistor ladder. When pressed, each of the switches will result in a different signal voltage seen by the head-up display, depending on the switch’s location on the resistor ladder.

## Head-Up Display Operation

In normal operation, the operator may select from three different display configurations. These display configurations provide the operator with different information, with the vehicle speed being the primary item, along with the following standard indicators:

- Turn signal indicators
- High beam indicator
- Lane departure warning indicator (if equipped)
- Vehicle detected ahead indicator (if equipped)
- Adaptive cruise control on indicator (if equipped)

### Standard/Speed Configuration

The head-up display projects only the vehicle speed. Additionally, the outside air temperature, compass, and time may also be displayed.

### Audio Configuration

The head-up display will project the current audio information when listening to the audio system and the active phone information if the operator is on a phone call.

### Navigation Configuration

The head-up display will project navigation information. If a current route is being followed, turn by turn instructions and arrows will be displayed. If no route is programed, the compass heading is displayed.

**Performance Configuration**
The head-up display will project RPM and PRNDL information.

**Adaptive Cruise Control Configuration (if equipped)**
The head-up display will project the selected following distance when adaptive cruise control is active.

## Indicator/Warning Message Description and Operation

### INDICATOR LIGHT ON

Refer to the OWNER'S MANUAL for the descriptions and explanations of all indicator lights.

For diagnosis and repair information related to an indicator light refer to the System Diagnosis and the Description of Operation that the message relates to.

### MESSAGE DISPLAYED

Refer to the OWNER'S MANUAL for descriptions and explanations of all messages displayed.

For diagnosis and repair information related to a displayed message refer to the System Diagnosis and the Description of Operation that the message relates to.

### CHANGE TIMING BELT MESSAGE (without LWN/LIH)

The Instrument Cluster monitors the odometer mileage to determine when timing belt (if equipped) replacement may be necessary. After the vehicle has accumulated approximately 100,000 miles (160,000 kilometers), the Instrument Cluster may display the CHANGE TIMING BELT message. After the engine timing belt has been replaced, reset the CHANGE TIMING BELT message by locating and removing the fuses that supply power to the Instrument Cluster for two minutes.

### CHANGE TIMING BELT MESSAGE (LWN/LIH)

The Instrument Cluster monitors the odometer mileage to determine when timing belt replacement may be necessary. After the vehicle has accumulated approximately 150,000 miles (240,000 kilometers), the Instrument Cluster may display the CHANGE TIMING BELT message. After the engine timing belt and oil pump drive belts have been replaced, reset the CHANGE TIMING BELT message by performing the Instrument Cluster control function Timing Belt Life Reset (if available), using the scan tool. Without scan tool control function, reset the CHANGE TIMING BELT message by locating and removing the fuses that supply power to the Instrument Cluster for two minutes.

### BRAKES OVERHEATED

The Electronic Brake Control Module monitors brake usage and compares it to an internal thermal model to determine if the brakes could become overheated. If the Electronic Brake Control Module determines the brakes pads have exceeded a desirable temperature based on the thermal model, it sends a serial data message to the Instrument Cluster to display the BRAKES OVERHEATED message. The message remains displayed until the estimated temperature returns to a desirable range.

## Transmission Shift Lever Position Indicator

The Transmission Shift Lever Position Indicator (if equipped) is located on the center console and indicates the current transmission shift lever position. The Transmission Shift Lever Position Indicator receives power and ground and is controlled by the Body Control Module (BCM) via serial data. The Transmission Control Module determines transmission shift lever position based on signals from the Transmission Internal Mode Switch and sends the shift lever position information to the BCM via serial data.

## Instrument Cluster Description and Operation

### Instrument Cluster (with RPO UDC)

The instrument cluster is a multifunction module that provides the vehicle operator with information that is critical to vehicle operation, such as vehicle speed, engine RPM, oil pressure, battery voltage, fuel level, and coolant temperature, using analog gauges. The instrument cluster also provides the operator with operational warnings and message through various indicators and the driver information center. The driver information center is a one color multifunction display that is located in the instrument cluster. The driver information center has several screens that can be controlled using the steering column mounted driver information display switch.

### Instrument Cluster (with RPO UDD)

The instrument cluster is a multifunction module that provides the vehicle operator with information that is critical to vehicle operation, such as vehicle speed, engine RPM, and coolant temperature, using analog gauges. The instrument cluster also provides the operator with operational warnings and message through various indicators and the driver information center. The driver information center is a full color multifunction display that is located in the instrument cluster. The driver information center is also tightly integrated with the vehicle's infotainment system and is highly reconfigurable. The driver information center is controlled using the steering wheel control switches which connect to the Instrument Cluster via serial data.

## Instrument Cluster (with RPO UHS)

The instrument cluster is a multifunction module that provides the vehicle operator with information such as vehicle speed and engine RPM using analog gauges. Oil pressure, battery voltage, fuel level, and coolant temperature can also be displayed using an interactive LCD display. The instrument cluster is highly reconfigurable, with four different themes available for selection. The instrument cluster also provides the operator with operational warnings and message through various indicators and the driver information center. Because the instrument cluster is an LCD display, driver information center elements are located in various zones of the display, depending on how the instrument panel is configured. The driver information center is controlled using the steering wheel control switches which connect to the Instrument Cluster via serial data.

## Instrument Cluster (with RPO UDV)

The instrument cluster is a multifunction module that provides the vehicle operator with information that is critical to vehicle operation, such as vehicle speed, engine RPM, and coolant temperature, using an interactive LCD display. The instrument cluster is highly reconfigurable, with four different themes available for selection. The instrument cluster also provides the operator with operational warnings and message through various indicators and the driver information center. Because the instrument cluster is an LCD display, driver information center elements are located in various zones of the display, depending on how the instrument panel is configured. The driver information center is controlled using the steering wheel control switches which connect to the Instrument Cluster via serial data.

## Indicators and Warning Messages

Refer to *Indicator/Warning Message Description and Operation 5-46*.

## Engine Coolant Temperature Gauge

The instrument cluster displays the engine coolant temperature as determined by the engine control module (ECM). The ECM sends the engine coolant temperature information via serial data to the instrument cluster to display the engine coolant temperature.

## Engine Hours (if equipped)

The instrument cluster calculates, stores, and displays the accumulated engine hours as available information in the DIC area of the instrument cluster. The engine hours accumulate over the life of the vehicle. Although not used for display purposes, the ECM also receives the engine hours value from the instrument cluster.

## Engine Oil Level Switch (if equipped)

The engine oil level sensor/switch is normally-closed with proper engine oil level. The switch opens when the engine oil level drops below a calibrated level. The engine control module (ECM) monitors the engine oil level signal circuit when the ignition is ON, and the engine is OFF. With the switch in the closed position, the ECM detects a low voltage on the signal circuit. With the switch in the open position, the ECM detects a high voltage on the signal circuit. When high voltage is detected on the signal circuit, the ECM will send a serial data message to the instrument cluster. The instrument cluster will then display a message on the driver information center (DIC) or illuminate a low engine oil level lamp.

The following information determines the message sent from the ECM to the instrument cluster:

- The Low Engine Oil Level message lamp is displayed only after the ECM detects a high voltage on the signal circuit for three consecutive ignition cycles, followed by an ignition OFF event from 15 minutes to greater than 50 minutes, depending on engine oil temperatures.
- The Low Engine Oil Level message is turned OFF when the ECM detects a low voltage on the signal circuit after an ignition OFF event for greater than 90 seconds, followed by an ignition ON event for less than 1 second.

## Engine Oil Pressure Gauge (if equipped)

The instrument cluster displays the engine oil pressure as determined by the ECM. The engine oil pressure sensor changes voltage based on the engine oil pressure. The ECM monitors the signal circuit of the engine oil pressure sensor to determine if the engine oil pressure sensor voltage is within the normal operating range of approximately 1–4 V. The ECM sends the engine oil pressure information to the instrument cluster via serial data. The instrument cluster will illuminate or display the engine oil pressure indicator when the engine oil pressure is low. The engine oil pressure gauge defaults to 0 kPa (0 psi) if:

- The ECM detects a malfunction in the engine oil pressure sensor signal circuit.
- The instrument cluster detects a loss of serial data communication with the ECM.

## Engine Oil Temperature Gauge (if equipped)

The instrument cluster may display the engine oil temperature as determined by the engine control module (ECM). The ECM sends the engine oil temperature information via serial data to the instrument cluster to display the engine oil temperature.

### Fuel Gauge (Gasoline and Diesel)

The instrument cluster displays the fuel level based on the information from the ECM. The ECM converts the data from the fuel level sensors to a fuel level signal. The ECM sends the fuel level signal via serial data to the BCM. The BCM then sends the information via serial data to the instrument cluster to display the fuel level. If the fuel level falls under 11% the instrument cluster will illuminate the low fuel level indicator. The fuel gauge defaults to empty if:

- The ECM detects a malfunction in the fuel level sensor circuit.
- The BCM detects a loss of serial data communications with the ECM.
- The instrument cluster detects a loss of serial data communications with the BCM.

### Speedometer

The instrument cluster displays the vehicle speed based on the information from the ECM. The ECM sends the vehicle speed information via serial data to the BCM. The BCM then sends the vehicle speed information via serial data to the instrument cluster to display the vehicle speed.

### Odometer

The instrument cluster displays the vehicle odometer in the driver information center. The ECM send a distance rolling count message via serial data to the body control module (BCM). The BCM uses this information to calculate the vehicle odometer. This odometer value is then sent to the instrument cluster. The instrument cluster does not calculate the odometer.

The odometer value is stored in multiple modules. The instrument cluster is a secondary storage module for the odometer, while the BCM is the primary storage and accumulator.

In addition to storing the odometer value for the vehicle, the instrument cluster and the BCM store the VIN. Software checks are performed to ensure these modules, and their stored odometer information, can not be move or transferred between different vehicles.

### Tachometer

The instrument cluster displays the engine speed based on the information from the ECM. The ECM converts the data from the crankshaft position sensor to an engine revolution signal. The ECM sends the engine speed information via serial data to the BCM. The BCM then sends the information via serial data to the instrument cluster to display the engine speed.

### Compass

The vehicle compass information is gather through the compass module or vehicle communication interface module (VCIM). The compass module or VCIM determines vehicle direction and communicates this with the BCM through serial data. The BCM sends the compass information to the instrument cluster via serial data, where it is displayed.

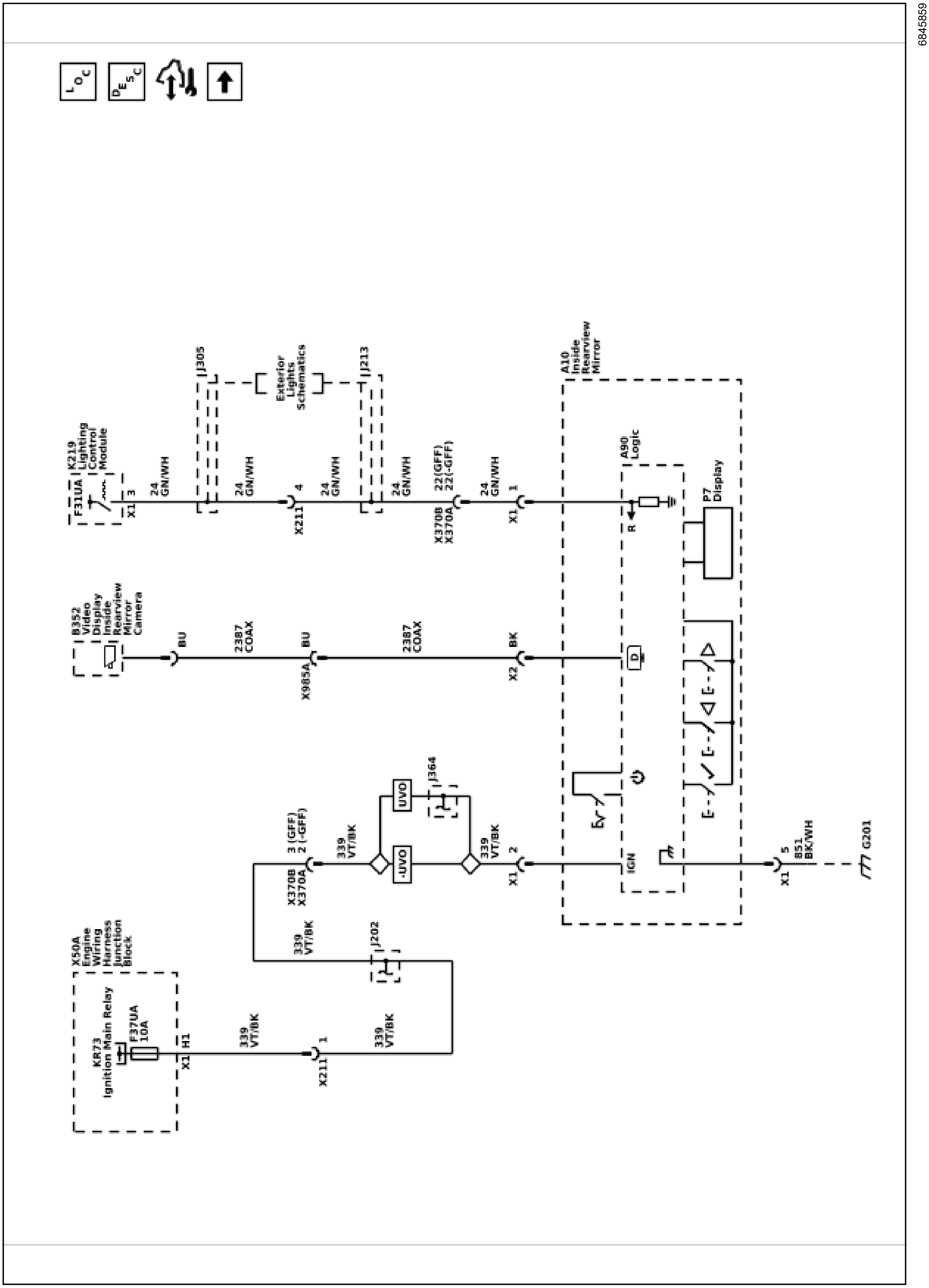
### Outside Air Temperature

The Ambient Air Temperature Sensor is located in the Passenger Outside Rearview Mirror and varies it’s resistance with temperature. The Engine Control Module (ECM) reads the resistance value to determine temperature. The time of and rate of the temperature update is based on an algorithm in the Engine Control Module (ECM) software. Factors such as, last reading, current reading, length of time vehicle is been off/on, power mode, vehicle speed, driven distance, and sensor location are all considered by the Engine Control Module (ECM) to know when to update the displayed temperature on the Info Display Module. For example, if the sensor is located near the engine compartment, and the vehicle has been turned off for only 10 minutes then restarted, the ECM will wait until the vehicle is driven to get more accurate air flow across the sensor before it updates the display.

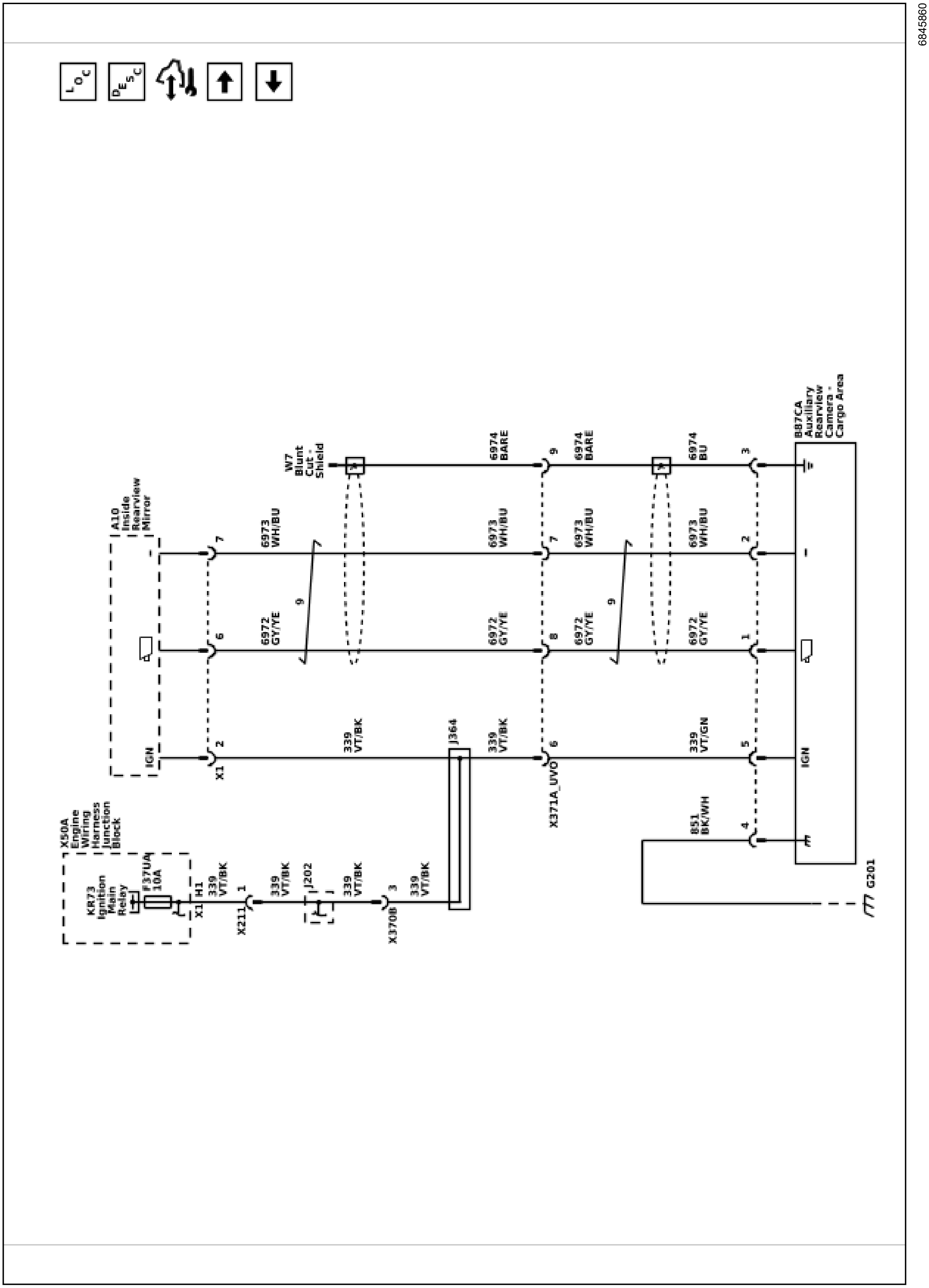
# Image Display Cameras

## Schematic and Routing Diagrams

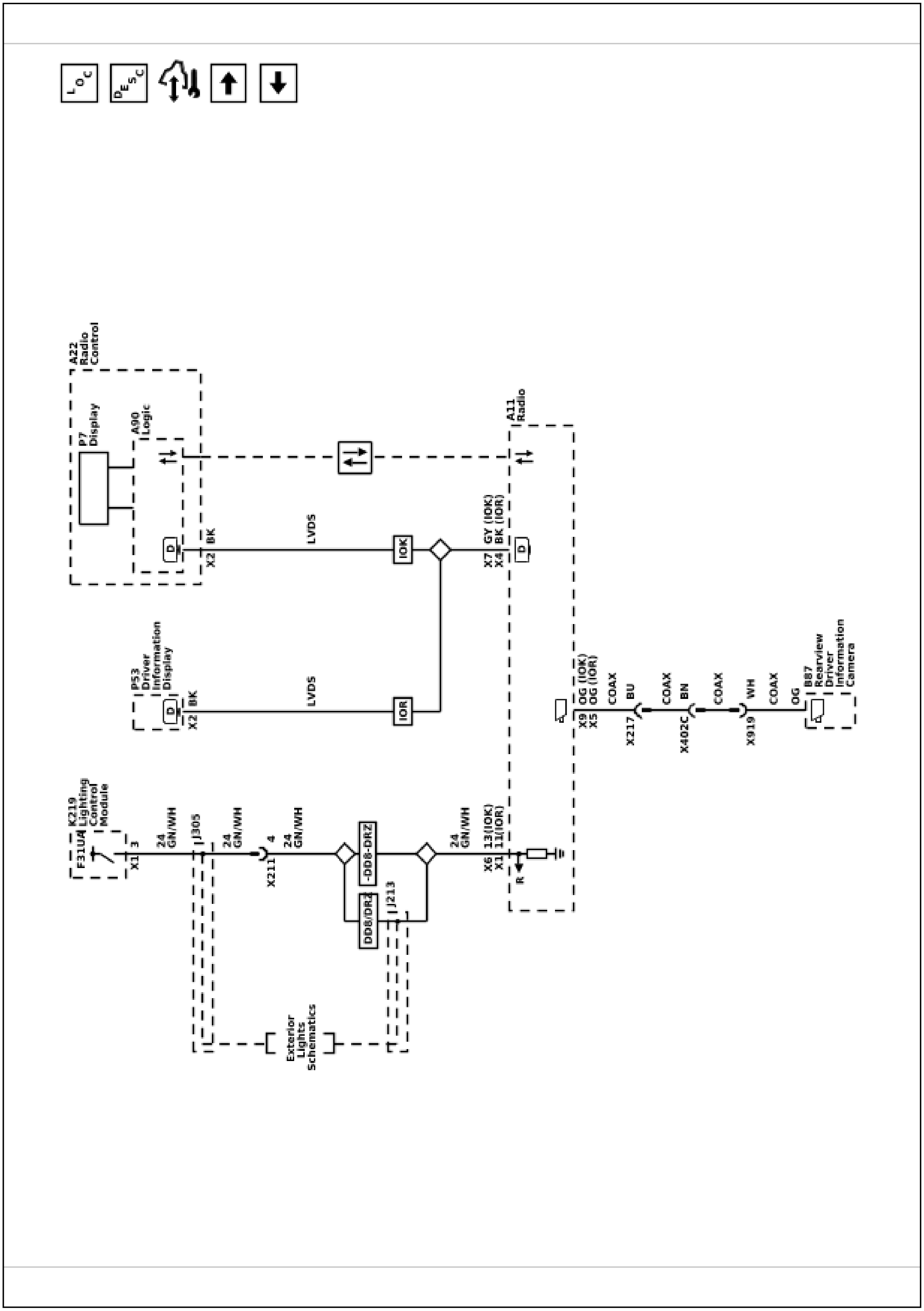
## Image Display Camera Schematics (Inside Rearview Mirror Camera (DRZ))



## Image Display Camera Schematics (Inside Rearview Mirror Camera (UVO))



## Image Display Camera Schematics (Rearview Driver Information Camera (UDU/UVB))

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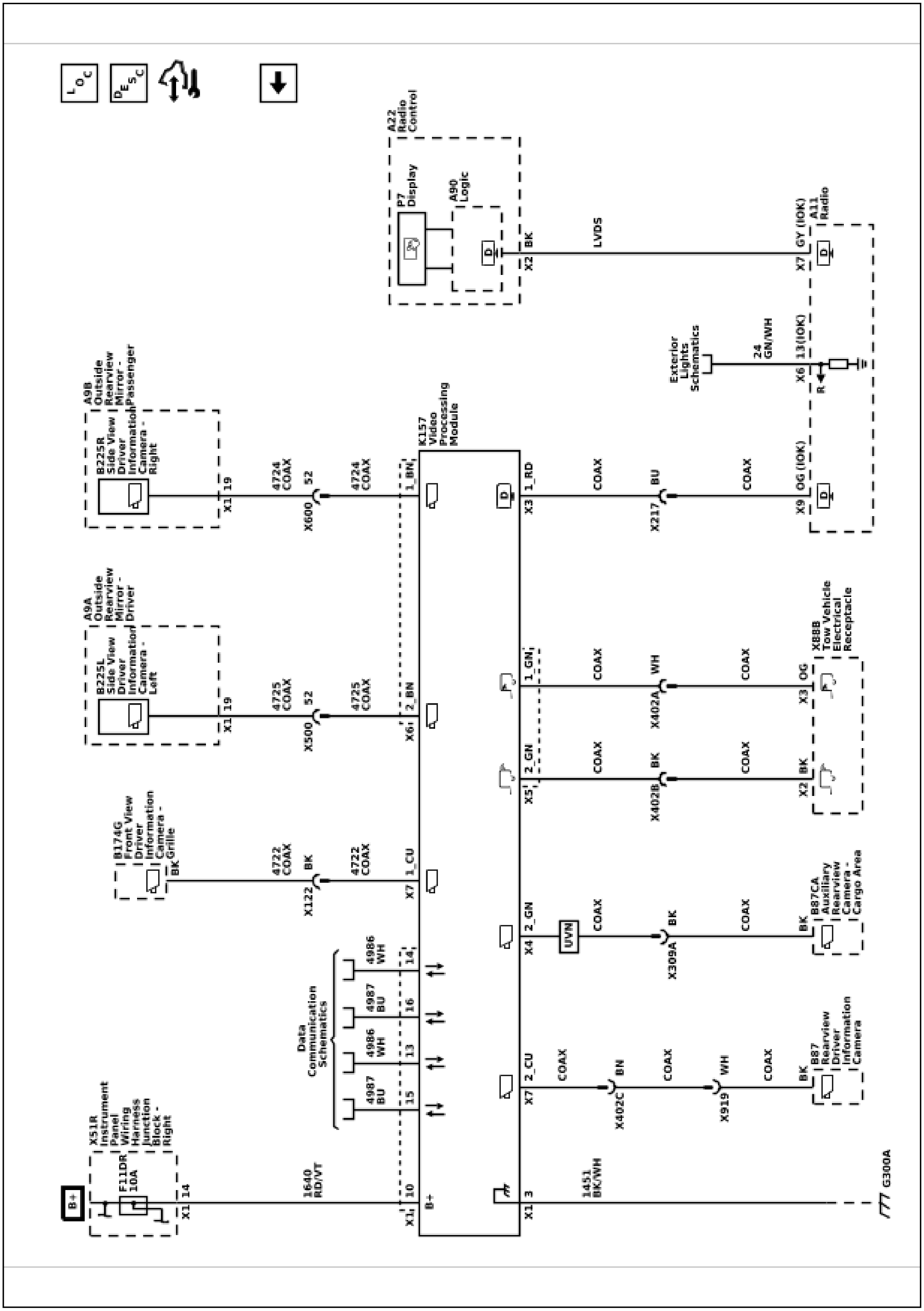
## Image Display Camera Schematics (Surround Vision (UV2))



# Description and Operation

## Rearview Camera Full Display Mirror Description and Operation

If equipped, full display mirror provides a wider field of view than normally seen from the inside rearview mirror to assist when driving and changing lanes. When the tab under the inside rearview mirror is pulled rearward, a view of the area behind the vehicle displays on the mirror. The inside rearview camera full display mirror is connected to the outside rearview camera via a shielded coaxial cable.

When the tab under the inside rearview mirror is pulled rearward, a view of the area behind the vehicle displays on the mirror.

Adjust the rearview mirror for a clear view of the area behind the vehicle before turning on full display mirror. Use the three buttons on the bottom of the mirror to adjust the brightness, zoom, and tilt of the display. Make sure the light sensor is not covered when adjusting the brightness.

The inside rearview camera full display mirror may not work properly or display a clear image if:

- It is dark.
- The sun or the beam of headlamps are shining directly into the camera lens.
- Ice, snow, mud, or anything else builds up on the camera lens. Clean the lens, rinse it with water, and wipe it with a soft cloth.

When the mirror detects that the camera is not sending a valid video signal, it “blue screens” with a “no video” decal for 3 seconds, then reverts back to the mirror.

## Rearview Camera Full Display Mirror Description and Operation

### Rear Vision Camera System Operation

The rear vision camera system consists of a video camera located at the rear of the vehicle and the A10 Inside Rearview Mirror

The cargo bed vision camera receives ignition voltage and a constant ground to power the camera. Video signal + and video signal – circuits carry the video image from the rear vision camera to the A10 Inside Rearview Mirror . Additionally, the video signal circuits are shielded to prevent any interference which may lead to a loss of video signal resolution and a degraded video image. The shield is provided a ground path by the rear vision camera.

The following conditions may cause a degraded cargo bed vision camera image:

- Ice, snow, or mud has built up on the rear vision camera
- Dark conditions
- Extreme light conditions, such as glare from the sun or the headlights of another vehicle
- Damage to the rear of the vehicle
- Extreme high temperatures or extreme temperature changes

## Rear Vision Camera Description and Operation

### Rear Vision Camera System Operation

The rear vision camera system consists of a video camera located at the rear of the vehicle and the A11 Radio.

When the transmission is placed into REVERSE, a signal is sent to the A11 Radio indicating that camera operation is requested. The rearview camera sends video information to the A11 Radio through a coax cable. The coax cable also provides power from the A11 Radio to the rearview camera.

The following conditions may cause a degraded rear vision camera image:

- Ice, snow, or mud has built up on the rear vision camera
- Dark conditions
- Extreme light conditions, such as glare from the sun or the headlights of another vehicle
- Damage to the rear of the vehicle
- Extreme high temperatures or extreme temperature changes

If a malfunction is detected in the system, SERVICE REAR VISION CAMERA may be displayed on the Info Display Module as an indicator to the customer that a problem exists that requires service.

## Rear Vision Camera Description and Operation

### Rear Vision Camera System Operation

The rear vision camera system consists of a video camera located at the rear of the vehicle and the Rado.

When the transmission is placed into REVERSE, a signal indicates to the Radio that the vehicle is in reverse and image display is requested. The rear vision camera receives ignition voltage and a constant ground to power the camera. Video signal + and video signal – circuits carry the video image from the rear vision camera to the radio. Additionally, the video signal circuits are shielded to prevent any interference which may lead to a loss of video signal resolution and a degraded video image. The shield is provided a ground path by the rear vision camera.

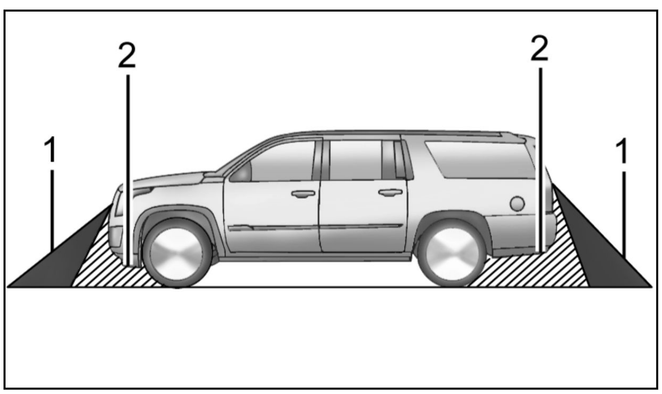
The following conditions may cause a degraded rear vision camera image:

- Ice, snow, or mud has built up on the rear vision camera
- Dark conditions
- Extreme light conditions, such as glare from the sun or the headlights of another vehicle
- Damage to the rear of the vehicle
- Extreme high temperatures or extreme temperature changes

If a malfunction is detected in the system, Service Rear Vision Camera may be displayed on the Infotainment screen as an indicator to the customer that a problem exists that requires service.

### Surround Vision Camera Description and Operation

***Warning: The Surround Vision cameras have blind spots and will not display all objects near the corners of the vehicle. Folding outside mirrors that are out of position may not display surround view correctly. Always check around the vehicle when parking or backing.***

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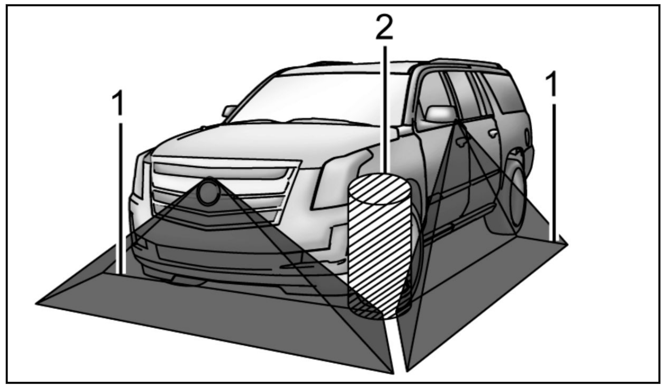
1. View displayed by the surround vision camera
2. Area not shown

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1. View displayed by the surround vision camera
2. Area not shown

The surround vision camera system consists of the following components:

- B87 Rearview Camera
- B174G Frontview Camera – Grille
- K157 Video Processing Control Module
- A11 Radio **OR** K74 Human Machine Interface Module
- B225L Sideview Camera – Left
- B225R Sideview Camera – Right
- X20 Memory Card Receptacle (with XVR)

When the vehicle is traveling at speeds slower than 6 mph (10kph) the video processing control module will power up the cameras and send a video signal to the radio or human machine interface module.

The following conditions may cause a degraded surround vision camera image:

- Ice, snow, or mud has built up on the rear vision camera
- Dark conditions
- Extreme light conditions, such as glare from the sun or the headlights of another vehicle
- Damage to the rear of the vehicle
- Extreme high temperatures or extreme temperature changes

Surround Vision displays an overhead view of the area surrounding the vehicle, along with the front or rear camera views in the center stack. The front camera is in the grille or near the front emblem, the side cameras are on the bottom of the outside rearview mirrors, and the rear vision camera is above the license plate.

**Note:** Images from the Sideview Cameras are only displayed when both front doors are properly closed.

**Features of the Surround Vision System**

- Rear camera (B87 Rearview Camera) view alongside overhead view is displayed in reverse
- Front camera (B174G Frontview Camera – Grille) view alongside overhead view is displayed after shifting out of reverse to Neutral or Drive
- Will display front view when front park assist object is within trigger range calibration value (30 cm (12 in) in a forward gear
- Image is removed from display when vehicle speed exceeds speed calibration (10kph/6 mph) or button press / screen touch

**System Operation**

The video processing control module is connected to each camera via a shielded coaxial cable. The coaxial cable provides power for the camera and also carries the video image from the cameras to the video processing control module for processing. The video processing control module will then send the processed image output to infotainment system via another coaxial cable.

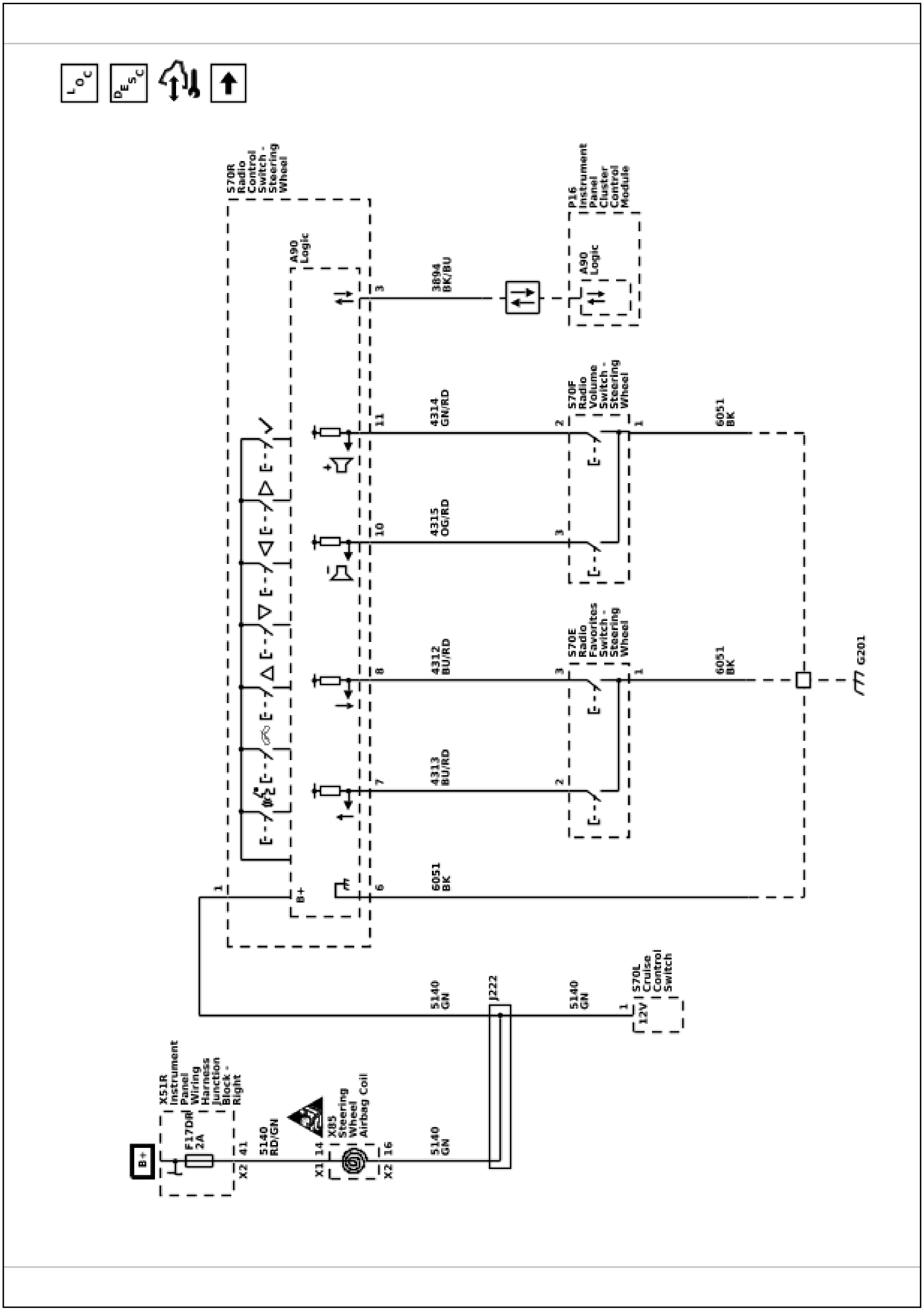
The video processing module receives various vehicle information (such as steering wheel angle, object detection, etc) from other sources such as parking assist modules and the Body Control Module via serial data. This information is used to produce the enhanced surround vision system images that include a warning triangle that may display if an object is detected nearby. This triangle changes from amber to red and increases in size as the object gets closer to the vehicle. Also, dynamic guidelines are displayed in Reverse to show the projected path of the vehicle based on steering wheel angle. Due to this use of vehicle information, any faults or DTCs in these related systems can prohibit proper surround vision operation.

If equipped, the video processing control module system may have a memory card receptacle (with XVR) located in the trunk. The memory card receptacle interfaces with the video processing control module via a USB cable. The memory card receptacle also receives fused battery voltage and ground from the video processing control module. The video processing control module uses the memory card as a mass storage device, similar to a USB storage device.

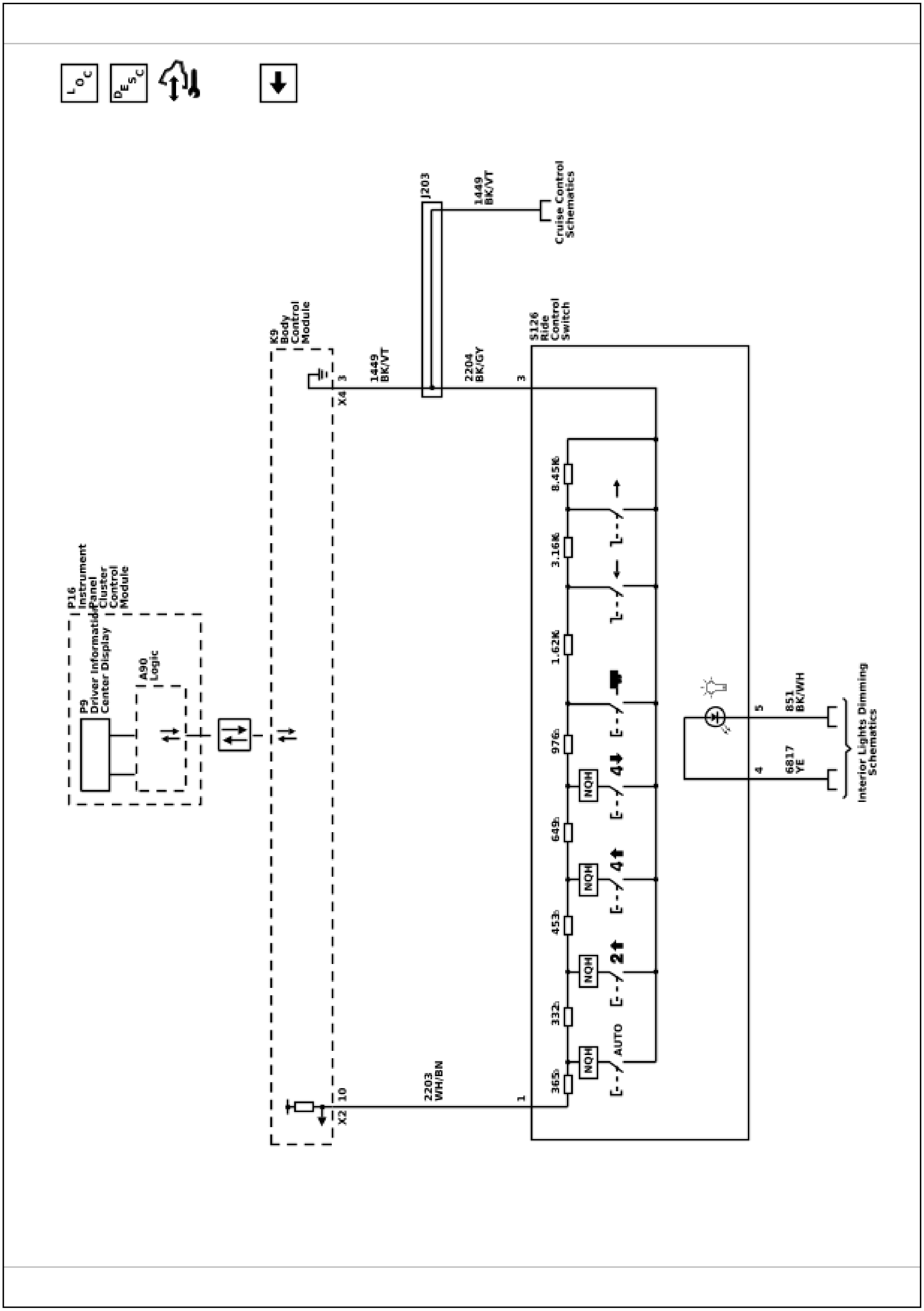
# Secondary and Configurable Customer Controls

## Schematic and Routing Diagrams

## Steering Wheel Secondary/Configurable Control Schematics (Steering Wheel Radio Controls (UK3))



## Steering Wheel Secondary/Configurable Control Schematics (Drive Mode Select Switch (URC))

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# Description and Operation

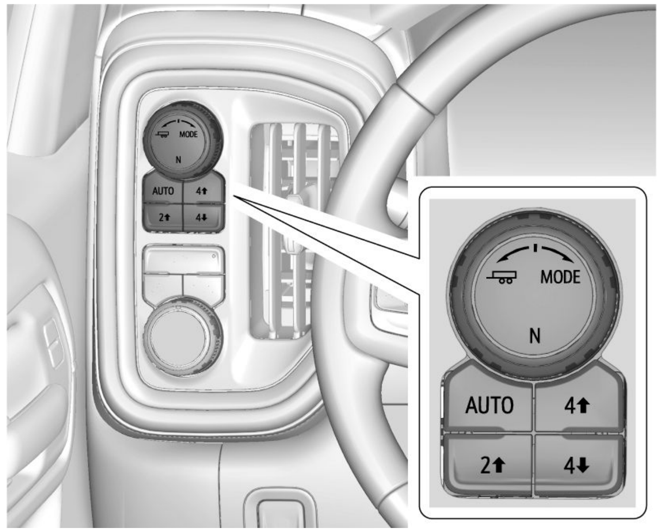
## Drive Mode Description and Operation

Driver Mode Control allows the driver to adjust the overall driving experience to better suit preference by adjusting multiple systems to fit specific driving needs. Drive mode availability and affected vehicle subsystems are dependent upon vehicle trim level, region, and optional features.

## Mode Activation

### Two-Speed Transfer Case

### Work Truck

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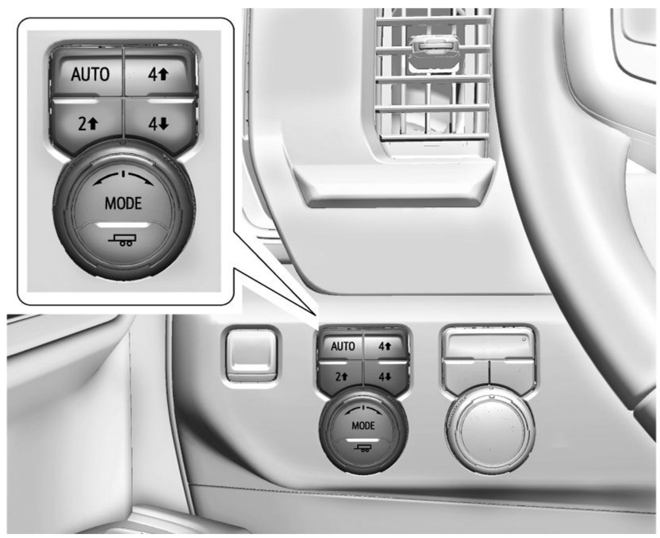
### Uplevel Shown, Base Level Similar

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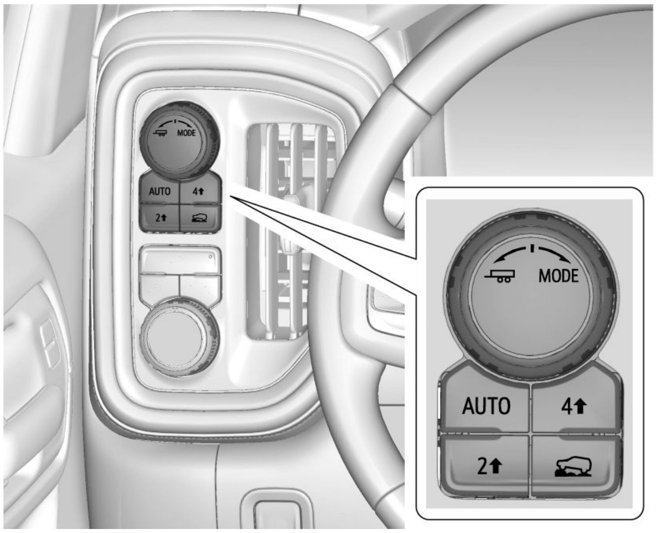
### Single Speed Transfer Case

### Work Truck

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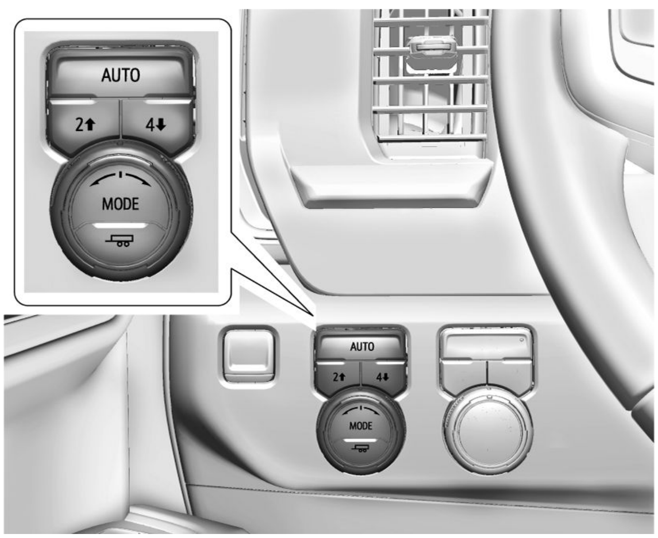
### Uplevel Shown, Base Level Similar

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The drive mode switch shown is referred to as the S126 Ride Control Switch. It is a resistor-ladder design, when the mode knob is turned or a button is pressed each function has a specific resistance value tied to it indicating to the K9 Body Control Module the requested function. Voltage is supplied to the S126 Ride Control Switch via a drive mode voltage reference circuit from the K9 Body Control Module. Once a request is made through the S126 Ride Control Switch, the K9 Body Control Module determines the request made via the specific voltage signal and then communicates with various modules to complete the request.

To activate Tow/Haul mode, press . To activate other drive modes, turn the knob.

## Modes

**Normal Mode: Use for normal city and highway driving to provide a smooth ride. This setting provides balance between comfort and handling. This is the standard/ default mode. There is no persistent indicator in the instrument cluster for this mode.**

**Sport Mode: Use where road conditions or personal preference demand a more controlled response. If equipped with Active Exhaust, Sport mode modifies the exhaust valve opening to run the engine more efficiently at any speed. Sport mode improves vehicle handling and acceleration on dry pavement. When active, Sport mode modifies steering efforts, transmission shifting, brake pedal feel and suspension tuning, if equipped.**

**Snow/Ice Mode: Snow/Ice mode improves vehicle acceleration on snow and ice covered roads. When active, Snow/Ice mode will adjust acceleration to optimize traction on slippery surfaces. This can compromise the acceleration on dry asphalt.This feature is not intended for use when the vehicle is stuck in sand, mud, ice, snow, or gravel.**

**Off-Road Mode: Use this mode for off-road recreational driving. Off-Road mode should be used to improve driving at moderate speeds, on grass, gravel, dirt, unpaved roads, or snow-covered roads. If equipped with Active Exhaust, Off-Road mode modifies the exhaust valve opening to run the engine more efficiently at any speed. The accelerator pedal is tuned for off-road use. This mode modifies pedal mapping, Antilock Brake System (ABS), StabiliTrak/Electronic Stability Control, and Traction Control System performance.**

**Tow/Haul Mode: Use this mode when hauling heavy loads for increased performance and vehicle control. Tow/Haul mode adjusts the transmission shift pattern, steering, and Trailer Sway Control, if equipped.If the vehicle is turned off while in Tow/Haul mode and then restarted within four hours or less, it will remain active. Otherwise, the vehicle will start in Normal mode.If the vehicle has a diesel engine, exhaust braking is automatically activated when Tow/Haul mode is selected. The system will command downshifts and use the turbocharger on the engine to reduce vehicle speed when the brake is applied. The normal tow/haul shift pattern will return once the vehicle is on a low grade or when the accelerator pedal is pressed. While in the Electronic Range Select mode, grade breaking is deactivated, allowing the driver to select a range, and limiting the highest gear available. Auto Start/Stop is disabled while in Tow/Haul mode.For more information on trailer weight specifications, see general towing information in the owners manual..**

**Terrain Mode: Use for finer control during low speed, off-road driving. When using this mode it will mimic the characteristics of four-wheel drive low (4↓) without the torque capabilities.Use when:**

- Traveling on very rough roads at very low speeds, such as a two-track or heavily rutted road.
- Traveling slowly in grassy fields.
- Pulling a boat out of the water on a trailer.

- Using the vehicle for public off-road recreational driving. See Offroad-Driving in the owners manual..

Using Terrain mode in extreme conditions that cause the wheel(s) to slip can lead to excessive heat in the transfer case causing four-wheel drive and Terrain mode to automatically turn off, leaving the vehicle in two-wheel drive. Four-wheel drive will automatically re-engage once the transfer case has cooled, then Terrain mode can be turned back on.

When in Terrain mode, the vehicle will shift automatically but may hold a lower gear longer to maximize engine torque. A unique pedal map, transmission shift pattern, and rpm control are utilized to give better control at lower speeds and over rough terrain. When the vehicle comes to a stop, Vehicle Hold is engaged. The Traction Control System will be optimized for maximum torque transfer across axles, and Active Braking During Lift Throttle will be engaged.

Active Braking During Lift Throttle:

- Automatically applies light braking, similar to heavy engine braking of four-wheel drive low.
- Applies light braking in D (Drive) until the vehicle is at idle speeds. In Manual L1 and Manual L2, moderate braking may stop the vehicle.
- Reduces trailer braking.

| Terrain Mode Drive Select | Expected Vehicle Behavior | Ideal Terrain |
|---|---|---|
| Drive (L3-Lx) | Minor deceleration when off throttle and mild ability to modulate throttle; mimics performance of 4↓ without torque multiplication. | Grassy fields, mild two tracks, rutted roads, large rolling hills |
| L2 | Moderate deceleration when off throttle and moderate ability to modulate throttle; will bring vehicle to a stop in most cases. | Mild rock crawling, heavy ruts, short, steeper grades |
| L1 | Significant deceleration when off throttle and significant ability to modulate throttle; will bring vehicle to a stop in most cases. | Rock crawling downhill |

Active Braking During Lift Throttle will reduce the back and forth between the accelerator and brake pedals.

Vehicle Hold Features:

- When the vehicle comes to a stop on an incline grade in forward gear or on a decline grade in reverse gear, Vehicle Hold is engaged until the accelerator pedal is pressed.
- When the vehicle is in forward gear on a decline, the vehicle is allowed to creep down the hill when the brake pedal is released without pressing the accelerator pedal. The vehicle will also creep forward on flat ground.
- If the driver seat belt is removed and the driver door is opened while the vehicle is being held, the Electric Parking Brake will be engaged.
- The Electric Parking Brake will engage if the vehicle is held for an extended period.

Terrain mode can only be active when:

- Vehicle speed is less than 80 km/h (50 mph).
- The transfer case is in 4↑.

Frequent use of this mode may cause brake wear due to the light braking.

The vehicle will automatically exit the mode if the brakes get too hot. Terrain mode can be turned back on after the brakes have cooled.

When Terrain mode is selected:

- Auto Engine Start/Stop will be disabled.
- The Terrain mode indicator displays on the instrument cluster.

### ERROR - table Title is missing for titlesource=author-entry

| Terrain Mode Drive Select | Expected Vehicle Behavior | Ideal Terrain |
|---|---|---|
| Drive (L3-Lx) | Minor deceleration when off throttle and mild ability to modulate throttle; mimics performance of 4↓ without torque multiplication. | Grassy fields, mild two tracks, rutted roads, large rolling hills |
| L2 | Moderate deceleration when off throttle and moderate ability to modulate throttle; brings vehicle to a stop in most cases. | Mild rock crawling, heavy ruts, short, steeper grades |
| L1 | Significant deceleration when off throttle and significant ability to modulate throttle; brings vehicle to a stop in most cases. | Rock crawling downhill |

Vehicle Hold Features

- When the vehicle comes to a stop on an incline grade in forward gear or on a decline grade in reverse gear, Vehicle Hold is engaged until the accelerator pedal is pressed.

- When the vehicle is in forward gear on a decline, the vehicle will creep down the hill when the brake pedal is released without pressing the accelerator pedal. The vehicle will also creep forward on flat ground.
- If the driver seat belt is removed and the driver door is opened while the vehicle is being held, Electric Parking Brake (EPB) is engaged.
- EPB engages if the vehicle is held for an extended period.

Terrain mode is only available on vehicles equipped with the single speed transfer case.

Terrain mode can only be active when:

- Vehicle speed is less than 80 km/h (50 mph).
- The transfer case is in 4 ↑ .

Frequent use of this mode may cause brake wear due to the light braking.

The vehicle automatically exits the mode if the brakes get too hot. Terrain mode can be turned back on after the brakes have cooled.

When Terrain mode is selected:

- Auto Engine Start/Stop is disabled.
- The Terrain mode indicator displays on the instrument cluster.

## Steering Wheel Controls Description and Operation

The steering wheel control switches duplicate the function of the primary controls of the associated component, through a network of momentary contact switches.

The steering wheel controls are divided into a right-hand set and left-hand set. The switches are connected to a dedicated LIN data circuit.

- The S70E Radio Favorites Switch-Steering Wheel controls the favorites function of the radio.
- The S70F Radio Volume Switch-Steering Wheel allows for volume control of the radio.
- The S70L Cruise Control Switch consists of various cruise control specific functions including cruise on/off functions.
- The S70R Radio Control Switch controls various audio, communication and vehicle systems

Refer to the owners manual for more detailed operation of each steering wheel switch.

## Steering Wheel Control Components

**S70E Radio Favorites Switch-Steering Wheel**
The S70E Radio Favorites Switch-Steering Wheel is a momentary contact switch located on the left rear side of the steering wheel. The S70E Radio Favorites Switch-Steering Wheel has two dedicated 5V Reference circuits for each switch function, the 5V Reference circuits come directly from the S70R Radio Control Switch. When a switch is depressed the signal is sent to the S70R Radio Control Switch that outputs a request through the LIN serial data circuit to perform the requested function.

**S70F Radio Volume Switch-Steering Wheel**
The S70F Radio Volume Switch-Steering Wheel is a momentary contact switch located on the right rear side of the steering wheel. The S70F Radio Volume Switch-Steering Wheel has two dedicated 5V Reference circuits for each switch function, the 5V Reference circuits come directly from the S70R Radio Control Switch. When a switch is depressed the signal is sent to the S70R Radio Control Switch that outputs a request through the LIN serial data circuit to perform the requested function.

**S70L Cruise Control Switch**
The S70L Cruise Control Switch is a resistive ladder design located on the left side of the steering wheel, each control function button having a different resistance value. The S70L Cruise Control Switch has its own 5V reference circuit from the BCM. The BCM detects a specific voltage value that is associated with the cruise control function switch being activated and sends the appropriate serial data message to complete the request.

For information on Cruise Control, refer to [Link target (target-id 10880-) not found]

**S70R Radio Control Switch - Steering Wheel**
The S70R Radio Control Switch is a set of momentary contact switches located on the right side of the steering wheel. When a switch is depressed the signal is grounded, the S70R Radio Control Switch sends a request through the LIN serial data circuit to the A11 Radio to perform the requested function.

# Section 6

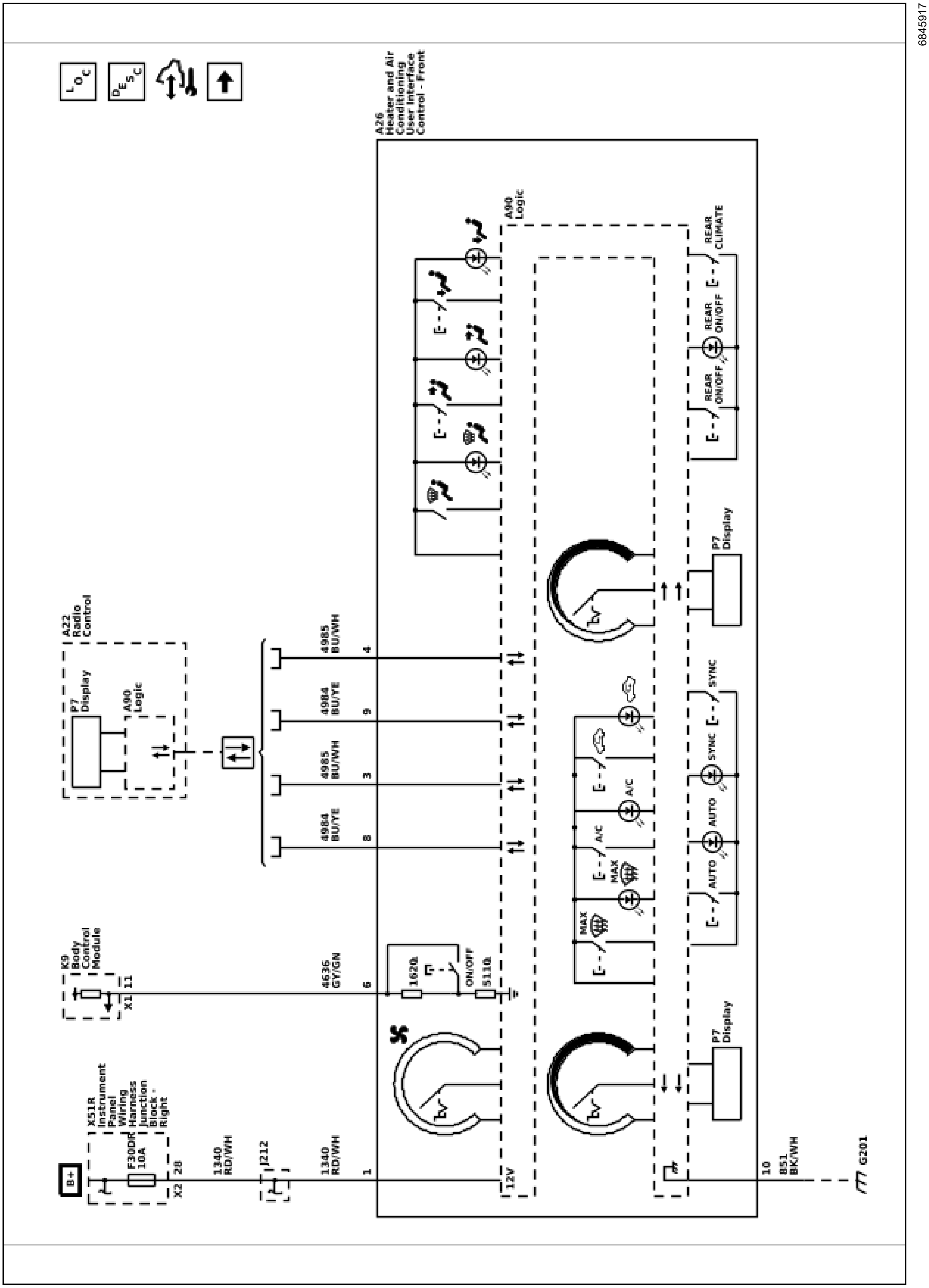
# HVAC

# HVAC

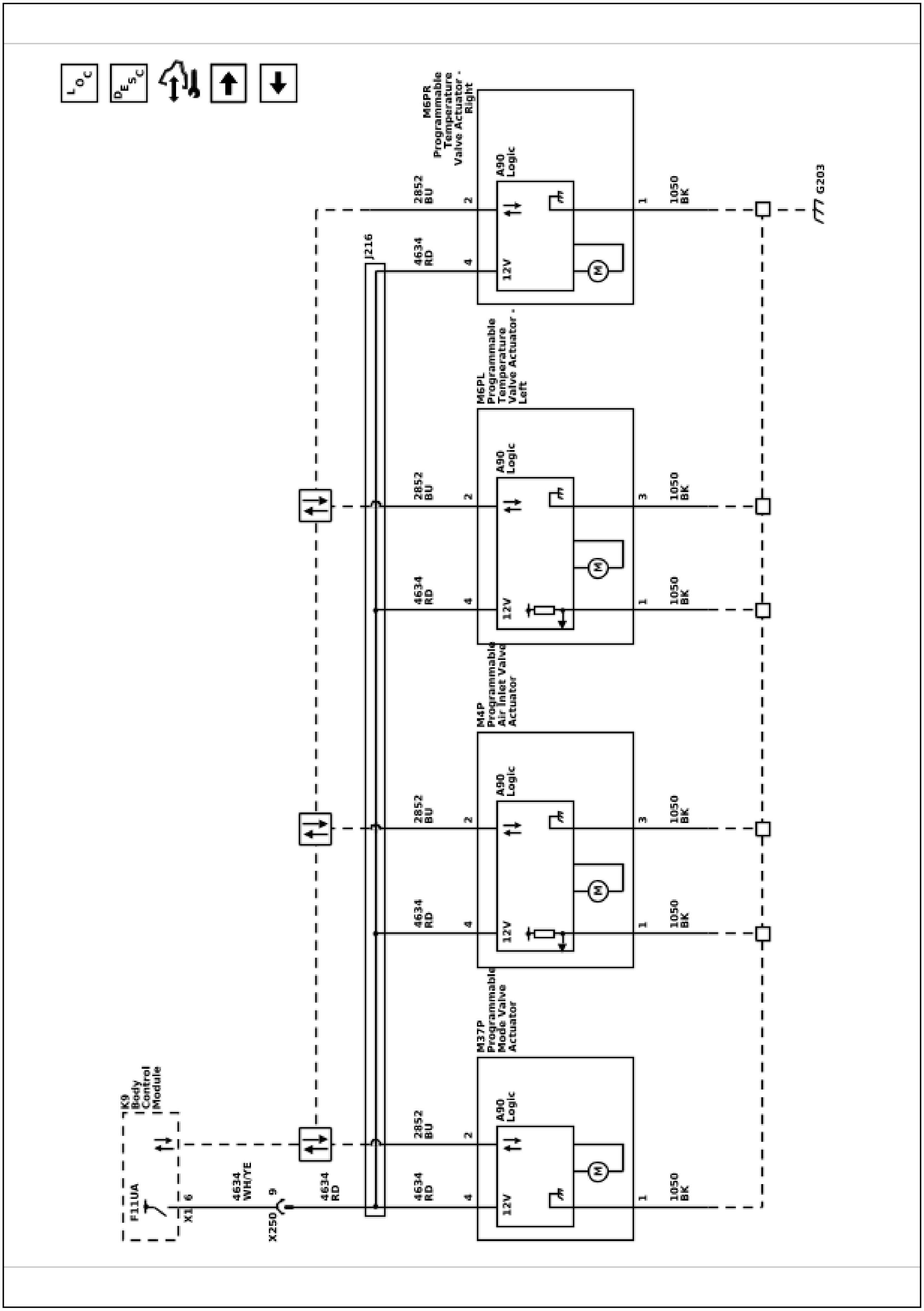
## HVAC - Automatic

### Schematic and Routing Diagrams

## HVAC Schematics (HVAC Controls)



## HVAC Schematics (Actuators)

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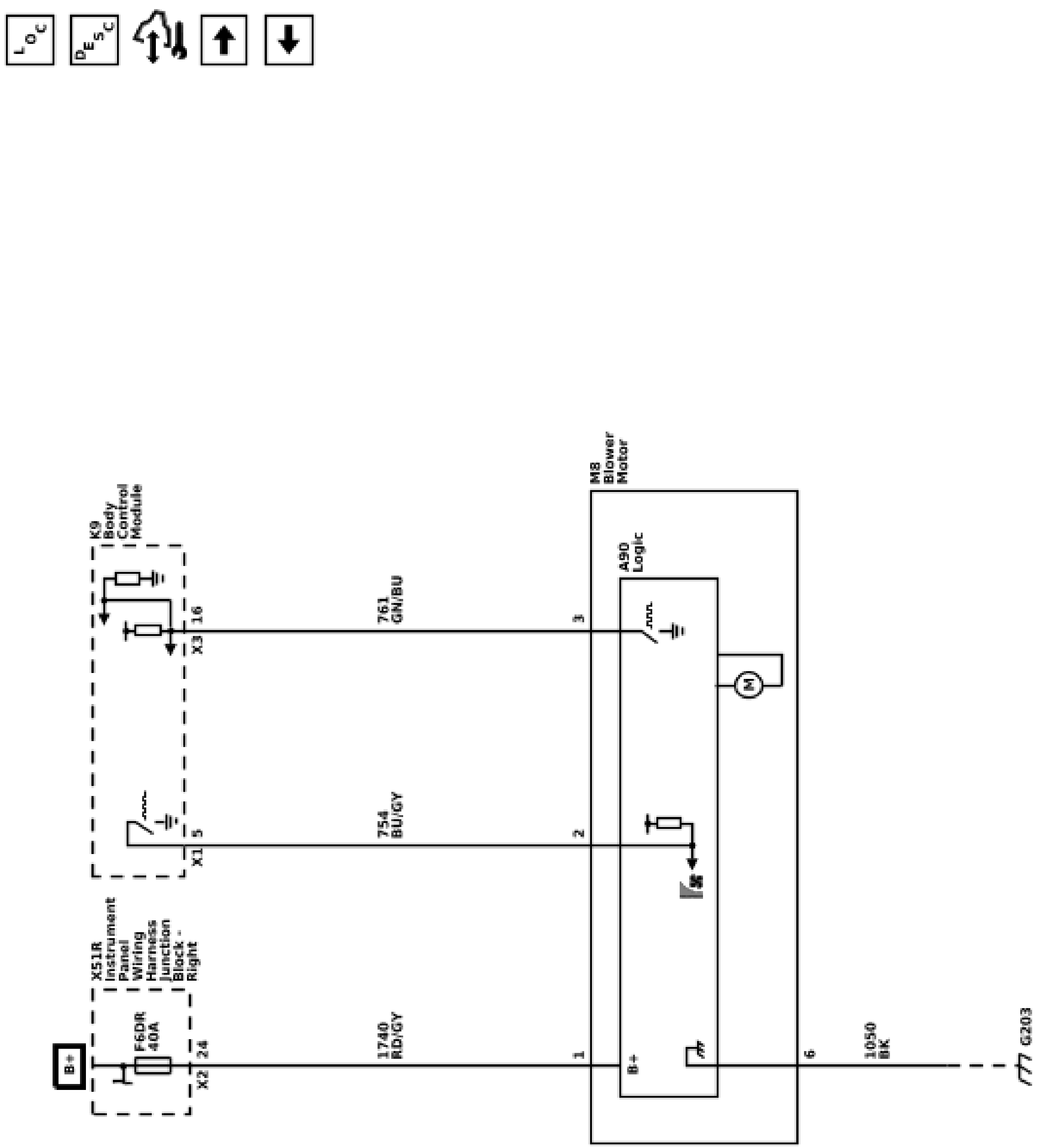
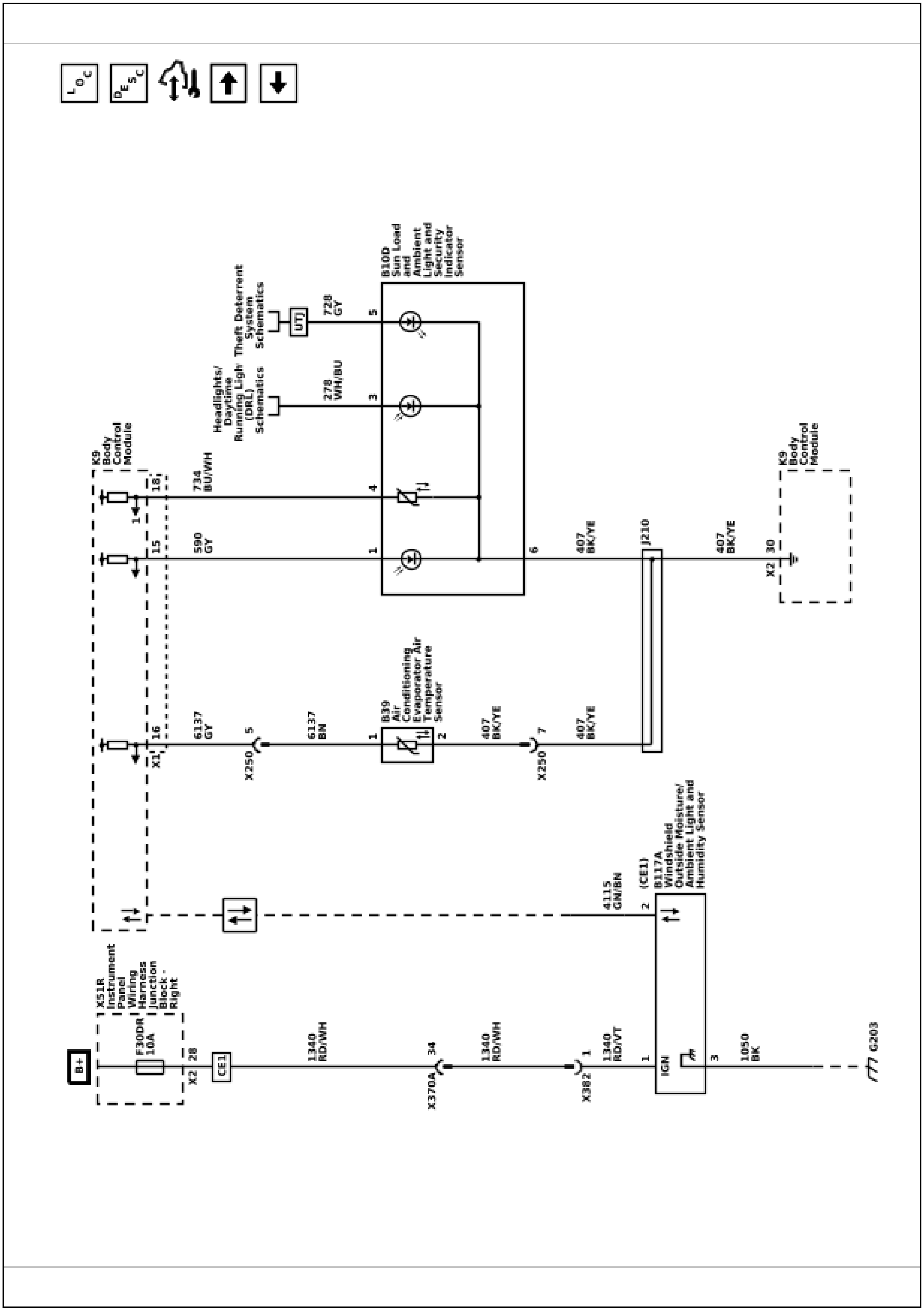
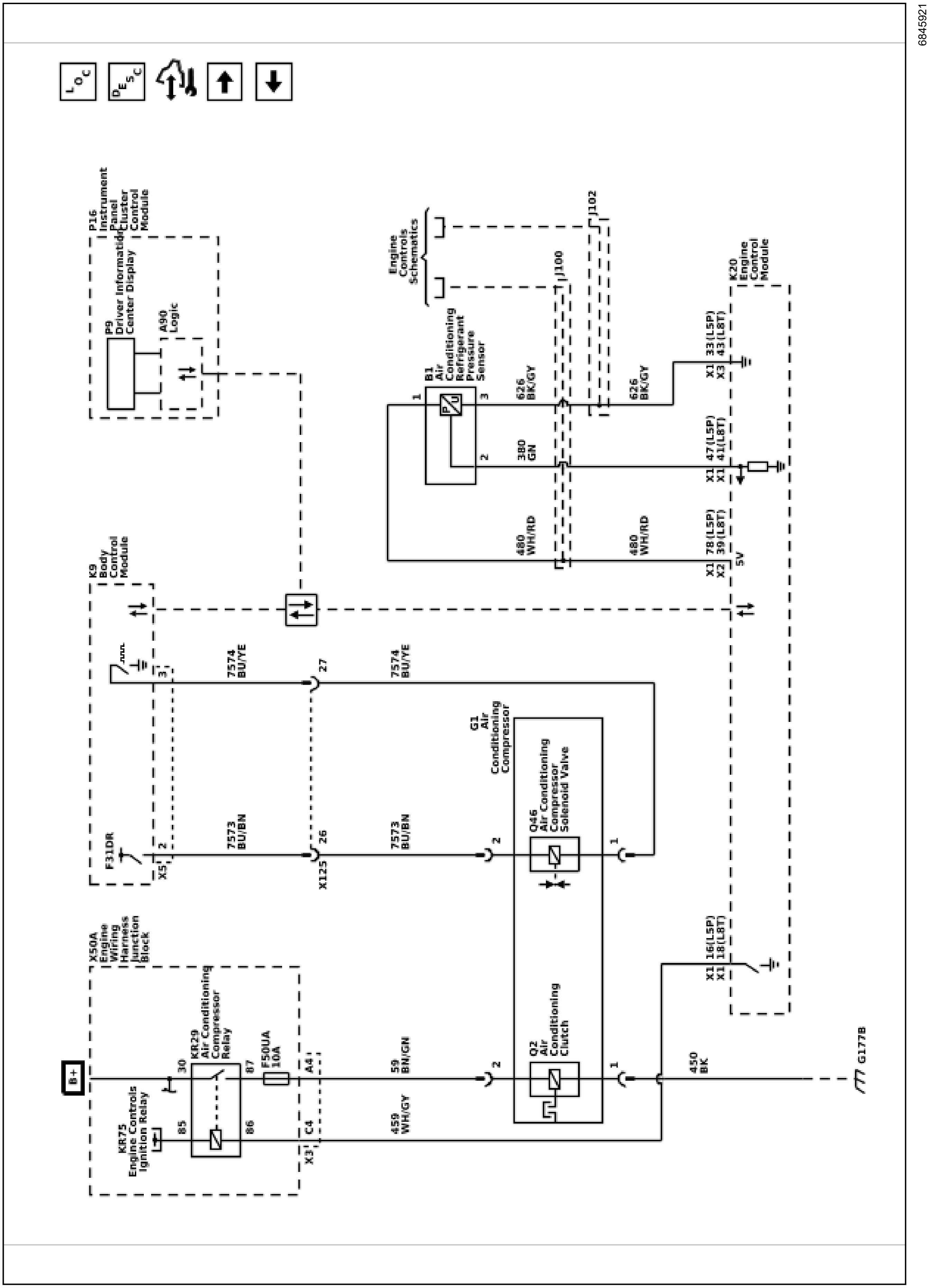
## HVAC Schematics (Blower Motor)



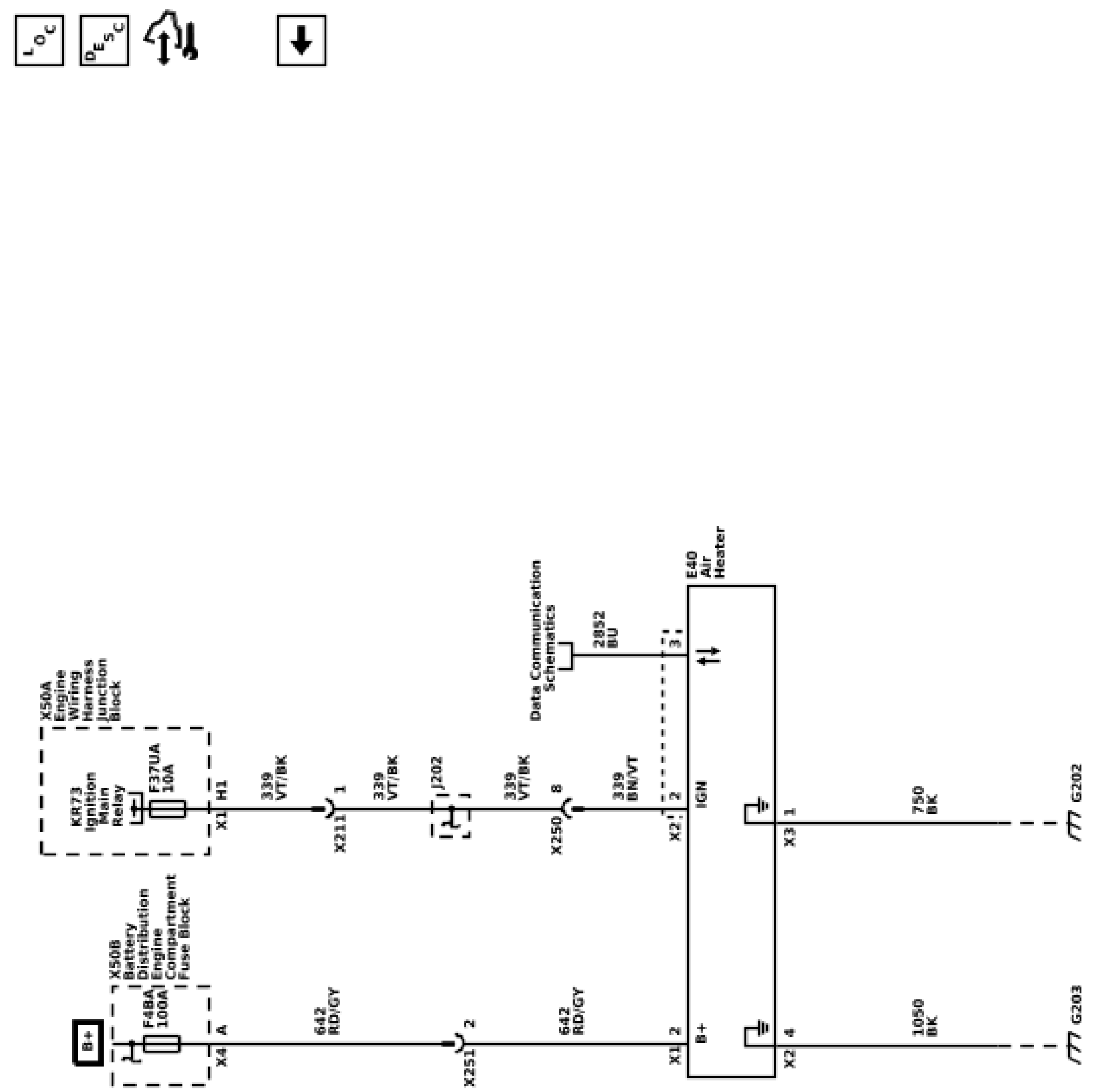
## HVAC Schematics (Windshield Sensors and A/C Evaporator Temperature Sensor)



## HVAC Schematics (A/C Compressor Controls)



## HVAC Schematics (Air Heater)

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# Description and Operation

## Automatic HVAC Description and Operation

The air temperature and the air delivery description and operation are divided into the following:

- HVAC Control Components
- Air Speed and Blower Motor
- Air Delivery
- Recirculation Operation
- Heating and A/C Operation
- Automatic Operation
- Engine Coolant and A/C System Refrigerant

### HVAC Control Components

**K9 Body Control Module**
The body control module (BCM) is a CAN device that interfaces between the operator and the HVAC system to maintain and control desired air temperature and air distribution settings. The BCM provides a device ON-Signal for the HVAC controls. The BCM provides blower, air delivery mode and air temperature control.

**A26 Heater and Air Conditioning User Interface Control - Front**
The HVAC control contains all switches which are required to control the functions of HVAC and serve as interface between the operator and the BCM. The selected values are passed to the BCM via serial data.

**Actuators**
Doors in the HVAC case assembly are used to control air flow. The BCM operates the doors through the use of actuators, with one actuator being used for each door. The system has the following air control doors and associated actuators: mode, left and right temperature, and recirculation.

Each actuator used in the system is a LIN device controlled by the BCM. The BCM supplies a 12 V reference voltage to the actuators, and ground is provided by the wiring harness. When the BCM sends a request message to the actuator, the actuator then operates internal stepper motors to move the door to the required position.

**Duct Air Temperature**
Physical duct air temperature sensors are not used with the system. The air temperature in the air distribution ducts is calculated by the BCM based on the engine coolant temperature, coolant flow, evaporator temperature, outside air temperature, solar load, blower motor speed, air inlet door position, and temperature door position information. The BCM uses the values to calculate actuator position.

**B39 Air Conditioning Evaporator Air Temperature Sensor**
The evaporator temperature sensor is a 2-wire negative temperature coefficient thermistor. The sensor operates within a temperature range of −40 to +85°C (−40 to +185°F). The sensor is installed near the evaporator core to measure the air temperature exiting the core.

Based on vehicle operating conditions and operator settings, the HVAC software algorithms will determine a target evaporator air temperature. The operation of the compressor solenoid will be adjusted as needed to quickly reach and maintain the targeted temperature.

**B1 Air Conditioning Refrigerant Pressure Sensor**
The A/C refrigerant pressure sensor is a 3-wire piezo-electric pressure transducer. A 5 V reference voltage, low reference, and signal circuits enable the sensor to operate. The A/C pressure signal can be between 0.2–4.8 V. When the A/C refrigerant pressure is low, the signal value is near 0 V. When the A/C refrigerant pressure is high, the signal value is near 5 V. The engine control module (ECM) converts the voltage signal to a pressure value. When pressure is too high or too low, the ECM will not allow the A/C compressor clutch to engage.

**G1 Air Conditioning Compressor**
The A/C compressor uses a conventional belt driven magnetic clutch to engage and mechanically turn the compressor. When the A/C switch is pressed, the BCM sends an A/C request message to the ECM via serial data. If specific criteria is met, the ECM then grounds the A/C compressor clutch relay control circuit, which will switch the A/C compressor clutch relay. With the relay contacts closed, battery voltage is supplied to the permanently grounded A/C compressor clutch. The A/C compressor clutch will then be activated.

This A/C system utilizes a variable displacement solenoid valve to alter the amount of displacement created by the turning of the compressor. The BCM provides both battery voltage and a pulse width modulated ground to the Q46 Air Conditioning Compressor Solenoid Valve. When the A/C switch is pressed, the BCM grounds the variable displacement solenoid using a (PWM) signal in order to determine the amount of compressor displacement. The performance of the A/C compressor is regulated based on cooling load.

**B117A Windshield Outside Moisture/Ambient Light and Humidity Sensor (CE1)**
The windshield outside moisture, ambient light, and humidity sensor is used by the wiper system to determine exterior moisture, and by the HVAC system for inside windshield temperature and humidity.

The sensors are part of a LIN windshield sensor array, and the sensor values are transmitted to the BCM via serial data.

When equipped, this sensor assembly provides information to the HVAC system about:

- Relative humidity level at windshield (passenger compartment side)
- Temperature of the windshield (passenger compartment side)
- Temperature of the humidity sensor element

The relative humidity sensor measures the relative humidity of the passenger compartment side of the windshield. It also detects the temperature of the windshield surface on the passenger compartment side. Both values are used as control inputs for the BCM application to calculate the fog risk on windshield compartment side and ability to reduce fuel consumption by decreasing A/C compressor power to a minimum without causing any fog. The sensor will also enable partial recirculation mode in order to improve heat-up performance of the passenger compartment under cold ambient temperature conditions without the risk of mist build-up on the windshield. The humidity sensor element temperature sensor supplies the temperature of the humidity sensor element. It is only needed if the thermal contact between the humidity sensing element and the inside windshield surface is not sufficient.

**B10D Sun Load and Ambient Light and Security Indicator Sensor**
The ambient light/sunload sensor includes the solar sensor and passenger compartment temperature sensor.

The solar sensor is connected to a low reference and 5 V supply through the BCM. As the sunload increases, the sensor signal voltage also increases and vice versa. The signal provided to the BCM varies between 1.2–4.85 V.

The passenger compartment temperature sensor is a negative temperature coefficient thermistor, connected to a low reference and 5 V supply through the BCM. As the air temperature increases, the sensor resistance decreases. The signal varies between 0–5 V.

Bright or high intensity light can cause the vehicles interior temperature to increase. The HVAC system uses the sensor values and compensates for the increased temperature to maintain the system settings.

**E40 Air Heater (C32)**
Some models are equipped with an auxiliary electric heater to assist in warming the passenger compartment when the engine coolant has not sufficiently warmed to operating temperature. The air heater is a LIN device.

The heater uses an ignition circuit, battery voltage circuit, ground circuit, and a serial data signal from the BCM to operate.

The heater is a 12 V positive temperature coefficient heating element located in the HVAC case just downstream of the traditional heater core. The system will activate the heater when the outside temperature is less than approximately 8°C (46°F), the engine coolant temperature is less than approximately 75°C (167°F), and the temperature blend door is commanded to the full hot position.

**Air Speed and M8 Blower Motor**
The selected blower motor speed is passed from the controls to the BCM via serial data.

The motor uses a fused B+, ground, control, and speed output signal circuits to operate. The blower motor speed is controlled by increasing or decreasing the voltage drop on the ground side of the blower motor speed control circuit. The BCM provides a low side pulse width modulation (PWM) signal to the blower motor to request a specific motor speed. The blower motor internal circuitry translates the PWM signal and drives the motor accordingly.

The blower motor has a signal wire used to output a speed signal. The signal is monitored by the BCM. The BCM monitors the blower motor speed to modify the total commanded engine coolant flow rate, which is a percentage of available coolant flow sent to the heater core for occupant comfort and windshield defrosting. The HVAC Blower Speed is monitored so that the ECM can optimize engine coolant flow for fuel economy and emissions.

**Afterblow**
Afterblow is a feature that dries the evaporator core by operating the blower motor after the engine is turned OFF under certain conditions. This reduces the amount of moisture that can create undesirable odors. For additional information on afterblow, the default setting, and changing the setting, refer to [Link target (target-id 328146-) not found] .

## Air Delivery

The BCM controls the distribution of air by the use of recirculation and mode door actuators. The modes that may be selected are:

- Defrost: windshield outlet
- Panel: dashboard outlets
- Floor: front footwell outlets
- Defog: defrost + floor
- Bi-level: panel + floor
- Tri-level: panel + defrost + floor
- Hi-level: panel + defrost

The desired air distribution mode can be selected with the air distribution switches at the HVAC control. The HVAC control delivers the values to the BCM via serial data. The BCM sends a request to the mode door actuator to move the door to the required position. Depending on the position of the door, air is distributed through various ducts leading to the outlets in the dash. When defrost airflow is active, the BCM will move the recirculation actuator to outside air, to aid in reducing window fogging. When defrost is selected the blower motor will be activated, regardless of the coolant temperature. A/C is available in all modes.

Refer to the owners manual for operation of the HVAC controls and mode selection.

**Recirculation Operation**
The recirculation switch is integrated into the HVAC control. The selected recirculation setting is sent to the BCM via serial data. The BCM controls the air intake using the recirculation actuator. In recirculation mode the recirculation door is positioned to block outside air from entering and circulate the air within the vehicle. In outside air mode the recirculation door is positioned to route outside air into the vehicle.

Recirculation is only available if the defrost mode is not active. When the defrost mode is active, the recirculation actuator positions the recirculation door so that outside air is circulated to the windshield to reduce fogging.

In automatic mode the values of the sensors are used as inputs for the BCM to calculate the fog risk on the passenger compartment side of the windshield. The A/C compressor and the defrost mode may be activated to prevent or remove fog on the passenger compartment side of the windshield.

In automatic mode, a partial recirculation mode may be commanded to accelerate cabin heating or cooling and reduce energy usage. The recirculation indicator remains illuminated at all times, regardless of the actual operating mode determined by the system.

## Heating and A/C Operation

The purpose of the heating and A/C system is to provide heated and cooled air to the interior of the vehicle. The A/C system will also remove humidity from the interior and reduce windshield fogging. Regardless of the temperature setting, the following may affect the rate that the HVAC system can achieve the desired temperature:

- Recirculation setting
- Difference between inside and desired temperature
- Blower motor speed setting
- Mode setting
- Dashboard outlet open/closed position

When the A/C switch or the AUTO switch is pressed, the HVAC control sends a signal to the BCM via serial data. The BCM evaluates this signal and sends an A/C request signal to the ECM via CAN-Bus. The ECM checks all preconditions before releasing and if all conditions are met sends a release signal back to the BCM. The A/C compressor is activated by the BCM. The BCM supplies battery voltage to the A/C compressor solenoid. When the A/C switch is pressed, the BCM provides a pulse width modulation (PWM) signal to the A/C compressor solenoid in order to command the performance of the A/C compressor. The performance of the A/C compressor is regulated using evaporator temperature and engine load.

The A/C indicator does not indicate the compressor is currently active. The A/C indicator shows that A/C has been requested and the system will activate the compressor as needed.

The following conditions must be met in order to activate the A/C compressor:

- Battery voltage is between 9–18 V
- Engine coolant temperature is less than 124°C (255°F)
- Engine speed is greater than 600 RPM
- Engine speed is less than 5 500 RPM
- A/C high side pressure is between 269–2 929 kPa (39–425 PSI)
- Throttle position is less than 100%
- Evaporator temperature is greater than 3°C (38°F)
- ECM does not detect immoderate torque load
- ECM does not detect insufficient idle quality
- The ambient temperature is above 1°C (34°F)

The sensor information is used by the ECM to determine the following:

- The A/C high side pressure
- An A/C system load on the engine
- An immoderate A/C high side pressure
- The heat load at the A/C condenser

The air streams into the passenger compartment through the heater core and the evaporator core. The air temperature actuator drives the mixed air door to direct the airflow. If the interior temperature should be increased, the mixed air door is put into the position in which more air streams through the heater core. If the interior temperature should be decreased, the mixed air door is put into the position in which more air streams through the evaporator core.

### Automatic Operation

In automatic operation, the BCM maintains the comfort level inside of the vehicle by controlling the A/C compressor solenoid, the blower motor, the air temperature actuators, mode actuator and recirculation actuator.

The automatic mode indicator shows that the system is in full automatic operation. If an individual setting is changed (excluding temperature), the automatic indicator will turn off, and that function will enter manual control. All other functions will remain under automatic control unless manually changed.

To put the HVAC system in automatic mode, the following is required:

1. The auto switch must be activated.
2. The air temperature switch must not be in either the full hot or full cold position.

Once the desired temperature is reached, the blower motor, mode, recirculation and temperature actuators automatically adjust to maintain the temperature selected. The BCM performs the following functions to maintain the desired air temperature:

- Monitors the following:
  - Ambient (outside) air temperature sensor
  - Passenger compartment temperature sensor
  - Calculated front duct air temperatures
  - Windshield temperature and inside moisture sensor (ASV/ CE1)
  - Evaporator temperature sensor
  - Ambient light/sunload sensor
- Regulate the blower motor speed
- Position the air temperature actuators
- Position the mode door actuators
- Position the recirculation actuator
- Control of the A/C compressor solenoid

When the temperature setting is set to full hot, the blower speed will increase gradually as the coolant warms to normal operating temperature. When normal engine operating temperature is reached the blower stays on high speed and the air temperature actuators stays in the full heat position.

When the temperature setting is set to full cold, the blower will immediately operate at high speed and the air temperature actuators move to full cold position. The mode actuator moves to the panel position and the recirculation actuator moves to the recirculation position.

Under cold ambient temperatures, the automatic HVAC system provides heat in the most efficient manner. The operator can select an extreme temperature setting but the system will not warm the vehicle any faster. Under warm ambient temperatures, the automatic HVAC system also provides air conditioning in the most efficient manner. Selecting an extreme cool temperature will not cool the vehicle any faster.

In automatic mode the values of the windshield temperature and inside moisture sensor are used as control inputs for the BCM application to calculate the fog risk on the passenger compartment side of the windshield and ability to reduce fuel consumption by decreasing A/C compressor power to a minimum without causing any fog. The A/C compressor and the defrost mode are activated to prevent or remove fog on the passenger compartment side of the windshield. The sensor will also enable partial recirculation mode in order to improve heat-up performance of the passenger compartment under cold ambient temperature conditions without the risk of mist build-up on the windshield.

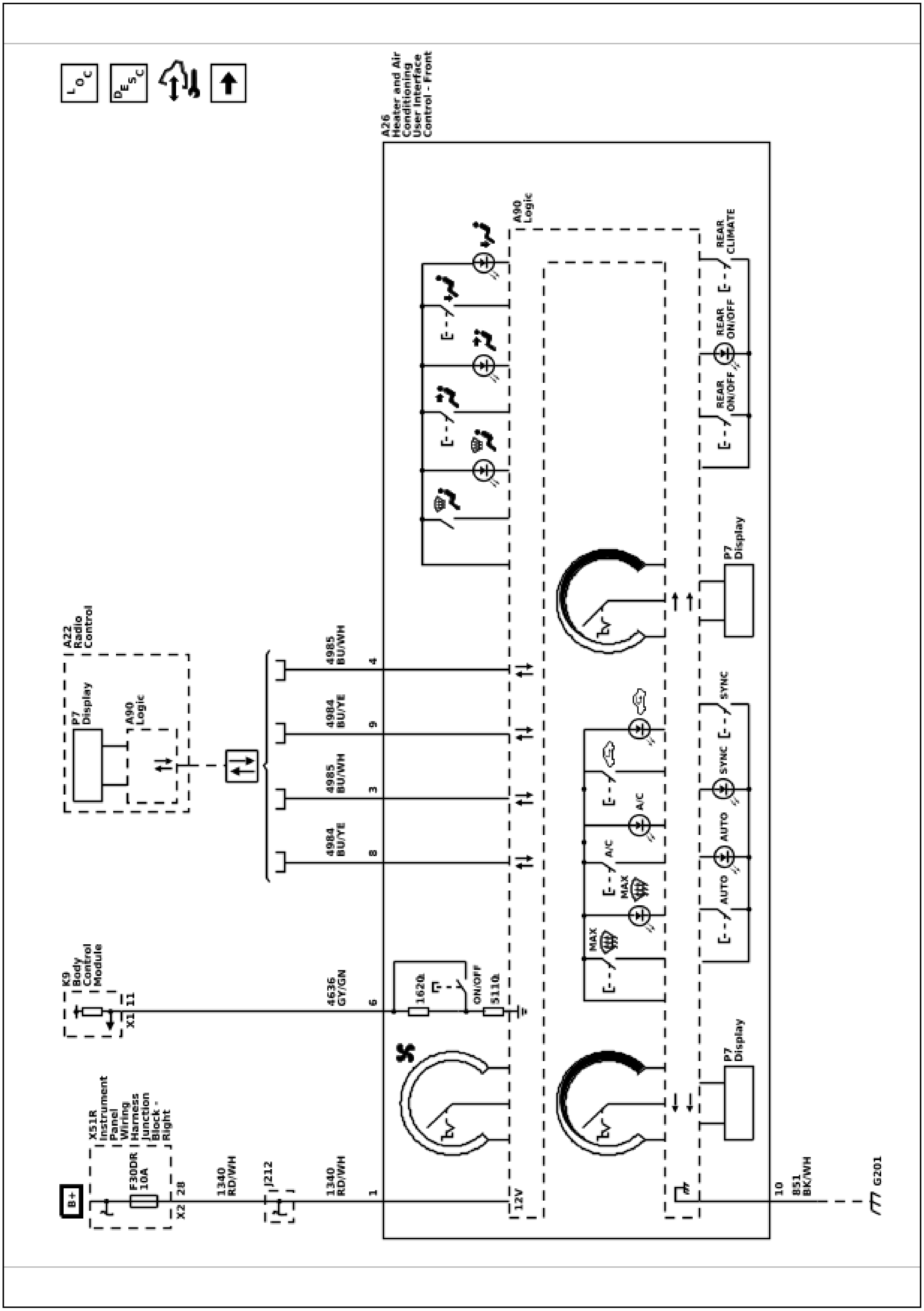
### Engine Coolant and A/C System Refrigerant

For information on engine coolant, coolant flow, A/C refrigerant, and the A/C refrigerant cycle, refer to [Link target (target-id 162334-) not found] .

# HVAC - Manual

## Schematic and Routing Diagrams

HVAC Schematics (HVAC Controls)

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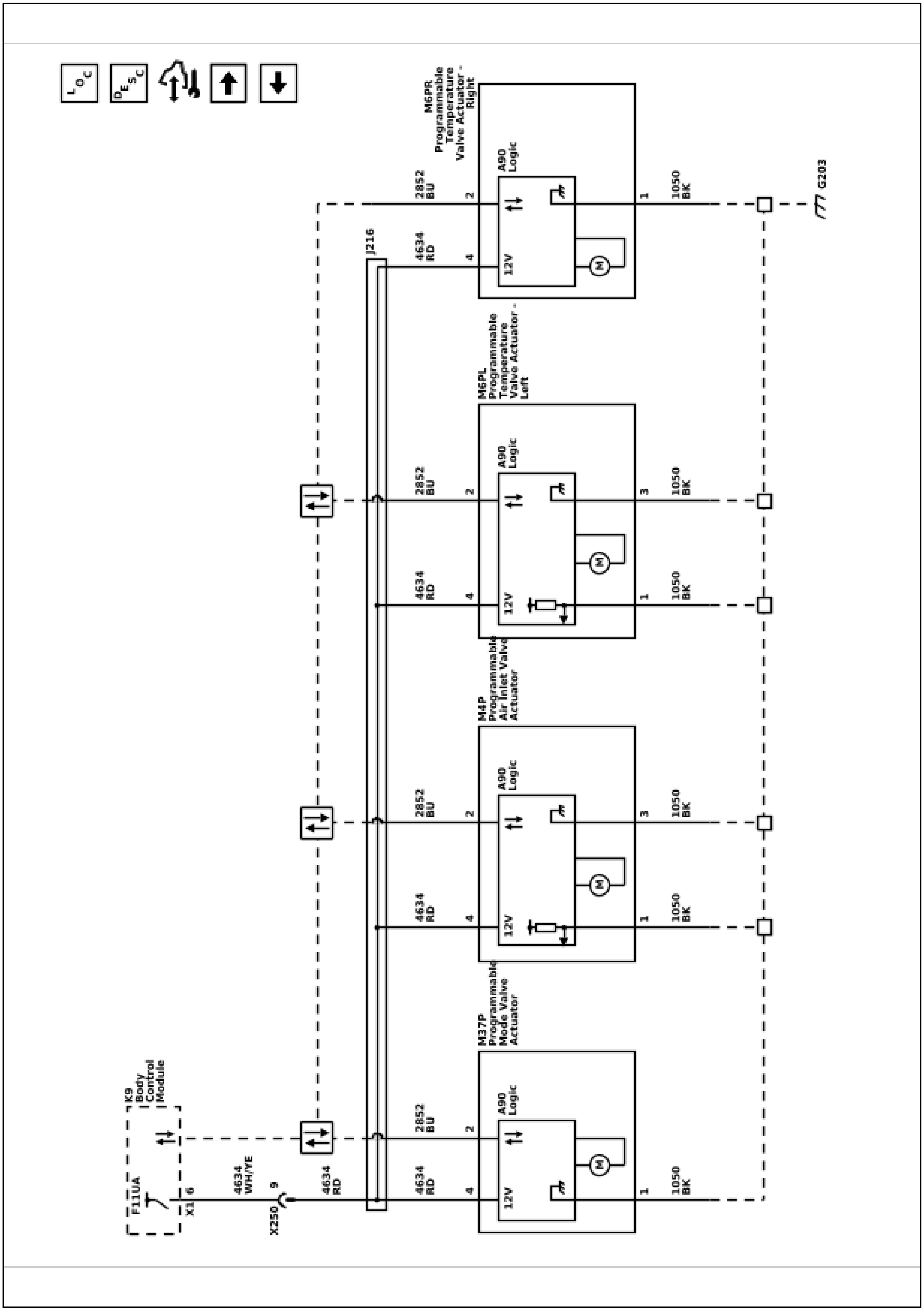
## HVAC Schematics (Actuators)

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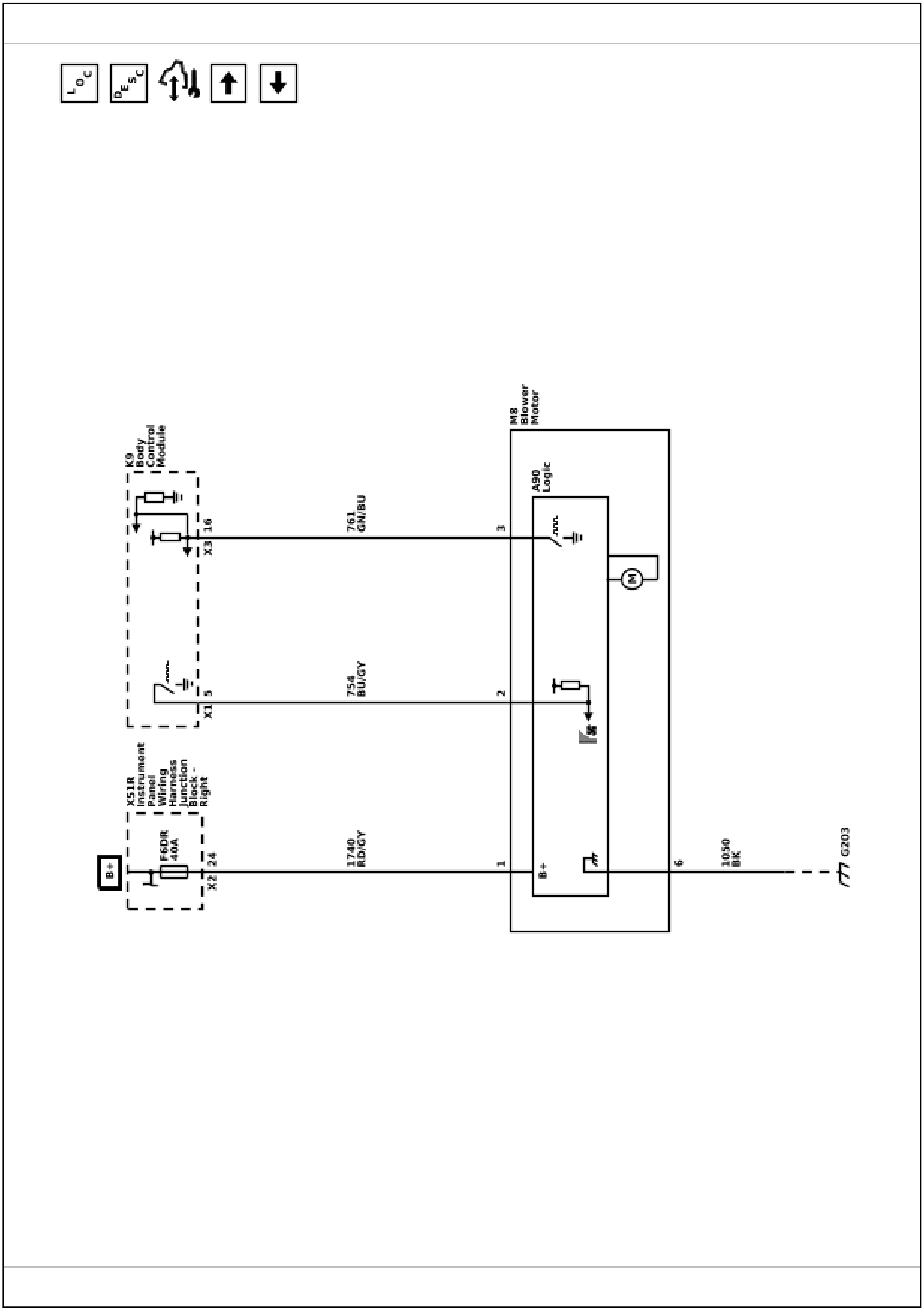
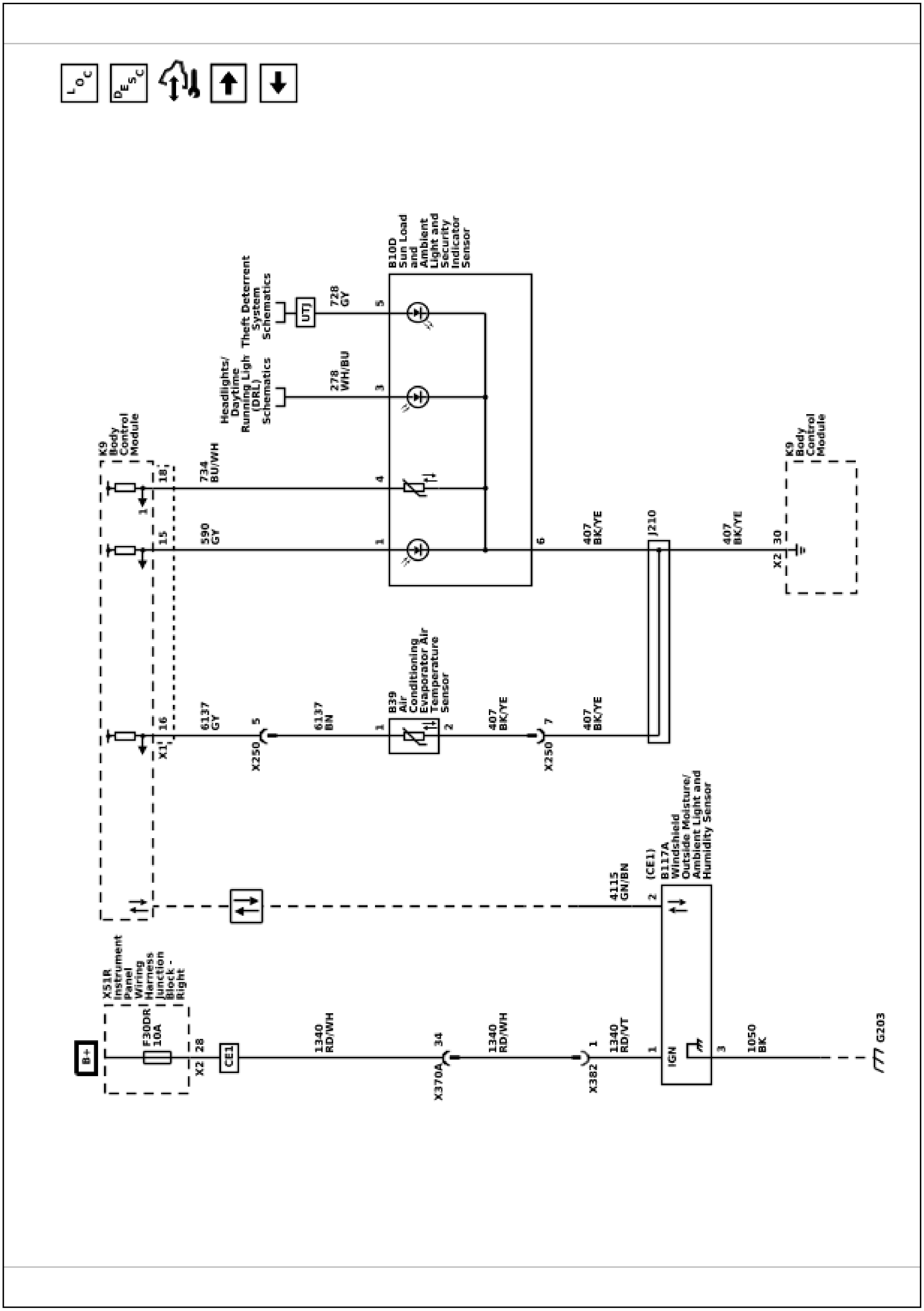
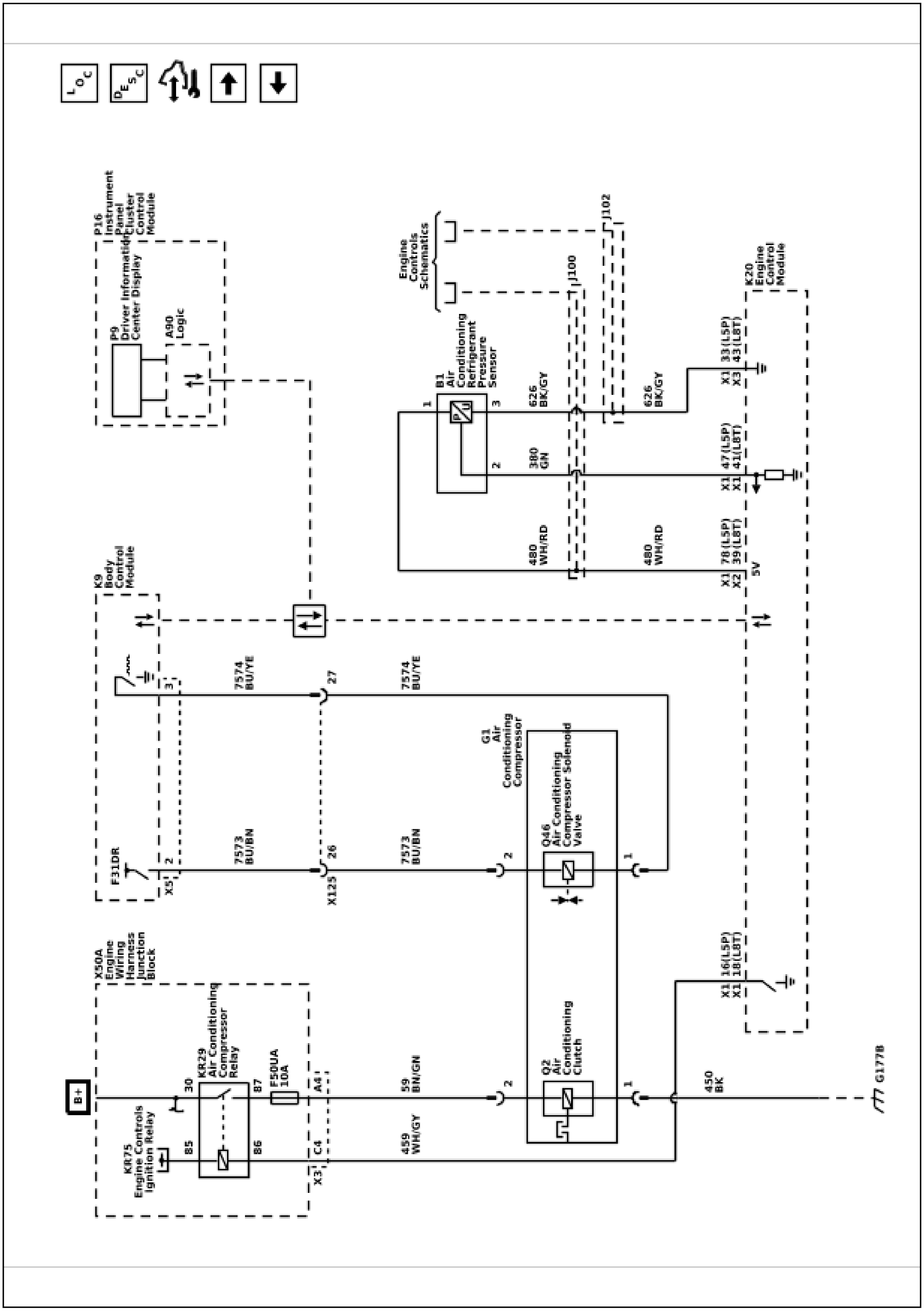
## HVAC Schematics (Blower Motor)



## HVAC Schematics (Windshield Sensors and A/C Evaporator Temperature Sensor)



## HVAC Schematics (A/C Compressor Controls)



## HVAC Schematics (Air Heater)

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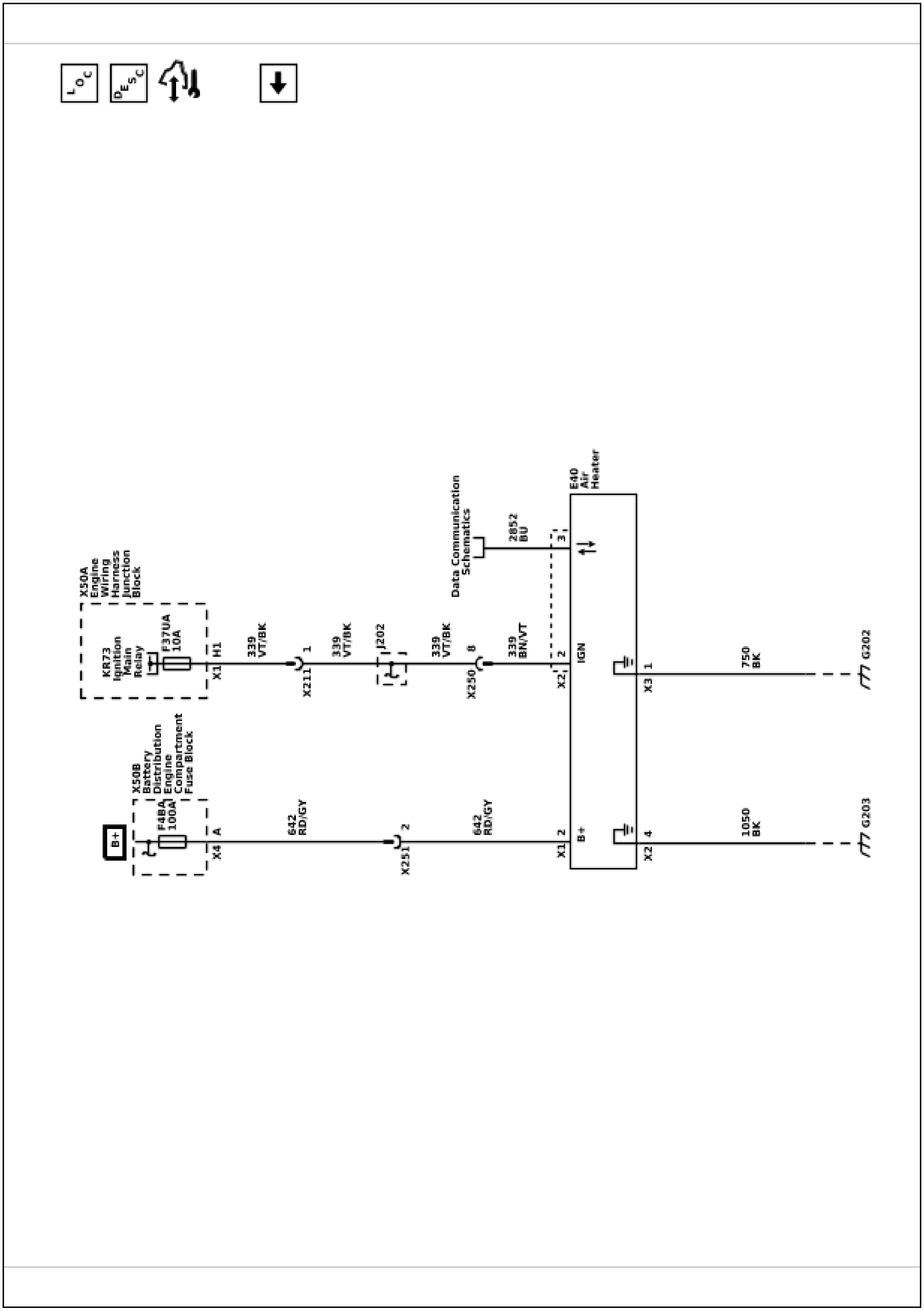


# Description and Operation

## Manual HVAC Description and Operation

The air temperature and the air delivery description and operation are divided into the following:

- HVAC Control Components
- Air Speed and Blower Motor
- Air Delivery
- Heating and A/C Operation
- Recirculation Operation
- Engine Coolant and A/C System Refrigerant

## HVAC Control Components

**K9 Body Control Module**
The body control module (BCM) is a CAN device that interfaces between the operator and the HVAC system to maintain and control desired air temperature and air distribution settings. The BCM provides a device ON-Signal for the HVAC controls. The BCM provides blower, air delivery mode and air temperature control.

**A26 Heater and Air Conditioning User Interface Control - Front**
The HVAC control contains all switches which are required to control the functions of HVAC and serve as interface between the operator and the BCM. The selected values are passed to the BCM via serial data.

**Actuators**
Doors in the HVAC case assembly are used to control air flow. The BCM operates the doors through the use of actuators, with one actuator being used for each door. The system has the following air control doors and associated actuators: mode, temperature, and recirculation.

Each actuator used in the system is a LIN device controlled by the BCM. The BCM supplies a 12 V reference voltage to the actuators, and ground is provided by the wiring harness. When the BCM sends a request message to the actuator, the actuator then operates internal stepper motors to move the door to the required position.

**Air Speed and M8 Blower Motor**
The selected blower motor speed is passed from the controls to the BCM via serial data.

The motor uses a fused B+, ground, control, and speed output signal circuits to operate. The blower motor speed is controlled by increasing or decreasing the voltage drop on the ground side of the blower motor speed control circuit. The BCM provides a low side pulse width modulation (PWM) signal to the blower motor to request a specific motor speed. The blower motor internal circuitry translates the PWM signal and drives the motor accordingly.

The blower motor has a signal wire used to output a speed signal. The signal is monitored by the BCM. The BCM monitors the blower motor speed to modify the total commanded engine coolant flow rate, which is a percentage of available coolant flow sent to the heater core for occupant comfort and windshield defrosting. The HVAC Blower Speed is monitored so that the ECM can optimize engine coolant flow for fuel economy and emissions.

**Afterblow**
Afterblow is a feature that dries the evaporator core by operating the blower motor after the engine is turned OFF under certain conditions. This reduces the amount of moisture that can create undesirable odors. For additional information on afterblow, the default setting, and changing the setting, refer to [Link target (target-id 328147-) not found] .

**B39 Air Conditioning Evaporator Air Temperature Sensor**
The evaporator temperature sensor is a 2-wire negative temperature coefficient thermistor. The sensor operates within a temperature range of −40 to +85°C (−40 to +185°F). The sensor is installed near the evaporator core to measure the air temperature exiting the core.

Based on vehicle operating conditions and operator settings, the HVAC software algorithms will determine a target evaporator air temperature. The operation of the compressor solenoid will be adjusted as needed to quickly reach and maintain the targeted temperature.

**B1 Air Conditioning Refrigerant Pressure Sensor**
The A/C refrigerant pressure sensor is a 3-wire piezo-electric pressure transducer. A 5 V reference voltage, low reference, and signal circuits enable the sensor to operate. The A/C pressure signal can be between 0.2–4.8 V. When the A/C refrigerant pressure is low, the signal value is near 0 V. When the A/C refrigerant pressure is high, the signal value is near 5 V. The engine control module (ECM) converts the voltage signal to a pressure value. When pressure is too high or too low, the ECM will not allow the A/C compressor clutch to engage.

**G1 Air Conditioning Compressor**
The A/C compressor uses a conventional belt driven magnetic clutch to engage and mechanically turn the compressor. When the A/C switch is pressed, the BCM sends an A/C request message to the ECM via serial data. If specific criteria is met, the ECM then grounds the A/C compressor clutch relay control circuit, which will switch the A/C compressor clutch relay. With the relay contacts closed, battery voltage is supplied to the permanently grounded A/C compressor clutch. The A/C compressor clutch will then be activated.

This A/C system utilizes a variable displacement solenoid valve to alter the amount of displacement created by the turning of the compressor. The BCM provides both battery voltage and a pulse width modulated ground to the Q46 Air Conditioning Compressor Solenoid Valve. When the A/C switch is pressed, the BCM grounds the variable displacement solenoid using a (PWM) signal in order to determine the amount of compressor displacement. The performance of the A/C compressor is regulated based on cooling load.

**E40 Air Heater (C32)**
Some models are equipped with an auxiliary electric heater to assist in warming the passenger compartment when the engine coolant has not sufficiently warmed to operating temperature. The air heater is a LIN device. The heater uses an ignition circuit, battery voltage circuit, ground circuit, and a serial data signal from the BCM to operate.

The heater is a 12 V positive temperature coefficient heating element located in the HVAC case just downstream of the traditional heater core. The system will activate the heater when the outside temperature is less than approximately 8°C (46°F), the engine coolant temperature is less than approximately 75°C (167°F), and the temperature blend door is commanded to the full hot position.

## Air Delivery

The BCM controls the distribution of air by the use of recirculation and mode door actuators. The modes that may be selected are:

- Defrost: windshield outlet
- Panel: dashboard outlets
- Floor: front footwell outlets
- Defog: defrost + floor
- Bi-level: panel + floor
- Tri-level: panel + defrost + floor
- Hi-level: panel + defrost

The desired air distribution mode can be selected with the air distribution switches at the HVAC control. The HVAC control delivers the values to the BCM via serial data. The BCM sends a request to the mode door actuator to move the door to the required position. Depending on the position of the door, air is distributed through various ducts leading to the outlets in the dash. When defrost airflow is active, the BCM will move the recirculation actuator to outside air, to aid in reducing window fogging. When defrost is selected the blower motor will be activated, regardless of the coolant temperature. A/C is available in all modes.

Refer to the owners manual for operation of the HVAC controls and mode selection.

**Recirculation Operation**
The recirculation switch is integrated into the HVAC control. The selected recirculation setting is sent to the BCM via serial data. The BCM controls the air intake using the recirculation actuator. In recirculation mode the recirculation door is positioned to block outside air from entering and circulate the air within the vehicle. In outside air mode the recirculation door is positioned to route outside air into the vehicle.

Recirculation is only available if the defrost mode is not active. When the defrost mode is active, the recirculation actuator positions the recirculation door so that outside air is circulated to the windshield to reduce fogging.

## Heating and A/C Operation

The purpose of the heating and A/C system is to provide heated and cooled air to the interior of the vehicle. The A/C system will also remove humidity from the interior and reduce windshield fogging. Regardless of the temperature setting, the following may affect the rate that the HVAC system can achieve the desired temperature:

- Recirculation setting
- Difference between inside and desired temperature
- Blower motor speed setting
- Mode setting
- Dashboard outlet open/closed position

When the A/C switch or the AUTO switch is pressed, the HVAC control sends a signal to the BCM via serial data. The BCM evaluates this signal and sends an A/C request signal to the ECM via CAN-Bus. The ECM checks all preconditions before releasing and if all conditions are met sends a release signal back to the BCM. The A/C compressor is activated by the BCM. The BCM supplies battery voltage to the A/C compressor solenoid. When the A/C switch is pressed, the BCM provides a pulse width modulation (PWM) signal to the A/C compressor solenoid in order to command the performance of the A/C compressor. The performance of the A/C compressor is regulated using evaporator temperature and engine load.

The A/C indicator does not indicate the compressor is currently active. The A/C indicator shows that A/C has been requested and the system will activate the compressor as needed.

The following conditions must be met in order to activate the A/C compressor:

- Battery voltage is between 9–18 V
- Engine coolant temperature is less than 124°C (255°F)
- Engine speed is greater than 600 RPM

- Engine speed is less than 5 500 RPM
- A/C high side pressure is between 269–2 929 kPa (39–425 PSI)
- Throttle position is less than 100%
- Evaporator temperature is greater than 3°C (38°F)
- ECM does not detect immoderate torque load
- ECM does not detect insufficient idle quality
- The ambient temperature is above 1°C (34°F)

The sensor information is used by the ECM to determine the following:

- The A/C high side pressure
- An A/C system load on the engine
- An immoderate A/C high side pressure
- The heat load at the A/C condenser

The air streams into the passenger compartment through the heater core and the evaporator core. The air temperature actuator drives the mixed air door to direct the airflow. If the interior temperature should be increased, the mixed air door is put into the position in which more air streams through the heater core. If the interior temperature should be decreased, the mixed air door is put into the position in which more air streams through the evaporator core.

## Engine Coolant and A/C System Refrigerant

For information on engine coolant, coolant flow, A/C refrigerant, and the A/C refrigerant cycle, refer to [Link target (target-id 162334-) not found] .

# Section 7

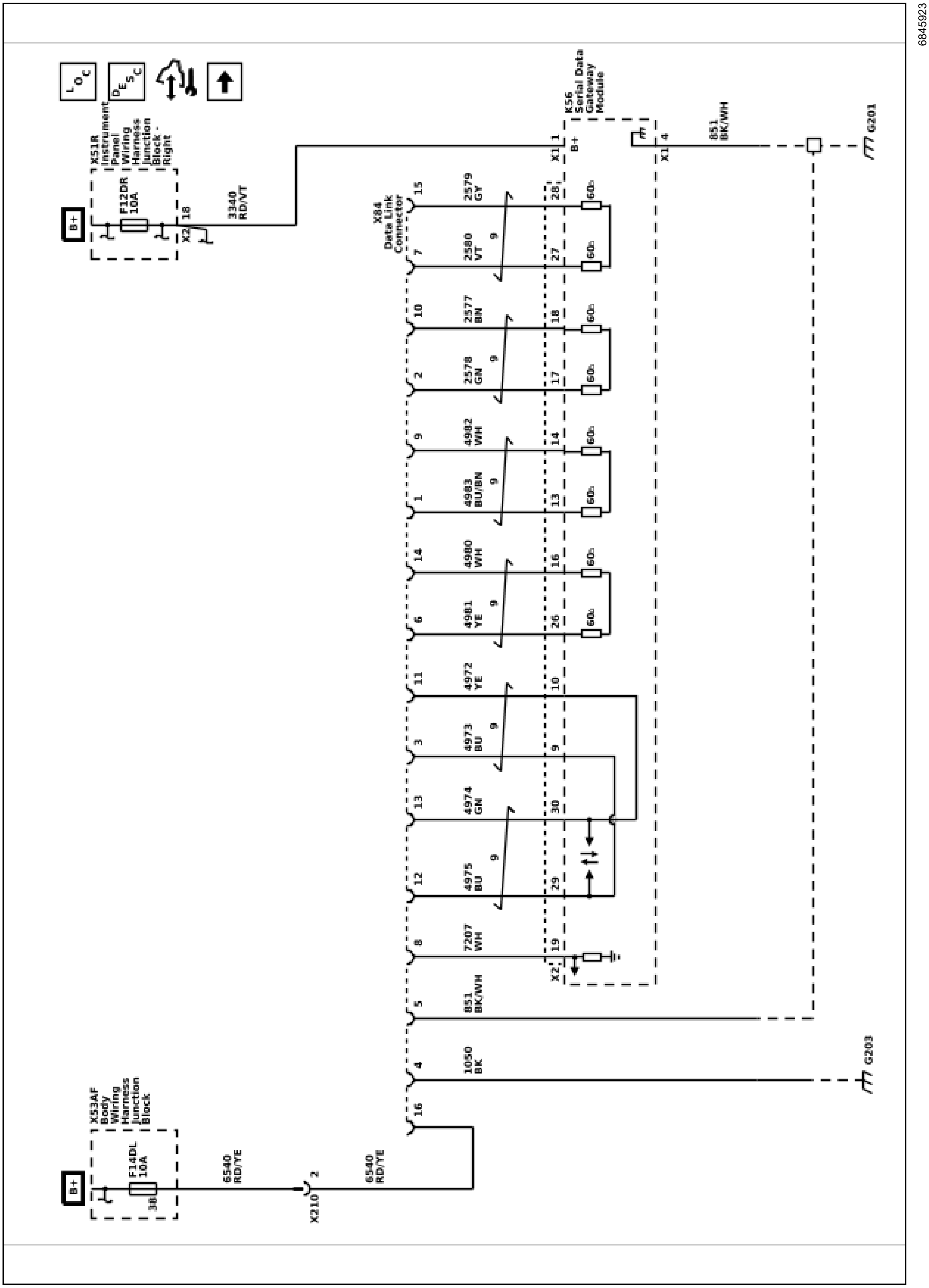
# Power and Signal Distribution

# Power and Signal Distribution

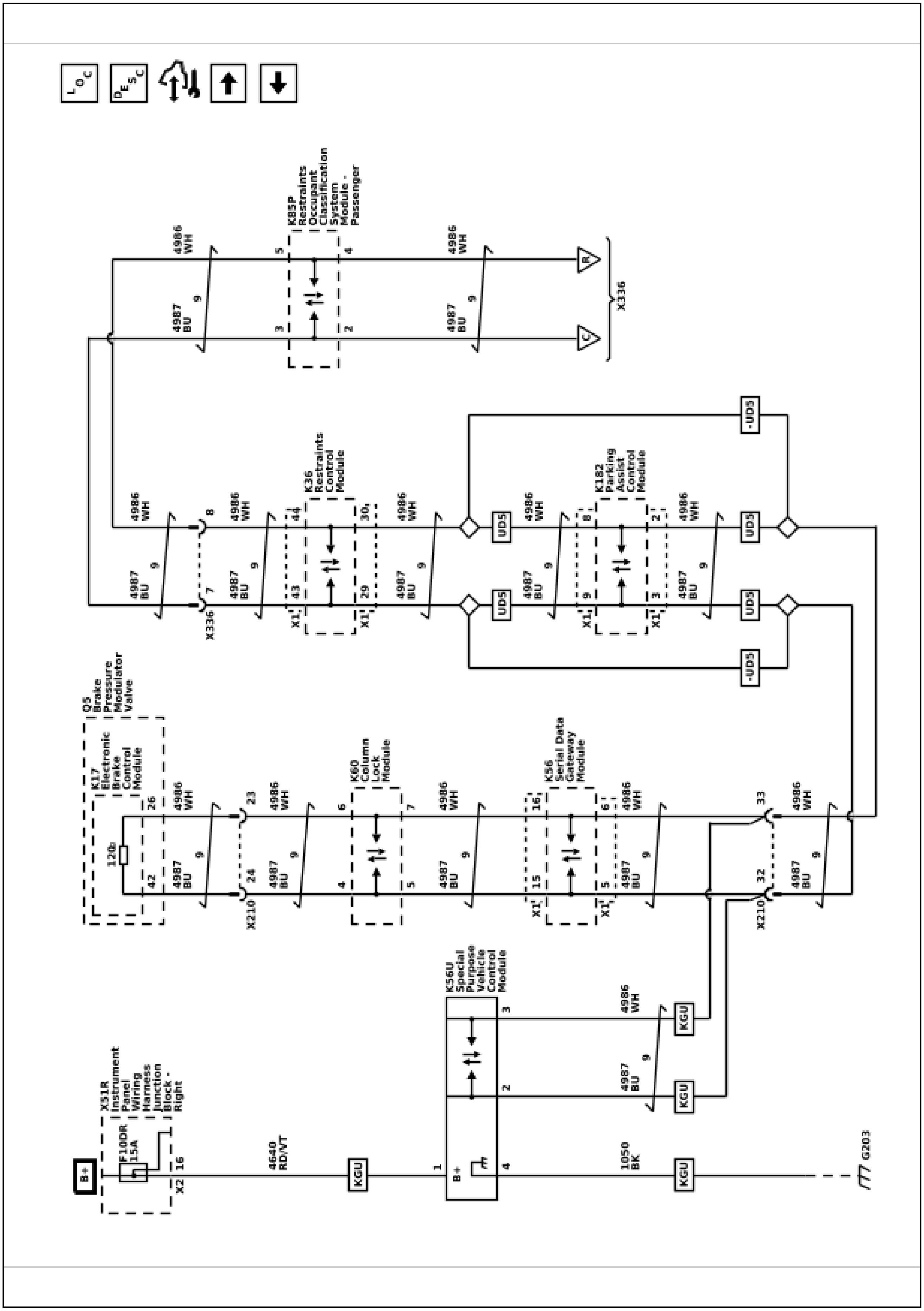
## Data Communications

### Schematic and Routing Diagrams

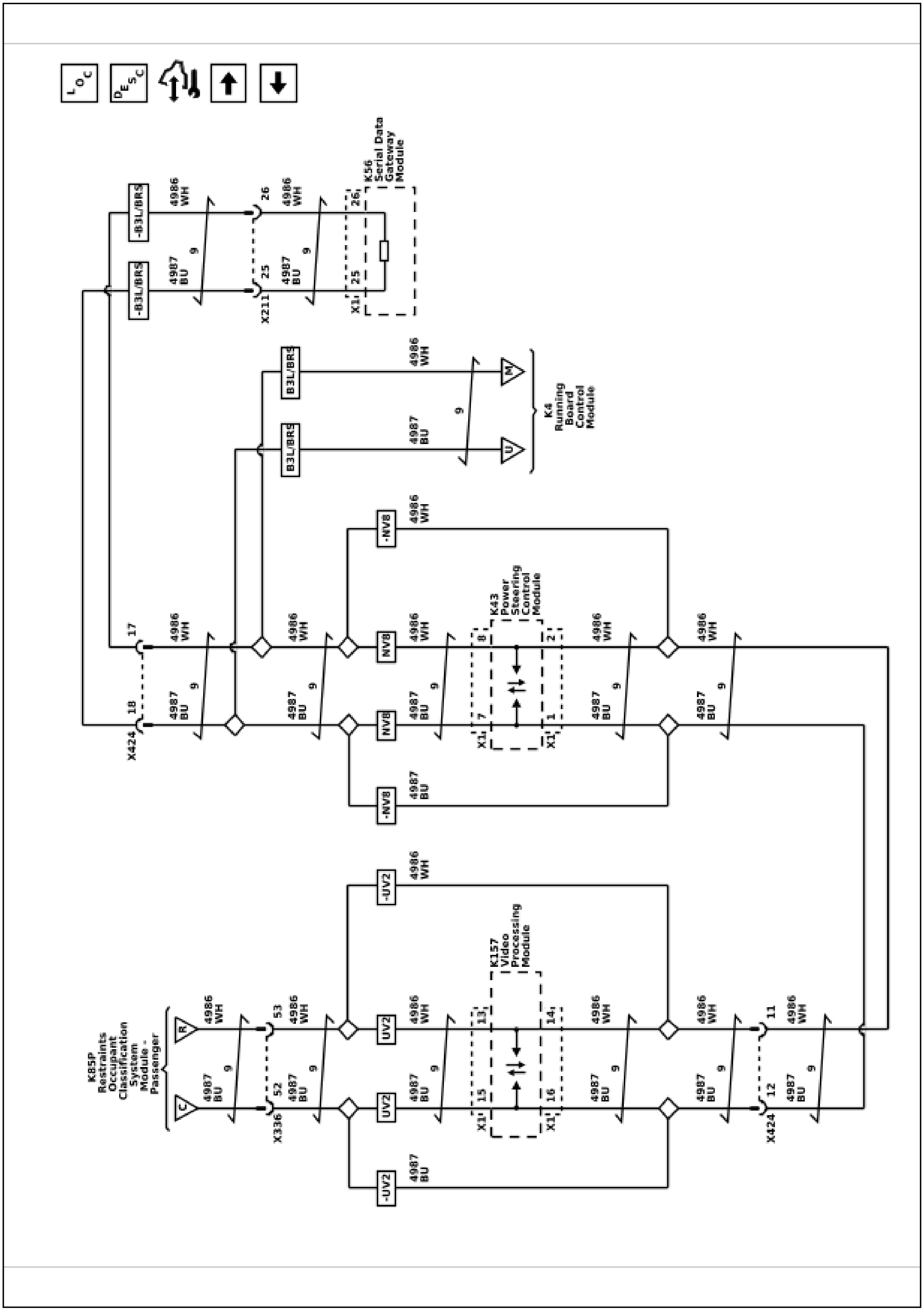
## Data Communication Schematics (Data Link Connector and Serial Data Gateway Module Power and Ground)



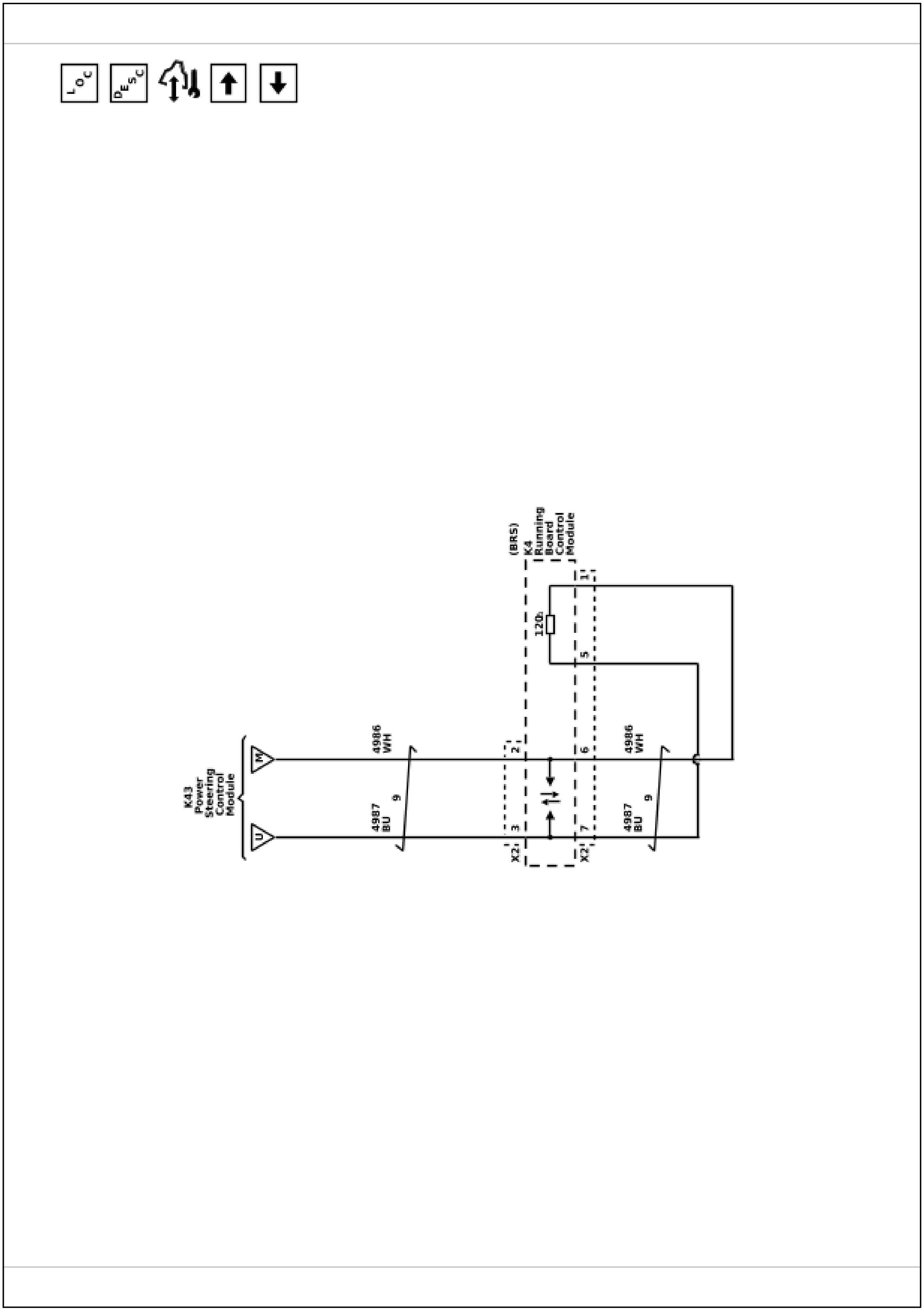
## Data Communication Schematics (CAN 1 - 1 of 3 and Special Purpose Vehicle Control Module Power and Ground)



## Data Communication Schematics (CAN 1 - 2 of 3)



## Data Communication Schematics (CAN 1 - 3 of 3)

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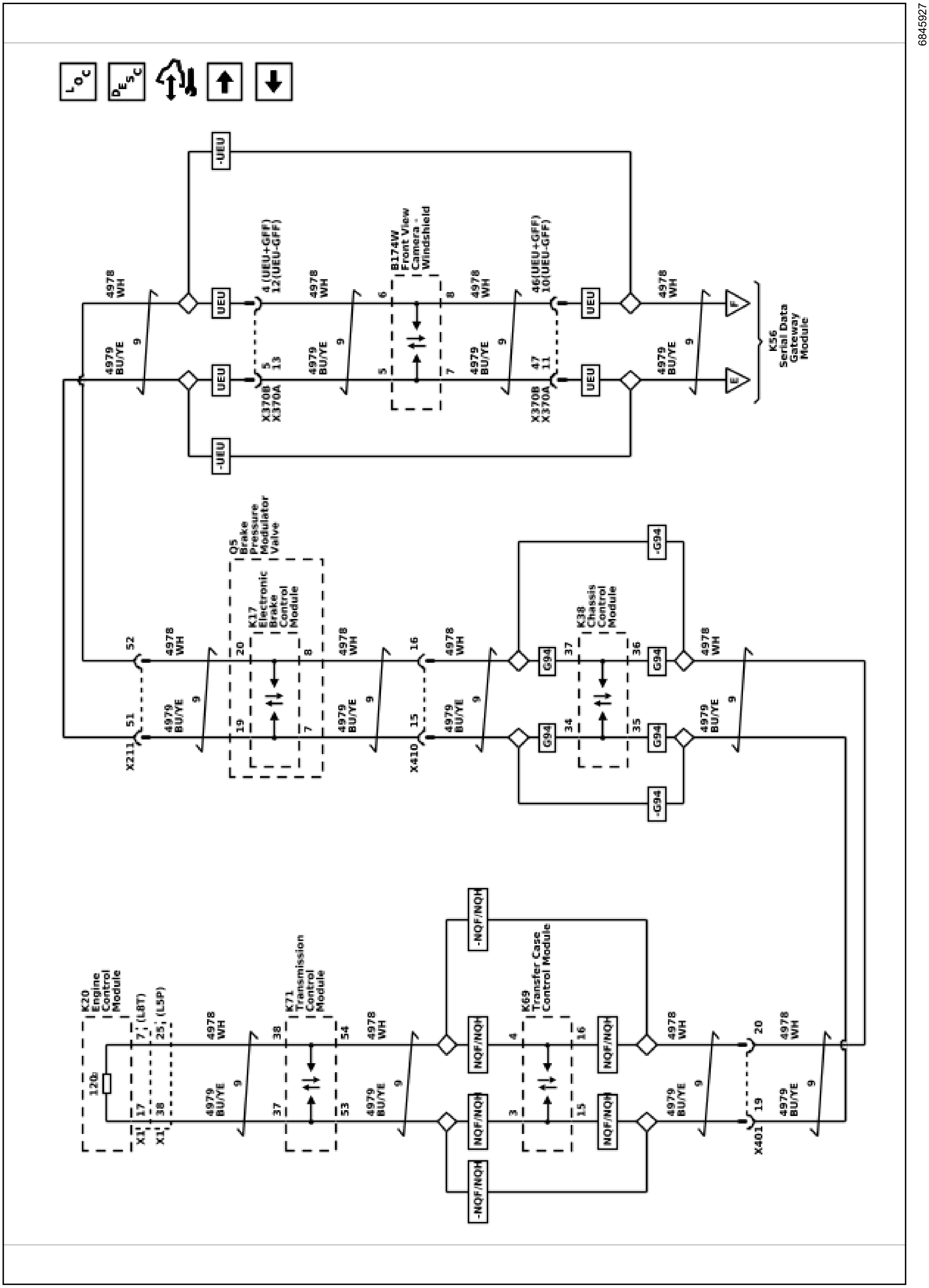
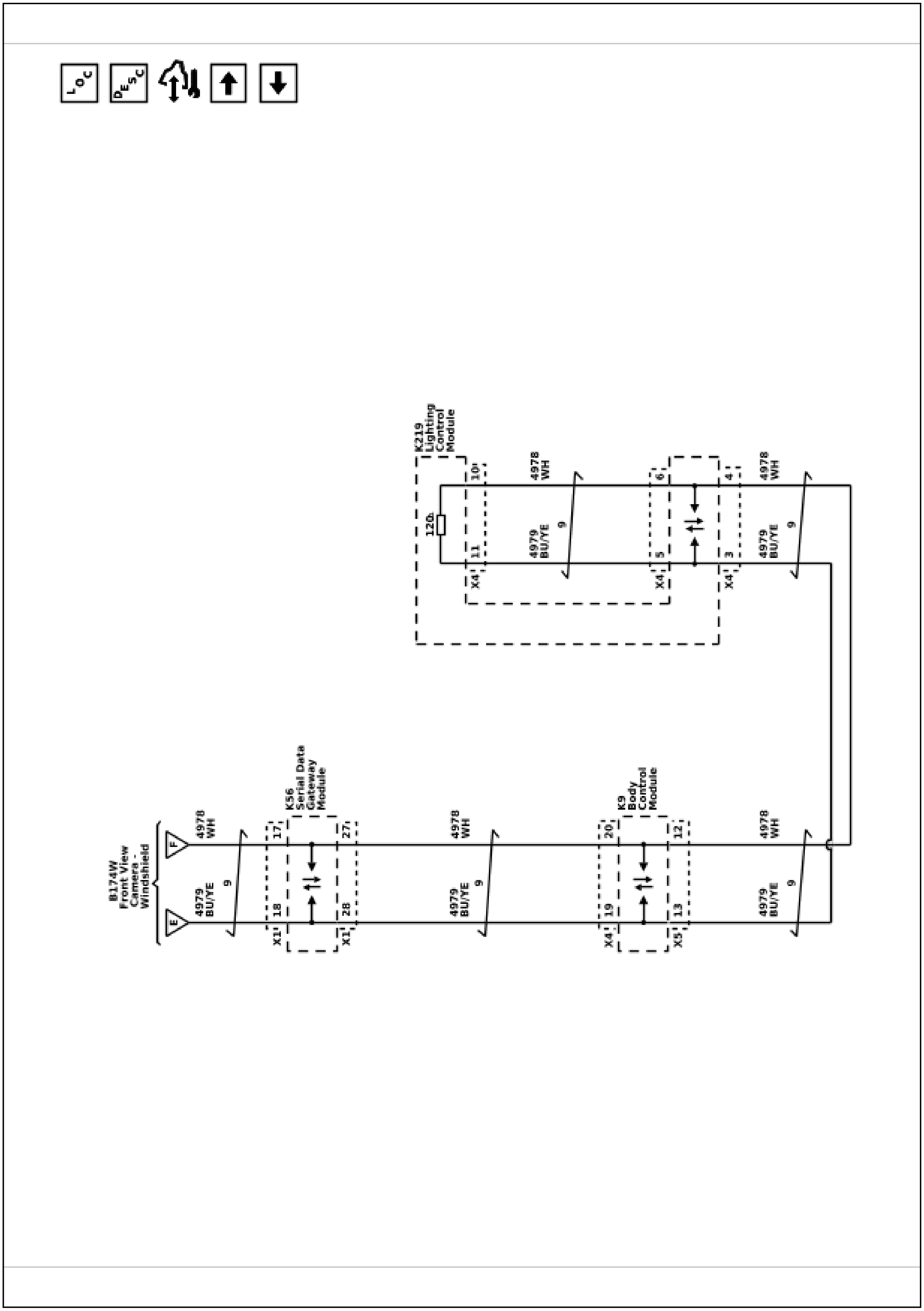
## Data Communication Schematics (CAN 2 - 1 of 2)



## Data Communication Schematics (CAN 2 - 2 of 2)

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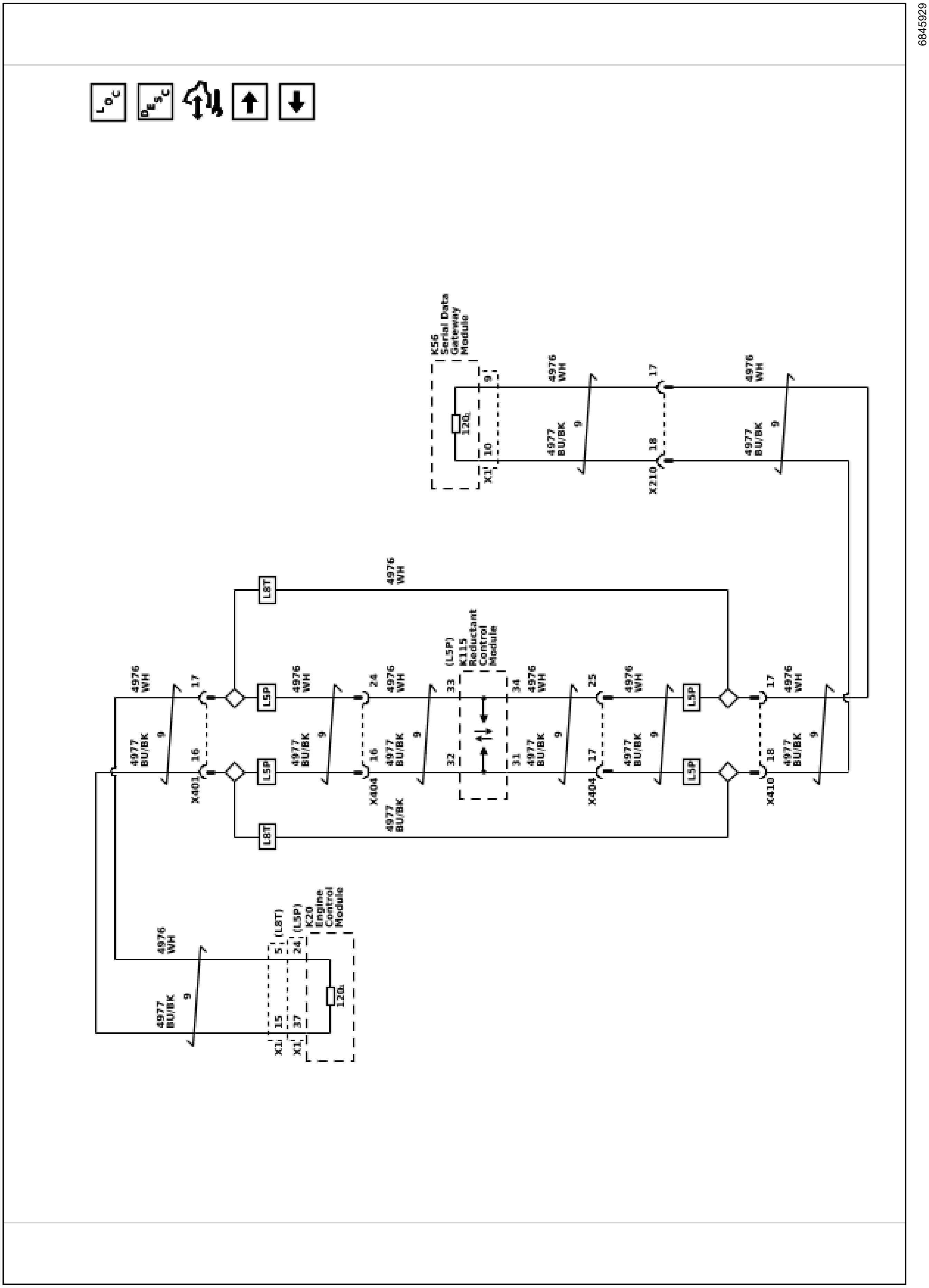
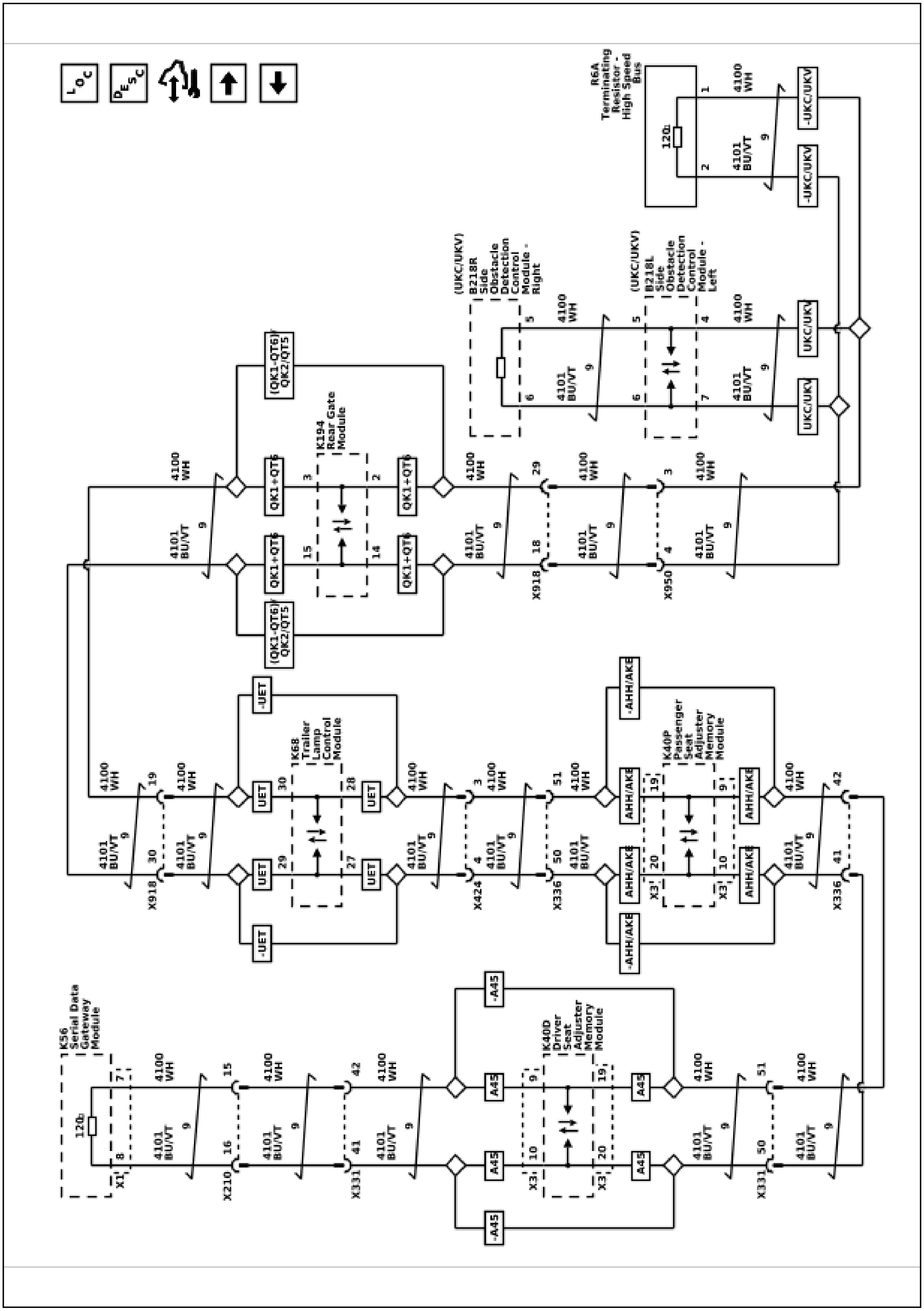
## Data Communication Schematics (CAN 3)



## Data Communication Schematics (CAN 4)

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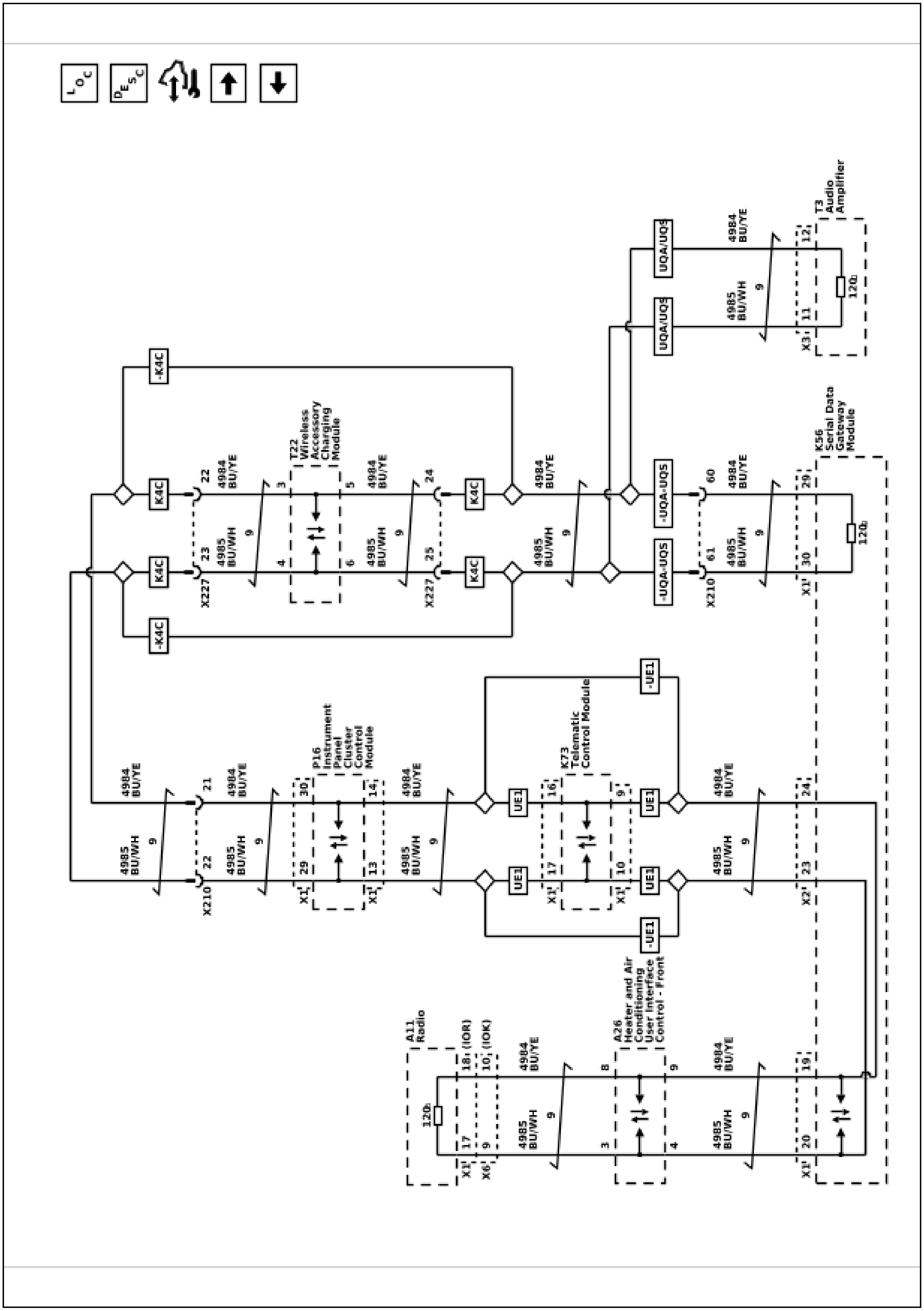
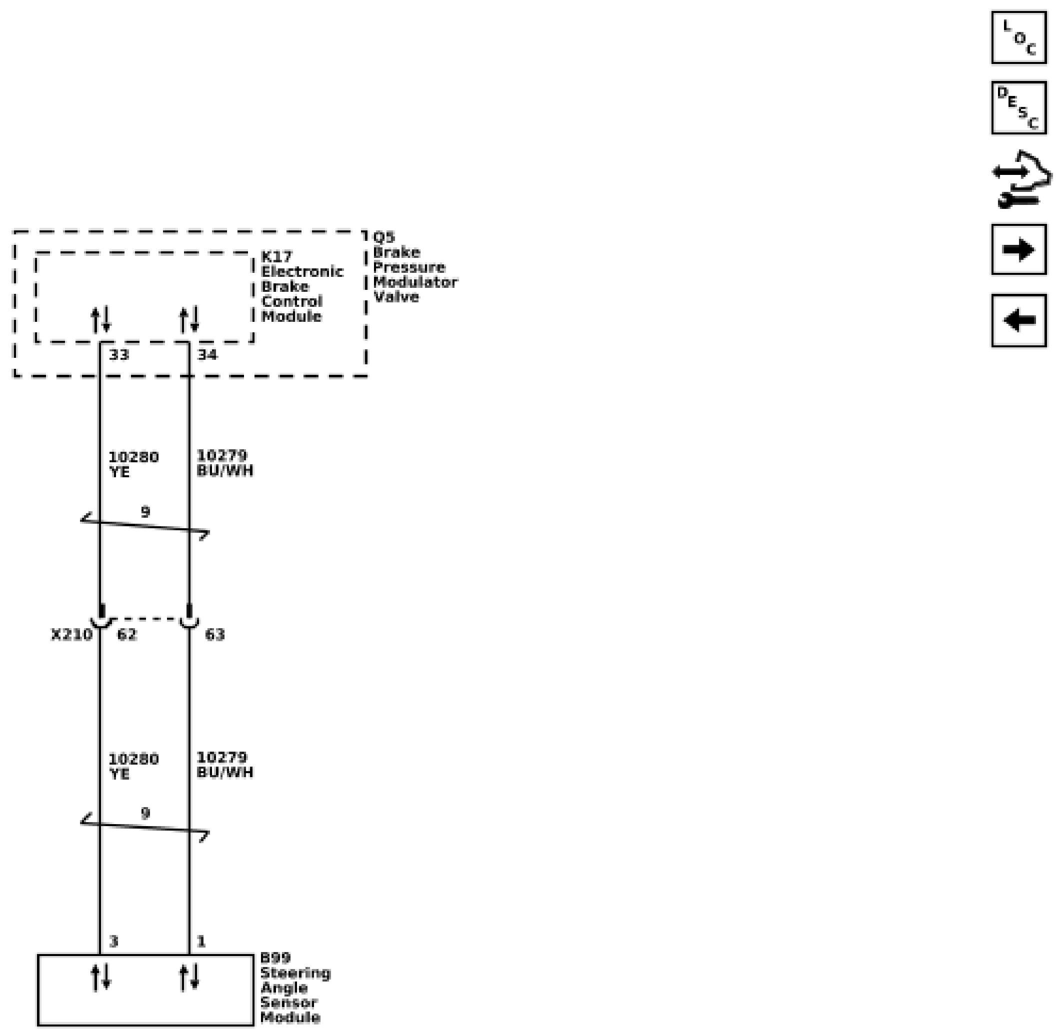
## Data Communication Schematics (CAN 5)



## Data Communication Schematics (Private Steering Angle CAN)

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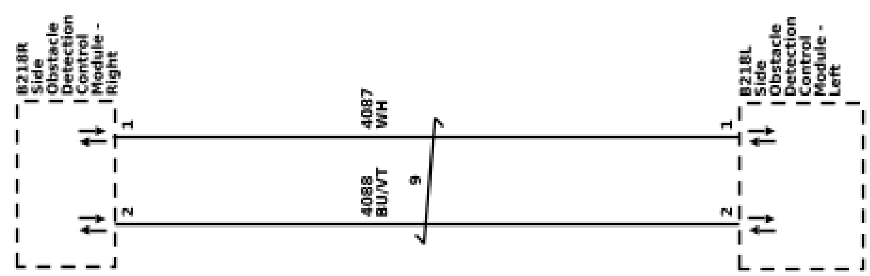
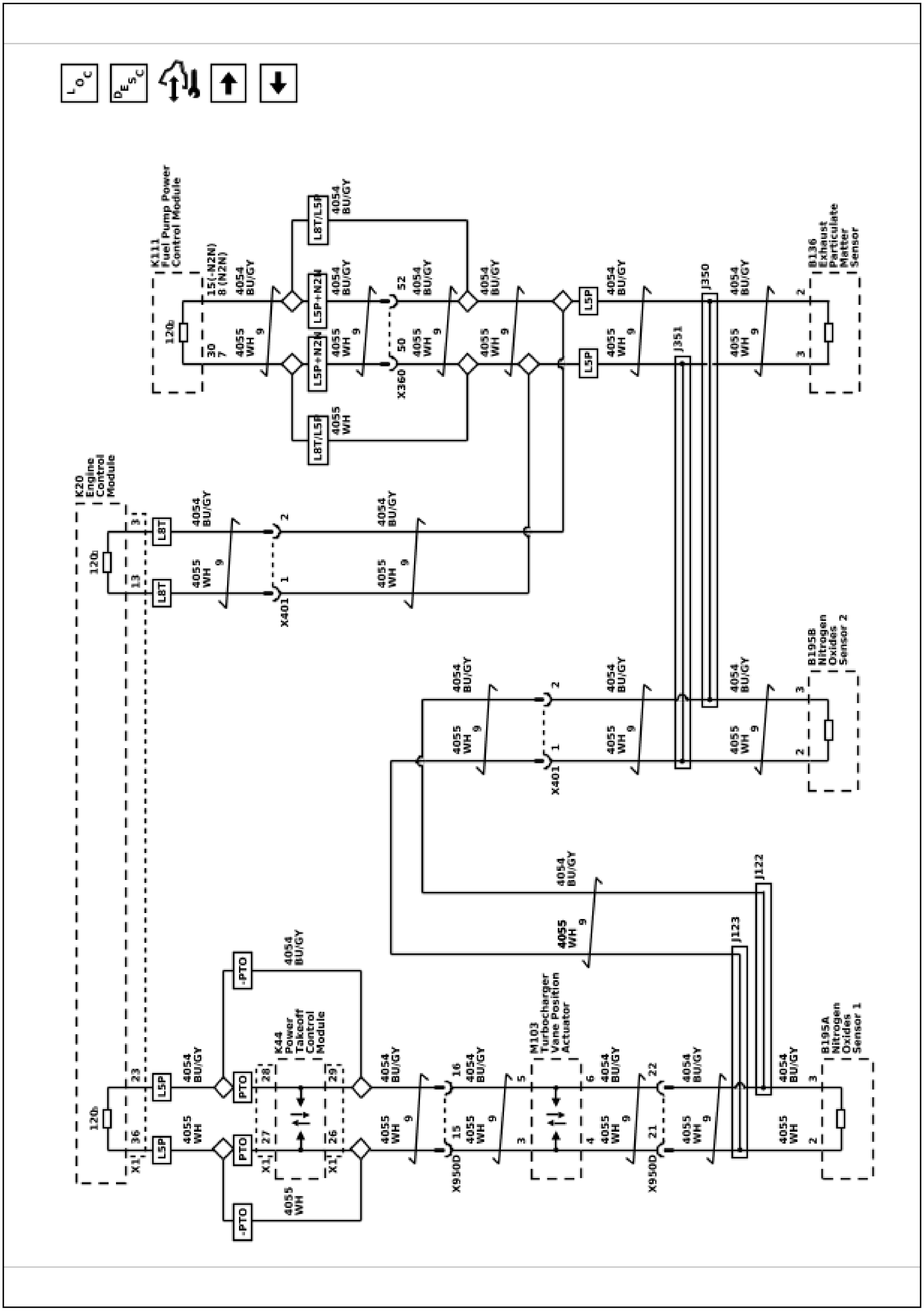
# Data Communication Schematics (Private Serial Data Side Obstacle Detection Can)



## Data Communication Schematics (Powertrain CAN)

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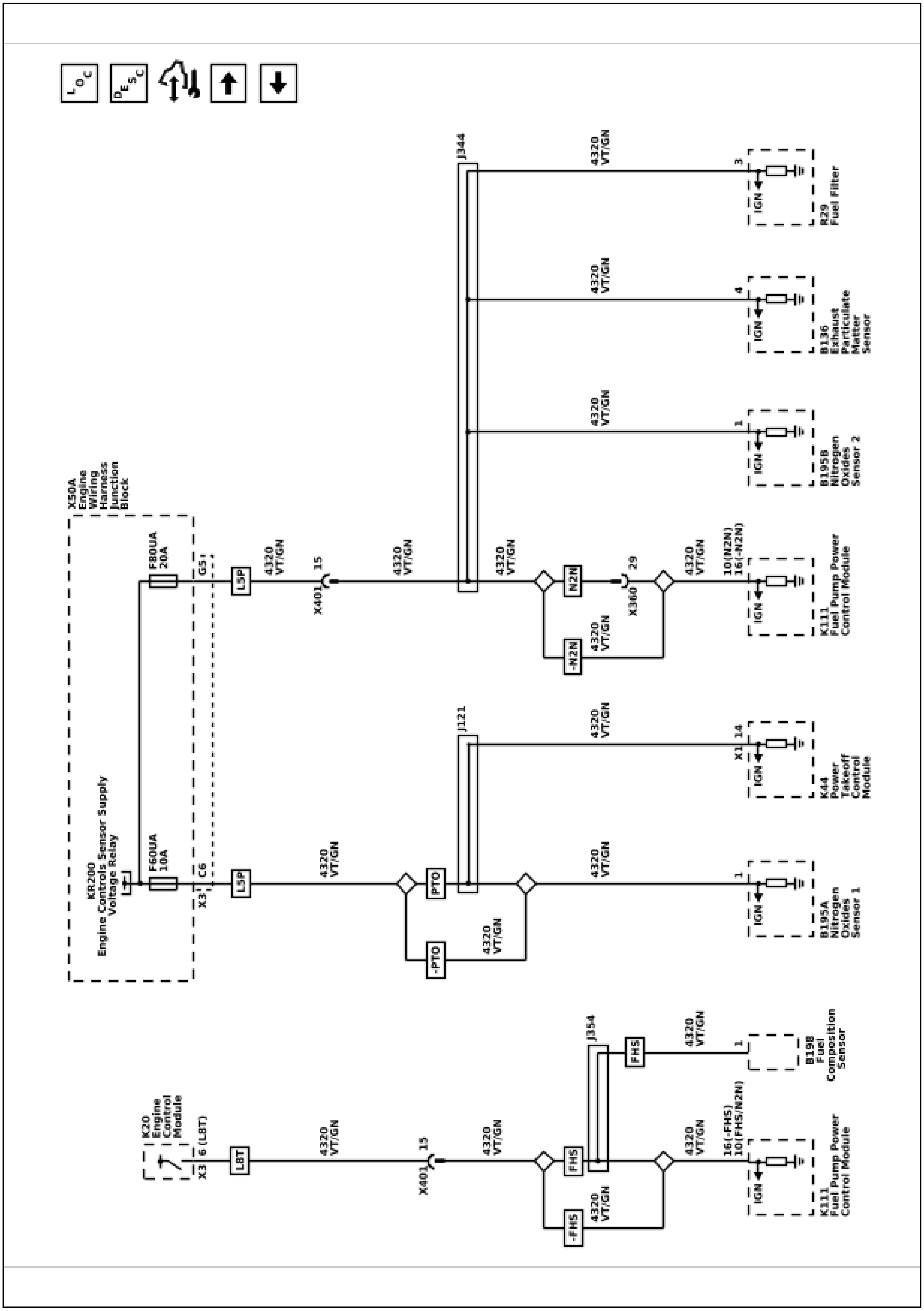
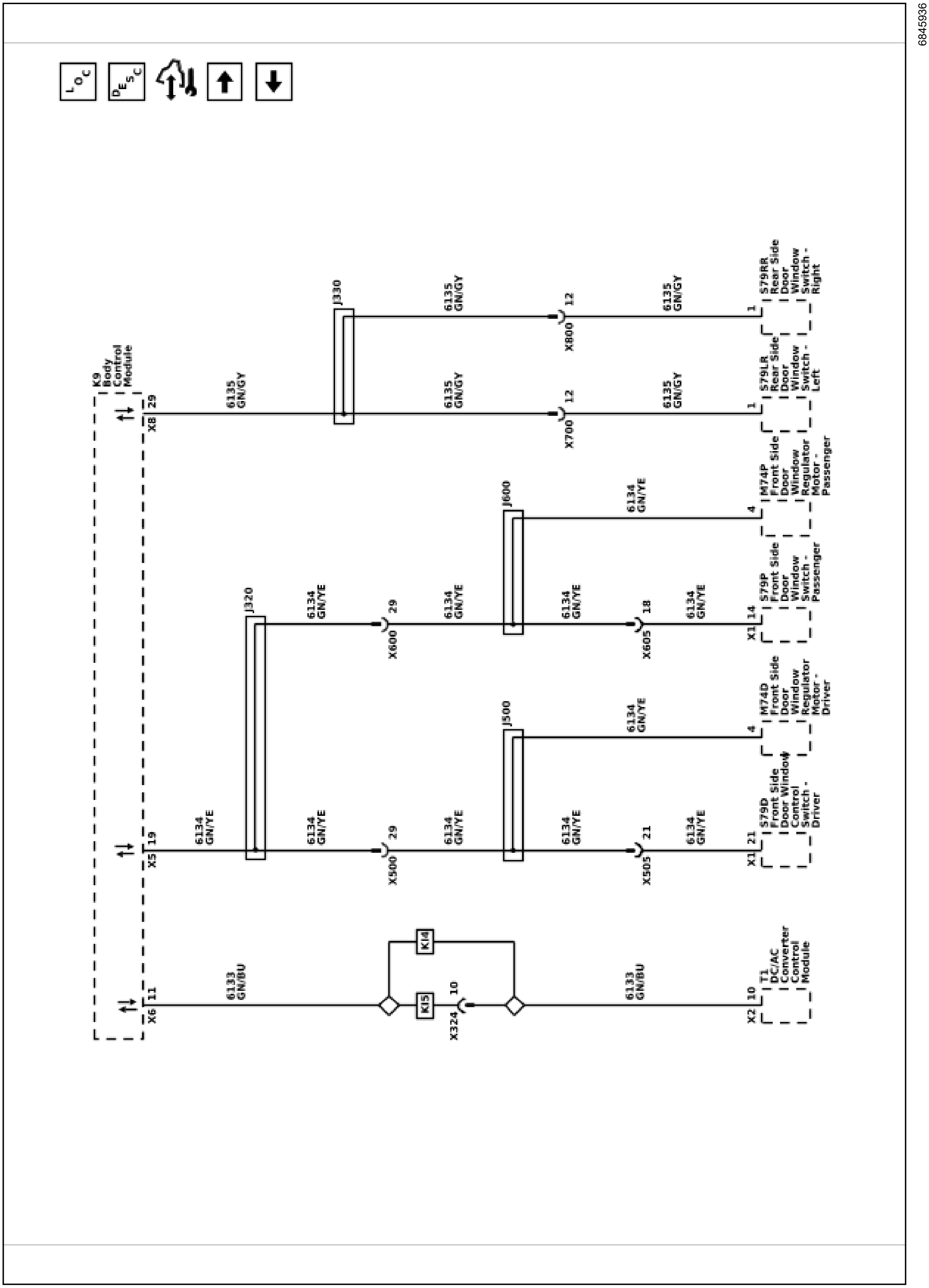
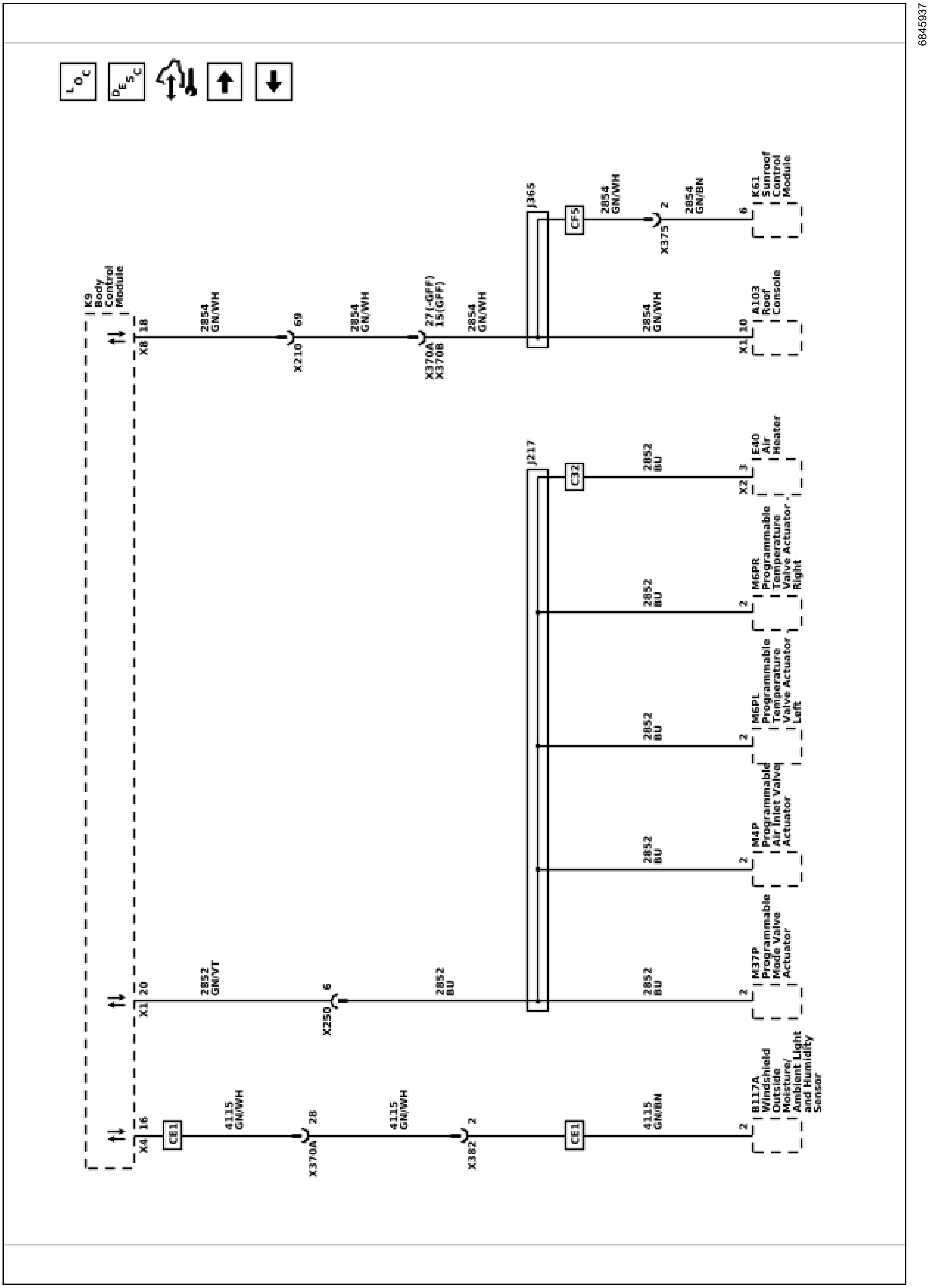
## Data Communication Schematics (Powertrain CAN Enable)



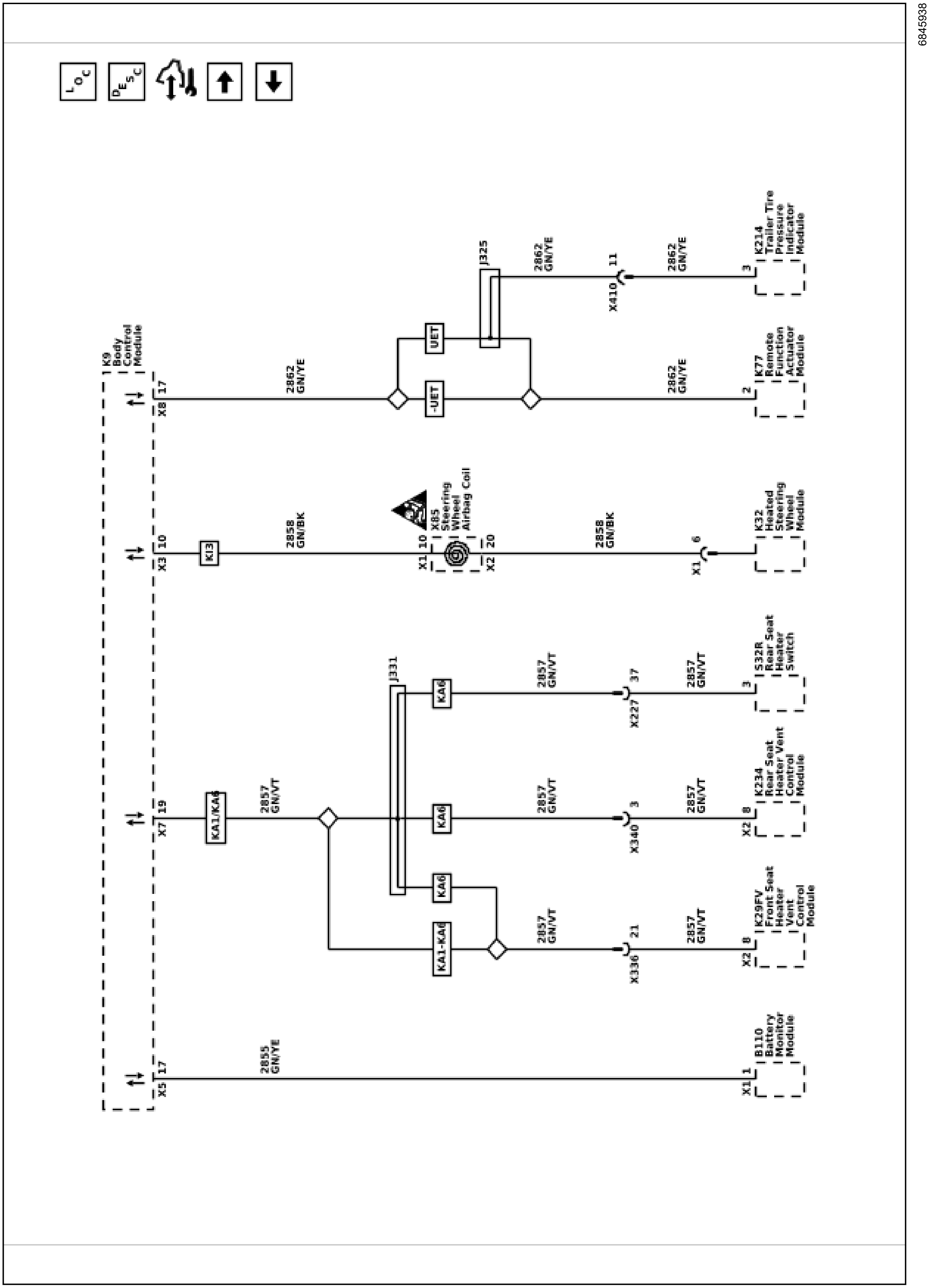
## Data Communication Schematics (Body Control Module Local Interconnect Network LIN Busses 2, 3, and 4)



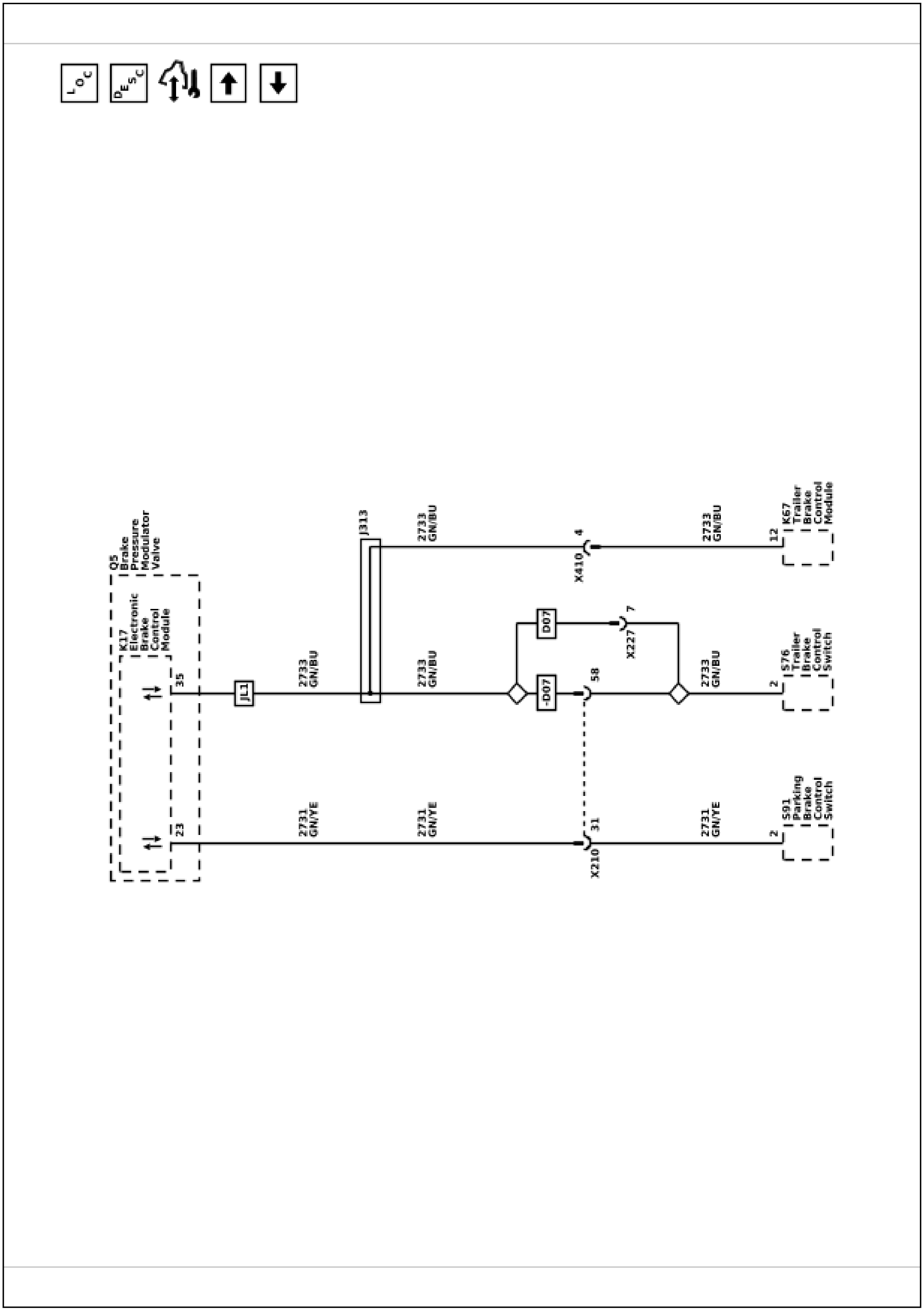
## Data Communication Schematics (Body Control Module Local Interconnect Network LIN Busses 5, 6, and 8)



## Data Communication Schematics (Body Control Module Local Interconnect Network LIN Busses 9, 11, 12, and 16)



## Data Communication Schematics (Brake System Control Module Local Interconnect Network LIN Busses)



## Data Communication Schematics (Engine Control Module Local Interconnect Network LIN Busses)

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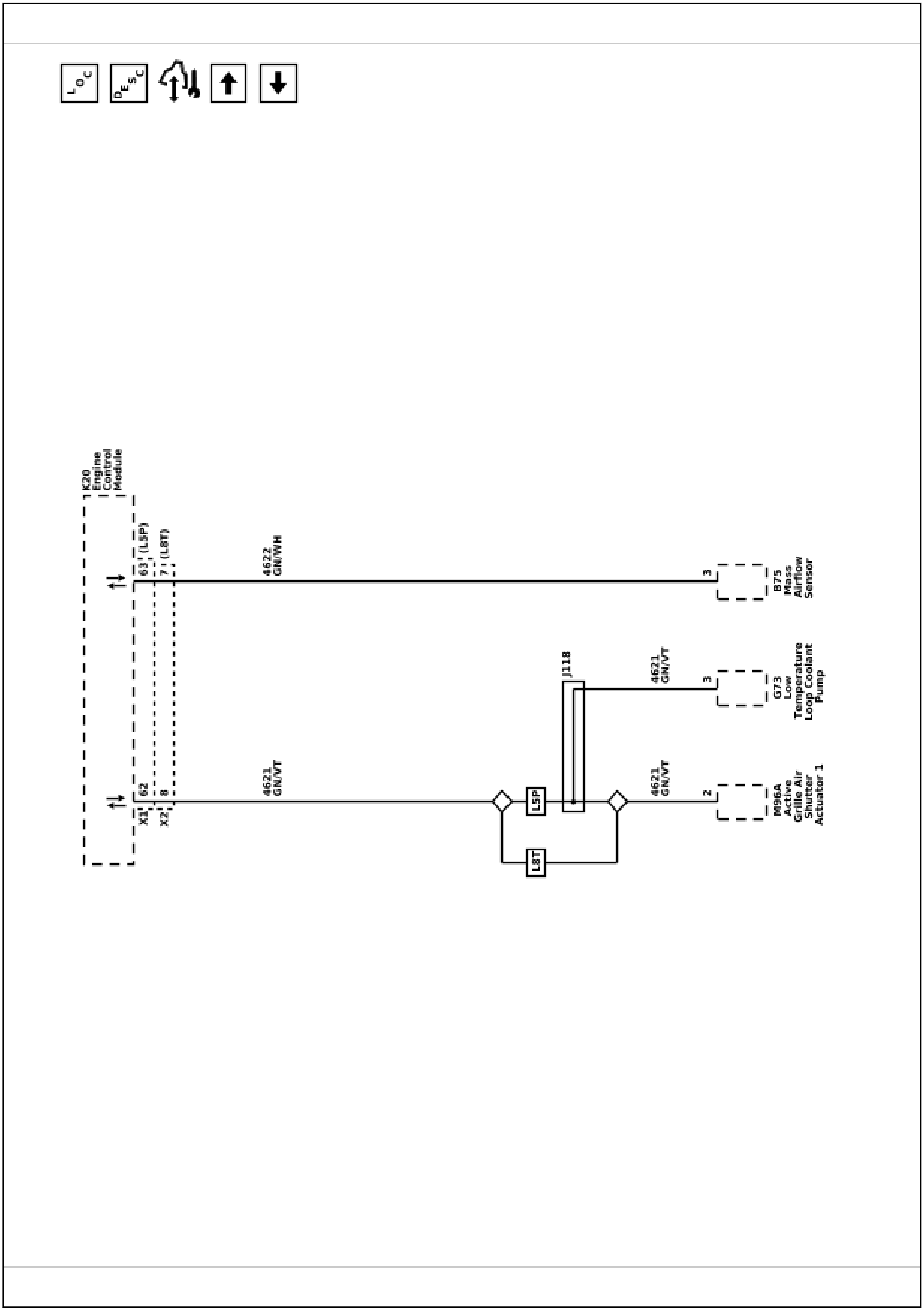
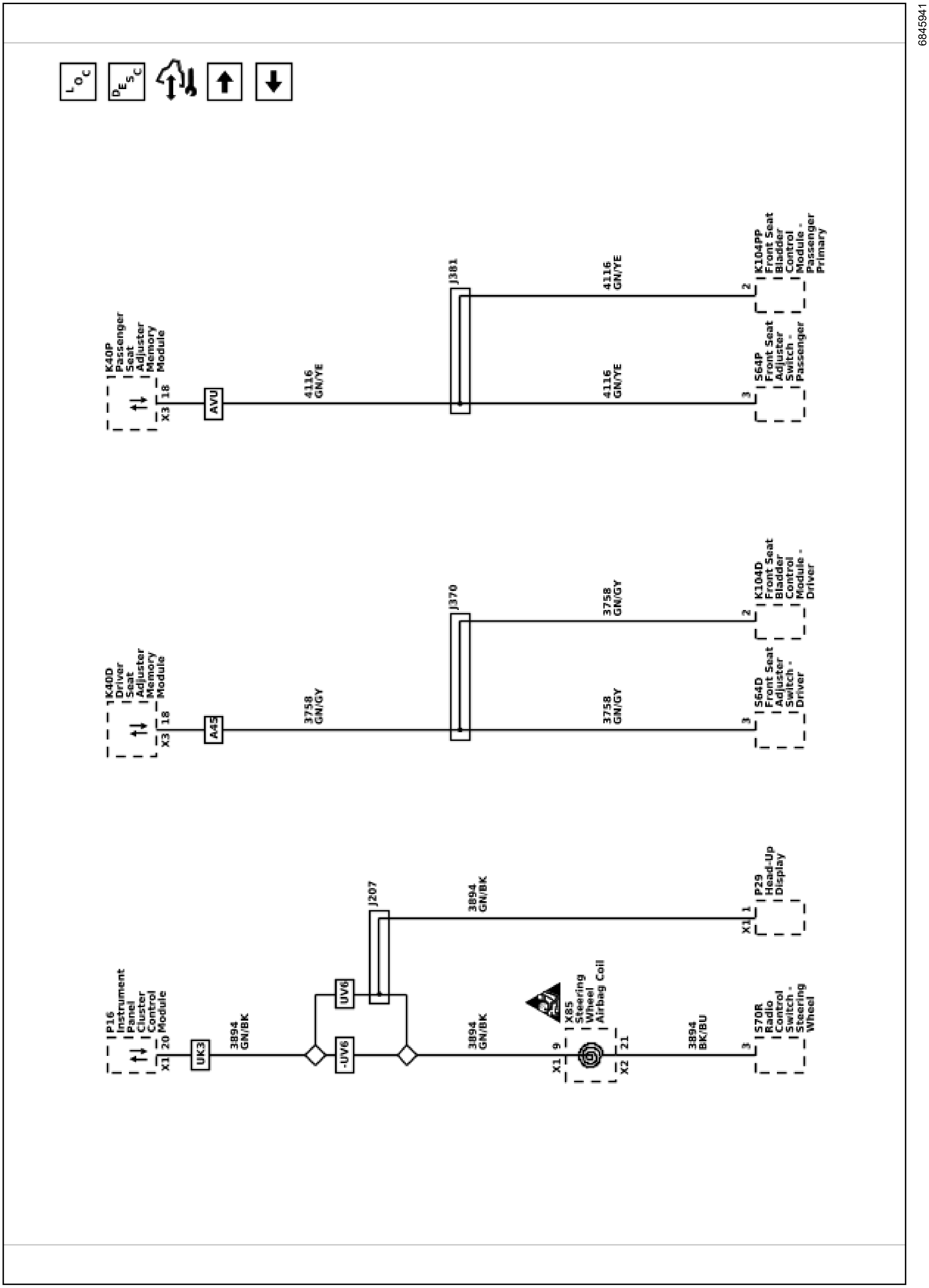
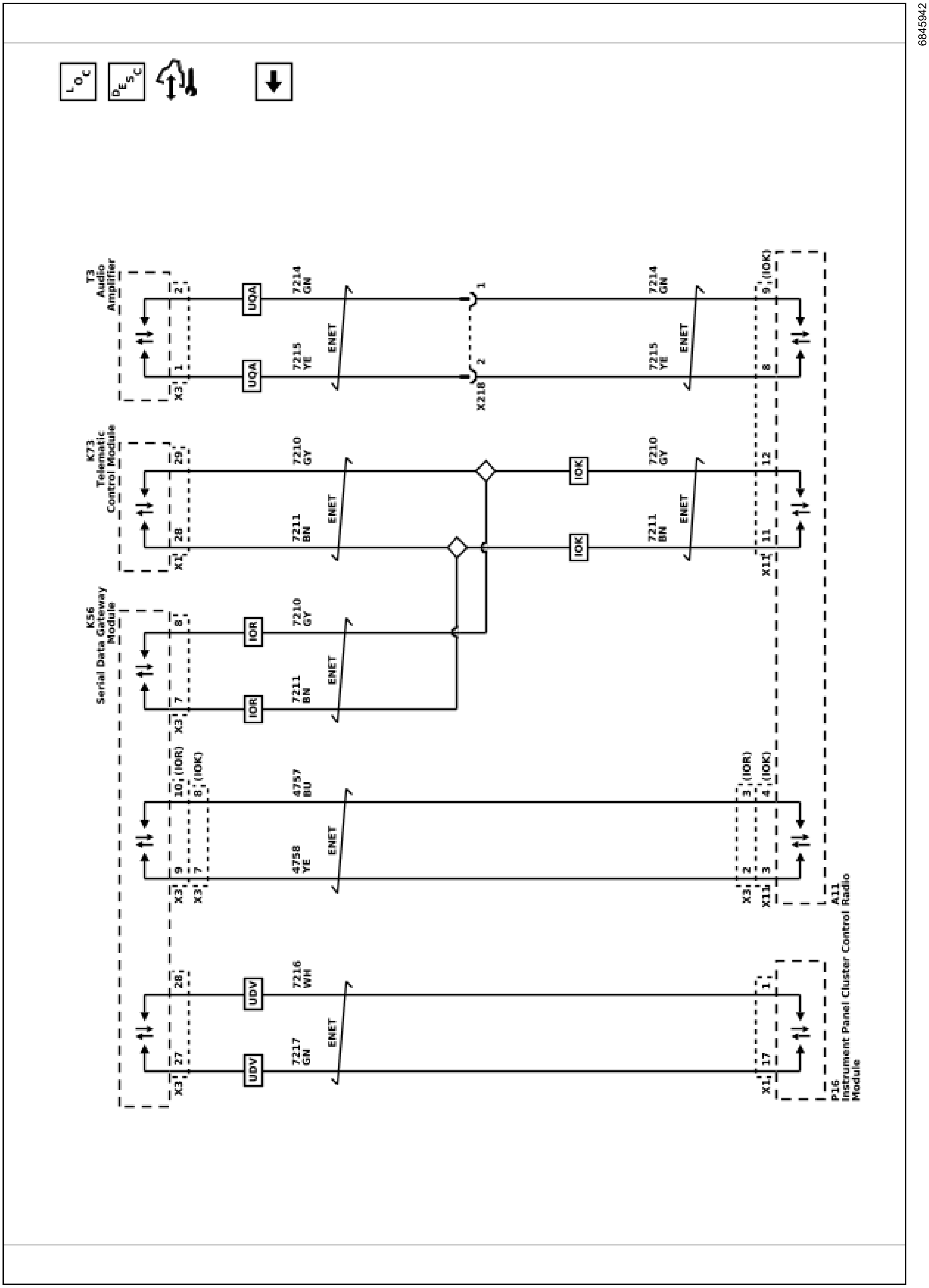


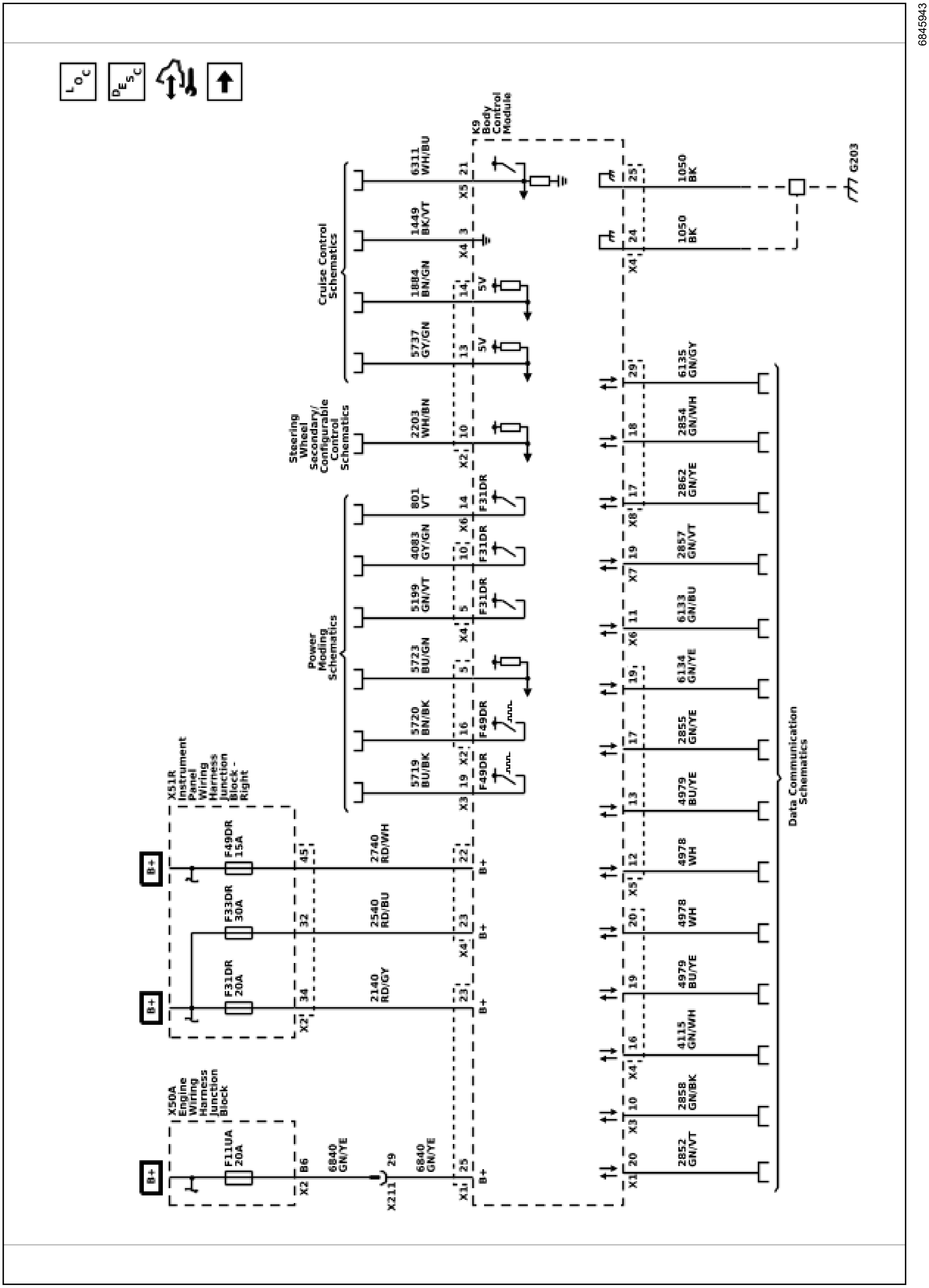
## Data Communication Schematics (Instrument Panel Cluster, and Seat Memory Module Local Interconnect Network (LIN) Busses)



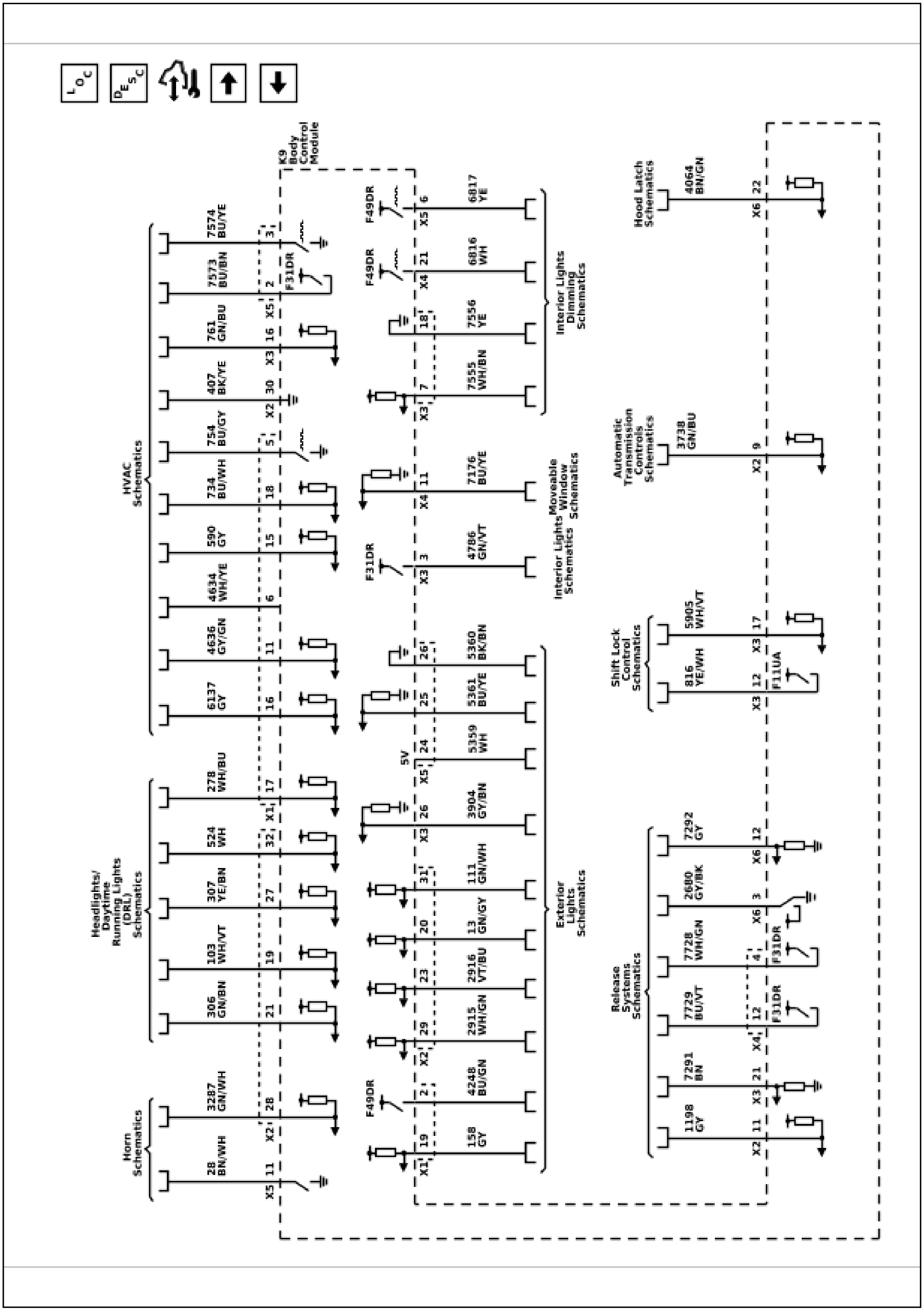
## Data Communication Schematics (Ethernet Bus)



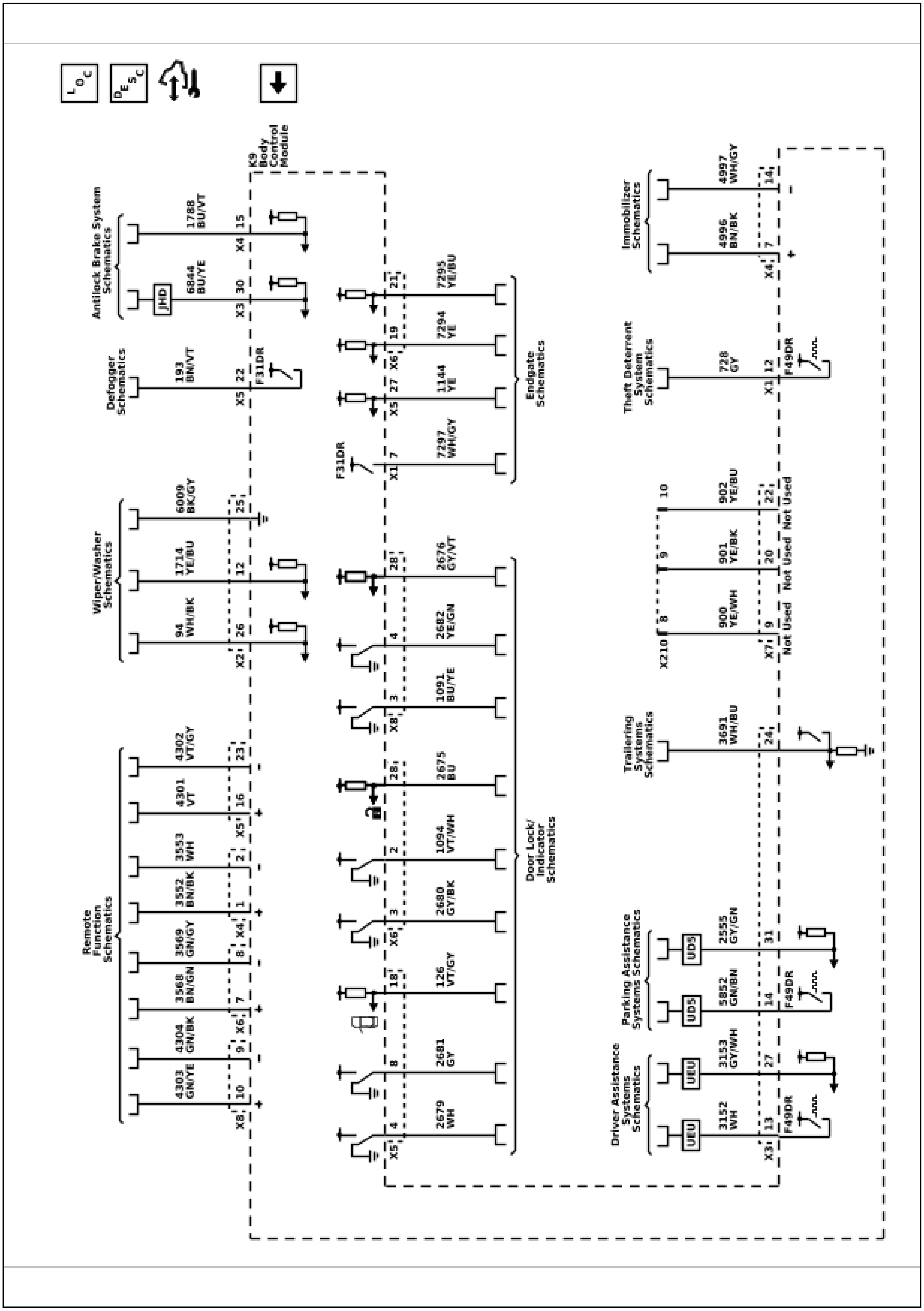
## Body Control System Schematics (Power, Ground, Serial Data, and Subsystem References - 1 of 3)



## Body Control System Schematics (Subsystem References - 2 of 3)



## Body Control System Schematics (Subsystem References - 3 of 3)

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# Description and Operation

## Data Link Communications Description and Operation

**Note:** This is an overview of different serial data buses used by control modules to communicate with each others. Use *Data Communication Schematics 7-3* to find out which serial data buses are configured for a specific vehicle.

## Vehicle Intelligence Platform (VIP) Data Link Communications Overview

There are many components in a vehicle that rely on information from other sources, transmit information to other sources, or both. Serial data communication networks provide a reliable, cost effective, way for various components of the vehicle to “talk” to one another and share information.

General Motors uses a number of different communication buses to ensure the timely and efficient exchange of information between control modules. When compared to each other, some of these buses are different in nature as far as speed, signal characteristics, and behavior.

On the other hand, when other buses are compared to each other they have similar characteristics and simply operate in parallel. In this case they are used to group together components which have high interaction. Examples are the Controller Area Network (CAN), private CAN, and Local Interconnect Network (LIN) buses. This allows them to communicate with each other on a bus with reduced message congestion insuring faster and the more timely exchange of information than if all vehicle control modules were on a single bus.

The majority of information that exists within a given network generally stays local; however some information will have to be shared on other networks. Control modules designated as Gateways perform the function of transferring information between the various buses. A Gateway module is connected to at least 2 buses and will interact with each network according to its message strategy and transmission models.

CAN provides the capability for a receiving control module to monitor message transmissions from other control modules in order to determine if messages of interest are not being received. The primary purpose is to allow reasonable default values to be substituted for the information no longer being received. Additionally, a control module may set a Diagnostic Trouble Code (DTC) to indicate that the control module it is expecting information from is no longer communicating.

## K9 Body Control Module (BCM)

The body control system consists of the K9 Body Control Module, communications, and various input and outputs. Some inputs, outputs and messages require other control modules to interact with the K9 Body Control Module. The K9 Body Control Module also has discrete input and output terminals to control the vehicle's body functions. The K9 Body Control Module is wired to CAN bus and multiple LIN buses and acts as a gateway between them.

The various K9 Body Control Module input and output circuits are illustrated in the corresponding functional areas on the K9 Body Control Module electrical schematics. Refer to the *Body Control System Schematics 7-23* for more detailed information.

## K56 Serial Data Gateway Module

The K56 Serial Data Gateway Module gates messages between the CAN networks described in the Controller Area Network (CAN) Bus Description section below. The K56 Serial Data Gateway Module needs to know what CAN control modules are present on a given vehicle in order to enable/disable loss of communication DTCs and to know which CAN control modules to track for their communication status. The K56 Serial Data Gateway Module has the ability to learn the diagnostic addresses list of CAN control modules to identify what CAN control modules are equipped on the vehicle and what CAN buses they are on. If the K56 Serial Data Gateway Module is replaced, this learn/verification process will have to be done again through K56 Serial Data Gateway Module programming and setup procedure in SPS. This learn process will not cause any previously learned contents to be forgotten/overwritten. If the learn process is not done on a new K56 Serial Data Gateway Module, DTC U1977 will be set until the learn procedure is executed. If the learn is invalid due to control module internal malfunction or a K56 Serial Data Gateway Module swap, DTC U3000 42 or DTC U3002 56 will be set. If any of these DTCs sets, the K56 Serial Data Gateway Module will enable loss of communication for all CAN control modules. This will result in loss of communication DTCs being set against CAN control modules that are not equipped on the vehicle.

A fault can be localized by monitoring the normal mode messages on a CAN bus. The K56 Serial Data Gateway Module will monitor one signal per CAN control module per CAN bus to determine control module status. When a signal times out, a loss of communication event will be started.

## Controller Area Network (CAN) Bus Description

The CAN buses are used where data needs to be exchanged at a high enough rate to minimize the delay between the occurrence of a change in sensor value and the reception of this information by a control device using the information to adjust vehicle system performance.

Each CAN serial data network consists of two twisted wires. One signal circuit is identified as CAN-High and the other signal circuit is identified as CAN-Low. At each end of the data bus there is a 124 Ω termination resistor between the CAN-High and CAN-Low circuits. Most CAN control modules have an internal resistance of 4.950K Ω. There may be one or two CAN control modules that have a higher internal resistance like the K60 Column Lock Module which has an internal resistance of 77.4K Ω. The internal resistance of CAN control modules causes lower terminating resistor reading when splitting the CAN network to check for faults. The more CAN control modules on the network the lower the terminating resistor will read.

The data to be transmitted over a CAN bus is represented by the voltage difference between the CAN-High signal voltage and the CAN-Low signal voltage. Data symbols (1’s and 0’s) are transmitted sequentially at the following rate:

- CAN 1 (circuits 4986 & 4987) = 500 Kbit/s
- CAN 2 (circuits 4978 & 4979) = 2 Mbit/s
- CAN 3 (circuits 4976 & 4977) = 500 Kbit/s
- CAN 4 (circuits 4100 & 4101) = 500 Kbit/s
- CAN 5 (circuits 4984 & 4985) = 500 Kbit/s
- CAN 6 (circuits 4980 & 4981) = 5 Mbit/s
- CAN 7 (circuits 4982 & 4983) = 5 Mbit/s
- CAN 8 (circuits 4104 & 4105) = 2 Mbit/s
- CAN 9 (circuits 4102 & 4103) = 2 Mbit/s
- CAN 10 (circuits 10800 & 10801) = 2 Mbit/s

**Classical CAN:** CAN 1, CAN 3, CAN 4, and CAN 5 are Classical CAN buses. In Classical CAN, the entire message is transmitted at the same baud rate. The size of the data field is limited to 8 bytes.

**CAN FD:** CAN 2, CAN 8, CAN 9, and CAN 10 are CAN FD buses (FD = Flexible Data-Rate). In CAN FD, the data field of the message is transmitted at the same or at a faster baud rate. The size of the data field can be up to 64 bytes in length.

When the two wire bus is at rest the CAN-High and CAN-Low signal circuits are not being driven and this represents a logic “1”. In this state both signal circuits are at the same voltage of 2.5 V. The differential voltage is approximately 0 V.

When a logic “0” is to be transmitted, the CAN-High signal circuit is driven higher to about 3.5 V and the CAN-Low circuit is driven lower to about 1.5 V. The differential voltage becomes approximately 2.0 (+/- 0.5) V.

The CAN 1, CAN 2, CAN 3, CAN 4, CAN 5, CAN 8, CAN 9, and CAN 10 buses are used to communicate between the K56 Serial Data Gateway Module and other CAN control modules.

The CAN 8 and CAN 9 buses are reserved for the following systems:

- The CAN 8 bus is reserved for most control modules and sensors related to active safety system, if applicable.
- The CAN 9 bus is reserved for most control modules and sensors related to Hybrid/EV system, if applicable.

The following CAN buses are between the X84 Data Link Connector and the K56 Serial Data Gateway Module:

- The CAN 6 bus is used for CAN diagnostics and programming.
- The CAN 7 bus is used for programming by assembly plant only.
- The Private Presentation CAN 1 bus (circuits 2577 & 2578) is used by Engineering to observe data communications on CAN buses not directly accessible at the X84 Data Link Connector. It requires special security access and will not be used in a service environment.
- The Private Presentation CAN 2 bus (circuits 2579 & 2580) is used by Engineering to observe data communications on CAN buses not directly accessible at the X84 Data Link Connector. It requires special security access and will not be used in a service environment.

## Private Powertrain CAN Bus Description

The Private Powertrain CAN bus (circuits 4054 & 4055) is reserved for Powertrain components. It has a transmission rate of 500 Kbit/s. Sometimes communication is required between the Private Powertrain CAN bus and another CAN bus. This is accomplished by using the K20 Engine Control Module / K45 Powertrain Control Module (for gas vehicles) or K16 Battery Energy Control Module (for electric vehicles) as the Gateway module. Since the Private Powertrain CAN bus and other CAN buses operate in the same manner, the diagnostics for each are similar.

## Local Interconnect Network (LIN) Bus Description

The LIN Bus consists of a single wire with a transmission rate of 10.417 Kbit/s or 19.23 Kbit/s. This bus is used to exchange information between a master control module and other smart devices which provide supporting functionality. This type of configuration does not require the capacity or speed of a CAN bus and is thus relatively simpler.

The data symbols (1’s and 0’s) to be transmitted are represented by different voltage levels on the communication bus. When the LIN Bus is at rest and is not being driven, the signal is in a high voltage state of approximately Vbatt. This represents a logic “1”. When a logic “0” is to be transmitted, the signal voltage is driven low to about ground (0.0 V).

## Ethernet Bus Description

Ethernet is a data communication technology that uses a single twisted copper pair of wires at speeds of 100 Mbit/s and 1000 Mbit/s. The Ethernet system uses point-to-point communication that is connected via an Ethernet switch [Module <--> Switch <--> Module]. The Ethernet bus does not use terminating resistors.

The K56 Serial Data Gateway Module and the A11 Radio have an Ethernet switch that connects to other Ethernet modules. The K56 Serial Data Gateway Module and the A11 Radio communicate with other devices and systems in the vehicle via CAN and LIN buses. Diagnostic Trouble Codes will be read on CAN to diagnose Ethernet, LIN and system faults.

**Note:** Ethernet harness failures should only be repaired using an appropriate kit to perform de-pin/re-pin overlays or in cases where the wiring harness repair kits are not available, the entire harness should be replaced. No crimps or splicing should be performed on the Ethernet wiring harness.

### Ethernet 1

Ethernet bus 1 consists of 2 twisted pair of wires [1 pair for Ethernet bus 1R (circuits 4972 & 4973) and 1 pair for Ethernet bus 1T (circuits 4974 & 4975)]. It is connected between X84 Data Link Connector (DLC) and K56 Serial Data Gateway Module. This bus is used for diagnostics and service programming of control modules using Ethernet instead of CAN. The K56 Serial Data Gateway Module will convert Ethernet serial data to CAN as necessary, and vice versa. There is an Ethernet enable circuit (circuit 7207) which can be used to wake up the K56 Serial Data Gateway Module for Ethernet diagnostic and programming.

### Ethernet 2

Ethernet bus 2 (circuits 4757 & 4758) is for connection between the A11 Radio and the K56 Serial Data Gateway Module.

### Ethernet 3

Ethernet bus 3 (circuits 7208 & 7209) is for connection between the following control modules depending on vehicle configuration:

- K56 Serial Data Gateway Module and K179 Automated Driving Mapping Module.
- K56 Serial Data Gateway Module and K124 Image Processing Module.
- K56 Serial Data Gateway Module and B174W Front View Camera - Windshield.

### Ethernet 4

Ethernet bus 4 (circuits 7210 & 7211) is for connection between the following control modules:

- K56 Serial Data Gateway Module and K73 Telematic Control Module for vehicles equipped with IOR radio.
- A11 Radio and K73 Telematic Control Module for vehicles equipped with other radios.

### Ethernet 5

Ethernet bus 5 (circuits 7212 & 7213) is for connection between the A11 Radio and P22F Video Display - Right Front Seat Back.

### Ethernet 6

Ethernet bus 6 (circuits 7214 & 7215) is for connection between the A11 Radio and T3 Audio Amplifier.

### Ethernet 7

Ethernet bus 7 (circuits 7216 & 7217) is for connection between the K56 Serial Data Gateway Module and P16 Instrument Panel Cluster Control Module or K190 Off-Board Charger Control Module.

### Ethernet 11

Ethernet bus 11 (circuits 7224 & 7225) is for connection between the K124 Image Processing Module and K179 Automated Driving Mapping Module.

### Ethernet 14

Ethernet bus 14 (circuits 7230 & 7231) is for connection between the A11 Radio and P29 Head-Up Display.

**Ethernet 15**

Ethernet bus 15 (circuits 7232 & 7233) is for connection between the K56 Serial Data Gateway Module, K161 Vehicle Performance Data Recorder, and P22F Video Display - Passenger Seat Back.

## X84 Data Link Connector (DLC)

The X84 Data Link Connector is a standardized 16-cavity connector. Connector design and location is dictated by an industry wide standard, and is required to provide the following:

- Terminal 1: CAN Bus 7 Serial Data [+]
- Terminal 2: Private Presentation CAN Bus 1 Serial Data [+]
- Terminal 3: Ethernet Bus 1R [+]
- Terminal 4: Scan tool power ground
- Terminal 5: Common signal ground
- Terminal 6: CAN Bus 6 Serial Data [+]
- Terminal 7: Private Presentation CAN Bus 2 Serial Data [+]
- Terminal 8: Ethernet Bus 1 Enable Signal
- Terminal 9: CAN Bus 7 Serial Data [-]
- Terminal 10: Private Presentation CAN Bus 1 Serial Data [-]
- Terminal 11: Ethernet Bus 1R [-]
- Terminal 12: Ethernet Bus 1T [+]
- Terminal 13: Ethernet Bus 1T [-]
- Terminal 14: CAN Bus 6 Serial Data [-]
- Terminal 15: Private Presentation CAN Bus 2 Serial Data [-]
- Terminal 16: Scan tool power, B+

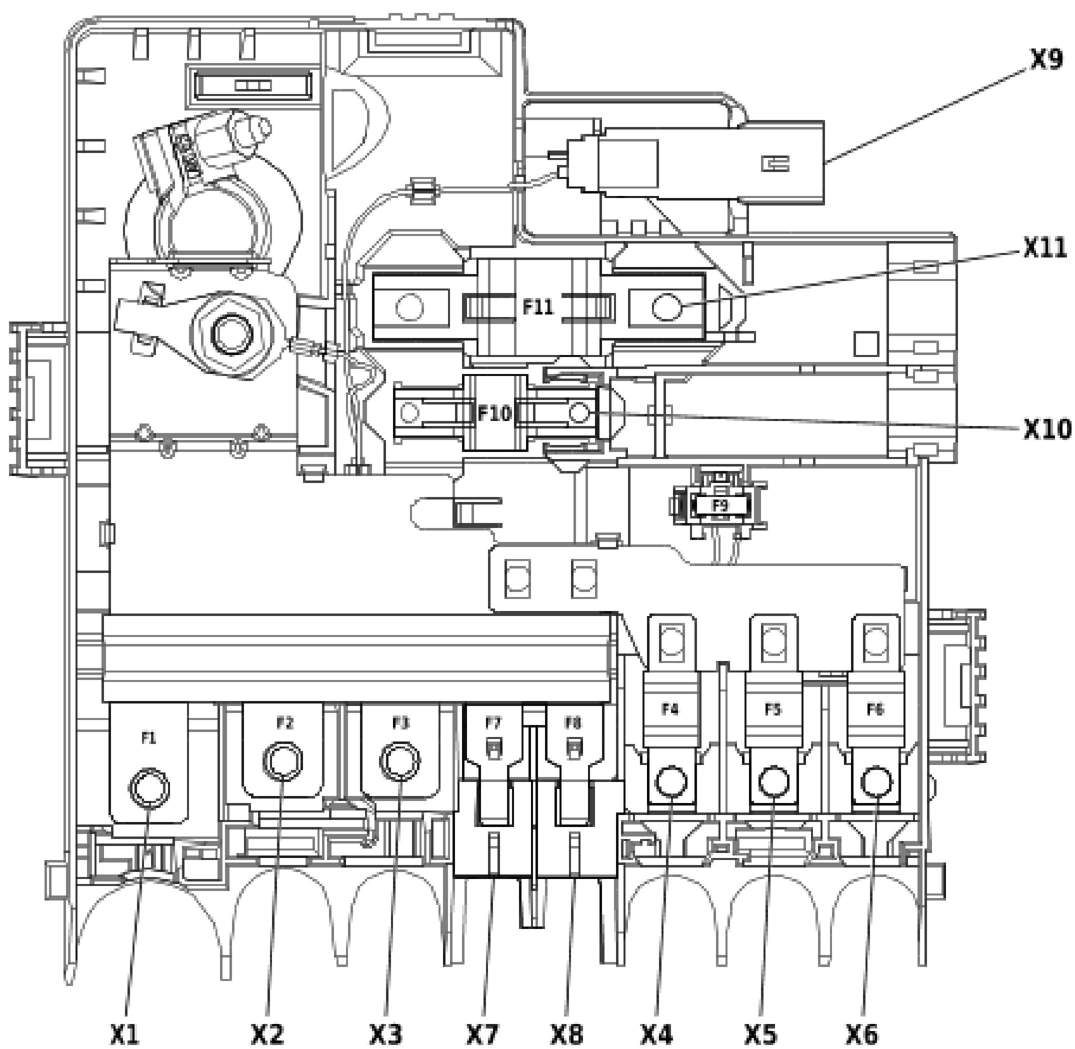
## Serial Data Reference

The scan tool communicates over the various buses on the vehicle. When a scan tool is installed on a vehicle, the scan tool will try to communicate with every control module that could be optioned into the vehicle. If an option is not installed on the vehicle, the scan tool will display No Communication for that optional control module. In order to avert misdiagnoses of No Communication with a specific control module, refer to [Link target (target-id 148085-) not found] for a list of control modules and the buses they communicate with. Use schematics and specific vehicle build RPO codes to determine optional control modules.

# Electrical Component and Inline Harness Connector End Views

## Component Locator

### X50B Battery Distribution Engine Compartment Fuse Block Top View



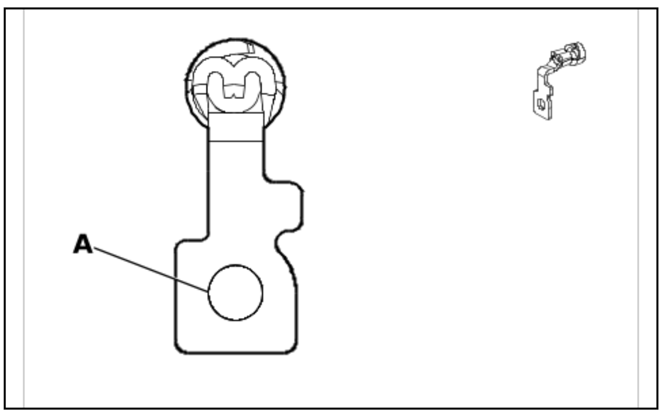

5070128

**Usage Table**

| No. | Device Label Name | Device Assigned Name | Rating | Description |
|---|---|---|---|---|
| **Fuses** | | | | |
| F1 | — | F1BA | 250A | • G13 Generator<br>• X50A Engine Wiring Harness Junction Block |

| No. | Device Label Name | Device Assigned Name | Rating | Description |
|---|---|---|---|---|
| F2 | — | F2BA | 175A (L8T)<br>400A (L5P) | • X50A Engine Wiring Harness Junction Block (L8T)<br>• G13 Generator (L8T)<br>• X50EA Battery Distribution Fuse Block - Auxiliary (L5P)<br>• X50A Engine Wiring Harness Junction Block (L5P) |
| F3 | — | F3BA | 400A | • M64 Starter Motor |
| F4 | — | F4BA | 60A | • E40 Air Heater (C32) |
| F5 | — | F5BA | 100A (K4Z)<br>60A (L5P) | • X50EA Battery Distribution Fuse Block - Auxiliary (K4Z)<br>• K20 Engine Control Module (L5P) |
| F6 | — | F6BA | 60A | • K20 Engine Control Module (L5P) |
| F7 | — | F7BA | 60A | • X51R Instrument Panel Wiring Harness Junction Block - Right |
| F8 | — | F8BA | 60A | • X51R Instrument Panel Wiring Harness Junction Block - Right |
| F9 | — | F9BA | 5A | • B110 Battery Sensor Module |
| F10 | — | F10BA | 60A | • X51AX Instrument Panel Wiring Harness Junction Block - Right (9L7) |

### X50B Battery Distribution Engine Compartment Fuse Block X1




5881464

**Connector Part Information**

- Harness Type: Generator Battery Jumper Cable
- OEM Connector: 84335252
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way Ring Terminal

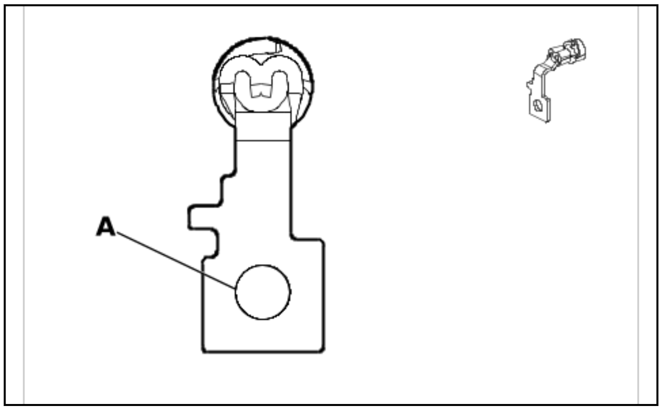
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## X50B Battery Distribution Engine Compartment Fuse Block X1

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| A | 35<br>35 | RD / GN<br>RD / YE | 242<br>2 | Battery Positive Voltage<br>Battery Positive Voltage | I<br>I | L5P<br>L8T |

### X50B Battery Distribution Engine Compartment Fuse Block X2 (L5P)




5664311

**Connector Part Information**
- Harness Type: Battery Positive Cable
- OEM Connector: 84392526
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way Ring Terminal

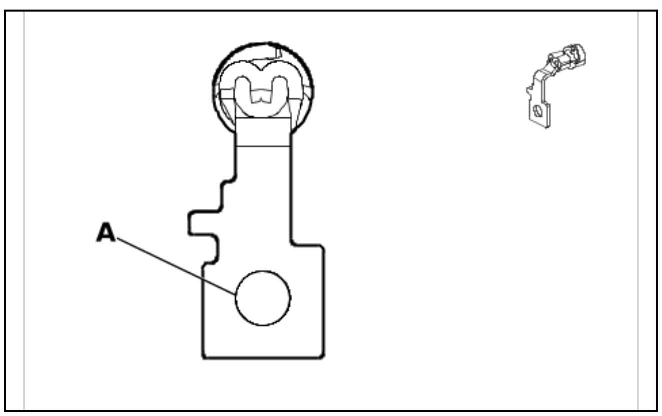
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## X50B Battery Distribution Engine Compartment Fuse Block X2 (L5P)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| A | 35 | RD / GN | 242 | Battery Positive Voltage | I | L5P |

### X50B Battery Distribution Engine Compartment Fuse Block X2 (L8T)




5664311

**Connector Part Information**
- Harness Type: Battery Positive Cable
- OEM Connector: 84386514
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way Ring Terminal

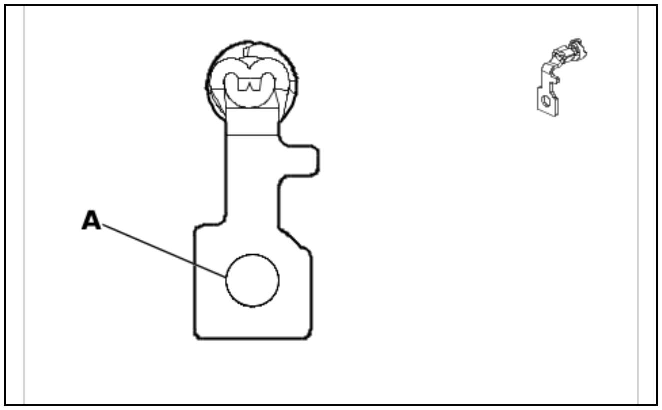
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## X50B Battery Distribution Engine Compartment Fuse Block X2 (L8T)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| A | 25 | RD / GN | 242 | Battery Positive Voltage | I | KHF+ L8T |
| | 25 | RD / GN | 242 | Battery Positive Voltage | I | L8T- KHF |

### X50B Battery Distribution Engine Compartment Fuse Block X3




5881244

**Connector Part Information**
- Harness Type: Starter Solenoid Cable
- OEM Connector: 84386515
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way Ring Terminal

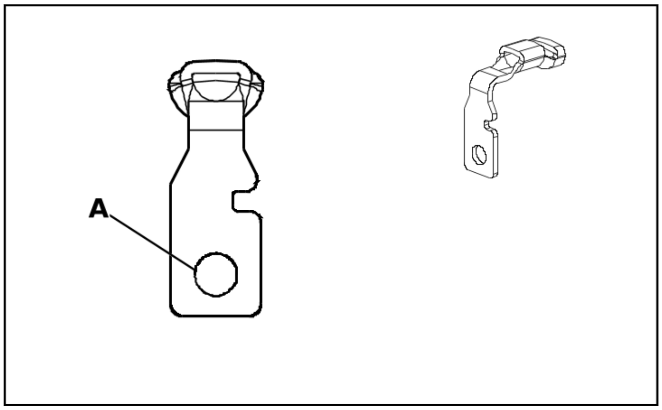
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## X50B Battery Distribution Engine Compartment Fuse Block X3

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| A | 35 | RD / YE | 2 | Battery Positive Voltage | I | L5P |
| | 35 | RD / YE | 2 | Battery Positive Voltage | I | L8T |

### X50B Battery Distribution Engine Compartment Fuse Block X4




5194789

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 35085117
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way Ring Terminal

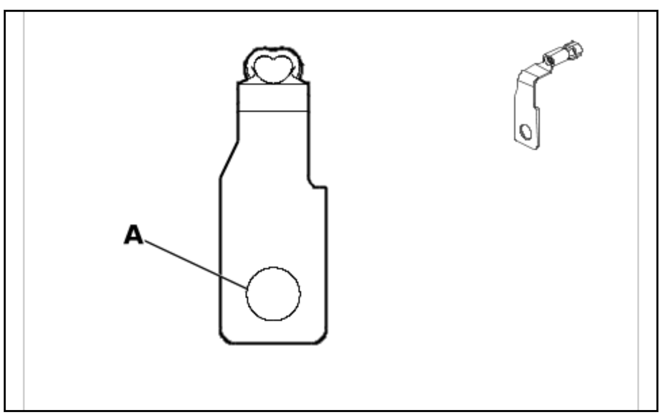
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## X50B Battery Distribution Engine Compartment Fuse Block X4

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| A | 10 | RD / GY | 642 | Battery Positive Voltage | I | — |

### X50B Battery Distribution Engine Compartment Fuse Block X5 (L5P)




5373306

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 84472882
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way Ring Terminal

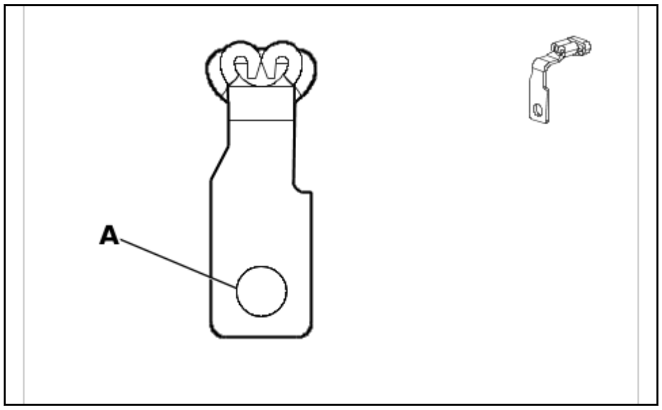
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## X50B Battery Distribution Engine Compartment Fuse Block X5 (L5P)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| A | 6 | BN / BU | 104 | Glow Plug Control | I | — |

### X50B Battery Distribution Engine Compartment Fuse Block X5 (L8T)




5838179

**Connector Part Information**

- Harness Type: Battery Positive Cable
- OEM Connector: 84386517
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way Ring Terminal

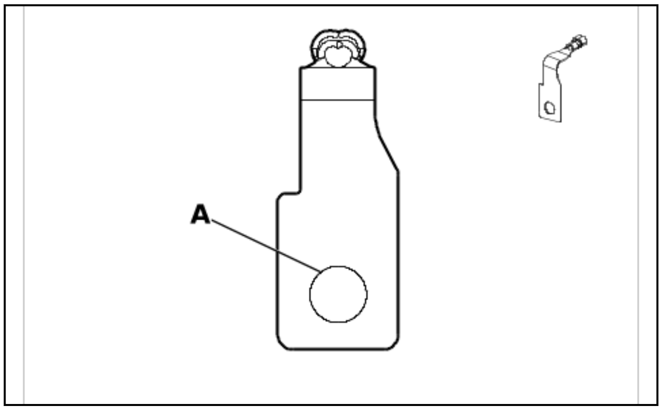
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## X50B Battery Distribution Engine Compartment Fuse Block X5 (L8T)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| A | 16 | RD / GN | 742 | Battery Positive Voltage | I | K4Z |

### X50B Battery Distribution Engine Compartment Fuse Block X6




6167349

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 84392525
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way Ring Terminal

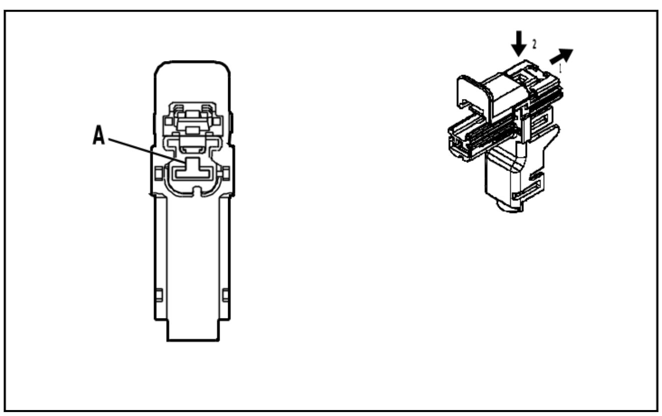
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## X50B Battery Distribution Engine Compartment Fuse Block X6

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| A | 6 | BN / BU | 104 | Glow Plug Control | I | — |

### X50B Battery Distribution Engine Compartment Fuse Block X7




4994171

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 33297579
- Service Connector: Service by Harness - See Part Catalog
- Description: 1-Way F 6.3 Series( BU)

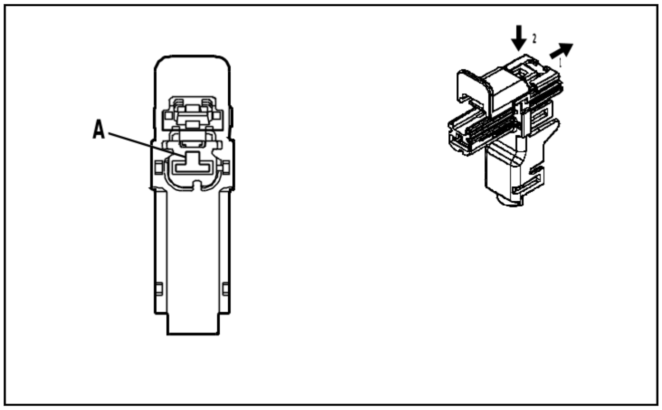
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-42 (RD) | No Tool Required |

## X50B Battery Distribution Engine Compartment Fuse Block X7

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| A | 5 | RD / YE | 1442 | Battery Positive Voltage | I | — |

### X50B Battery Distribution Engine Compartment Fuse Block X8




4994183

**Connector Part Information**
- Harness Type: Body Wiring Harness
- OEM Connector: 33297578
- Service Connector: Service by Harness - See Part Catalog
- Description: 1-Way F 6.3 Series( BK)

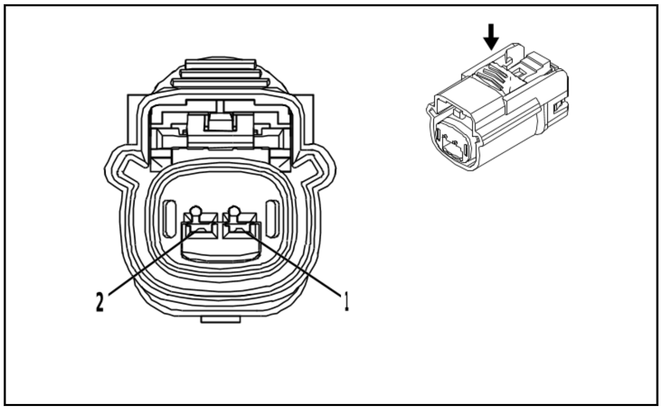
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-42 (RD) | No Tool Required |

## X50B Battery Distribution Engine Compartment Fuse Block X8

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| A | 10 | RD / WH | 342 | Battery Positive Voltage | I | — |

### X50B Battery Distribution Engine Compartment Fuse Block X9




4332222

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 33314786
- Service Connector: 19368124
- Description: 2-Way F 1.5 OCS Series, Sealed( BK)

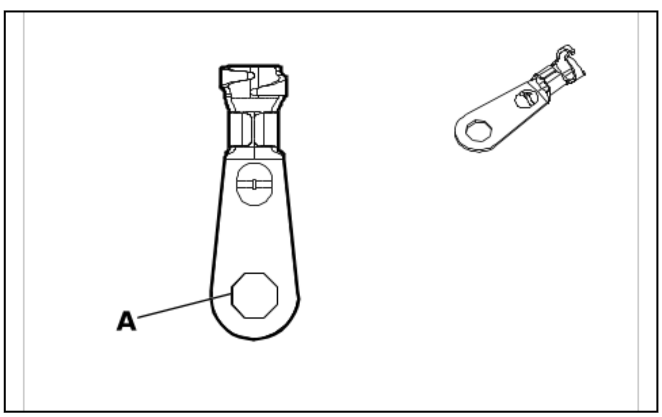
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-2A (GY) | No Tool Required |

## X50B Battery Distribution Engine Compartment Fuse Block X9

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) RD / YE | (1) 2340 | (1) Battery Positive Voltage | (1) I | (1) — |
| 2 | — | — | — | Not Occupied | — | — |

### X50B Battery Distribution Engine Compartment Fuse Block X10




5920578

**Connector Part Information**

- Harness Type: Battery Positive Cable Extension Cable
- OEM Connector: 13624367
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way Ring Terminal

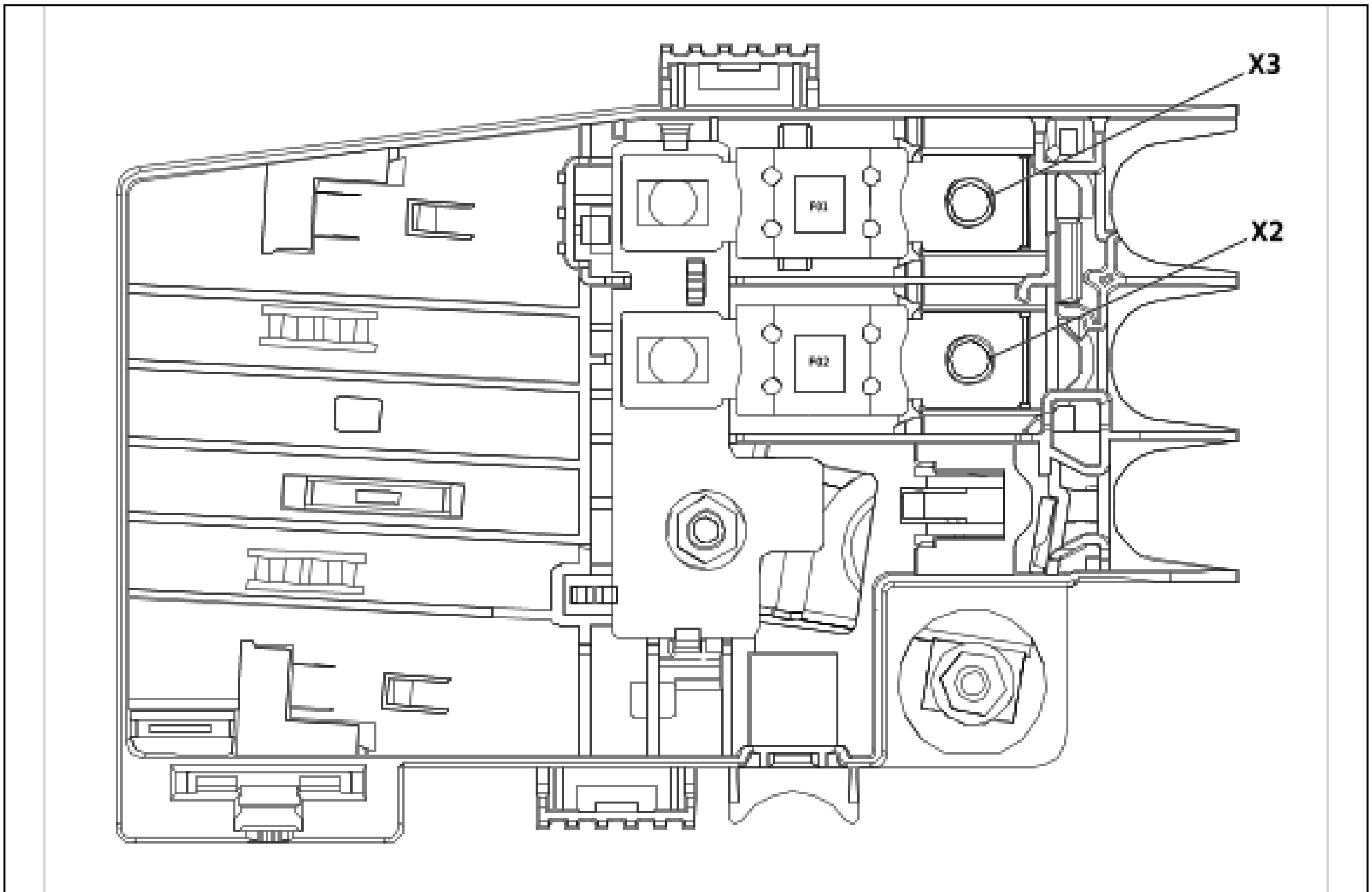
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## X50B Battery Distribution Engine Compartment Fuse Block X10

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 10 | (1) RD / VT | (1) 542 | (1) Battery Positive Voltage | (1) I | (1) — |
| A | — | — | — | Not Occupied | — | — |

### X50EA Battery Distribution Fuse Block - Auxiliary Top View (L5P)

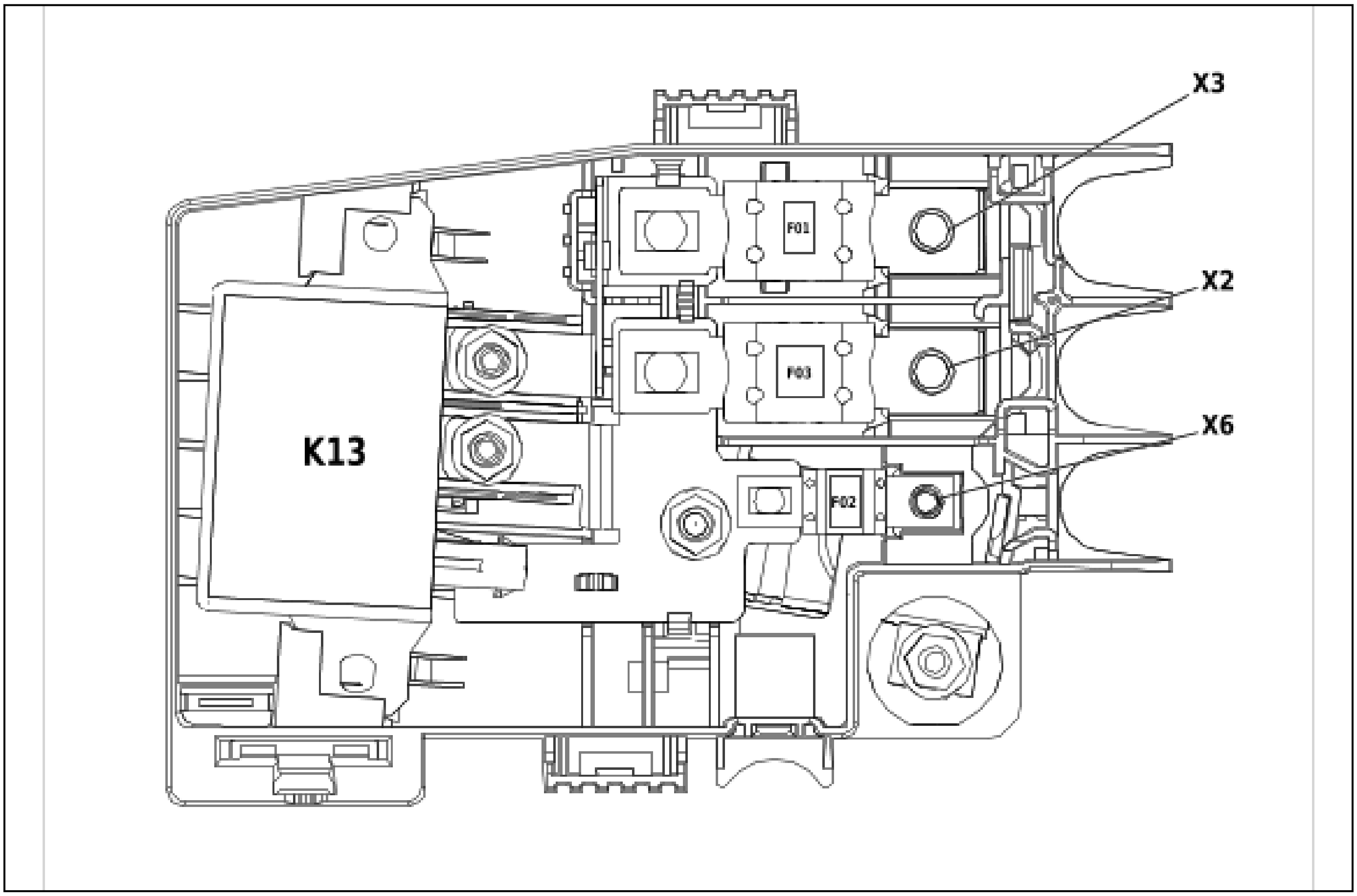



6465525

## Usage Table

| No. | Device Label Name | Device Assigned Name | Rating | Description |
|---|---|---|---|---|
| **Fuses** | | | | |
| F1 | — | F1BB | 175A | • G13A Auxiliary Generator |
| F2 | — | F2BB | 400A | • X50A Engine Wiring Harness Junction Block<br>• X50B Battery Distribution Engine Compartment Fuse Block |
| F3 | — | F3BB | 30A | • Not Used |

### X50EA Battery Distribution Fuse Block - Auxiliary Top View (L8T & K4Z)

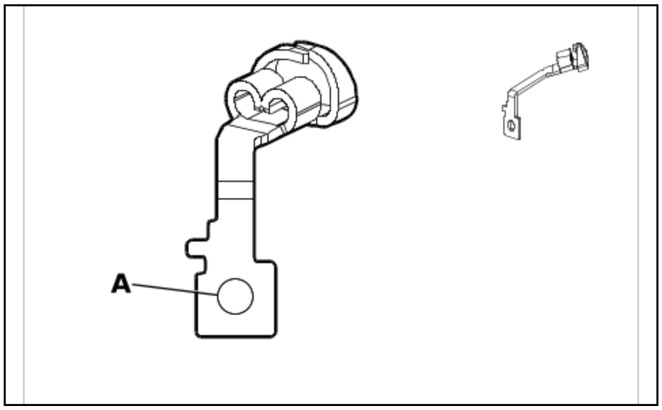



6465526

## Usage Table

| No. | Device Label Name | Device Assigned Name | Rating | Description |
|---|---|---|---|---|
| **Fuses** | | | | |
| F1 | — | F1BB | 100A | • X50B Battery Distribution Engine Compartment Fuse Block |
| F2 | — | F2BB | 30A | • X88B Tow Vehicle Electrical Receptacle |
| F3 | — | F3BB | 175A | • Not Used |
| **Relays** | | | | |
| K13 | — | KR81B Auxiliary Battery Relay 2 | — | • F1BB |

### X50EA Battery Distribution Fuse Block - Auxiliary X2




6444120

**Connector Part Information**

- Harness Type: Battery Positive Cable
- OEM Connector: 84668601
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way Ring Terminal

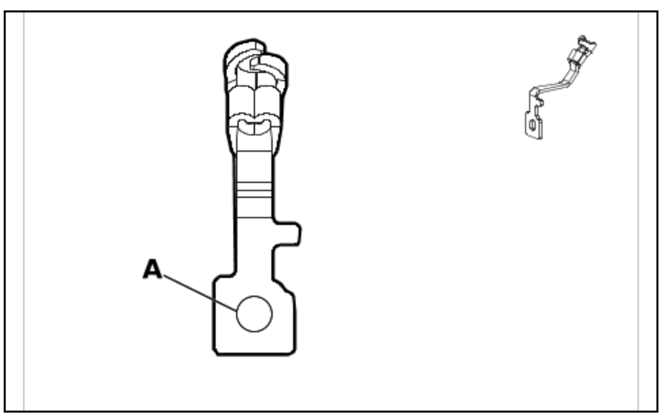
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## X50EA Battery Distribution Fuse Block - Auxiliary X2

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| A | 25 | RD / YE | 2 | Battery Positive Voltage | I | L5P |
| | 35 | RD / GN | 242 | Battery Positive Voltage | I | L5P |

### X50EA Battery Distribution Fuse Block - Auxiliary X3 (L5P)




6444793

**Connector Part Information**

- Harness Type: Auxiliary Generator Battery Jumper Cable
- OEM Connector: 84537524
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way Ring Terminal

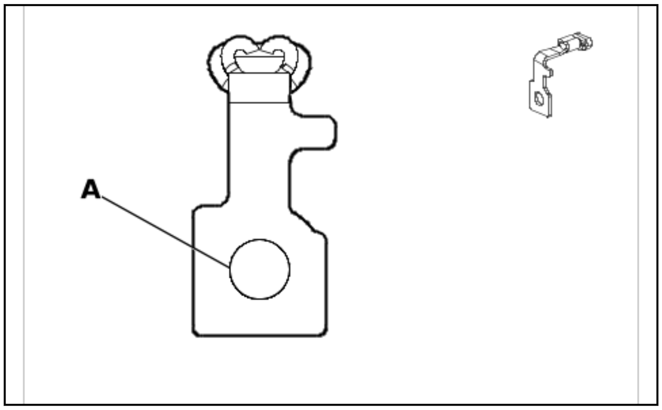
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## X50EA Battery Distribution Fuse Block - Auxiliary X3 (L5P)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| A | 25 | RD / YE | 2 | Battery Positive Voltage | I | KHF+ L5P |

### X50EA Battery Distribution Fuse Block - Auxiliary X3 (L8T)




5873864

**Connector Part Information**

- Harness Type: Battery Positive Cable
- OEM Connector: 84537527
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way Ring Terminal

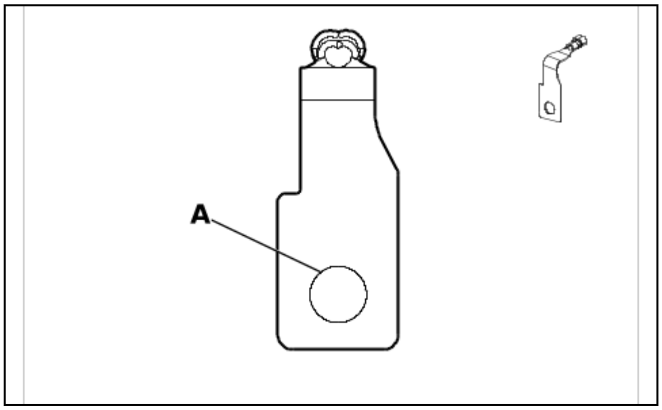
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## X50EA Battery Distribution Fuse Block - Auxiliary X3 (L8T)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| A | 16 | RD / GN | 742 | Battery Positive Voltage | I | K4Z |

### X50EA Battery Distribution Fuse Block - Auxiliary X6




6167349

**Connector Part Information**

- Harness Type: Battery Positive Cable
- OEM Connector: 84392525
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way Ring Terminal

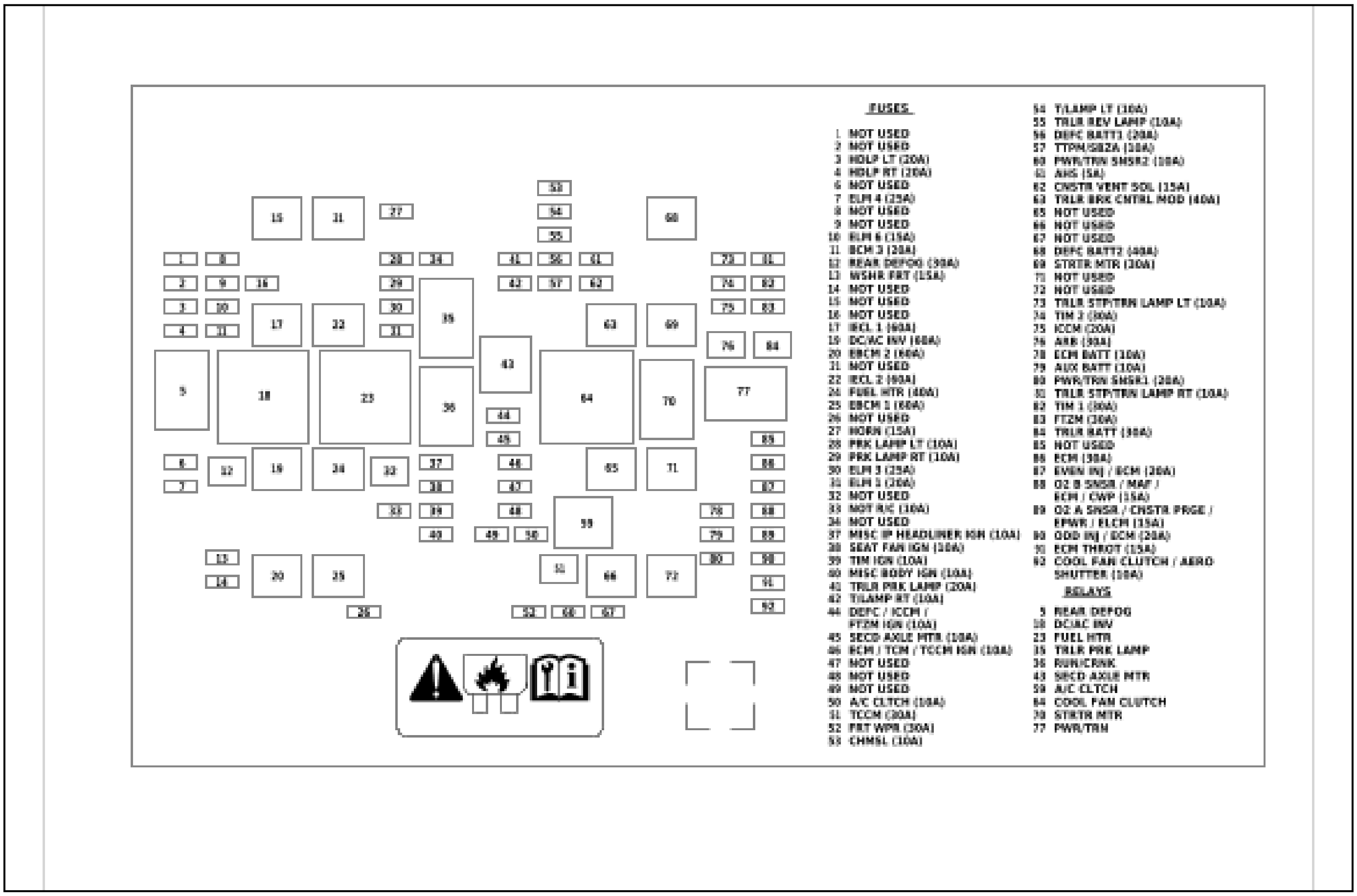
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## X50EA Battery Distribution Fuse Block - Auxiliary X6

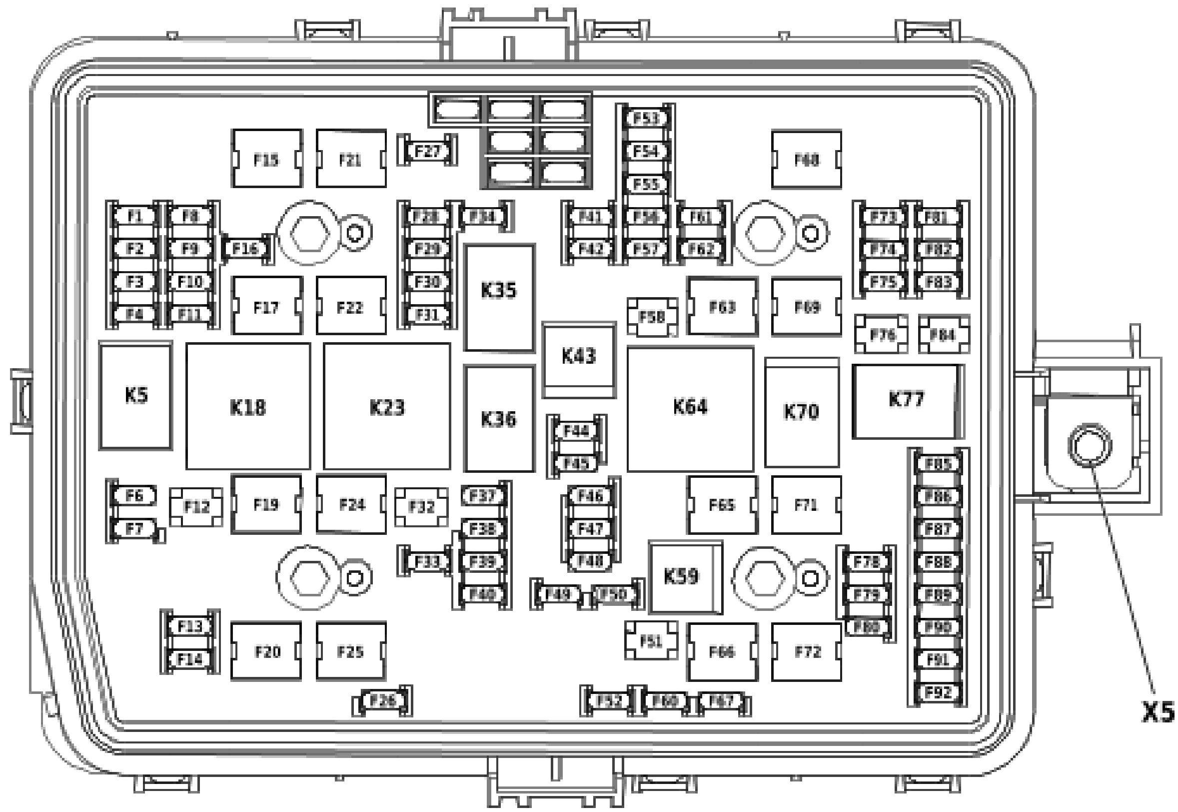
| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| A | 4 | RD / GN | 842 | Battery Positive Voltage | I | K4Z |

## X50A Engine Wiring Harness Junction Block Label




6401221

### X50A Engine Wiring Harness Junction Block Top View




6485542

## Usage Table

| No. | Device Label Name | Device Assigned Name | Rating | Description |
|---|---|---|---|---|
| **Fuses** | | | | |
| F1 | NOT USED | F1UA | — | • Not Used |
| F2 | NOT USED | F2UA | — | • Not Used |
| F3 | HDLP LT | F3UA | 20A | • E13LA Front Headlamp - Left |
| F4 | HDLP RT | F4UA | 20A | • E13RA Front Headlamp - Right |
| F6 | ELM 7 | F6UA | 25A | • Not Used |
| F7 | ELM 4 | F7UA | 25A | • K219 Lighting Control Module |
| F8 | NOT USED | F8UA | — | • Not Used |
| F9 | ELM 5 | F9UA | 25A | • Not Used |

| No. | Device Label Name | Device Assigned Name | Rating | Description |
|---|---|---|---|---|
| F10 | ELM 6 | F10UA | 15A | • K219 Lighting Control Module |
| F11 | BCM 2 | F11UA | 20A | • K9 Body Control Module |
| F12 | REAR DEFOG | F12UA | 30A | • E18 Rear Window Defogger Grid |
| F13 | WSHR FRT | F13UA | 15A | • G24 Windshield Washer Pump |
| F14 | NOT USED | F14UA | — | • Not Used |
| F15 | NOT USED | F15UA | — | • Not Used |
| F16 | NOT USED | F16UA | — | • Not Used |
| F17 | IECL 1 | F17UA | 60A | • X53AF Body Wiring Harness Junction Block |
| F19 | DC/AC INV | F19UA | 60A | • T1 DC/AC Converter Control Module (KI4/KI5) |
| F20 | IECR2 | F20UA | 60A | • K160 Brake System Control Module |
| F21 | NOT USED | F21UA | — | • Not Used |
| F22 | IECL 2 | F22UA | 60A | • X53AF Body Wiring Harness Junction Block |
| F24 | FUEL HTR | F24UA | 40A | • R29 Fuel Filter (L5P) |
| F25 | EBCM | F25UA | 60A | • K160 Brake System Control Module |
| F26 | NOT USED | F26UA | — | • Not Used |
| F27 | HORN | F27UA | 15A | • P13 Horn |
| F28 | PARK LAMP LT | F28UA | 10A | • A9A Outside Rearview Mirror - Driver (DBG/DWI/DZC)<br>• A9B Outside Rearview Mirror - Passenger (DBG/DWI/DZC)<br>• E3A Front Clearance Lamp - Roof Left Outer<br>• E3FA Front Identification Lamp<br>• E3E Front Clearance Lamp - Roof Right Outer<br>• E3LF Rear Clearance Lamp - Fender Left Front<br>• E3LR Rear Clearance Lamp - Fender Left Rear<br>• E3RF Rear Clearance Lamp - Fender Right Front<br>• E3RR Rear Clearance Lamp - Fender Right Rear<br>• E3RA Rear Identification Lamp |
| F29 | PARK LAMP RT | F29UA | 10A | • Not Used |
| F30 | ELM 3 | F30UA | 25A | • K219 Lighting Control Module |
| F31 | ELM 1 | F31UA | 20A | • K219 Lighting Control Module |
| F32 | NOT USED | F32UA | — | • Not Used |
| F33 | NOT R/C | F33UA | 10A | • K60 Column Lock Module |
| F34 | RADARS | F34UA | 10A | • Not Used |
| F37 | MISC IP HEADLINER IGN | F37UA | 10A | • A10 Inside Rearview Mirror<br>• E40 Air Heater (C32)<br>• P16 Instrument Panel Cluster Control Module<br>• P43 Forward Collision Alert Display ((UEU/UHX)-UV6)<br>• B87CA Auxiliary Rearview Camera - Cargo Area (UVO) |

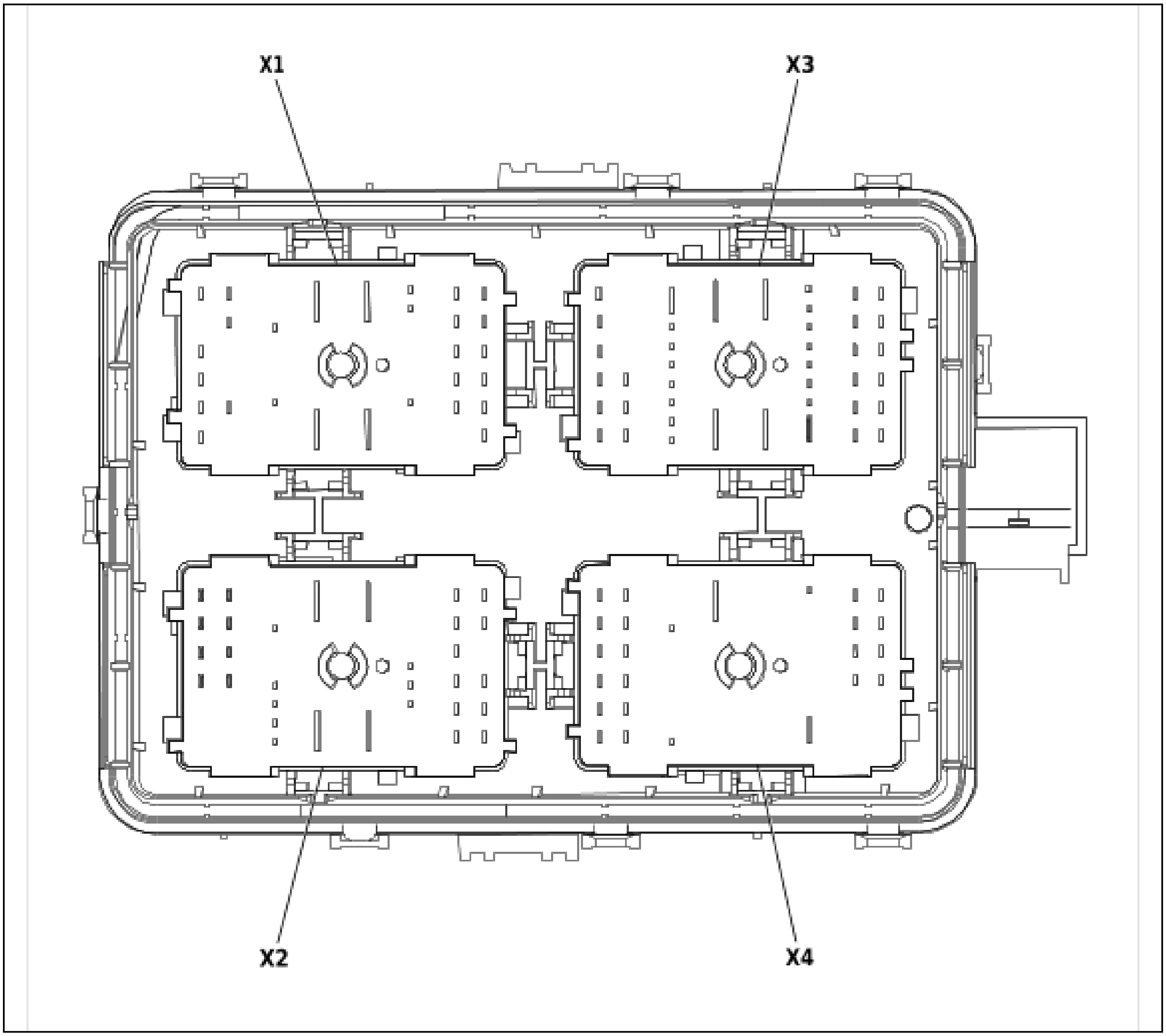
| No. | Device Label Name | Device Assigned Name | Rating | Description |
|---|---|---|---|---|
| F38 | SEAT FAN IGN | F38UA | 10A | • M73A Front Seat Back Ventilation Blower - Driver (KQV)<br>• M73B Front Seat Back Ventilation Blower - Passenger (KQV)<br>• M73D Front Seat Cushion Ventilation Blower - Driver (KQV)<br>• M73P Front Seat Cushion Ventilation Blower - Passenger (KQV) |
| F39 | TIM 2 | F39UA | 10A | • K68 Trailer Lamp Control Module (UET) |
| F40 | MISC BODY IGN | F40UA | 10A | • K36 Restraints Control Module<br>• K17 Electronic Brake Control Module<br>• K219 Lighting Control Module<br>• T1 DC/AC Converter Control Module (KI4/KI5) |
| F41 | TRLR PRK LAMP / GRT GRILLE LAMP | F41UA | 20A | • X88B Tow Vehicle Electrical Receptacle (Z82-UET) |
| F42 | T/LAMP RT | F42UA | 10A | • E42R Rear Body Structure Stop Lamp - Right |
| F44 | DEFC / ICCM / FTZM IGN | F44UA | 10A | • K38 Chassis Control Module (G94)<br>• K111 Fuel Pump Power Control Module<br>• K115 Reductant Control Module (L5P) |
| F45 | SECD AXLE MTR | F45UA | 10A | • Not Used |
| F46 | ECM / TCM / TCCM IGN | F46UA | 15A | • K20 Engine Control Module<br>• K71 Transmission Control Module<br>• K69 Transfer Case Control Module |
| F47 | NOT USED | F47UA | — | • Not Used |
| F48 | NOT USED | F48UA | — | • Not Used |
| F49 | TRANS AUX OIL PUMP | F49UA | 15A | • Not Used |
| F50 | A/C CLTCH | F50UA | 10A | • Q2 Air Conditioning Clutch |
| F51 | TCCM | F51UA | 30A | • K69 Transfer Case Control Module (NP0/NQH) |
| F52 | FRT WPR | F52UA | 30A | • M75 Windshield Wiper Motor |
| F53 | CHMSL | F53UA | 10A | • E6A High Mount Stop and Cargo Lamp (Regular Cab) |
| F54 | T/LAMP LT | F54UA | 10A | • E42L Rear Body Structure Stop Lamp - Left |
| F55 | TRLR REV LAMP | F55UA | 10A | • X88B Tow Vehicle Electrical Receptacle (Z82-UET) |
| F56 | DEFC BATT1 | F56UA | 20A | • K115 Reductant Control Module (L5P) |
| F57 | TTPM/SBZA | F57UA | 10A | • B218L Side Obstacle Detection Control Module - Left (UKC/UKV)<br>• B218R Side Obstacle Detection Control Module - Right (UKC/UKV)<br>• K214 Trailer Tire Pressure Indicator Module (UET) |
| F58 | STRTR MTR | F58UA | 30A | • Not Used |
| F60 | PWR/TRN SNSR2 | F60UA | 10A | • B195A Nitrogen Oxides Sensor 1 (L5P)<br>• K44 Power Takeoff Control Module (PTO) |
| F61 | AHS | F61UA | 5A | • K43 Power Steering Control Module (NV8) |
| F62 | CNSTR VENT SOL | F62UA | 15A | • Q13 Evaporative Emission Canister Vent Solenoid Valve (L8T) |

| No. | Device Label Name | Device Assigned Name | Rating | Description |
|---|---|---|---|---|
| F63 | TRLR BRK CNTRL MOD | F63UA | 40A | • K67 Trailer Brake Control Module (JL1)<br>• W24 Blunt Cut - Trailer Brakes Provision (JL1+Z82) |
| F65 | NOT USED | F65UA | — | • Not Used |
| F66 | COOL FAN MTR LT | F66UA | 50A | • Not Used |
| F67 | NOT USED | F67UA | — | • Not Used |
| F68 | DEFC BATT2 | F68UA | 40A | • K115 Reductant Control Module (L5P) |
| F69 | STRTR PINION | F69UA | 40A | • M64 Starter Motor |
| F71 | COOL FAN MTR LWR | F71UA | 50A | • Not Used |
| F72 | COOL FAN MTR RT | F72UA | 50A | • Not Used |
| F73 | TRLR STP/TRN LAMP LT | F73UA | 10A | • X88B Tow Vehicle Electrical Receptacle (Z82-UET) |
| F74 | TIM 2 | F74UA | 30A | • K68 Trailer Lamp Control Module (UET) |
| F75 | ICCM | F75UA | 20A | • K38 Chassis Control Module (G94) |
| F76 | ARB | F76UA | 30A | • K4 Running Board Control Module (BRS) |
| F78 | ECM BATT | F78UA | 15A | • K20 Engine Control Module |
| F79 | AUX BATT | F79UA | 10A | • X50EA Battery Distribution Fuse Block - Auxiliary |
| F80 | PWR/TRN SNSR1 | F80UA | 20A | • B195B Nitrogen Oxides Sensor 2 (L5P)<br>• M103 Turbocharger Vane Position Actuator (L5P)<br>• B136 Exhaust Particulate Matter Sensor (L5P)<br>• K111 Fuel Pump Power Control Module (L5P)<br>• R29 Fuel Filter (L5P) |
| F81 | TRLR STP/TRN LAMP RT | F81UA | 10A | • X88B Tow Vehicle Electrical Receptacle (Z82-UET) |
| F82 | TIM 1 | F82UA | 30A | • K68 Trailer Lamp Control Module (UET) |
| F83 | FTZM | F83UA | 30A | • K111 Fuel Pump Power Control Module |
| F84 | TRLR BATT | F84UA | 30A | • X88B Tow Vehicle Electrical Receptacle (Z82) |
| F85 | NOT USED | F85UA | — | • Not Used |
| F86 | ECM | F86UA | 30A | • K20 Engine Control Module |
| F87 | EVEN INJ / ECM | F87UA | 20A | • K20 Engine Control Module (L8T)<br>• T8B Ignition Coil 2 (L8T)<br>• T8D Ignition Coil 4 (L8T)<br>• T8F Ignition Coil 6 (L8T)<br>• T8H Ignition Coil 8 (L8T) |
| F88 | O2 B SNSR / MAF / ECM / EVAP / CWP / BCV | F88UA | 15A | • B75 Mass Airflow Sensor<br>• B52D Heated Oxygen Sensor - Bank 1 Sensor 2 (L8T)<br>• B52F Heated Oxygen Sensor - Bank 2 Sensor 2 (L8T)<br>• K20 Engine Control Module<br>• M10 Charge Air Cooler Coolant Pump (L5P) |

| No. | Device Label Name | Device Assigned Name | Rating | Description |
|---|---|---|---|---|
| F89 | O2 A SNSR / CNSTR PRGE / EPWR / WRAF / TURBO BYPASS / STEP CAM | F89UA | 15A | • B52C Heated Oxygen Sensor - Bank 1 Sensor 1 (L8T)<br>• B52E Heated Oxygen Sensor - Bank 2 Sensor 1 (L8T)<br>• Q12 Evaporative Emission Canister Purge Solenoid Valve (L8T)<br>• G34 Evaporative Emission System Leak Detection Pump (L8T)<br>• Q44 Engine Oil Pressure Control Solenoid Vlave (L8T) |
| F90 | ODD INJ / ECM | F90UA | 20A | • K20 Engine Control Module (L8T)<br>• T8A Ignition Coil 1 (L8T)<br>• T8C Ignition Coil 3 (L8T)<br>• T8E Ignition Coil 5 (L8T)<br>• T8G Ignition Coil 7 (L8T) |
| F91 | NOT USED | F91UA | 15A | • K20 Engine Control Module |
| F92 | AERO SHUTTER | F92UA | 10A | • M96A Active Grille Air Shutter Actuator 1 (VTI)<br>• Q85 Cooling Fan Clutch (L5P) |
| **Relays** | | | | |
| K5 | REAR DEFOG | KR5 Rear Window Defogger Relay | — | • F12UA |
| K18 | DC/AC INV | KR202 Accessory AC and DC Power Control Module Relay | — | • F19UA |
| K23 | FUEL HTR | KR22 Fuel Heater Relay | — | • R29 Fuel Filter (L5P) |
| K35 | TRLR PRK LAMP/FRT GRILLE LAMP | KR53 Parking Lamp Relay | — | • F28UA<br>• F41UA |
| K36 | RUN/CRNK | KR73 Ignition Main Relay | — | • F33UA<br>• F37UA<br>• F38UA<br>• F39UA<br>• F40UA<br>• F44UA<br>• F46UA |
| K43 | SECD AXLE MTR | KR203 Front Drive Axle Actuator Relay | — | • M26 Front Drive Axle Actuator |
| K59 | A/C CLTCH | KR29 A/C Compressor Clutch Relay | — | • F50UA |
| K64 | COOL FAN CLUTCH | KR20F Cooling Fan Relay | — | • Q85 Cooling Fan Clutch |
| K70 | STRTR MTR | KR27 Starter Motor | — | • M64 Starter Motor |

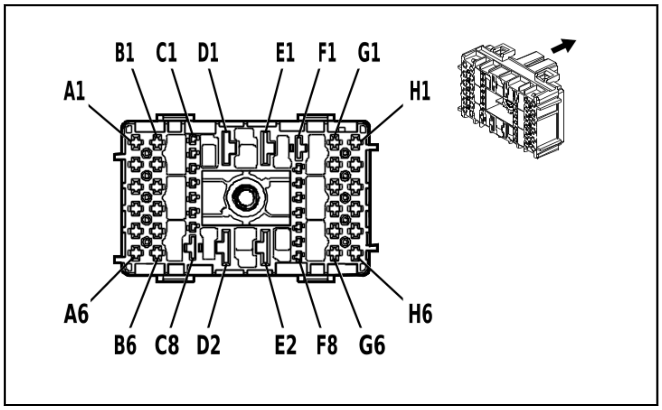
| No. | Device Label Name | Device Assigned Name | Rating | Description |
|---|---|---|---|---|
| K77 | PWR/TRN | KR75 Engine Controls Ignition Relay | — | • F86UA<br>• F87UA<br>• F88UA<br>• F89UA<br>• F90UA<br>• F91UA<br>• F92UA<br>• KR29 Air Conditioning Compressor Relay |
| **Note: Relays listed below are non-serviceable Printed Circuit Board (PCB) relays and are internal to the block.** | | | | |
| — | — | KR3 Horn Relay | — | • F27UA |
| — | — | KR11 Windshield Washer Pump Relay | — | • G24 Windshield Washer Pump |
| — | — | KR12B Windshield Wiper Motor Relay | — | • M75 Windshield Wiper Motor |
| — | — | KR12C Windshield Wiper Motor Speed Control Relay | — | • M75 Windshield Wiper Motor |
| — | — | KR41 High Mount Stop Lamp Relay | — | • F53UA |
| — | — | KR61 Trailer Backup Lamp Relay | — | • F55UA |
| — | — | KR63L Trailer Stop/ Turn Signal Lamp Relay - Left | — | • F73UA |
| — | — | KR63R Trailer Stop/ Turn Signal Lamp Relay - Right | — | • F81UA |
| — | — | KR200 Engine Controls Sensor Supply Voltage Relay | — | • F60UA<br>• F80UA |

### X50A Engine Wiring Harness Junction Block Bottom View




5041382

### X50A Engine Wiring Harness Junction Block X1




4994109

**Connector Part Information**
- Harness Type: Body Wiring Harness
- OEM Connector: 33384590
- Service Connector: 19370824
- Description: 44-Way F 1.5, 2.8, 6.3 CTS, 9.5 MCON-LL Series( BU)

## Terminal Part Information

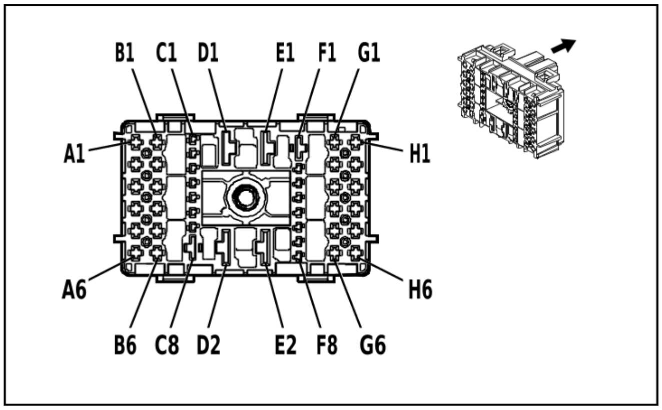
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 19369711 | J-35616-14 (GN) | J-38125-557 |
| II | 84764079 | J-35616-22 (RD) | J-38125-11A |
| III | 84779405 | J-35616-35 (VT) | J-38125-212 |

## X50A Engine Wiring Harness Junction Block X1

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| A1 | — | — | — | Not Occupied | — | — |
| A2 | 1.5 | RD / BU | 540 | Battery Positive Voltage | III | — |
| A3 | 0.35 | BN / VT | 193 | Rear Defogger Relay Control | III | — |
| A4 | 1 | BK | 650 | Ground | III | — |
| A5 | 0.75 | GY / VT | 228 | Windshield Washer Pump Control | III | — |
| A6 - B1 | — | — | — | Not Occupied | — | — |
| B2 | 2.5 | BN / VT | 293 | Rear Defogger Grid Control | III | — |
| B3 - C2 | — | — | — | Not Occupied | — | — |
| C3 | 0.5 | WH / GN | 4628 | DC/AC Inverter Relay Control | I | — |
| C4 | 0.35 | BN / GY | 2268 | Windshield Washer Relay Control | I | — |
| C5 - C8 | — | — | — | Not Occupied | — | — |
| D1 | 5 | BN / BK | 4629 | DC/AC Inverter Control | II | — |
| D2 | 6 | RD / WH | 1642 | Battery Positive Voltage | II | — |
| E1 | — | — | — | Not Occupied | — | — |
| E2 | 6 | RD / WH | 1040 | Battery Positive Voltage | II | — |
| F1 - F5 | — | — | — | Not Occupied | — | — |
| F6 | 0.35 | WH / VT | 860 | Windshield Wiper Switch High Signal | I | — |
| F7 - G2 | — | — | — | Not Occupied | — | — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| G3 | 0.35 | BU / VT | 807 | Ignition Off/Accessory Ignition Voltage | III | — |
| G4 | 0.5 | GN / VT | 5199 | Run/Crank Relay Coil Control | III | — |
| G5 | 2 | BK | 150 | Ground | III | — |
| G6 | 0.35 | GY | 91 | Windshield Wiper Motor Relay Coil Control | III | — |
| H1 | 0.5 | VT / BK | 339 | Run/Crank Ignition 1 Voltage | III | — |
| H2 | 0.75 | VT / WH | 1139 | Run/Crank Ignition 1 Voltage | III | — |
| H3 | 0.5 | VT / BK | 739 | Run/Crank Ignition 1 Voltage | III | — |
| H4 | 0.5 | VT / WH | 239 | Run/Crank Ignition 1 Voltage | III | — |
| H5 | 2 | WH | 92 | Windshield Wiper Motor High Speed Control | III | — |
| H6 | 2 | YE / BN | 95 | Windshield Wiper Motor Low Speed Control | III | — |

**X50A Engine Wiring Harness Junction Block X2**




4994132

**Connector Part Information**
- Harness Type: Body Wiring Harness
- OEM Connector: 33384594
- Service Connector: 19371174
- Description: 44-Way F 1.5, 2.8, 6.3 CTS, 9.5 MCON-LL Series( GN)

## Terminal Part Information

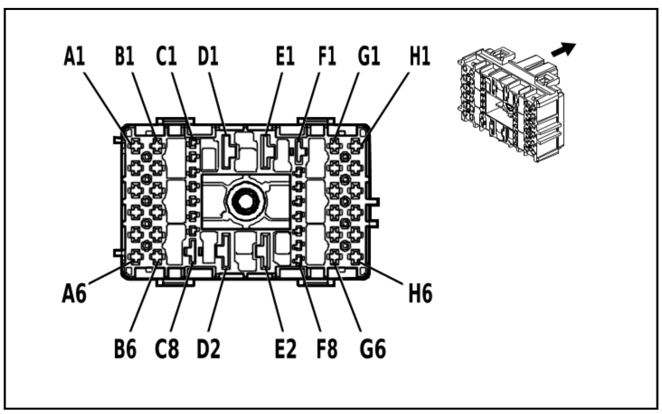
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 19369711 | J-35616-14 (GN) | J-38125-557 |
| II | 84779405 | J-35616-35 (VT) | J-38125-212 |
| III | Not required | J-35616-22 (RD) | No Tool Required |

## X50A Engine Wiring Harness Junction Block X2

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| A1 - A4 | — | — | — | Not Occupied | — | — |
| A5 | 1.5 | RD / WH | 640 | Battery Positive Voltage | II | — |
| A6 | 1.5 | RD / YE | 740 | Battery Positive Voltage | II | — |
| B1 - B4 | — | — | — | Not Occupied | — | — |
| B5 | 0.5 | RD / BU | 840 | Battery Positive Voltage | II | — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| B6 | 1 | GN / YE | 6840 | Auxiliary Device 2 Switched Voltage | II | — |
| C1 | 0.35 | YE / BU | 318 | Left Rear Trailer Stop/Turn Lamp Control | I | — |
| C2 | 0.35 | GN / BN | 319 | Right Rear Trailer Stop/Turn Lamp Control | I | — |
| C3 - D1 | — | — | — | Not Occupied | — | — |
| D2 | 10 | RD / GY | 142 | Battery Positive Voltage | III | — |
| E1 | — | — | — | Not Occupied | — | — |
| E2 | 10 | RD / GN | 242 | Battery Positive Voltage | III | — |
| F1 | — | — | — | Not Occupied | — | — |
| F2 | 0.35<br>0.5 | BN / YE<br>BN / YE | 820<br>820 | Center High Mounted Stop Lamp Supply Voltage<br>Center High Mounted Stop Lamp Supply Voltage | I<br>I | —<br>— |
| F3 | 0.35 | BU / BN | 38 | Backup Lamp Relay Control | I | — |
| F4 | 0.35 | BN / WH | 28 | Horn Relay Control | I | — |
| F5 - F8 | — | — | — | Not Occupied | — | — |
| G1 | 0.75 | BN / GY | 29 | Horn Control | II | — |
| G2 | — | — | — | Not Occupied | — | — |
| G3 | 0.5 | BN / GN | 4246 | Identification Lamp Control | II | — |
| G4 | — | — | — | Not Occupied | — | — |
| G5 | 1.5 | RD / BN | 1440 | Battery Positive Voltage | II | — |
| G6 | 1 | RD / BN | 1140 | Battery Positive Voltage | II | — |
| H1 | 0.5 | BU / BK | 1053 | Center High Mounted Stop Lamp Control 3 | II | — |
| H2 - H5 | — | — | — | Not Occupied | — | — |
| H6 | 0.35 | WH / BN | 7055 | Auxiliary Park Lamp Relay Control | II | — |

### X50A Engine Wiring Harness Junction Block X3




4992608

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 33384584
- Service Connector: 19371176
- Description: 44-Way F 1.5, 2.8, 6.3 CTS, 9.5 MCON-LL Series( GY)

## Terminal Part Information

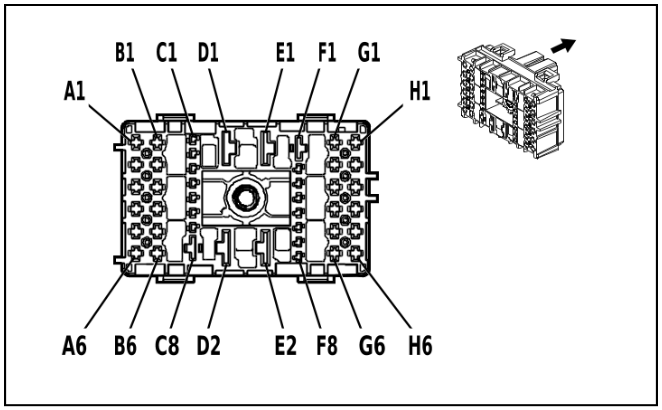
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 19369711 | J-35616-14 (GN) | J-38125-557 |
| II | 84764078 | J-35616-42 (RD) | J-38125-221 |
| III | 84779405 | J-35616-35 (VT) | J-38125-212 |

## X50A Engine Wiring Harness Junction Block X3

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| A1 | 0.75 | VT / GN | 439 | Run/Crank Ignition 1 Voltage | III | — |
| A2 - A3 | — | — | — | Not Occupied | — | — |
| A4 | 0.75 | BN / GN | 59 | Air Conditioning Compressor Clutch Control | III | — |
| A5 | — | — | — | Not Occupied | — | — |
| A6 | 0.5 | GN | 8016 | Secondary Axle Motor Control | III | — |
| B1 | 0.5 | WH | 2368 | Cooling Fan Control Signal | III | — |
| B2 | 0.5 | VT / BU | 5705 | Powertrain Main Relay Control | III | — |
| B3 | 0.5 | VT / GY | 8017 | Secondary Axle Motor Relay Control | III | — |
| B4 - B5 | — | — | — | Not Occupied | — | — |
| B6 | 3 | GN / RD | 6042 | Cruise Control Switch 5V Reference | III | — |
| C1 | 0.5 | BU | 3017 | Fuel Heater Relay 1 Control | I | — |
| C2 | 0.5 | WH / BK | 2366 | Cooling Fan Speed Control Signal | I | — |
| C3 | 1.5 | BK | 450 | Ground | I | — |
| C4 | 0.5 | WH / GY | 459 | Air Conditioning Compressor Clutch Relay Control | I | — |
| C5 | 0.5 | GN / BU | 3889 | Powertrain Sensor Bus Relay Control | I | — |
| C6 | 0.75 | VT / GN | 4320 | Powertrain Sensor Bus Enable | I | — |
| C7 - E2 | — | — | — | Not Occupied | — | — |
| F1 | 2.5 | YE | 6 | Starter Solenoid Crank Ignition Voltage | II | — |
| F2 | 0.5 | YE / BK | 625 | Starter Enable Relay Control | I | — |
| F3 | 0.5<br>0.75 | RD / BN<br>RD / BN | 440<br>440 | Battery Positive Voltage<br>Battery Positive Voltage | I<br>I | —<br>— |
| F4 | 0.5 | YE | 5991 | Powertrain Relay Coil Control | I | — |
| F5 | 0.5 | RD / WH | 3440 | Battery Positive Voltage | I | — |
| F6 | — | — | — | Not Occupied | — | — |
| F7 | 0.5 | VT / BU | 5705 | Powertrain Main Relay Control | I | — |
| F8 - G1 | — | — | — | Not Occupied | — | — |
| G2 | 1 | VT / BU | 5292 | Powertrain Main Relay Fused Supply Voltage 3 | III | — |
| G3 | — | — | — | Not Occupied | — | — |
| G4 | 0.75 | VT / BU | 5293 | Powertrain Main Relay Fused Supply Voltage 4 | III | — |
| G5 | 1.5 | VT / GN | 4320 | Powertrain Sensor Bus Enable | III | — |
| G6 | 0.75 | VT / BU | 5291 | Powertrain Main Relay Fused Supply Voltage 2 | III | — |
| H1 | 2.5<br>4 | VT / BU<br>VT / BU | 5290<br>5290 | Powertrain Main Relay Fused Supply Voltage 1<br>Powertrain Main Relay Fused Supply Voltage 1 | III<br>III | —<br>— |
| H2 | 0.75 | VT / BU | 5292 | Powertrain Main Relay Fused Supply Voltage 3 | III | — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| H3 | 1 | VT / BU | 5294 | Powertrain Main Relay Fused Supply Voltage 5 | III | — |
| H4 | 0.75 | VT / BU | 5293 | Powertrain Main Relay Fused Supply Voltage 4 | III | — |
| H5 | 1 | VT / BU | 5291 | Powertrain Main Relay Fused Supply Voltage 2 | III | — |
| H6 | 0.75<br>2.5 | VT / BU<br>VT / BU | 5290<br>5290 | Powertrain Main Relay Fused Supply Voltage 1<br>Powertrain Main Relay Fused Supply Voltage 1 | III<br>III | —<br>— |

**X50A Engine Wiring Harness Junction Block X4**




4993031

**Connector Part Information**

- Harness Type: Chassis Wiring Harness
- OEM Connector: 33384574
- Service Connector: 19371188
- Description: 44-Way F 1.5, 2.8, 6.3 CTS, 9.5 MCON-LL Series( BK)

## Terminal Part Information

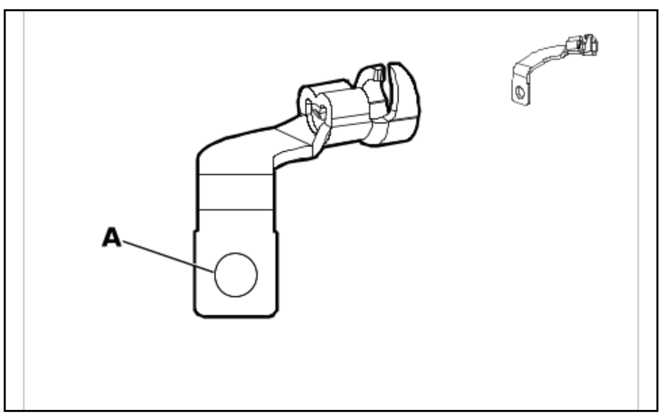
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 19369711 | J-35616-14 (GN) | J-38125-557 |
| II | 84764078 | J-35616-42 (RD) | J-38125-221 |
| III | 84764079 | J-35616-22 (RD) | J-38125-11A |
| IV | 84779405 | J-35616-35 (VT) | J-38125-212 |

## X50A Engine Wiring Harness Junction Block X4

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| A1 - A2 | — | — | — | Not Occupied | — | — |
| A3 | 1.5 | BN | 2109 | Trailer Park Lamp Control | IV | — |
| A4 | 0.5 | RD / WH | 6440 | Battery Positive Voltage | IV | — |
| A5 | — | — | — | Not Occupied | — | — |
| A6 | 0.5 | VT / WH | 639 | Run/Crank Ignition 1 Voltage | IV | — |
| B1 | 0.5 | RD / WH | 640 | Battery Positive Voltage | IV | — |
| B2 | 1 | GY | 1624 | Trailer Backup Lamp Control | IV | — |
| B3 | 1.5 | RD / GN | 2440 | Battery Positive Voltage | IV | — |
| B4 | 0.5 | RD / GN | 6940 | Battery Positive Voltage | IV | — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| B5 - B6 | — | — | — | Not Occupied | — | — |
| C1 | 0.5 | RD / WH | 5740 | Battery Positive Voltage | I | — |
| C2 - C6 | — | — | — | Not Occupied | — | — |
| C7 | 0.5 | RD / WH | 3440 | Battery Positive Voltage | I | — |
| C8 | 2.5 | BN / YE | 2996 | Fuel Heater Control 1 | II | — |
| D1 | — | — | — | Not Occupied | — | — |
| D2 | 4 | RD / BN | 3640 | Battery Positive Voltage | III | — |
| E1 - E2 | — | — | — | Not Occupied | — | — |
| F1 | 2.5 | RD / WH | 2040 | Battery Positive Voltage | II | — |
| F2 - G2 | — | — | — | Not Occupied | — | — |
| G3 | 1 | YE | 1618 | Left Rear Trailer Stop/Turn Lamp Control | IV | — |
| G4 | 2.5 | RD / YE | 5840 | Battery Positive Voltage | IV | — |
| G5 | 1.5 | RD / BN | 5940 | Battery Positive Voltage | IV | — |
| G6 | 2.5 | RD / WH | 1040 | Battery Positive Voltage | IV | — |
| H1 - H2 | — | — | — | Not Occupied | — | — |
| H3 | 1 | GN | 1619 | Right Rear Trailer Stop/Turn Lamp Control | IV | — |
| H4 | 2.5 | RD / VT | 5640 | Battery Positive Voltage | IV | — |
| H5 | 2.5 | RD / VT | 1940 | Battery Positive Voltage | IV | — |
| H6 | 4<br>4 | OG<br>RD / BU | 3940<br>3940 | Battery Positive Voltage<br>Battery Positive Voltage | IV<br>IV | —<br>— |

### X50A Engine Wiring Harness Junction Block X5 (L5P)




6443464

**Connector Part Information**

- Harness Type: Battery Positive Cable
- OEM Connector: 84537526
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way Ring Terminal

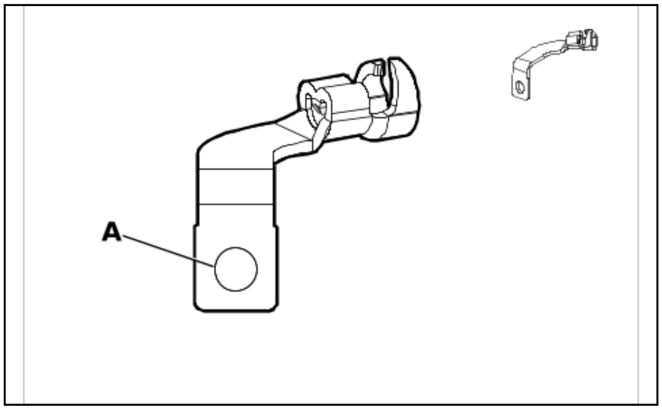
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## X50A Engine Wiring Harness Junction Block X5 (L5P)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| A | 25 | RD / YE | 2 | Battery Positive Voltage | I | L5P |

## X50A Engine Wiring Harness Junction Block X5 (L8T - K4Z)




6443464

**Connector Part Information**

- Harness Type: Battery Positive Cable
- OEM Connector: 84537526
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way Ring Terminal

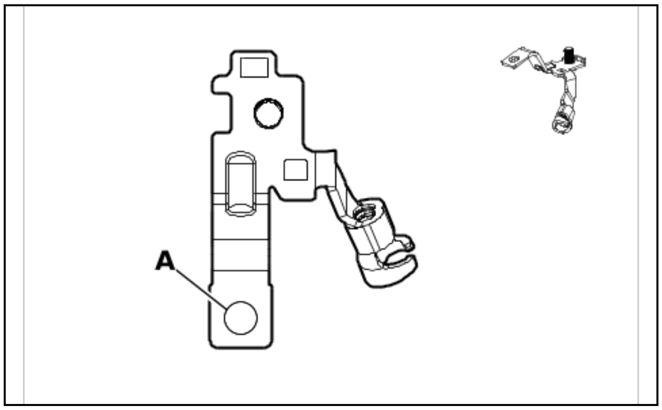
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## X50A Engine Wiring Harness Junction Block X5 (L8T - K4Z)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| A | 25 | RD / GN | 242 | Battery Positive Voltage | I | L8T- KHF |

### X50A Engine Wiring Harness Junction Block X5 (L8T & K4Z)




6758163

**Connector Part Information**

- Harness Type: Battery Positive Cable
- OEM Connector: 85664828
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way Ring Terminal

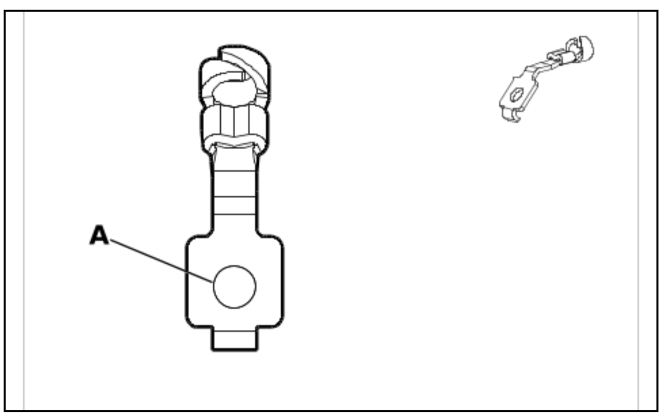
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## X50A Engine Wiring Harness Junction Block X5 (L8T & K4Z)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| A | 25 | RD / GN | 242 | Battery Positive Voltage | I | KHF+ L8T |

### X50A Engine Wiring Harness Junction Block X5 (L8T & KHF)




6444148

**Connector Part Information**

- Harness Type: Auxiliary Generator Battery Jumper Cable
- OEM Connector: 84386099
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way Ring Terminal

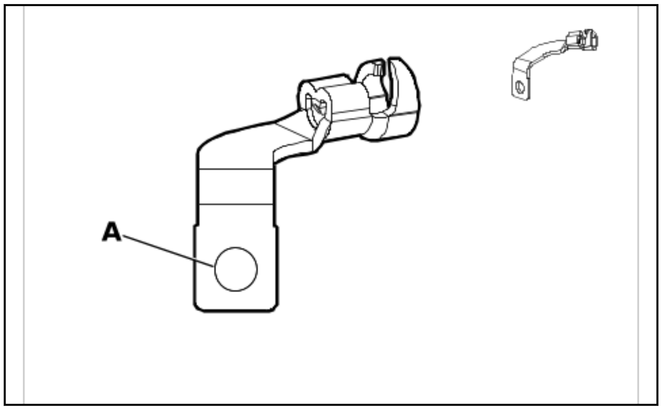
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## X50A Engine Wiring Harness Junction Block X5 (L8T & KHF)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| A | 25 | RD / YE | 2 | Battery Positive Voltage | I | KHF+ L8T |

### X50A Engine Wiring Harness Junction Block X5 (L8T & KW5 & K4Z)




6443464

**Connector Part Information**
- Harness Type: Battery Positive Cable
- OEM Connector: 84537526
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way Ring Terminal

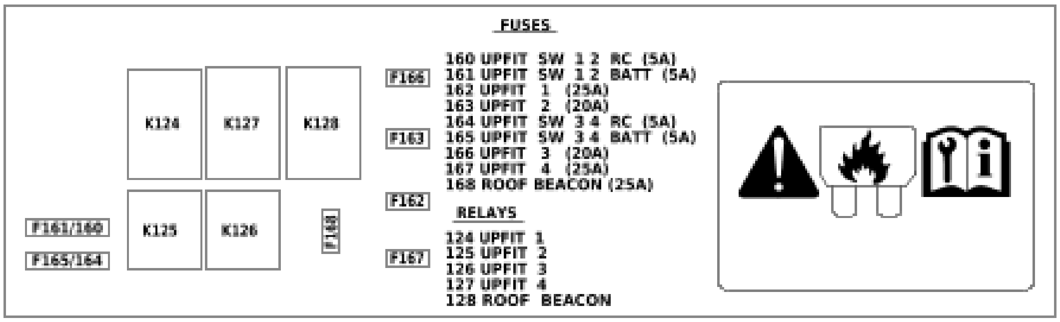
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## X50A Engine Wiring Harness Junction Block X5 (L8T & KW5 & K4Z)

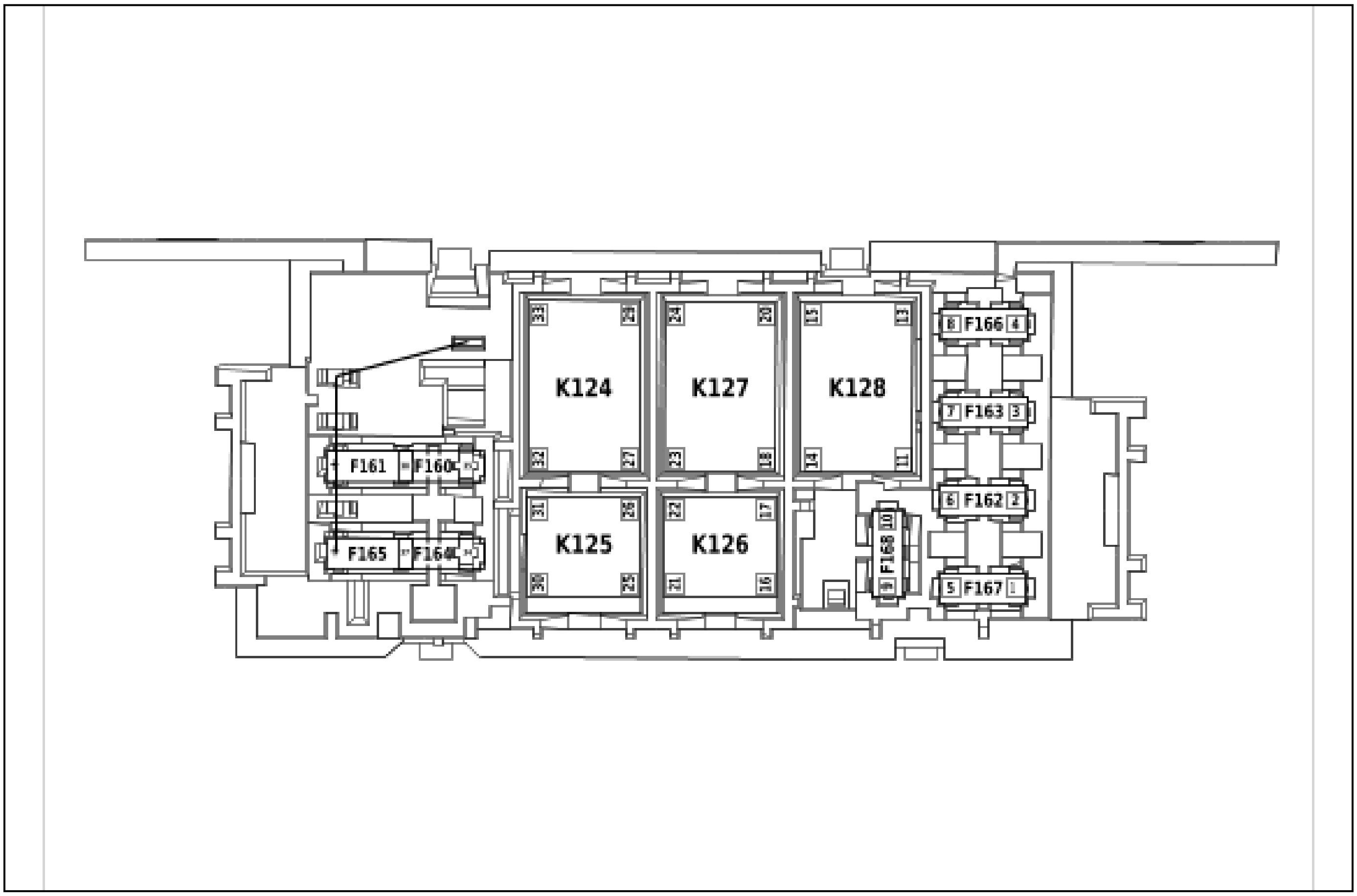
| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| A | 25 | RD / GN | 242 | Battery Positive Voltage | I | L8T- KHF |

## X51AX Instrument Panel Wiring Harness Junction Block - Auxiliary Label (9L7)




5969422

**X51AX Instrument Panel Wiring Harness Junction Block - Auxiliary Top View (9L7)**



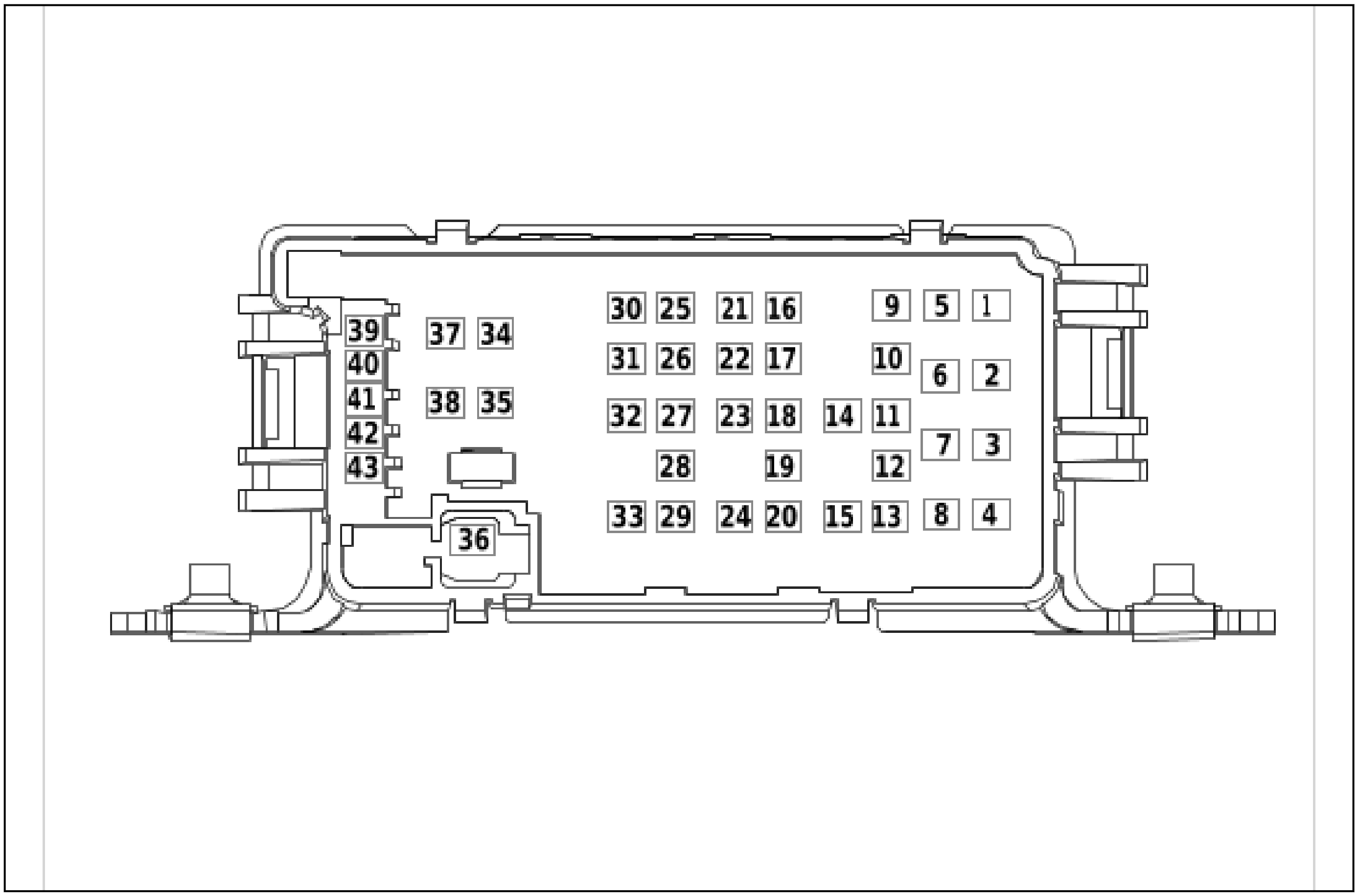

5988611

## Usage Table

| No. | Device Label Name | Device Assigned Name | Rating | Description |
|---|---|---|---|---|
| **Fuses** | | | | |
| F160 | UPFIT SW 1 2 RC | F160DA | 5A | • KR161AA Configurable/Accessory Provision Relay 1<br>• KR161BA Configurable/Accessory Provision Relay 2 |
| F161 | UPFIT SW 1 2 BATT | F161DA | 5A | • KR161AA Configurable/Accessory Provision Relay 1<br>• KR161BA Configurable/Accessory Provision Relay 2 |
| F162 | UPFIT 1 | F162DA | 25A | • X79A Configurable/Accessory Provision Supply Connector |
| F163 | UPFIT 2 | F163DA | 20A | • X79A Configurable/Accessory Provision Supply Connector |
| F164 | UPFIT SW 3 4 RC | F164DA | 5A | • KR161CA Configurable/Accessory Provision Relay 3<br>• KR161DA Configurable/Accessory Provision Relay 4<br>• KR161EA Configurable/Accessory Provision Relay 5 |
| F165 | UPFIT SW 3 4 BATT | F165DA | 5A | • KR161CA Configurable/Accessory Provision Relay 3<br>• KR161DA Configurable/Accessory Provision Relay 4<br>• KR161EA Configurable/Accessory Provision Relay 5 |
| F166 | UPFIT 3 | F166DA | 20A | • X79A Configurable/Accessory Provision Supply Connector |

| No. | Device Label Name | Device Assigned Name | Rating | Description |
|---|---|---|---|---|
| F167 | UPFIT 4 | F167DA | 25A | • X79A Configurable/Accessory Provision Supply Connector |
| F168 | ROOF BEACON | F168DA | 25A | • W11 Blunt Cut - Emergency Vehicle Roof Lamp |
| **Relays** | | | | |
| K124 | UPFIT 1 | KR161AA Configurable/ Accessory Provision Relay 1 | — | • F162DA |
| K125 | UPFIT 2 | KR161BA Configurable/ Accessory Provision Relay 2 | — | • F163DA |
| K126 | UPFIT 3 | KR161CA Configurable/ Accessory Provision Relay 3 | — | • F166DA |
| K127 | UPFIT 4 | KR161DA Configurable/ Accessory Provision Relay 4 | — | • F167DA |
| K128 | ROOF BEACON | KR161EA Configurable/ Accessory Provision Relay 5 | — | • F168DA |

## X51AX Instrument Panel Wiring Harness Junction Block - Auxiliary Wire Entry View




**Connector Part Information**

- Harness Type: Auxiliary Fuse Block Wiring Harness
- OEM Connector: 33323307
- Service Connector: Service by Component Assembly - See Part Catalog
- Description: Wire Entry Fuse Block

### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-22 (RD) | No Tool Required |
| II | Not required | J-35616-35 (VT) | No Tool Required |
| III | Not required | J-35616-4A (PU) | No Tool Required |

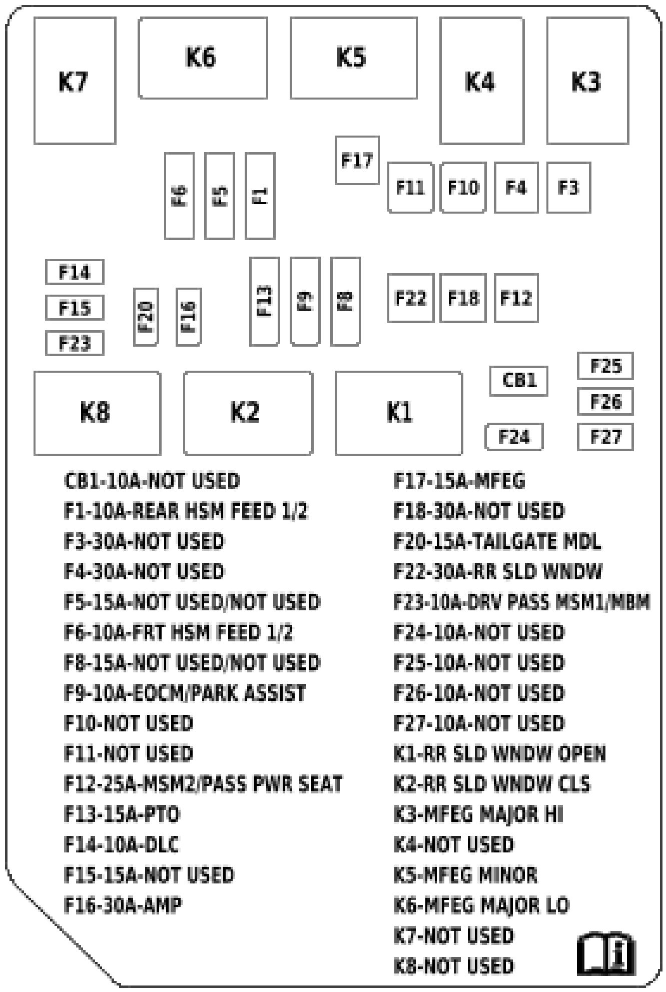
### X51AX Instrument Panel Wiring Harness Junction Block - Auxiliary Wire Entry View

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 2.5 | (1) YE / BN | (1) 10734 | (1) Upfitter Accessory 4 Supply Voltage | (1) III | (1) — |
| (2) 2 | (2) 2.5 | (2) BU | (2) 10731 | (2) Upfitter Accessory 1 Supply Voltage | (2) III | (2) — |
| (3) 3 | (3) 2.5 | (3) GY / BK | (3) 10732 | (3) Upfitter Accessory 2 Supply Voltage | (3) III | (3) — |
| (4) 4 | (4) 2.5 | (4) BN / WH | (4) 10733 | (4) Upfitter Accessory 3 Supply Voltage | (4) III | (4) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (5) 5 | (5) 2.5 | (5) YE | (5) 10729 | (5) Upfitter Accessory Fuse 4 Supply Voltage | (5) III | (5) — |
| (6) 6 | (6) 2.5 | (6) BU / GN | (6) 10726 | (6) Upfitter Accessory Fuse 1 Supply Voltage | (6) III | (6) — |
| (7) 7 | (7) 2.5 | (7) GY | (7) 10727 | (7) Upfitter Accessory Fuse 2 Supply Voltage | (7) III | (7) — |
| (8) 8 | (8) 2.5 | (8) BN | (8) 10728 | (8) Upfitter Accessory Fuse 3 Supply Voltage | (8) III | (8) — |
| (9) 9 | (9) 2.5 | (9) VT / BU | (9) 10735 | (9) Upfitter Accessory 5 Supply Voltage | (9) III | (9) — |
| (10) 10 | (10) 2.5 | (10) VT | (10) 10730 | (10) Upfitter Accessory Fuse 5 Supply Voltage | (10) III | (10) — |
| (11) 11 | (11) 2.5 | (11) VT | (11) 10730 | (11) Upfitter Accessory Fuse 5 Supply Voltage | (11) III | (11) — |
| (13) 13 | (13) 0.35 | (13) VT / BN | (13) 10723 | (13) Upfitter Accessory Relay 3 Coil Supply Voltage | (13) II | (13) — |
| (14) 14 | (14) 0.35 | (14) GY / VT | (14) 10720 | (14) Upfitter Accessory Relay 5 Coil Control | (14) II | (14) — |
| (15) 15 | (15) 2.5 | (15) RD / VT | (15) 542 | (15) Battery Positive Voltage | (15) III | (15) — |
| (16) 16 | (16) 2.5 | (16) RD / VT | (16) 542 | (16) Battery Positive Voltage | (16) III | (16) — |
| (17) 17 | (17) 0.35 | (17) GN / BN | (17) 10718 | (17) Upfitter Accessory Relay 3 Coil Control | (17) II | (17) — |
| (18) 18 | (18) 2.5 | (18) YE | (18) 10729 | (18) Upfitter Accessory Fuse 4 Supply Voltage | (18) III | (18) — |
| (20) 20 | (20) 0.35 | (20) VT / BN | (20) 10723 | (20) Upfitter Accessory Relay 3 Coil Supply Voltage | (20) III | (20) — |
| (21) 21 | (21) 0.35 | (21) VT / BN | (21) 10723 | (21) Upfitter Accessory Relay 3 Coil Supply Voltage | (21) III | (21) — |
| (22) 22 | (22) 2.5 | (22) BN | (22) 10728 | (22) Upfitter Accessory Fuse 3 Supply Voltage | (22) III | (22) — |
| (23) 23 | (23) 0.35 | (23) WH / YE | (23) 10719 | (23) Upfitter Accessory Relay 4 Coil Control | (23) II | (23) — |
| (24) 24 | (24) 2.5 | (24) RD / VT | (24) 542 | (24) Battery Positive Voltage | (24) III | (24) — |
| (25) 25 | (25) 2.5 | (25) RD / VT | (25) 542 | (25) Battery Positive Voltage | (25) III | (25) — |
| (26) 26 | (26) 0.35 | (26) VT / GY | (26) 10717 | (26) Upfitter Accessory Relay 2 Coil Control | (26) II | (26) — |
| (27) 27 | (27) 2.5 | (27) BU / GN | (27) 10726 | (27) Upfitter Accessory Fuse 1 Supply Voltage | (27) III | (27) — |
| (29) 29 | (29) 0.35 | (29) BU / VT | (29) 10721 | (29) Upfitter Accessory Relay 1 Coil Supply Voltage | (29) III | (29) — |
| (30) 30 | (30) 0.35 | (30) BU / VT | (30) 10721 | (30) Upfitter Accessory Relay 1 Coil Supply Voltage | (30) II | (30) — |
| (31) 31 | (31) 2.5 | (31) GY | (31) 10727 | (31) Upfitter Accessory Fuse 2 Supply Voltage | (31) III | (31) — |
| (32) 32 | (32) 0.35 | (32) BU / WH | (32) 10716 | (32) Upfitter Accessory Relay 1 Coil Control | (32) II | (32) — |
| (33) 33 | (33) 2.5 | (33) RD / VT | (33) 542 | (33) Battery Positive Voltage | (33) III | (33) — |
| (34) 34 | (34) 0.5 | (34) VT / BK | (34) 339 | (34) Run/Crank Ignition 1 Voltage | (34) III | (34) — |
| (35) 35 | (35) 0.5 | (35) VT / BK | (35) 339 | (35) Run/Crank Ignition 1 Voltage | (35) III | (35) — |

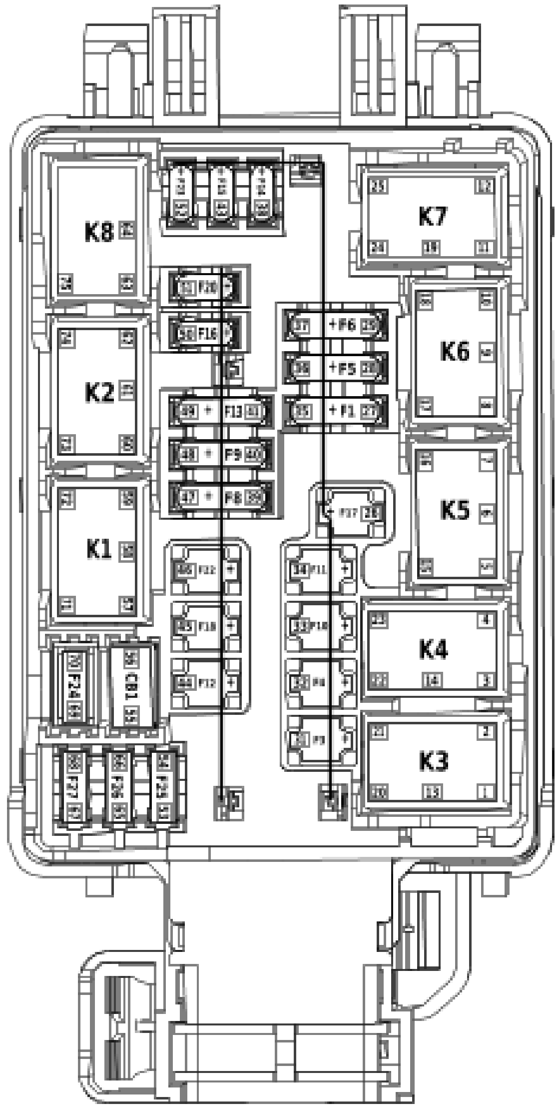
| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (36) 36 | (36) 10 | (36) RD / VT | (36) 542 | (36) Battery Positive Voltage | (36) I | (36) — |
| (37) 37 | (37) 0.35 | (37) VT / BN | (37) 10723 | (37) Upfitter Accessory Relay 3 Coil Supply Voltage | (37) II | (37) — |
| (38) 38 | (38) 0.35 | (38) BU / VT | (38) 10721 | (38) Upfitter Accessory Relay 1 Coil Supply Voltage | (38) II | (38) — |
| (39) 39 | (39) 2.5 | (39) RD / VT | (39) 542 | (39) Battery Positive Voltage | (39) III | (39) — |
| (40) 40 | (40) 2.5 | (40) RD / VT | (40) 542 | (40) Battery Positive Voltage | (40) III | (40) — |
| (41) 41 | (41) 2.5 | (41) RD / VT | (41) 542 | (41) Battery Positive Voltage | (41) III | (41) — |
| (42) 42 | (42) 2.5 | (42) RD / VT | (42) 542 | (42) Battery Positive Voltage | (42) III | (42) — |
| (43) 43 | (43) 2.5 | (43) RD / VT | (43) 542 | (43) Battery Positive Voltage | (43) III | (43) — |

### X53AF Body Wiring Harness Junction Block Label




6465161

**X53AF Body Wiring Harness Junction Block Top View**




6094371

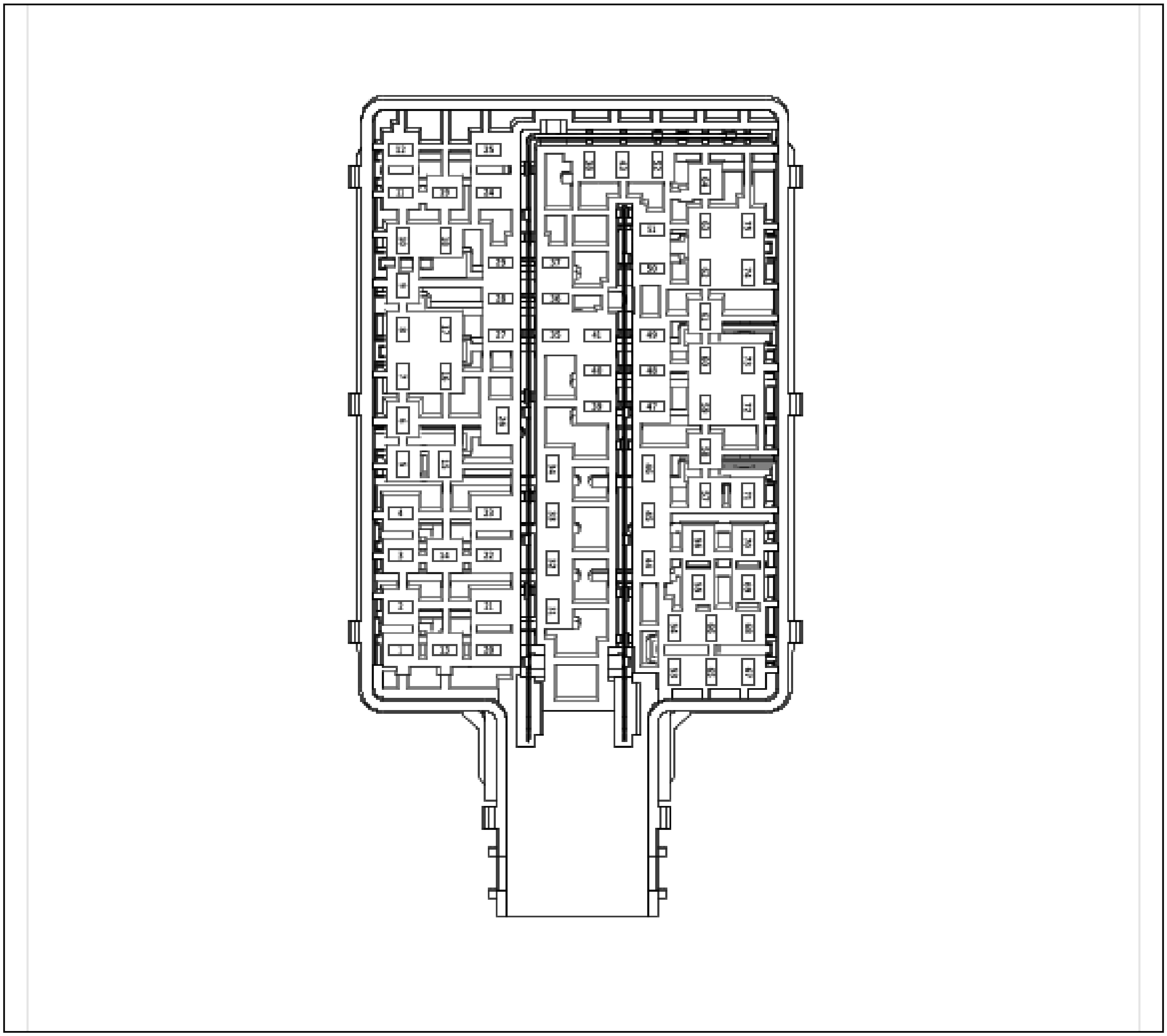
## Usage Table

| No. | Device Label Name | Device Assigned Name | Rating | Description |
|---|---|---|---|---|
| **Fuses** | | | | |
| F1 | REAR HSM FEED 1/2 | F1DL | 10A | • K234 Rear Seat Heater Vent Control Module (KA6) |
| F3 | NOT USED | F3DL | 30A | • Not Used |
| F4 | NOT USED | F4DL | 30A | • Not Used |
| F5 | NOT USED/NOT USED | F5DL | 15A | • Not Used |
| F6 | FRT HSM FEED 1/2 | F6DL | 10A | • K29FV Front Seat Heater Vent Control Module (KA1/ KQV) |

| No. | Device Label Name | Device Assigned Name | Rating | Description |
|---|---|---|---|---|
| F8 | NOT USED/NOT USED | F8DL | 15A | • Not Used |
| F9 | EOCM/PARK ASSIST | F9DL | 10A | • K182 Parking Assist Control Module (UD5/UD7) |
| F10 | NOT USED | F10DL | 30A | • Not Used |
| F11 | NOT USED | F11DL | 30A | • Not Used |
| F12 | MSM2/PASS PWR SEAT | F12DL | 25A | • K40P Passenger Seat Adjuster Memory Module (AKE)<br>• S64P Front Seat Adjuster Switch - Passenger (A7K-AKE) |
| F13 | PTO | F13DL | 15A | • K44 Power Takeoff Control Module<br>• X175P Connector |
| F14 | DLC | F14DL | 10A | • X84 Data Link Connector |
| F15 | NOT USED | F15DL | 15A | • Not Used |
| F16 | AMP | F16DL | 30A | • T3 Audio Amplifier (UQA) |
| F17 | MFEG | F17DL | 15A | • KR191S Pickup Box Endgate Latch Relay - Supply Voltage (QT5)<br>• KR192 Pickup Box Auxiliary Endgate Latch Relay (QK2+QT5) |
| F18 | NOT USED | F18DL | 30A | • Not Used |
| F20 | TAILGATE MDL | F20DL | 15A | • K194 Rear Gate Module (QT6) |
| F22 | RR SLD WNDW | F22DL | 30A | • KR206C Rear Sliding Window Close Relay (A48)<br>• KR206O Rear Sliding Window Open Relay (A48) |
| F23 | DRV PASS MSM1/MBM | F23DL | 10A | • K104D Front Seat Bladder Control Module - Driver (AVK-AF6)<br>• K104DP Front Seat Bladder Control Module - Driver Primary (AF6)<br>• K104DS Front Seat Bladder Control Module - Driver Secondary (AF6)<br>• K40D Front Seat Adjuster Switch - Driver (A45)<br>• K104P Front Seat Bladder Control Module - Passenger (AVU-AKE)<br>• K104PP Front Seat Bladder Control Module - Passenger Primary (AKE)<br>• K104PS Front Seat Bladder Control Module - Passenger Secondary (AKE)<br>• K40P Passenger Seat Adjuster Memory Module (AKE)<br>• S64D Front Seat Adjuster Switch - Driver (A45)<br>• S64P Front Seat Adjuster Switch - Passenger (AKE)<br>• S65D Front Seat Lumbar Switch - Driver (AVK-A45)<br>• S65P Front Seat Lumbar Switch - Passenger (A7K-AVU-AKE)<br>• E14D Front Seat Cushion Heater - Passenger (KA1)<br>• E14C Front Seat Back Heater - Passenger (KA1) |
| F24 | NOT USED | F24DL | 10A | • Not Used |
| F25 | NOT USED | F25DL | 10A | • Not Used |
| F26 | NOT USED | F26DL | 10A | • Not Used |
| F27 | NOT USED | F27DL | 10A | • Not Used |

| No. | Device Label Name | Device Assigned Name | Rating | Description |
|---|---|---|---|---|
| **Circuit Breakers** | | | | |
| CB1 | NOT USED | CB1DL | 10A | • Not Used |
| **Relays** | | | | |
| K1 | RR SLD WNDW OPEN | KR206O Rear Sliding Window Open Relay | — | • M63 Rear Sliding Window Motor (A48) |
| K2 | RR WNDW CLS | KR206C Rear Sliding Window Close Relay | — | • M63 Rear Sliding Window Motor (A48) |
| K3 | MFEG MAJOR HI | KR191G Pickup Box Endgate Latch Relay - Ground | — | • A99L Pickup Box Endgate Latch - Left (QK2+QT5)<br>• A99R Pickup Box Endgate Latch - Right (QK2+QT5)<br>• M14A Pickup Box Endgate Lock Actuator (QK1+QT5) |
| K4 | NOT USED | — | — | • Not Used |
| K5 | MFEG MINOR | KR192 Pickup Box Auxiliary Endgate Latch Relay | — | • A100L Pickup Box Auxiliary Endgate Latch - Left (QK2+QT5)<br>• A100R Pickup Box Auxiliary Endgate Latch - Right (QK2+QT5) |
| K6 | MFEG MAJOR LO | KR191S Pickup Box Endgate Latch Relay - Supply Voltage | — | • A99L Pickup Box Endgate Latch - Left (QK2+QT5)<br>• A99R Pickup Box Endgate Latch - Right (QK2+QT5)<br>• M14A Pickup Box Endgate Lock Actuator (QK1+QT5) |
| K7 | NOT USED | — | — | • Not Used |
| K8 | NOT USED | — | — | • Not Used |

### X53AF Body Wiring Harness Junction Block Wire Entry View



6039722

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 35232561
- Service Connector: Service by Component Assembly - See Part Catalog
- Description: Wire Entry Fuse Block

## Terminal Part Information

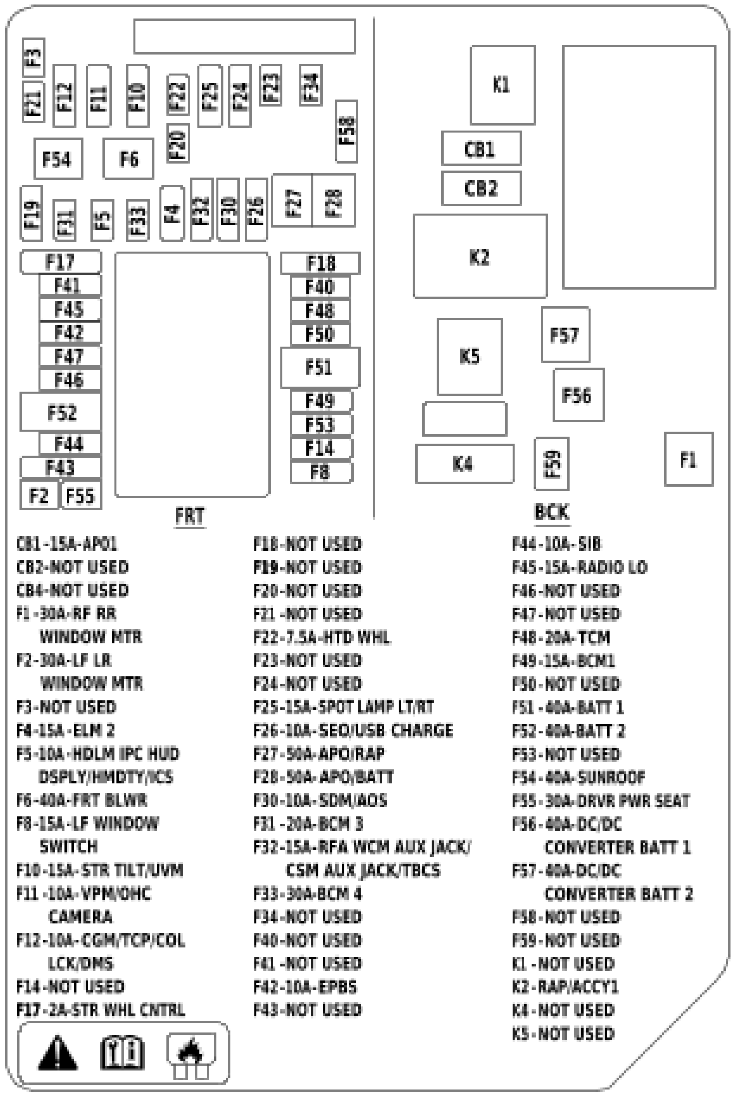
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 13575574 | J-35616-5 (PU) | J-38125-36 |
| II | 13578850 | J-35616-5 (PU) | J-38125-36 |
| III | 19332366 | J-35616-35 (VT) | J-38125-212 |
| IV | Not required | J-35616-22 (RD) | No Tool Required |

## X53AF Body Wiring Harness Junction Block Wire Entry View

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) WH / GN | (1) 7728 | (1) Major Endgate High Relay Control | (1) III | (1) — |
| (2) 2 | (2) 1 | (2) GN | (2) 1299 | (2) Major Endgate Motor Control | (2) III | (2) — |
| (5) 5 | (5) 1 | (5) VT | (5) 7725 | (5) Minor Endgate Motor Control | (5) III | (5) — |
| (7) 7 | (7) 0.75 | (7) WH / GY | (7) 7297 | (7) Minor Endgate High Relay Control | (7) III | (7) — |
| (8) 8 | (8) 1.5 | (8) BK | (8) 1550 | (8) Ground | (8) III | (8) — |
| (10) 10 | (10) 0.75 | (10) BU / VT | (10) 7729 | (10) Major Endgate Low Relay Control | (10) III | (10) — |
| (15) 15 | (15) 0.5 | (15) BK | (15) 1550 | (15) Ground | (15) III | (15) — |
| (16) 16 | (16) 1 | (16) RD / BN | (16) 8240 | (16) Battery Positive Voltage | (16) III | (16) — |
| (17) 17 | (17) 0.5 | (17) BK | (17) 1550 | (17) Ground | (17) III | (17) — |
| (18) 18 | (18) 1 | (18) YE / BK | (18) 7730 | (18) Major Endgate Motor Low Reference | (18) III | (18) — |
| (20) 20 | (20) 1 | (20) RD / BN | (20) 8240 | (20) Battery Positive Voltage | (20) III | (20) — |
| (21) 21 | (21) 0.5 | (21) BK | (21) 1550 | (21) Ground | (21) III | (21) — |
| (26) 26 | (26) 1 | (26) RD / BN | (26) 8240 | (26) Battery Positive Voltage | (26) II | (26) — |
| (27) 27 | (27) 0.75 | (27) RD / WH | (27) 5740 | (27) Battery Positive Voltage | (27) III | (27) — |
| (29) 29 | (29) 0.75 | (29) RD / BN | (29) 6640 | (29) Battery Positive Voltage | (29) III | (29) — |
| (30) 30 | (30) 10 | (30) RD / GY | (30) 142 | (30) Battery Positive Voltage | (30) IV | (30) — |
| (35) 35 | (35) 0.75 | (35) RD / BU | (35) 6740 | (35) Battery Positive Voltage | (35) III | (35) — |
| (37) 37 | (37) 0.75 | (37) RD / GN | (37) 6140 | (37) Battery Positive Voltage | (37) III | (37) — |
| (38) 38 | (38) 0.5 | (38) RD / YE | (38) 6540 | (38) Battery Positive Voltage | (38) III | (38) — |
| (41) 41 | (41) 0.5 | (41) RD / VT | (41) 2640 | (41) Battery Positive Voltage | (41) III | (41) — |
| (42) 42 | (42) 10 | (42) RD / GN | (42) 242 | (42) Battery Positive Voltage | (42) IV | (42) — |
| (44) 44 | (44) 2.5 | (44) RD / YE | (44) 7440 | (44) Battery Positive Voltage | (44) I | (44) — |
| (46) 46 | (46) 2.5 | (46) RD / VT | (46) 8640 | (46) Battery Positive Voltage | (46) I | (46) — |
| (48) 48 | (48) 0.5 | (48) RD / WH | (48) 4740 | (48) Battery Positive Voltage | (48) III | (48) — |
| (49) 49 | (49) 0.5 | (49) RD / BU | (49) 4540 | (49) Battery Positive Voltage | (49) III | (49) — |
| (50) 50 | (50) 2.5 | (50) RD / YE | (50) 3740 | (50) Battery Positive Voltage | (50) III | (50) — |
| (51) 51 | (51) 2.5 | (51) RD / VT | (51) 4442 | (51) Primary Fused Battery Positive Voltage | (51) III | (51) — |
| (52) 52 | (52) 0.5 | (52) RD / BN | (52) 2240 | (52) Battery Positive Voltage | (52) III | (52) — |

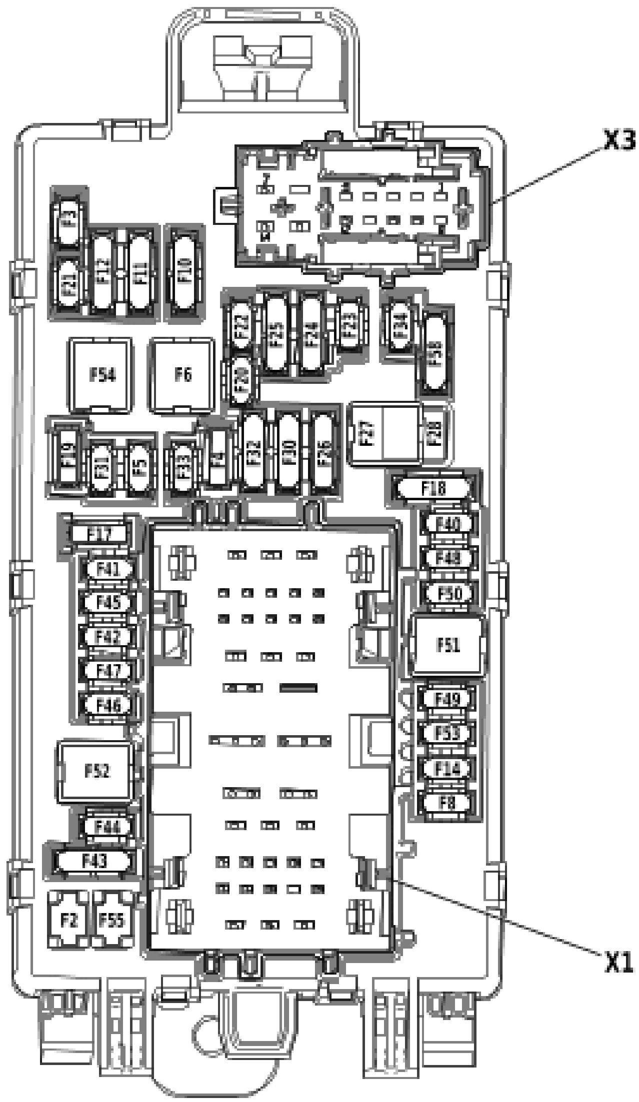
| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (57) 57 | (57) 2.5 | (57) RD / VT | (57) 8640 | (57) Battery Positive Voltage | (57) III | (57) — |
| (58) 58 | (58) 2.5 | (58) BK | (58) 1550 | (58) Ground | (58) III | (58) — |
| (59) 59 | (59) 0.5 | (59) BK | (59) 1550 | (59) Ground | (59) III | (59) — |
| (60) 60 | (60) 2.5 | (60) RD / VT | (60) 8640 | (60) Battery Positive Voltage | (60) III | (60) — |
| (61) 61 | (61) 2.5 | (61) BK | (61) 1550 | (61) Ground | (61) III | (61) — |
| (62) 62 | (62) 0.5 | (62) BK | (62) 1550 | (62) Ground | (62) III | (62) — |
| (71) 71 | (71) 0.5 | (71) YE / VT | (71) 6191 | (71) Power Rear Window Switch Open Signal | (71) III | (71) — |
| (72) 72 | (72) 2 | (72) VT / YE | (72) 7453 | (72) Window Motor Rear Auxiliary Open Control | (72) III | (72) — |
| (73) 73 | (73) 0.5 | (73) WH | (73) 6192 | (73) Sliding Rear Window Switch Close Signal | (73) III | (73) — |
| (74) 74 | (74) 2 | (74) YE | (74) 7454 | (74) Window Motor Rear Auxiliary Close Control | (74) III | (74) — |

### X51R Instrument Panel Wiring Harness Junction Block - Right Label




5969420

### X51R Instrument Panel Wiring Harness Junction Block - Right Top View




5041376

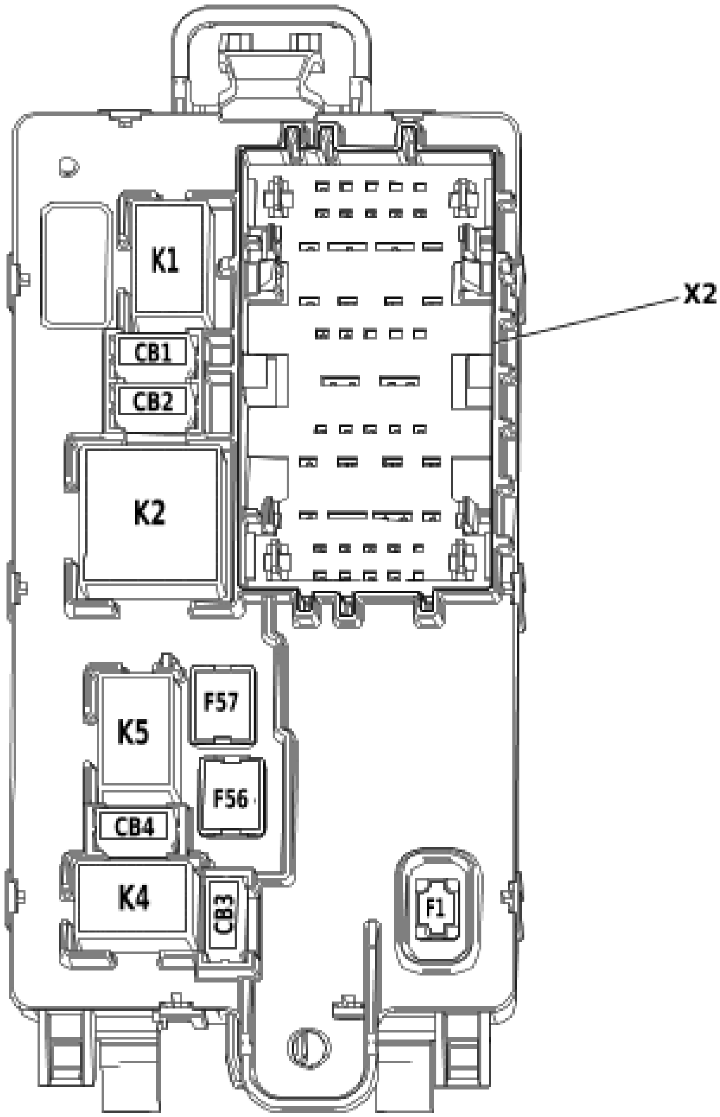
## Usage Table

| No. | Device Label Name | Device Assigned Name | Rating | Description |
|---|---|---|---|---|
| **Circuit Breakers** | | | | |
| CB4 | NOT USED | — | — | • Not Used |
| **Fuses** | | | | |
| F1 | RF RR WINDOW MTR | F1DR | 30A | • M74P Front Side Door Window Regulator Motor - Passenger (AEF)<br>• S79P Front Side Door Window Switch - Passenger (AED/AEF)<br>• S79RR Rear Side Door Window Switch - Right |

| No. | Device Label Name | Device Assigned Name | Rating | Description |
|---|---|---|---|---|
| F2 | LF LR WINDOW MTR | F2DR | 30A | • M74D Front Side Door Window Regulator Motor - Driver<br>• S79LR Rear Side Door Window Switch - Left |
| F3 | NOT USED | F3DR | — | • Not Used |
| F4 | ELM 2 | F4DR | 15A | • K219 Lighting Control Module |
| F5 | ELM 2 | F5DR | 10A | • K219 Lighting Control Module |
| F6 | FRT BLWR | F6DR | 40A | • M8 Blower Motor |
| F8 | LF WINDOW SWITCH | F8DR | 15A | • S79D Front Side Door Window Control Switch - Driver<br>• S32R Rear Seat Heater Switch (KA6) |
| F10 | STR TILT/UVM | F10DR | 15A | • K219 Lighting Control Module<br>• K56U Special Purpose Vehicle Control Module |
| F11 | VPM/OHC CAMERA | F11DR | 10A | • A103 Roof Console<br>• B174W Front View Camera - Windshield (UGN/UHY)<br>• K157 Video Processing Module (UV2) |
| F12 | CGM/TCP/COL LCK/DMS | F12DR | 10A | • K56 Serial Data Gateway Module<br>• K60 Column Lock Module<br>• K73 Telematic Control Module (UE1) |
| F14 | NOT USED | F14DR | — | • Not Used |
| F17 | STR WHL CNTRL | F17DR | 2A | • S70L Cruise Control Switch (KI3)<br>• S70R Radio Control Switch - Steering Wheel (KI3) |
| F18 | NOT USED | F18DR | — | • Not Used |
| F19 | NOT USED | F19DR | — | • Not Used |
| F20 | NOT USED | F20DR | — | • Not Used |
| F21 | NOT USED | F21DR | — | • Not Used |
| F22 | HTD WHL | F22DR | 7.5A | • K32 Steering Wheel Heating Control Module (KI3) |
| F23 | NOT USED | F23DR | — | • Not Used |
| F24 | NOT USED | F24DR | — | • Not Used |
| F25 | SPOT LAMP LT/RT | F25DR | 15A | • Not Used |
| F26 | SEO/USB CHARGE | F26DR | 10A | • X92CD Dual Charge Only Receptacle - Floor Console Rear (D07+UBI)<br>• X92FSR Dual Charge Only Receptacle - Front Center Seat Rear Cover (AZ3+UBI) |
| F27 | APO/RAP | F27DR | 50A | • Not Used |
| F28 | APO/BATT | F28DR | 50A | • Not Used |
| F30 | SDM/AOS | F30DR | 10A | • K85P Restraints Occupant Classification System Module - Passenger<br>• P16 Instrument Panel Cluster Control Module<br>• P29 Head-Up Display<br>• A22 Radio Control<br>• A26 Heater and Air Conditioning User Interface Control - Front<br>• B117A Windshield Outside Moisture/Ambient Light and Humidity Sensor |
| F31 | BCM 3 | F31DR | 20A | • K9 Body Control Module |

| No. | Device Label Name | Device Assigned Name | Rating | Description |
|---|---|---|---|---|
| F32 | RFA WCM AUX JACK/CSM AUX JACK/TBCS | F32DR | 15A | • A11 Radio (IOK)<br>• S76 Trailer Brake Control Switch<br>• T22 Wireless Accessory Charging Module (K4C)<br>• X83B Audio/Video Receptacle (D07)<br>• X92IP USB 2 Port Receptacle - Instrument Panel (d07)<br>• X92CF USB 2 Port Receptacle - Floor Console Front (UBD) |
| F33 | BCM 4 | F33DR | 30A | • K9 Body Control Module |
| F34 | NOT USED | F34DR | — | • Not Used |
| F40 | NOT USED | F40DR | — | • Not Used |
| F41 | NOT USED | F41DR | — | • Not Used |
| F42 | EPBS | F42DR | 10A | • S91 Parking Brake Control Switch |
| F43 | NOT USED | F43DR | — | • Not Used |
| F44 | SIB | F44DR | 10A | • Not Used |
| F45 | RADIO LO | F45DR | 15A | • A11 Radio (IOR) |
| F46 | NOT USED | F46DR | — | • Not Used |

### X51R Instrument Panel Wiring Harness Junction Block - Right Bottom View



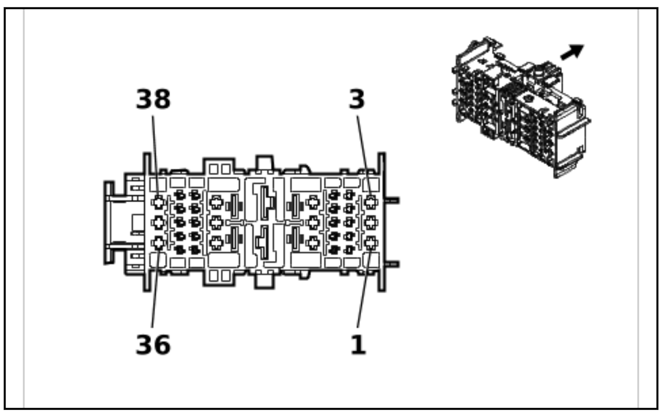

6094373

## Usage Table

| No. | Device Label Name | Device Assigned Name | Rating | Description |
|---|---|---|---|---|
| **Circuit Breakers** | | | | |
| CB1 | APO 1 | CB1DR | 15A | • X80G Accessory Power Receptacle - Instrument Panel (KC5) |
| CB2 | NOT USED | — | — | • Not Used |
| **Fuses** | | | | |
| F47 | NOT USED | F47DR | — | • Not Used |
| F48 | TCM | F48DR | 20A | • K71 Transmission Control Module |
| F49 | BCM 1 | F49DR | 15A | • K9 Body Control Module |
| F50 | NOT USED | F50DR | — | • Not Used |

| No. | Device Label Name | Device Assigned Name | Rating | Description |
|---|---|---|---|---|
| F51 | BATT 1 | F51DR | 40A | • Not Used |
| F52 | BATT 2 | F52DR | 40A | • Not Used |
| F53 | NOT USED | F53DR | — | • Not Used |
| F54 | SUNROOF | F54DR | 40A | • K61 Sunroof Control Module (CF5) |
| F55 | DRVR PWR SEAT | F55DR | 30A | • K40D Driver Seat Adjuster Memory Module (A45)<br>• S64D Front Seat Adjuster Switch - Driver (-A45) |
| F56 | DC/DC CONVERTER BATT 1 | F56DR | 40A | • Not Used |
| F57 | DC/DC CONVERTER BATT 2 | F57DR | 40A | • Not Used |
| F58 | NOT USED | F58DR | — | • Not Used |
| F59 | NOT USED | F59DR | — | • Not Used |
| **Relays** | | | | |
| K1 | NOT USED | — | — | • Not Used |
| K2 | RAP/ACCY 1 | KR76 Accessory Time Delay Cutoff Relay | — | • CB1DR<br>• F26DR |
| K4 | NOT USED | — | — | • Not Used |
| K5 | NOT USED | — | — | • Not Used |

**X51R Instrument Panel Wiring Harness Junction Block - Right X1**




5402140

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 35729471
- Service Connector: 85791494
- Description: 38-Way F 1.5, 2.8, 6.3 MCP, 9.5 MCON-LL Series( BU)

## Terminal Part Information

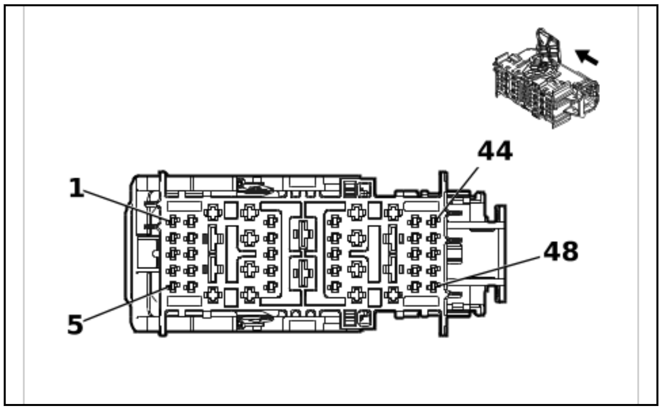
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 19332366 | J-35616-35 (VT) | J-38125-212 |
| II | 19371175 | J-35616-2A (GY) | EL-38125-560A |

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| III | 84764079 | J-35616-22 (RD) | J-38125-11A |
| IV | Not required | J-35616-22 (RD) | No Tool Required |

## X51R Instrument Panel Wiring Harness Junction Block - Right X1

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 - 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 1.5 | (3) RD / GN | (3) 1840 | (3) Battery Positive Voltage | (3) I | (3) — |
| (4) 4 | (4) 0.75 | (4) RD / VT | (4) 2640 | (4) Battery Positive Voltage | (4) II | (4) — |
| (5) 5 | (5) 0.5 | (5) RD / GN | (5) 4440 | (5) Battery Positive Voltage | (5) II | (5) — |
| (6) 6 | (6) 0.35 | (6) VT | (6) 4701 | (6) Retained Accessory Power Control | (6) II | (6) — |
| 7 - 13 | — | — | — | Not Occupied | — | — |
| (14) 14 | (14) 0.5 | (14) RD / VT | (14) 1640 | (14) Battery Positive Voltage | (14) I | (14) — |
| 15 - 18 | — | — | — | Not Occupied | — | — |
| (19) 19 | (19) 5 | (19) RD / YE | (19) 1442 | (19) Battery Positive Voltage | (19) III | (19) — |
| (20) 20 | (20) 10 | (20) RD / WH | (20) 342 | (20) Battery Positive Voltage | (20) IV | (20) — |
| 21 - 22 | — | — | — | Not Occupied | — | — |
| (23) 23 | (23) 2.5 | (23) RD / GY | (23) 4840 | (23) Battery Positive Voltage | (23) I | (23) — |
| (24) 24 | (24) 2.5 | (24) RD / BN | (24) 4240 | (24) Battery Positive Voltage | (24) I | (24) — |
| (25) 25 | (25) 2.5 | (25) RD / BU | (25) 3240 | (25) Battery Positive Voltage | (25) I | (25) — |
| 26 - 29 | — | — | — | Not Occupied | — | — |
| (30) 30 | (30) 0.5 | (30) RD / BU | (30) 1240 | (30) Battery Positive Voltage | (30) II | (30) — |
| 31 - 35 | — | — | — | Not Occupied | — | — |
| (36) 36 | (36) 2.5 | (36) RD / YE | (36) 5040 | (36) Battery Positive Voltage | (36) I | (36) — |
| (37) 37 | (37) 2.5 | (37) RD / GY | (37) 3540 | (37) Battery Positive Voltage | (37) I | (37) — |
| 38 | — | — | — | Not Occupied | — | — |

### X51R Instrument Panel Wiring Harness Junction Block - Right X2




5403539

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 35264616
- Service Connector: 19371180
- Description: 48-Way F 1.5, 2.8, 6.3 CTS Series( GN)

## Terminal Part Information

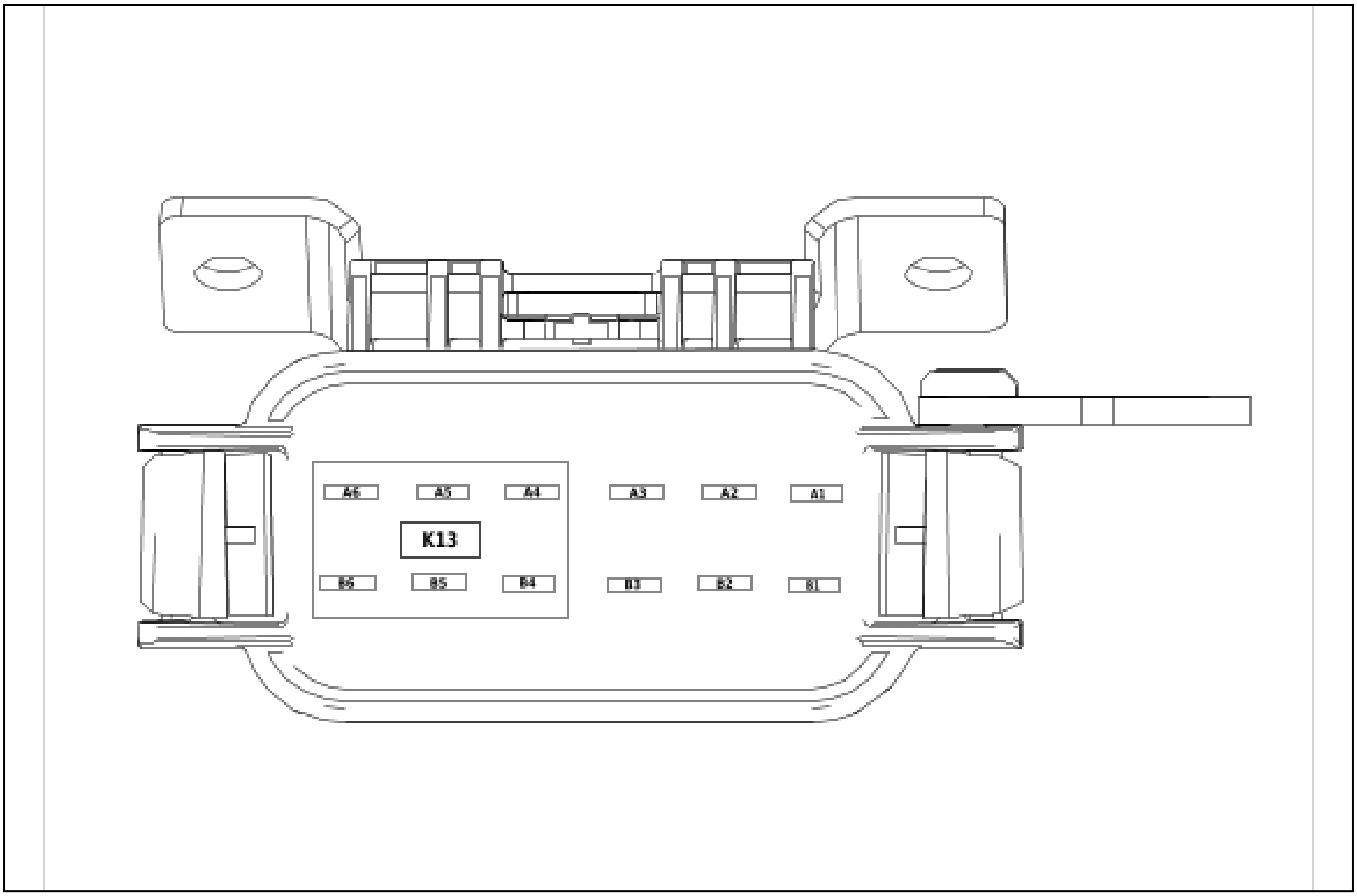
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 19369711 | J-35616-14 (GN) | J-38125-557 |
| II | 84764078 | J-35616-42 (RD) | J-38125-221 |
| III | 84779405 | J-35616-35 (VT) | J-38125-212 |

## X51R Instrument Panel Wiring Harness Junction Block - Right X2

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) BK | (1) 1050 | (1) Ground | (1) I | (1) — |
| 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 0.35 | (3) GY / GN | (3) 4083 | (3) Retained Accessory Power Relay 2 Coil Control | (3) I | (3) — |
| 4 - 7 | — | — | — | Not Occupied | — | — |
| (8) 8 | (8) 0.5 | (8) RD / GN | (8) 7740 | (8) Battery Positive Voltage | (8) I | (8) — |
| (9) 9 | (9) 0.5 | (9) RD / YE | (9) 240 | (9) Battery Positive Voltage | (9) I | (9) — |
| 10 - 13 | — | — | — | Not Occupied | — | — |
| (14) 14 | (14) 0.5 | (14) RD / YE | (14) 3040 | (14) Battery Positive Voltage | (14) III | (14) — |
| (15) 15 | (15) 0.5 | (15) RD / BN | (15) 1004 0 | (15) Battery Positive Voltage | (15) III | (15) — |
| (16) 16 | (16) 0.7 5 | (16) RD / VT | (16) 4640 | (16) Battery Positive Voltage | (16) III | (16) — |
| 17 | — | — | — | Not Occupied | — | — |
| (18) 18 | (18) 0.3 5 | (18) RD / VT | (18) 3340 | (18) Battery Positive Voltage | (18) III | (18) — |
| 19 - 23 | — | — | — | Not Occupied | — | — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (24) 24 | (24) 4 | (24) RD / GY | (24) 1740 | (24) Battery Positive Voltage | (24) II | (24) — |
| (25) 25 | (25) 2.5 | (25) RD / BU | (25) 4540 | (25) Battery Positive Voltage | (25) II | (25) — |
| 26 | — | — | — | Not Occupied | — | — |
| (27) 27 | (27) 0.5 | (27) RD / YE | (27) 2340 | (27) Battery Positive Voltage | (27) I | (27) — |
| (28) 28 | (28) 0.5 | (28) RD / WH | (28) 1340 | (28) Battery Positive Voltage | (28) I | (28) — |
| 29 - 30 | — | — | — | Not Occupied | — | — |
| (31) 31 | (31) 1.5 | (31) VT | (31) 1001 | (31) Retained Accessory Power Ignition Voltage | (31) III | (31) — |
| (32) 32 | (32) 2 | (32) RD / BU | (32) 2540 | (32) Battery Positive Voltage | (32) III | (32) — |
| (33) 33 | (33) 0.5 | (33) RD / VT | (33) 7140 | (33) Battery Positive Voltage | (33) III | (33) — |
| (34) 34 | (34) 1 | (34) RD / GY | (34) 2140 | (34) Battery Positive Voltage | (34) III | (34) — |
| (35) 35 | (35) 0.5 | (35) RD / GN | (35) 1540 | (35) Battery Positive Voltage | (35) III | (35) — |
| 36 | — | — | — | Not Occupied | — | — |
| (37) 37 | (37) 1 | (37) RD / GY | (37) 2840 | (37) Battery Positive Voltage | (37) II | (37) — |
| 38 - 40 | — | — | — | Not Occupied | — | — |
| (41) 41 | (41) 0.35 | (41) RD / GN | (41) 5140 | (41) Battery Positive Voltage | (41) I | (41) — |
| (42) 42 | (42) 0.35 | (42) RD / YE | (42) 4340 | (42) Battery Positive Voltage | (42) I | (42) — |
| 43 - 44 | — | — | — | Not Occupied | — | — |
| (45) 45 | (45) 0.5 | (45) RD / WH | (45) 2740 | (45) Battery Positive Voltage | (45) I | (45) — |
| 46 - 48 | — | — | — | Not Occupied | — | — |

### X54 Accessory Wiring Junction Block - Snow Plow Top View (VYU)

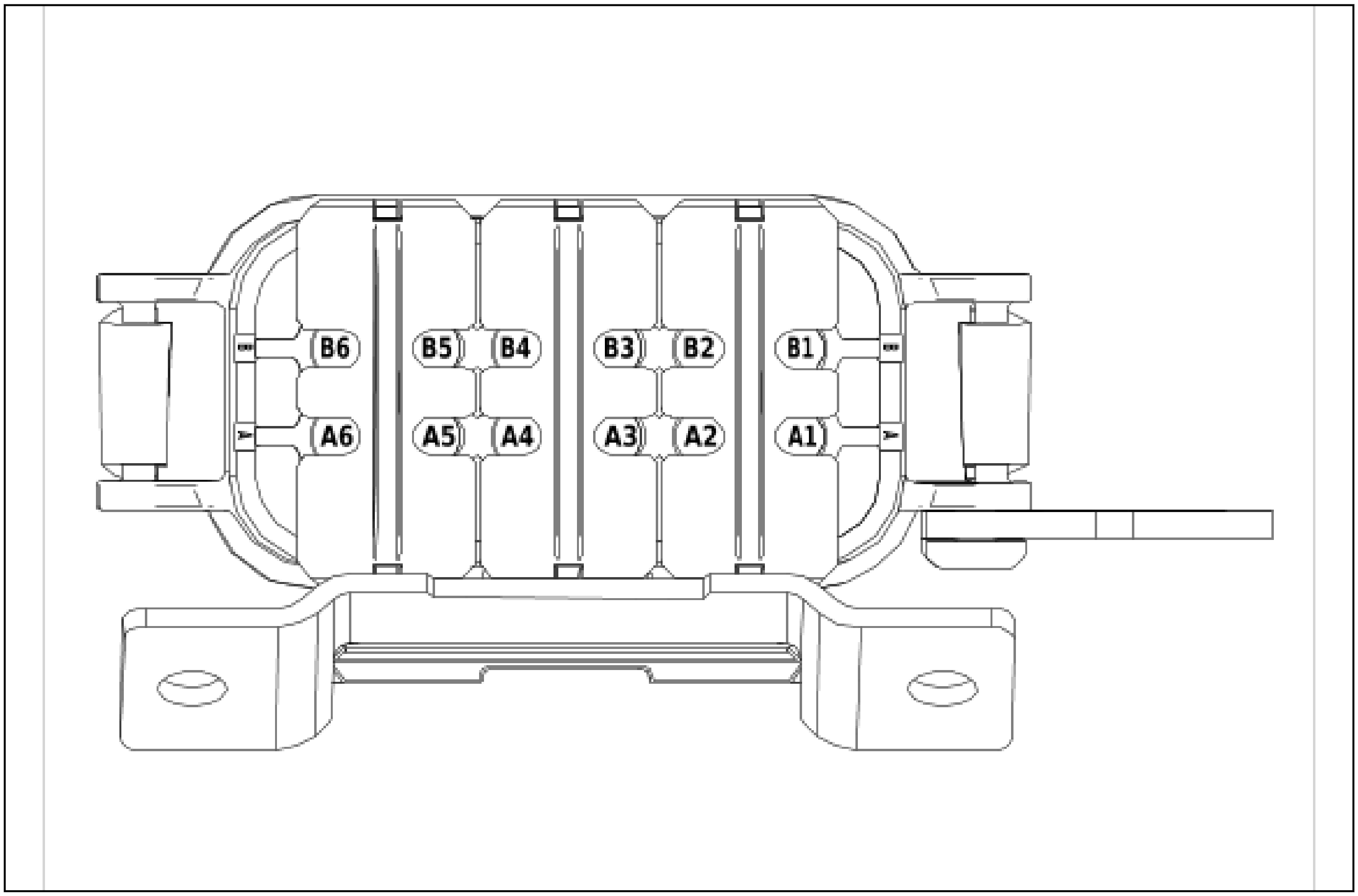



6471250

## Usage Table

| No. | Device Label Name | Device Assigned Name | Rating | Description |
|---|---|---|---|---|
| **Relays** | | | | |
| K13 | — | KR181 Snow Plow Relay | — | • G13 Generator<br>• G13A Auxiliary Generator |

## X54 Accessory Wiring Junction Block - Snow Plow (VYU)




6470466

**Connector Part Information**

- Harness Type: Accessory Wiring Harness
- OEM Connector: 35028846
- Service Connector: Service by Component Assembly - See Part Catalog
- Description: Wire Entry Fuse Block

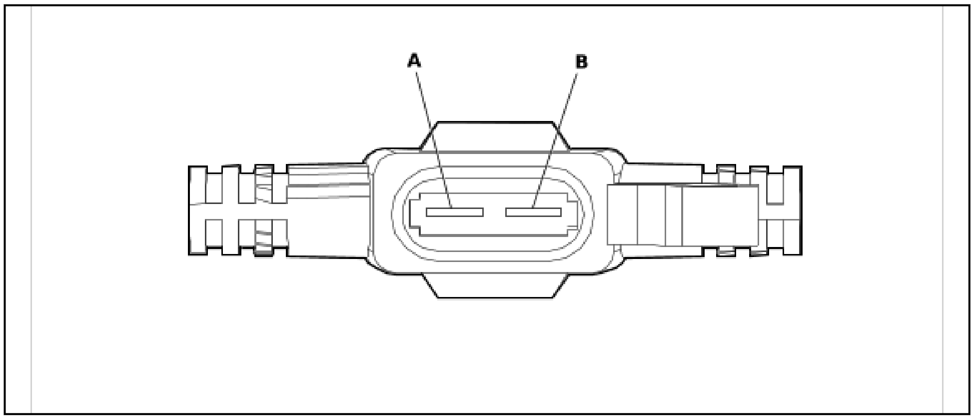
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-4A (PU) | No Tool Required |

### X54 Accessory Wiring Junction Block - Snow Plow (VYU)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| A4 | 0.5 | BN | 25 | Charge Indicator Control | I | — |
| A6 | 0.75 | GY / VT | 9026 | — | I | — |
| B4 | 0.75 | BN | 25 | Charge Indicator Control | I | — |
| B5 | 0.5 | BN | 25 | Charge Indicator Control | I | — |

### X55SP Wiring Harness Fuse Holder - Snow Plow (VYU)




6465868

**Connector Part Information**
- Harness Type: Accessory Wiring Harness
- OEM Connector: 0FHM0003ZXJH
- Service Connector: Service by Component Assembly - See Part Catalog
- Description: Wire Entry Fuse Holder

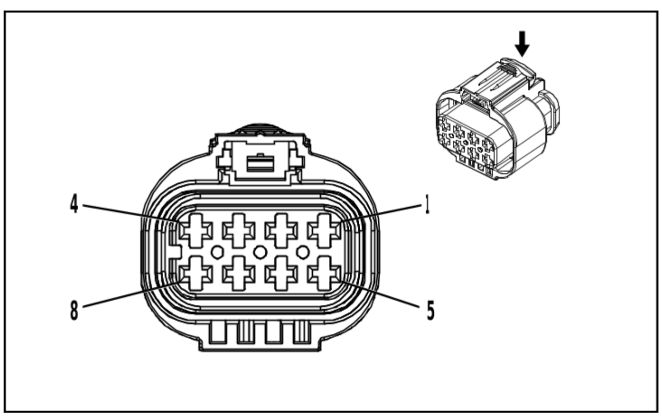
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## X55SP Wiring Harness Fuse Holder - Snow Plow (VYU)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| A | 1 | OG | 9026 | — | I | — |
| B | 1 | BARE | 9028 | — | I | — |

### A7 Fuel Tank Fuel Pump Module




3749582

**Connector Part Information**
- Harness Type: Chassis Wiring Harness
- OEM Connector: 2-2109441-5
- Service Connector: 19354078
- Description: 8-Way F 2.8 Series, Sealed( L-GY)

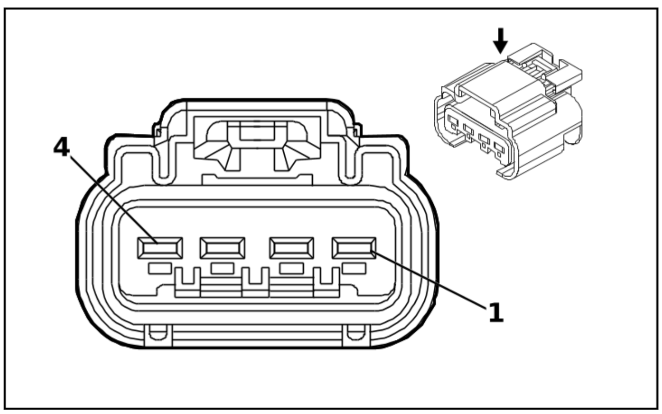
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-35 (VT) | No Tool Required |
| II | Not required | J-35616-4A (PU) | No Tool Required |

## A7 Fuel Tank Fuel Pump Module

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 2.5 | (1) GY | (1) 120 | (1) Fuel Pump Control | (1) I | (1) — |
| (2) 2 | (2) 2.5 | (2) YE / GY | (2) 4137 | (2) Fuel Pump Supply Voltage Phase 2 | (2) I | (2) — |
| (3) 3 | (3) 2.5 | (3) WH / BN | (3) 4138 | (3) Fuel Pump Supply Voltage Phase 3 | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) WH | (4) 7444 | (4) Fuel Pump Assembly Shield Ground | (4) II | (4) — |
| (5) 5 | (5) 0.5<br>(5) 0.75 | (5) BU / GN<br>(5) BU / GN | (5) 1936<br>(5) 1936 | (5) Primary Fuel Level Sensor Signal<br>(5) Primary Fuel Level Sensor Signal | (5) II<br>(5) II | (5) FHS<br>(5) FHS |
| (6) 6 | (6) 0.5 | (6) BK / GN | (6) 6281 | (6) Fuel Level Sensor Low Reference | (6) II | (6) — |
| 7 - 8 | — | — | — | Not Occupied | — | — |

### A7AX Fuel Tank Fuel Pump Module - Auxiliary (L8T)




5199377

**Connector Part Information**

- Harness Type: Chassis Wiring Harness
- OEM Connector: 13843236
- Service Connector: 84769204
- Description: 4-Way F 280 GT Series, Sealed( NA)

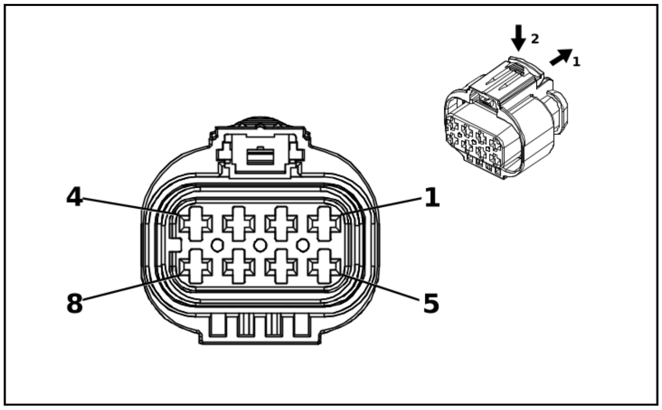
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-4A (PU) | No Tool Required |

## A7AX Fuel Tank Fuel Pump Module - Auxiliary (L8T)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 1 | (1) BU / GN | (1) 2120 | (1) Secondary Fuel Pump Control | (1) I | (1) — |
| (2) 2 | (2) 1 | (2) BK / GN | (2) 1580 | (2) Fuel Pump Low Reference | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BU / WH | (3) 1937 | (3) Secondary Fuel Level Sensor Signal | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) BK / BU | (4) 6282 | (4) Fuel Level Sensor 2 Low Reference | (4) I | (4) — |

### A7AX Fuel Tank Fuel Pump Module - Auxiliary (N2N)




3749581

**Connector Part Information**

- Harness Type: Chassis Wiring Harness
- OEM Connector: 2109441-4
- Service Connector: 19355165
- Description: 8-Way F 2.8 Series, Sealed( BK)

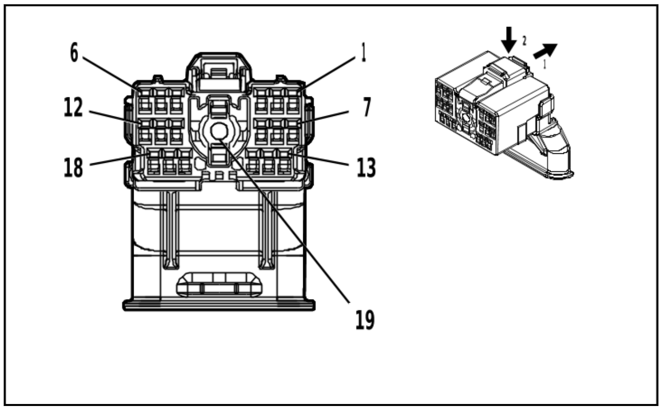
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-4A (PU) | No Tool Required |

## A7AX Fuel Tank Fuel Pump Module - Auxiliary (N2N)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 - 4 | — | — | — | Not Occupied | — | — |
| (5) 5 | (5) 0.5 | (5) BU / WH | (5) 1937 | (5) Secondary Fuel Level Sensor Signal | (5) I | (5) — |
| (6) 6 | (6) 0.5 | (6) BK / BU | (6) 6282 | (6) Fuel Level Sensor 2 Low Reference | (6) I | (6) — |
| 7 - 8 | — | — | — | Not Occupied | — | — |

### A9A Outside Rearview Mirror - Driver X1




4991775

**Connector Part Information**

- Harness Type: Front Side Door Door Wiring Harness - Left
- OEM Connector: 6098-8388
- Service Connector: Service by Harness - See Part Catalog
- Description: 19-Way F 1.2 MCON, Coaxial Series( BK)

## Terminal Part Information

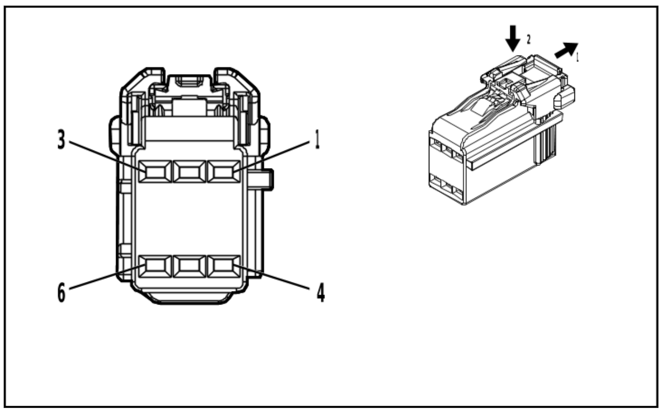
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |
| II | Not required | J-35616-16 (L-GN) | No Tool Required |
| III | Service by Cable | No Tool Required | No Tool Required |

## A9A Outside Rearview Mirror - Driver X1

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BN / BK | (1) 2790 | (1) Left Front Mirror Motor Right [+] Left [-] Control | (1) II | (1) — |
| (2) 2 | (2) 0.5 | (2) VT / BU | (2) 2788 | (2) Left Front Mirror Motor Up [+] Down [-] Control | (2) II | (2) — |
| (3) 3 | (3) 0.5 | (3) WH / GN | (3) 2786 | (3) Left Front Mirror Motor Fold In Control | (3) II | (3) — |
| (4) 4 | (4) 0.5 | (4) GY / YE | (4) 1760 | (4) Left Side Object Detection LED Control | (4) II | (4) — |
| (5) 5 | (5) 0.5 | (5) WH / GN | (5) 5966 | (5) Approach Lamp Control | (5) II | (5) — |
| (6) 6 | (6) 0.5 | (6) BN / GN | (6) 4246 | (6) Identification Lamp Control | (6) II | (6) — |
| (7) 7 | (7) 0.5 | (7) WH | (7) 606 | (7) Left Outside Rearview Mirror Heater Control | (7) II | (7) — |
| (8) 8 | (8) 0.5 | (8) WH / GY | (8) 2114 | (8) Left Turn Signal Lamp Control 2 | (8) II | (8) — |
| (9) 9 | (9) 0.5 | (9) BK | (9) 1550 | (9) Ground | (9) II | (9) — |
| 10 | — | — | — | Not Occupied | — | — |
| (11) 11 | (11) 0.35 | (11) YE / GY | (11) 2933 | (11) Task Lamp Control Left | (11) I | (11) — |
| (12) 12 | (12) 0.5 | (12) BK / YE | (12) 1691 | (12) Automatic Day/Night Mirror Low Reference | (12) II | (12) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (13) 13 | (13) 0.5 | (13) BU / YE | (13) 7761 | (13) Backup Illumination Lamp Control | (13) II | (13) — |
| (14) 14 | (14) 0.5 | (14) YE / BN | (14) 2789 | (14) Left Front Mirror Motor Common Control | (14) II | (14) — |
| (15) 15 | (15) 0.5 | (15) GY / WH | (15) 2785 | (15) Left Front Mirror Motor Fold Out Control | (15) II | (15) — |
| 16 | — | — | — | Not Occupied | — | — |
| (17) 17 | (17) 0.5 | (17) YE / WH | (17) 1690 | (17) Mirror Dimming Signal | (17) II | (17) — |
| 18 | — | — | — | Not Occupied | — | — |
| (19) 19 | (19) 0 | (19) Coax Cable | (19) 4725 | (19) Left Sideview Camera LVDS (Low Voltage Differential Signaling) Coaxial Signal | (19) III | (19) — |

**A9A Outside Rearview Mirror - Driver X2**




4862126

**Connector Part Information**

- Harness Type: Front Side Door Door Wiring Harness - Left
- OEM Connector: 6098-8996
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 1.2 Series( BK)

## Terminal Part Information

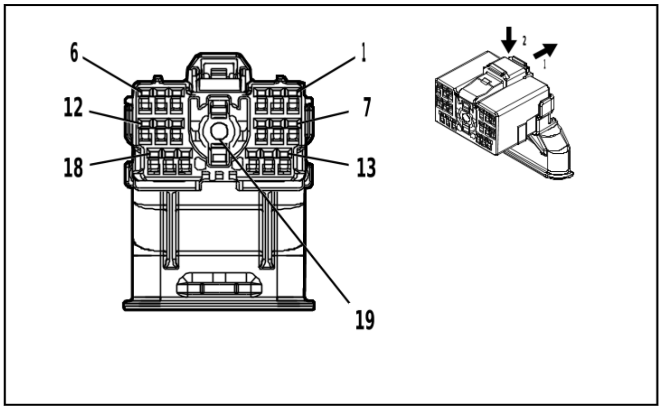
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## A9A Outside Rearview Mirror - Driver X2

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) WH / YE | (1) 2792 | (1) Left Front Mirror Position Sensor Left [-] Right [+] Signal | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) VT / RD | (2) 2791 | (2) Left Front Mirror Position Sensor High Reference | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) GY / BN | (3) 2787 | (3) Left Front Mirror Position Sensor Up [+] Down [-] Signal | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) BK / BN | (4) 673 | (4) Left Outside Rearview Mirror Position Sensor Low Reference | (4) I | (4) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (5) 5 | (5) 0.5 | (5) BN | (5) 10201 | (5) Left Front Mirror Motor Extend Control | (5) I | (5) — |
| (6) 6 | (6) 0.5 | (6) WH / BK | (6) 10202 | (6) Left Front Mirror Motor Retract Control | (6) I | (6) — |

**A9B Outside Rearview Mirror - Passenger X1**




4991775

**Connector Part Information**

- Harness Type: Front Side Door Door Wiring Harness - Right
- OEM Connector: 6098-8388
- Service Connector: Service by Harness - See Part Catalog
- Description: 19-Way F 1.2 MCON, Coaxial Series( BK)

## Terminal Part Information

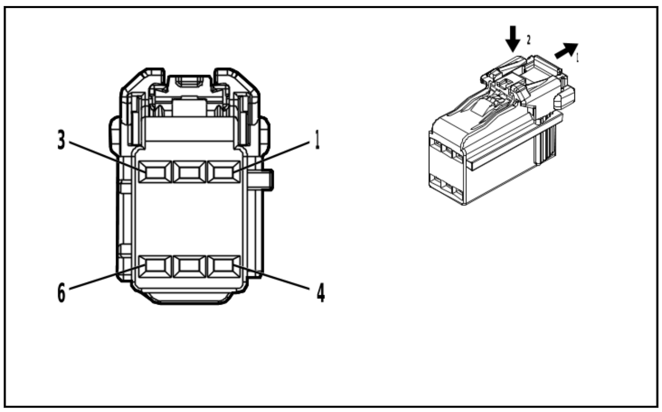
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |
| II | Not required | J-35616-16 (L-GN) | No Tool Required |
| III | Service by Cable | No Tool Required | No Tool Required |

## A9B Outside Rearview Mirror - Passenger X1

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) GN / BK | (1) 2798 | (1) Right Front Mirror Motor Right [+] Left [-] Control | (1) II | (1) — |
| (2) 2 | (2) 0.5 | (2) YE / VT | (2) 2796 | (2) Right Front Mirror Motor Up [+] Down [-] Control | (2) II | (2) — |
| (3) 3 | (3) 0.5 | (3) BU / GY | (3) 2794 | (3) Right Front Mirror Motor Fold In Control | (3) II | (3) — |
| (4) 4 | (4) 0.5 | (4) GY | (4) 1761 | (4) Right Side Object Detection LED Control | (4) II | (4) — |
| (5) 5 | (5) 0.5 | (5) WH / GN | (5) 5966 | (5) Approach Lamp Control | (5) II | (5) — |
| (6) 6 | (6) 0.5 | (6) BN / GN | (6) 4246 | (6) Identification Lamp Control | (6) II | (6) — |
| (7) 7 | (7) 0.5 | (7) BN / VT | (7) 607 | (7) Right Outside Rearview Mirror Heater Control | (7) II | (7) — |
| (8) 8 | (8) 0.5 | (8) GN / GY | (8) 2115 | (8) Right Turn Signal Lamp Control 2 | (8) II | (8) — |
| (9) 9 | (9) 0.75 | (9) BK | (9) 1350 | (9) Ground | (9) II | (9) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (10) 10 | (10) 0.5 | (10) BU / GY | (10) 636 | (10) Ambient Air Temperature Sensor Signal | (10) II | (10) — |
| (11) 11 | (11) 0.35 | (11) YE / WH | (11) 2934 | (11) Task Lamp Control Right | (11) I | (11) — |
| (12) 12 | (12) 0.5 | (12) BK / YE | (12) 1691 | (12) Automatic Day/Night Mirror Low Reference | (12) II | (12) — |
| (13) 13 | (13) 0.5 | (13) BU / YE | (13) 7761 | (13) Backup Illumination Lamp Control | (13) II | (13) — |
| (14) 14 | (14) 0.5 | (14) WH | (14) 2797 | (14) Right Front Mirror Motor Common Control | (14) II | (14) — |
| (15) 15 | (15) 0.5 | (15) YE / WH | (15) 2793 | (15) Right Front Mirror Motor Fold Out Control | (15) II | (15) — |
| 16 | — | — | — | Not Occupied | — | — |
| (17) 17 | (17) 0.5 | (17) YE / WH | (17) 1690 | (17) Mirror Dimming Signal | (17) II | (17) — |
| (18) 18 | (18) 0.5 | (18) BK / GY | (18) 626 | (18) Engine Control Vehicle Sensors Low Reference 1 | (18) II | (18) — |
| (19) 19 | (19) 0 | (19) Coax Cable | (19) 4724 | (19) Right Sideview Camera LVDS (Low Voltage Differential Signaling) Coaxial Signal | (19) III | (19) — |

**A9B Outside Rearview Mirror - Passenger X2**




4862126

**Connector Part Information**

- Harness Type: Front Side Door Door Wiring Harness - Right
- OEM Connector: 6098-8996
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 1.2 Series( BK)

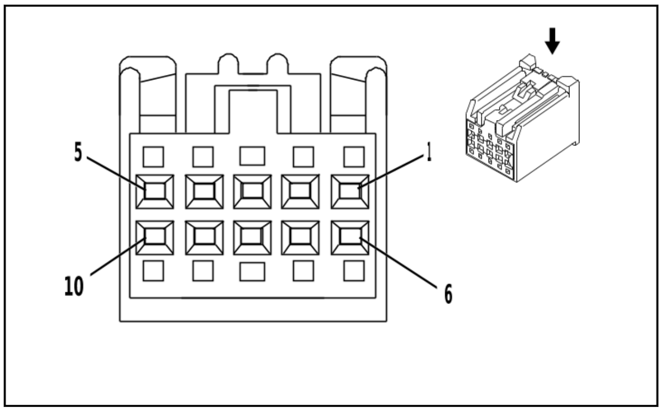
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## A9B Outside Rearview Mirror - Passenger X2

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) VT / WH | (1) 2800 | (1) Right Front Mirror Position Sensor Left [-] Right [+] Signal | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) YE / RD | (2) 2799 | (2) Right Front Mirror Position Sensor High Reference | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BU / YE | (3) 2795 | (3) Right Front Mirror Position Sensor Up [+] Down [-] Signal | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) BK / GN | (4) 675 | (4) Right Outside Rearview Mirror Position Sensor Low Reference | (4) I | (4) — |
| (5) 5 | (5) 0.5 | (5) BN / GN | (5) 10203 | (5) Right Front Mirror Motor Extend Control | (5) I | (5) — |
| (6) 6 | (6) 0.5 | (6) VT | (6) 10204 | (6) Right Front Mirror Motor Retract Control | (6) I | (6) — |

### A10 Inside Rearview Mirror X1




2180211

**Connector Part Information**
- Harness Type: Dome Lamp Wiring Harness
- OEM Connector: AIT2PB-10P-2AK
- Service Connector: 13577390
- Description: 10-Way F 0.64 Kaizen Series( BK)

## Terminal Part Information

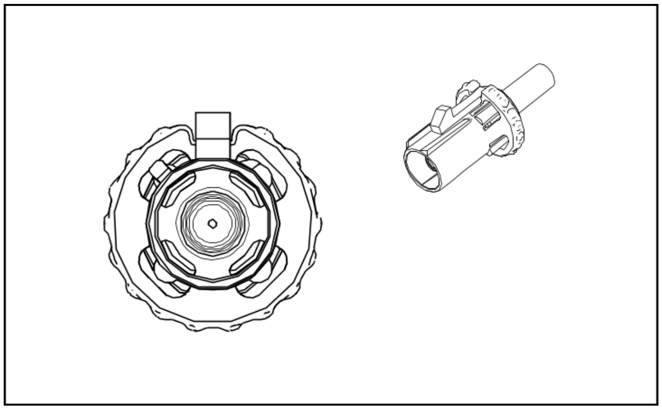
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 13575742 | J-35616-64B (L-BU) | J-38125-215A |

## A10 Inside Rearview Mirror X1

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) GN / WH | (1) 24 | (1) Backup Lamp Control | (1) I | (1) — |
| (2) 2 | (2) 0.35<br>(2) 0.5 | (2) VT / BK<br>(2) VT / BK | (2) 339<br>(2) 339 | (2) Run/Crank Ignition 1 Voltage<br>(2) Run/Crank Ignition 1 Voltage | (2) I<br>(2) I | (2) —<br>(2) — |
| 3 - 4 | — | — | — | Not Occupied | — | — |
| (5) 5 | (5) 0.5 | (5) BK / WH | (5) 851 | (5) Signal Ground | (5) I | (5) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (6) 6 | (6) 0.35 | (6) GY / YE | (6) 6972 | (6) Rearview Camera Signal [+] | (6) I | (6) — |
| (7) 7 | (7) 0.35 | (7) WH / BU | (7) 6973 | (7) Rearview Camera Signal [-] | (7) I | (7) — |
| (8) 8 | (8) 0.35 | (8) BK / YE | (8) 1691 | (8) Automatic Day/Night Mirror Low Reference | (8) I | (8) — |
| (9) 9 | (9) 0.35 | (9) YE / WH | (9) 1690 | (9) Mirror Dimming Signal | (9) I | (9) — |
| 10 | — | — | — | Not Occupied | — | — |

**A10 Inside Rearview Mirror X2 (DRZ)**



4109605

**Connector Part Information**

- Harness Type: Rearview Driver Information Camera Rear Closure Coaxial Cable
- OEM Connector: 13581672
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way M Coax Type( BK)

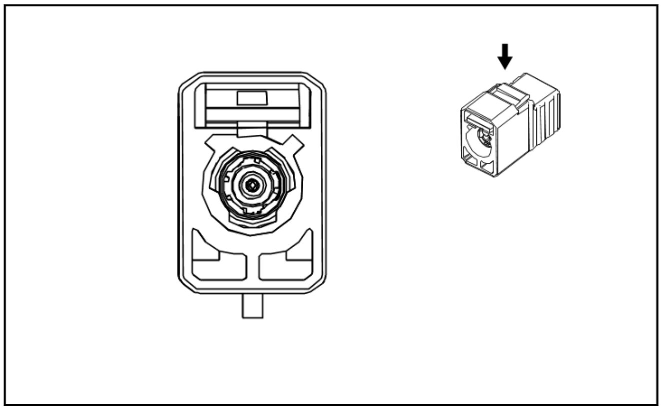
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## A10 Inside Rearview Mirror X2 (DRZ)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| BK | — | Coax Cable | — | — | I | — |

### A11 Radio X1 (IOK)



2893647

**Connector Part Information**
- Harness Type: Radio Antenna Cable Extension Cable COAX
- OEM Connector: 3FA1-NASJ-C01W0
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type( BK)

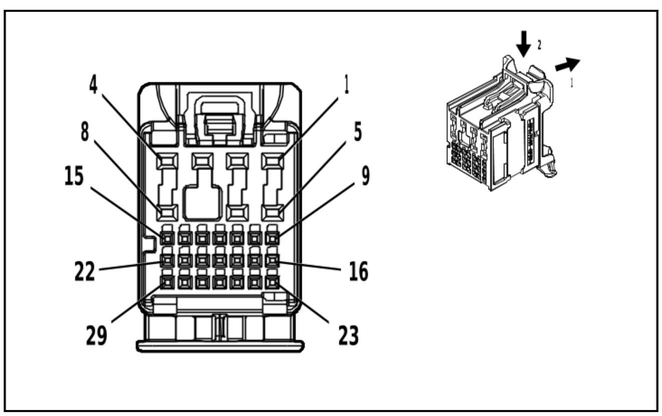
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## A11 Radio X1 (IOK)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| — | — | Coax Cable | — | (AM/FM) Antenna RF Signal | I | — |

### A11 Radio X1 (IOR)




4584346

**Connector Part Information**
- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 160014-0012
- Service Connector: 13534972
- Description: 29-Way F 0.5 NANO, 1.2 MCON Series( GN)

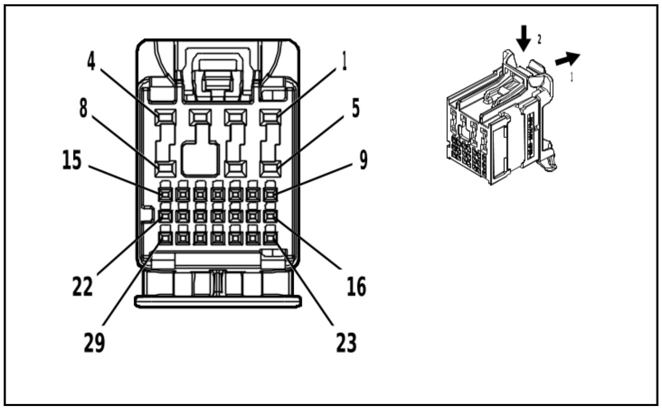
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 84729890 | J-35616-12 (BU) | J-38125-215A |

## A11 Radio X1 (IOR)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) RD / GY | (1) 2840 | (1) Battery Positive Voltage | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) RD / GY | (2) 2840 | (2) Battery Positive Voltage | (2) I | (2) — |
| (3) 3 | (3) 0.75 | (3) BK / WH | (3) 1051 | (3) Signal Ground | (3) I | (3) — |
| (4) 4 | (4) 0.35 | (4) BU / RD | (4) 11246 | (4) Infotainment Display 5 Volt Reference | (4) I | (4) — |
| (5) 5 | (5) 0.35 | (5) BK / WH | (5) 11252 | (5) Infotainment Display Low Reference | (5) I | (5) — |
| (6) 6 | (6) 0.75 | (6) BK / WH | (6) 1051 | (6) Signal Ground | (6) I | (6) — |
| 7 | — | — | — | Not Occupied | — | — |
| (8) 8 | (8) 0.75 | (8) GN / BK | (8) 116 | (8) Left Rear Speaker [-] Control | (8) I | (8) — |
| (9) 9 | (9) 0.35 | (9) GY / BU | (9) 11247 | (9) Infotainment Display LCD Enable Signal | (9) I | (9) — |
| 10 | — | — | — | Not Occupied | — | — |
| (11) 11 | (11) 0.35 | (11) GN / WH | (11) 24 | (11) Backup Lamp Control | (11) I | (11) — |
| 12 - 14 | — | — | — | Not Occupied | — | — |
| (15) 15 | (15) 0.35 | (15) BU / GY | (15) 11244 | (15) Radio Switch Dimming Control | (15) I | (15) — |
| 16 | — | — | — | Not Occupied | — | — |
| (17) 17 | (17) 0.35 | (17) BU / WH | (17) 4985 | (17) AUTOSAR CAN Bus [+] 5 Serial Data | (17) I | (17) — |
| (18) 18 | (18) 0.35 | (18) BU / YE | (18) 4984 | (18) AUTOSAR CAN Bus [-] 5 Serial Data | (18) I | (18) — |
| 19 - 20 | — | — | — | Not Occupied | — | — |
| (21) 21 | (21) 0.35 | (21) GY / VT | (21) 11249 | (21) Infotainment Display Backlight Enable Control | (21) I | (21) — |
| (22) 22 | (22) 0.35 | (22) BU / GN | (22) 11248 | (22) Infotainment Display Backlight Dimming Control | (22) I | (22) — |
| 23 | — | — | — | Not Occupied | — | — |
| (24) 24 | (24) 0.35 | (24) BN / WH | (24) 11233 | (24) Radio Switch Power ON/OFF Switch Signal | (24) I | (24) — |
| (25) 25 | (25) 0.35 | (25) VT / WH | (25) 11245 | (25) Radio Switch Buttons Signal | (25) I | (25) — |
| (26) 26 | (26) 0.35 | (26) BU | (26) 11235 | (26) Radio Switch Volume Up Signal | (26) I | (26) — |
| (27) 27 | (27) 0.35 | (27) GY / BN | (27) 11234 | (27) Radio Switch Volume Down Signal | (27) I | (27) — |
| 28 - 29 | — | — | — | Not Occupied | — | — |

### A11 Radio X2 (IOR)




4584398

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 160014-0013
- Service Connector: 13534973
- Description: 29-Way F 0.5 NANO, 1.2 MCON, stAK50h Series( LT GY with GY Inner Connector)

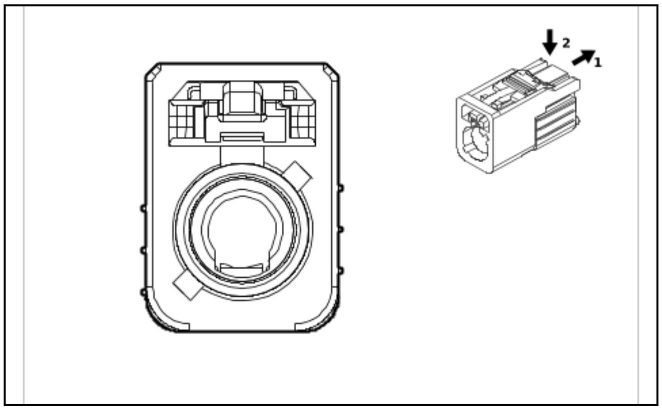
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 84729890 | J-35616-12 (BU) | J-38125-215A |

## A11 Radio X2 (IOR)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) GN | (1) 199 | (1) Left Rear Speaker [+] Control | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) BU | (2) 201 | (2) Left Front Speaker 1 [+] Control | (2) I | (2) — |
| (3) 3 | (3) 0.75 | (3) YE | (3) 200 | (3) Right Front Speaker 1 [+] Control | (3) I | (3) — |
| (4) 4 | (4) 0.75 | (4) BU / BK | (4) 115 | (4) Right Rear Speaker [-] Control | (4) I | (4) — |
| (5) 5 | (5) 0.75 | (5) BN / BU | (5) 118 | (5) Left Front Speaker [-] Control 1 | (5) I | (5) — |
| (6) 6 | (6) 0.75 | (6) YE / BK | (6) 117 | (6) Right Front Speaker [-] Control 1 | (6) I | (6) — |
| 7 | — | — | — | Not Occupied | — | — |
| (8) 8 | (8) 0.75 | (8) WH | (8) 46 | (8) Right Rear Speaker [+] Control | (8) I | (8) — |
| (9) 9 | (9) 0.35 | (9) BK / GY | (9) 5152 | (9) Voice Recognition Audio [-] Control | (9) I | (9) — |
| (10) 10 | (10) 0.35 | (10) GY / YE | (10) 5149 | (10) Voice Recognition Audio Signal | (10) I | (10) — |
| 11 - 29 | — | — | — | Not Occupied | — | — |

### A11 Radio X2 (IOK)




5793980

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness COAX
- OEM Connector: 13516046
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type( BU)

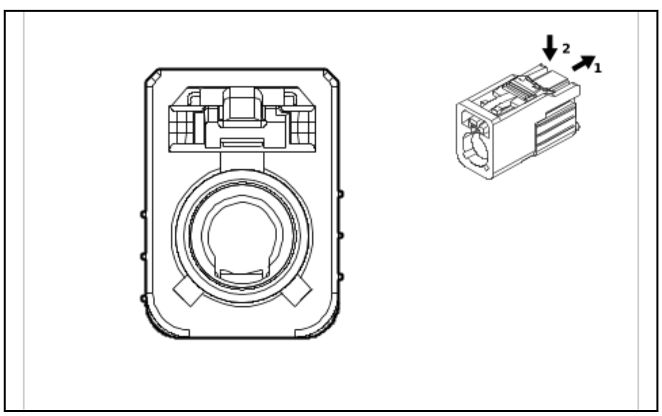
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## A11 Radio X2 (IOK)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| — | — | Coax Cable | — | (GPS only) Coaxial Antenna GPS Signal | I | — |

### A11 Radio X3 (IOK)




5794617

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness COAX
- OEM Connector: 33340318
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type( CU)

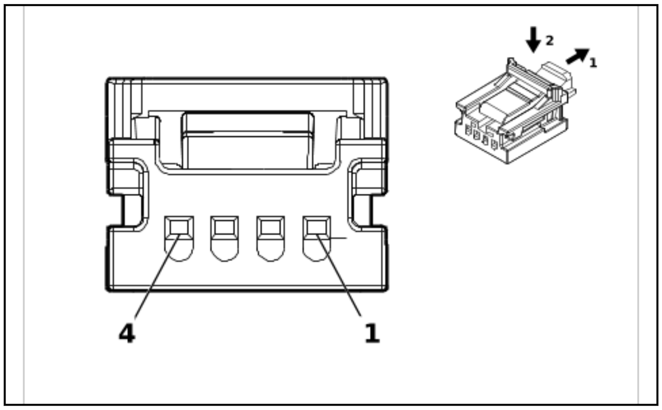
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## A11 Radio X3 (IOK)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| — | — | Coax Cable | — | (XM +/-HD) Coaxial Antenna XM Signal | I | — |

### A11 Radio X3 (IOR)




5493278

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 34791-5140
- Service Connector: 19354840
- Description: 4-Way F Mini 50 Series( BK)

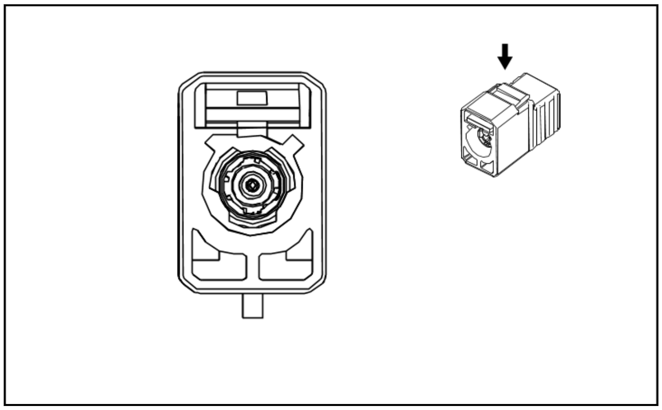
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Service by Cable | EL-35616-58 (BK) | EL-38125-58 |

## A11 Radio X3 (IOR)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 | — | — | — | Not Occupied | — | — |
| (2) 2 | (2) 0.35 | (2) YE | (2) 4758 | (2) Ethernet Bus 2 [+] | (2) I | (2) — |
| (3) 3 | (3) 0.35 | (3) BU | (3) 4757 | (3) Ethernet Bus 2 [-] | (3) I | (3) — |
| 4 | — | — | — | Not Occupied | — | — |

### A11 Radio X4 (IOK)



2893647

**Connector Part Information**
- Harness Type: Radio Antenna Cable Extension Cable COAX
- OEM Connector: 3FA1-NASJ-C01W0
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type( BK)

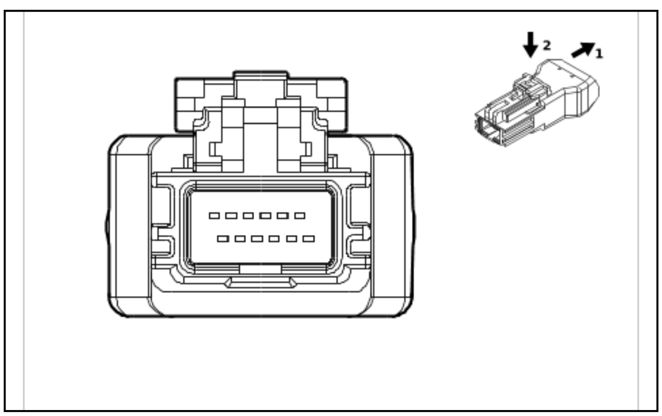
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## A11 Radio X4 (IOK)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| — | — | Coax Cable | — | (DAB/DMB) Coaxial Antenna DAB Signal | I | — |

### A11 Radio X4 (IOR)




6410264

**Connector Part Information**
- Harness Type: Instrument Panel Wiring Harness LVDS
- OEM Connector: 111146-3000
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 12-Way M 2.0 HSAL-2 Series( BK)

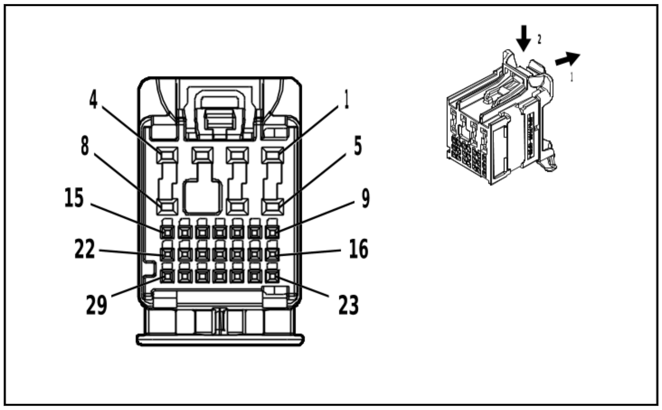
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## A11 Radio X4 (IOR)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| — | — | LVDS | — | Center Stack LVDS (Low Voltage Differential Signaling) Low Reference | I | — |

### A11 Radio X5 (IOK)




4496253

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 160014-0014
- Service Connector: 13534974
- Description: 29-Way F 0.5 NANO, 1.2 MCON, stAK50h Series( BK with GY Inner Connector)

## Terminal Part Information

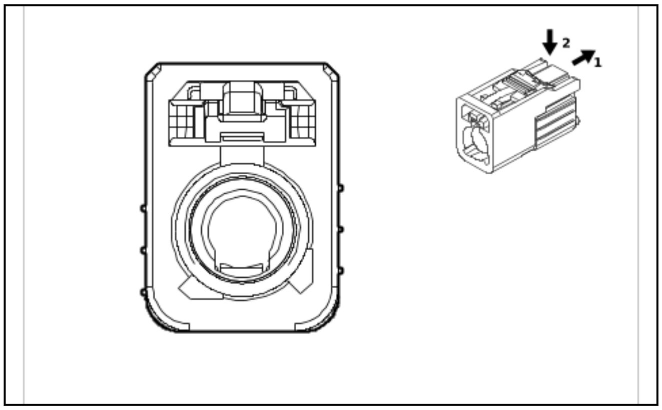
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 84729890 | J-35616-12 (BU) | J-38125-215A |

## A11 Radio X5 (IOK)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) RD / YE | (1) 2340 | (1) Battery Positive Voltage | (1) I | (1) — |
| 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 0.75 | (3) BK / WH | (3) 1051 | (3) Signal Ground | (3) I | (3) — |
| 4 - 7 | — | — | — | Not Occupied | — | — |
| (8) 8 | (8) 0.75 | (8) GN / BK | (8) 116 | (8) Left Rear Speaker [-] Control | (8) I | (8) — |
| (9) 9 | (9) 0.35 | (9) GY / YE | (9) 5149 | (9) Voice Recognition Audio Signal | (9) I | (9) — |
| (10) 10 | (10) 0.35 | (10) BK / GY | (10) 5152 | (10) Voice Recognition Audio [-] Control | (10) I | (10) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (11) 11 | (11) 0.35 | (11) VT / YE | (11) 7043 | (11) Microphone [+] Signal | (11) I | (11) — |
| (12) 12 | (12) 0.35 | (12) BU / BK | (12) 7044 | (12) Microphone [-] Signal | (12) I | (12) — |
| 13 - 29 | — | — | — | Not Occupied | — | — |

**A11 Radio X5 (IOR)**




5191842

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness COAX
- OEM Connector: 33340320
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type( OG)

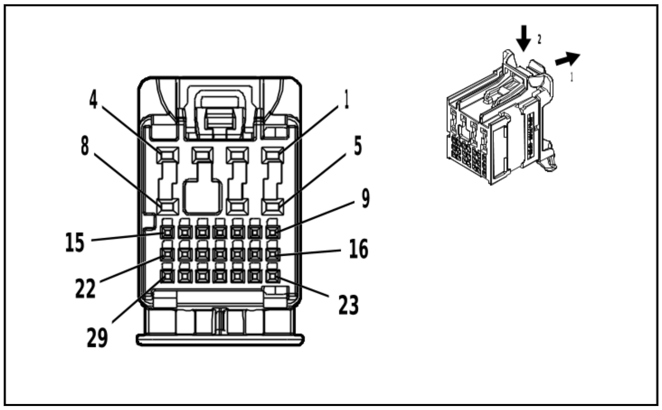
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## A11 Radio X5 (IOR)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| — | — | Coax Cable | — | Rear Vision Camera Coaxial Video Signal | I | — |

## A11 Radio X6 (IOK)




4578560

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 160014-0011
- Service Connector: 13534971
- Description: 29-Way F 0.5 NANO, 1.2 MCON, stAK50h Series( DK-GY with GY Inner Connector)

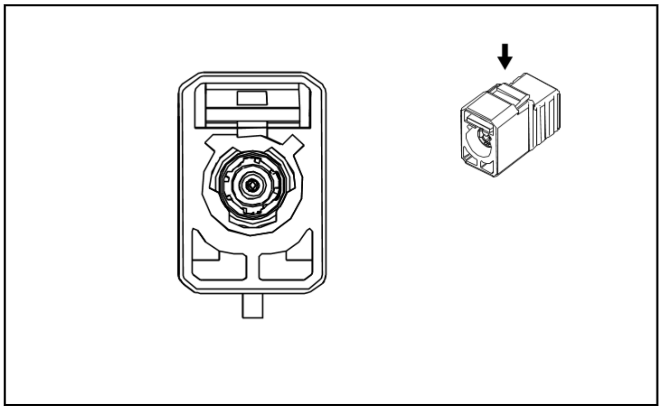
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 84729890 | J-35616-12 (BU) | J-38125-215A |

### A11 Radio X6 (IOK)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) GN | (1) 199 | (1) Left Rear Speaker [+] Control | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) BU | (2) 201 | (2) Left Front Speaker 1 [+] Control | (2) I | (2) — |
| (3) 3 | (3) 0.75 | (3) YE / BK | (3) 117 | (3) Right Front Speaker [-] Control 1 | (3) I | (3) — |
| (4) 4 | (4) 0.75 | (4) BU / BK | (4) 115 | (4) Right Rear Speaker [-] Control | (4) I | (4) — |
| (5) 5 | (5) 0.75 | (5) BN / BU | (5) 118 | (5) Left Front Speaker [-] Control 1 | (5) I | (5) — |
| (6) 6 | (6) 0.75 | (6) YE | (6) 200 | (6) Right Front Speaker 1 [+] Control | (6) I | (6) — |
| 7 | — | — | — | Not Occupied | — | — |
| (8) 8 | (8) 0.75 | (8) WH | (8) 46 | (8) Right Rear Speaker [+] Control | (8) I | (8) — |
| (9) 9 | (9) 0.35 | (9) BU / WH | (9) 4985 | (9) AUTOSAR CAN Bus [+] 5 Serial Data | (9) I | (9) — |
| (10) 10 | (10) 0.35 | (10) BU / YE | (10) 4984 | (10) AUTOSAR CAN Bus [-] 5 Serial Data | (10) I | (10) — |
| 11 - 12 | — | — | — | Not Occupied | — | — |
| (13) 13 | (13) 0.35 | (13) GN / WH | (13) 24 | (13) Backup Lamp Control | (13) I | (13) — |
| 14 - 29 | — | — | — | Not Occupied | — | — |

### A11 Radio X6 (IOR)



2893647

**Connector Part Information**
- Harness Type: Radio Antenna Cable Extension Cable COAX
- OEM Connector: 3FA1-NASJ-C01W0
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type( BK)

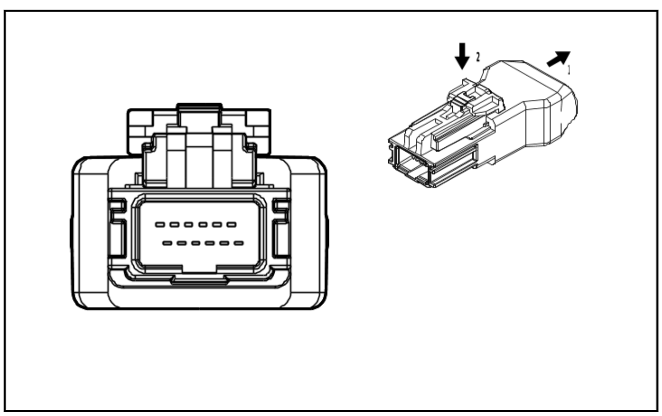
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## A11 Radio X6 (IOR)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| — | — | Coax Cable | — | (AM/FM) Antenna RF Signal | I | — |

### A11 Radio X7 (IOK)




4584321

**Connector Part Information**
- Harness Type: Instrument Panel Wiring Harness LVDS
- OEM Connector: 111146-7100
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 12-Way M 2.0 HSAL-2 Series( GY)

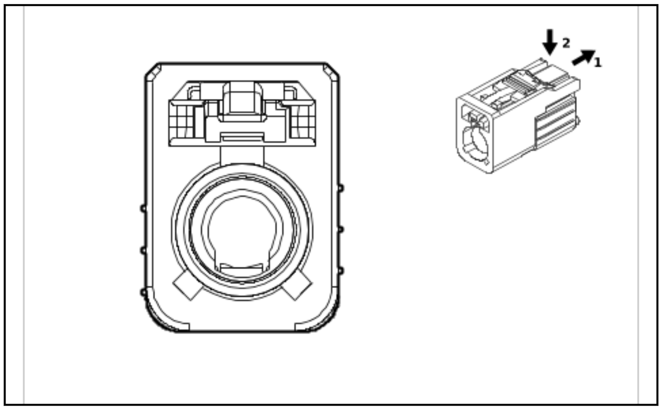
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## A11 Radio X7 (IOK)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| — | — | LVDS | — | Center Stack LVDS (Low Voltage Differential Signaling) Low Reference | I | — |

### A11 Radio X7 (IOR)




5794617

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness COAX
- OEM Connector: 33340318
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type( CU)

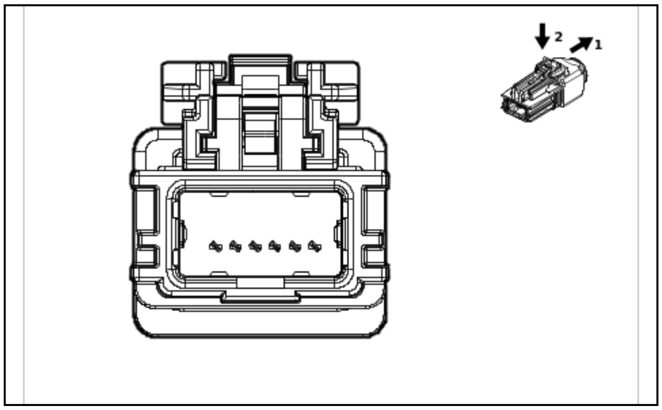
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## A11 Radio X7 (IOR)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| — | — | Coax Cable | — | (XM +/-HD) Coaxial Antenna XM Signal | I | — |

### A11 Radio X8 (IOK)




5987912

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness USB
- OEM Connector: 111146-7050
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 12-Way M 2.0 HSAL-2 Series( BK)

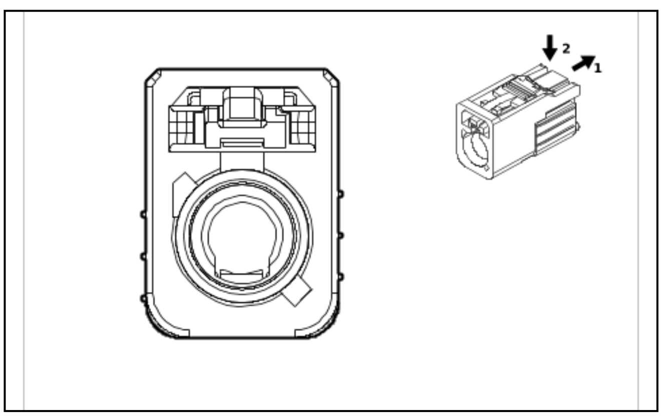
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## A11 Radio X8 (IOK)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| — | — | USB | — | USB Serial Data | I | — |

### A11 Radio X8 (IOR)




5518456

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness COAX
- OEM Connector: 33340317
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type( BG)

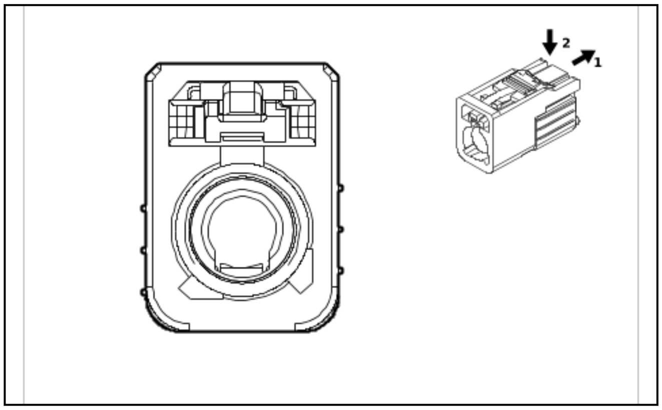
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## A11 Radio X8 (IOR)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| — | — | Coax Cable | — | WiFi Antenna Coaxial Signal | I | — |

### A11 Radio X9 (IOK)




5191842

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness COAX
- OEM Connector: 33340320
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type( OG)

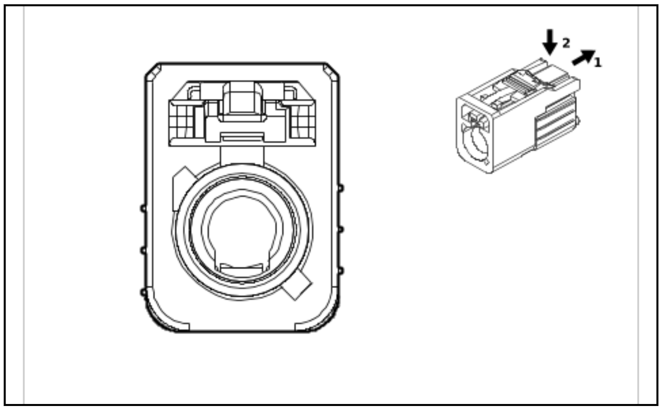
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## A11 Radio X9 (IOK)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| — | — | Coax Cable | — | Rear Vision Camera Coaxial Video Signal | I | — |

## A11 Radio X10 (IOK)




5518456

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness COAX
- OEM Connector: 33340317
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type( BG)

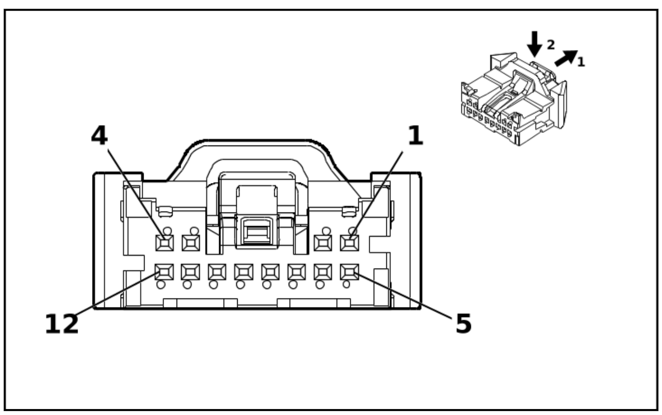
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

### A11 Radio X10 (IOK)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| — | — | Coax Cable | — | WiFi Antenna Coaxial Signal | I | — |

## A11 Radio X11 (IOK)




5360826

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 35068239
- Service Connector: 13529935
- Description: 12-Way F 050 CTS Series( BK)

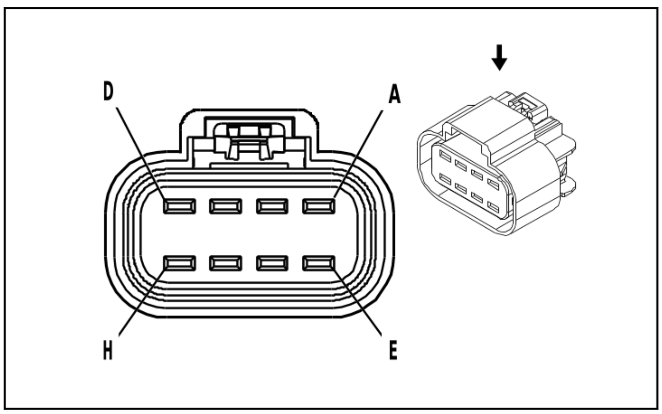
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Service by Cable | EL-35616-58 (BK) | EL-38125-58 |

## A11 Radio X11 (IOK)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 - 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 0.35 | (3) YE | (3) 4758 | (3) Ethernet Bus 2 [+] | (3) I | (3) — |
| (4) 4 | (4) 0.35 | (4) BU | (4) 4757 | (4) Ethernet Bus 2 [-] | (4) I | (4) — |
| 5 - 7 | — | — | — | Not Occupied | — | — |
| (8) 8 | (8) 0.35 | (8) YE | (8) 7215 | (8) Ethernet Bus 6 [+] | (8) I | (8) — |
| (9) 9 | (9) 0.35 | (9) GN | (9) 7214 | (9) Ethernet Bus 6 [-] | (9) I | (9) — |
| 10 | — | — | — | Not Occupied | — | — |
| (11) 11 | (11) 0.35 | (11) BN | (11) 7211 | (11) Ethernet Bus 4 [+] | (11) I | (11) — |
| (12) 12 | (12) 0.35 | (12) GY | (12) 7210 | (12) Ethernet Bus 4 [-] | (12) I | (12) — |

### A16 Transfer Case Four Wheel Drive Actuator




646372

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 13538370
- Service Connector: 19369184
- Description: 8-Way F 280 GT Series, Sealed( BK)

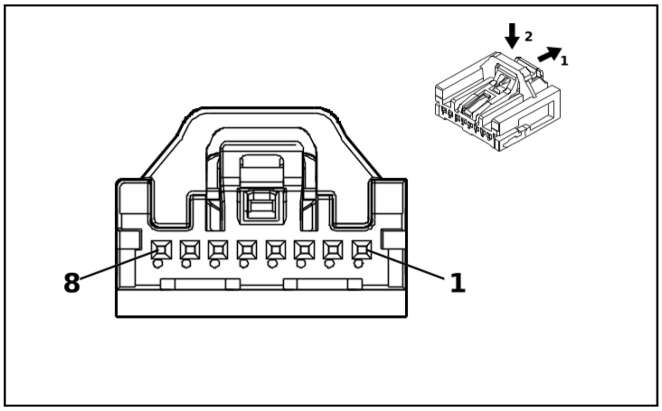
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-4A (PU) | No Tool Required |

## A16 Transfer Case Four Wheel Drive Actuator

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| A | 2.5 | YE / GY | 1552 | Transfer Case Motor Clockwise Control | I | — |
| B | 0.75 | BU | 8013 | Transfer Case Lock Solenoid Control 2 | I | — |
| C | 0.75 | YE / BN | 1569 | Transfer Case Lock Solenoid Valve Control | I | — |
| D | 2.5 | YE / VT | 1553 | Transfer Case Motor Counter Clockwise Control | I | — |
| E | 0.5 | YE | 7474 | Incremental Encoder Direction Signal | I | — |
| F | 0.5 | BU / GY | 7473 | Incremental Encoder Impulse Signal | I | — |
| G | 0.5 | WH / GN | 7475 | Incremental Encoder Sensor Voltage Reference | I | — |
| H | 0.5 | VT | 7476 | Incremental Encoder Sensor Low Reference | I | — |

### A22 Radio Control X1 (IOK)




5200269

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 35068228
- Service Connector: 84769201
- Description: 8-Way F Mini 50 Series( BK)

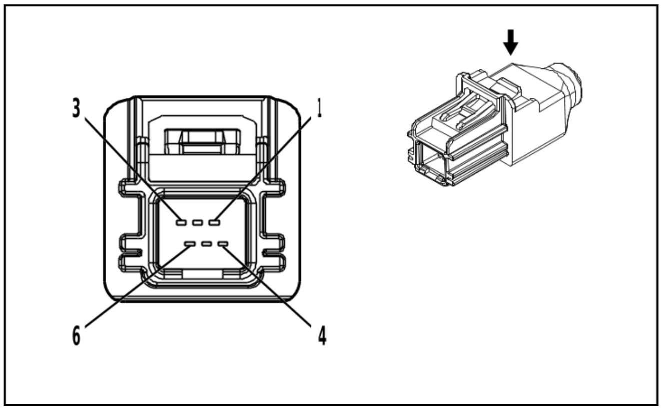
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | EL-35616-58 (BK) | No Tool Required |

## A22 Radio Control X1 (IOK)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) RD / WH | (1) 1340 | (1) Battery Positive Voltage | (1) I | (1) — |
| 2 - 7 | — | — | — | Not Occupied | — | — |
| (8) 8 | (8) 0.35 | (8) BK / WH | (8) 1051 | (8) Signal Ground | (8) I | (8) — |

### A22 Radio Control X2 (IOK)




4806625

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 100337-1020
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 6-Way M HSAL-2 Series( BK)

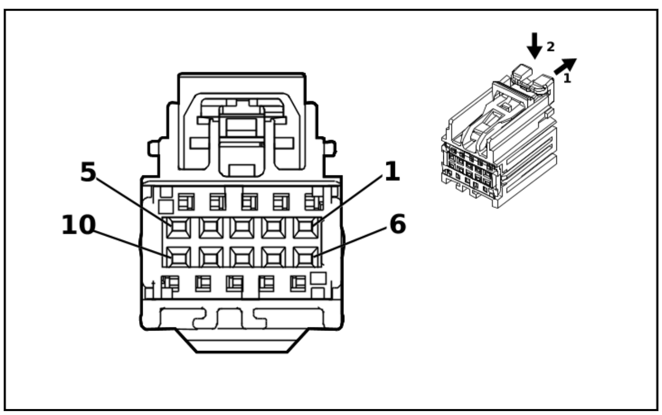
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## A22 Radio Control X2 (IOK)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| BK | — | BARE | LVDS | Low Voltage Differential Signaling | I | — |

### A23D Front Side Door Latch - Driver




4622549

**Connector Part Information**

- Harness Type: Front Side Door Door Wiring Harness - Left
- OEM Connector: 7289-5068-60
- Service Connector: Service by Harness - See Part Catalog
- Description: 10-Way F 0.64 Kaizen Series( GN)

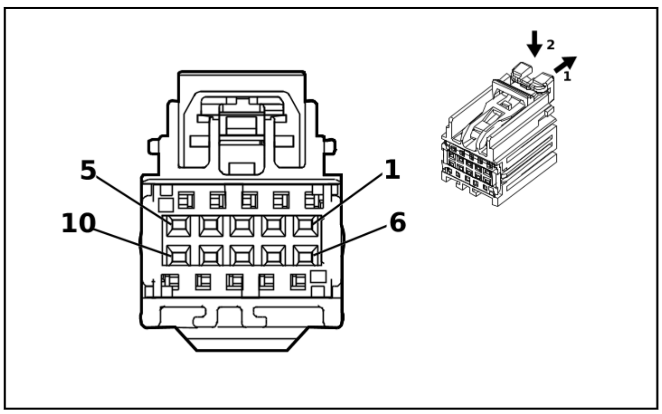
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## A23D Front Side Door Latch - Driver

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) GY | (1) 745 | (1) Left Front Door Ajar Switch Signal | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) VT / GY | (2) 126 | (2) Left Front Door Open Switch Signal | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BK | (3) 1550 | (3) Ground | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) WH / VT | (4) 4258 | (4) Left Front Door Lock Status Signal | (4) I | (4) — |
| 5 - 6 | — | — | — | Not Occupied | — | — |
| (7) 7 | (7) 0.75 | (7) GY | (7) 2681 | (7) Left Front Door Lock Actuator Lock Control | (7) I | (7) — |
| (8) 8 | (8) 0.75 | (8) WH | (8) 2679 | (8) Lock Actuators Unlock Control 1 | (8) I | (8) — |
| 9 - 10 | — | — | — | Not Occupied | — | — |

### A23LR Rear Side Door Latch - Left




4622549

**Connector Part Information**

- Harness Type: Rear Side Door Door Wiring Harness - Left
- OEM Connector: 7289-5068-60
- Service Connector: Service by Harness - See Part Catalog
- Description: 10-Way F 0.64 Kaizen Series( GN)

## Terminal Part Information

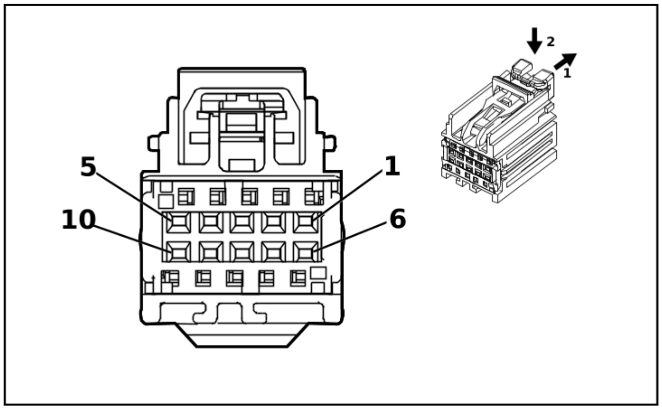
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## A23LR Rear Side Door Latch - Left

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) GY | (1) 747 | (1) Left Rear Door Ajar Switch Signal | (1) I | (1) — |
| 2 | — | — | — | Not Occupied | — | — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (3) 3 | (3) 0.5 | (3) BK | (3) 1550 | (3) Ground | (3) I | (3) — |
| 4 - 6 | — | — | — | Not Occupied | — | — |
| (7) 7 | (7) 0.75 | (7) BU / YE | (7) 1091 | (7) Left Rear Door Lock Actuator Lock Control | (7) I | (7) — |
| (8) 8 | (8) 0.75 | (8) WH | (8) 2679 | (8) Lock Actuators Unlock Control 1 | (8) I | (8) — |
| 9 - 10 | — | — | — | Not Occupied | — | — |

**A23P Front Side Door Latch - Passenger**




4622549

**Connector Part Information**

- Harness Type: Front Side Door Door Wiring Harness - Right
- OEM Connector: 7289-5068-60
- Service Connector: Service by Harness - See Part Catalog
- Description: 10-Way F 0.64 Kaizen Series( GN)

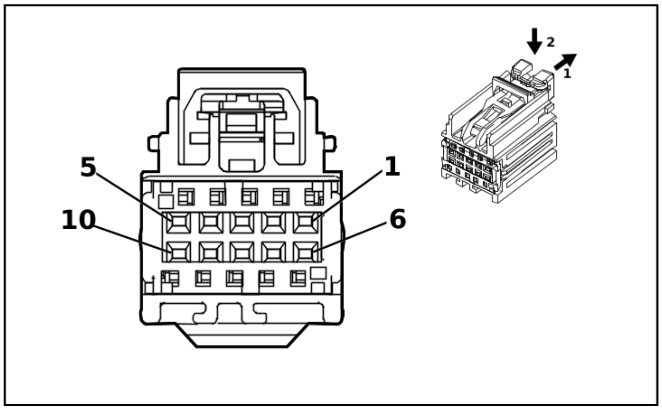
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## A23P Front Side Door Latch - Passenger

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 - 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 0.5 | (3) BK | (3) 1350 | (3) Ground | (3) I | (3) — |
| 4 | — | — | — | Not Occupied | — | — |
| (5) 5 | (5) 0.5 | (5) GY | (5) 746 | (5) Right Front Door Ajar Switch Signal | (5) I | (5) — |
| 6 - 7 | — | — | — | Not Occupied | — | — |
| (8) 8 | (8) 0.75 | (8) GY / BK | (8) 2680 | (8) Lock Actuators Unlock Control 2 | (8) I | (8) — |
| (9) 9 | (9) 0.75 | (9) YE / GN | (9) 2682 | (9) Right Front Door Lock Actuator Lock Control | (9) I | (9) — |
| 10 | — | — | — | Not Occupied | — | — |

### A23RR Rear Side Door Latch - Right




4622549

**Connector Part Information**

- Harness Type: Rear Side Door Door Wiring Harness - Right
- OEM Connector: 7289-5068-60
- Service Connector: Service by Harness - See Part Catalog
- Description: 10-Way F 0.64 Kaizen Series( GN)

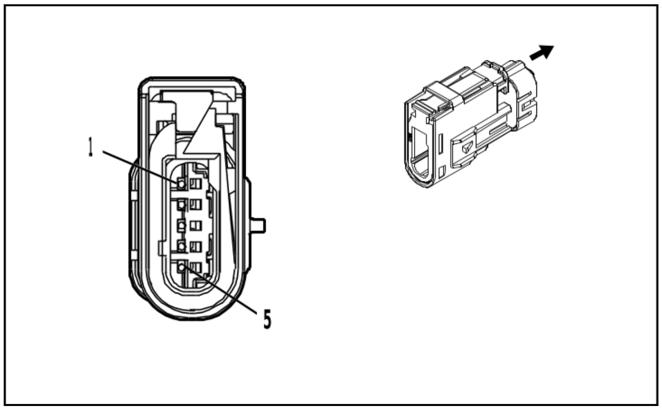
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## A23RR Rear Side Door Latch - Right

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 - 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 0.5 | (3) BK | (3) 1350 | (3) Ground | (3) I | (3) — |
| 4 | — | — | — | Not Occupied | — | — |
| (5) 5 | (5) 0.5 | (5) GY | (5) 748 | (5) Right Rear Door Ajar Switch Signal | (5) I | (5) — |
| 6 - 7 | — | — | — | Not Occupied | — | — |
| (8) 8 | (8) 0.75 | (8) GY / BK | (8) 2680 | (8) Lock Actuators Unlock Control 2 | (8) I | (8) — |
| (9) 9 | (9) 0.75 | (9) VT / WH | (9) 1094 | (9) Right Rear Door Lock Actuator Lock Control | (9) I | (9) — |
| 10 | — | — | — | Not Occupied | — | — |

## A24D Front Side Door Outside Handle - Left




4808321

**Connector Part Information**
- Harness Type: Front Side Door Door Wiring Harness - Left
- OEM Connector: SRVWSB-04A-BS
- Service Connector: Service by Harness - See Part Catalog
- Description: 5-Way M 1.2 Series, Sealed( NA)

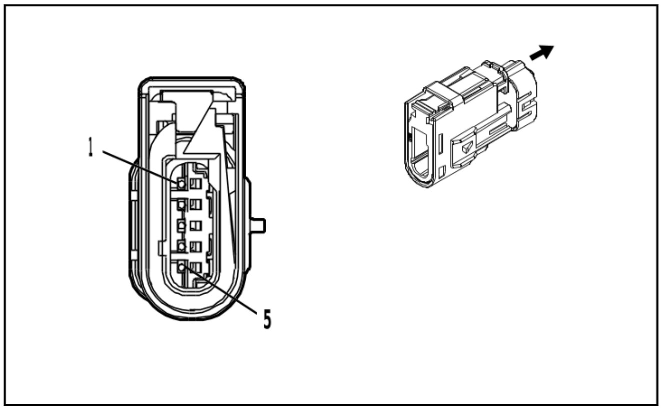
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-13 (BU) | No Tool Required |

### A24D Front Side Door Outside Handle - Left

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BU | (1) 2675 | (1) Left Front Exterior Door Handle Switch Unlock Signal | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) VT | (2) 4301 | (2) Passive Entry Left Antenna Signal High | (2) I | (2) — |
| 3 | — | — | — | Not Occupied | — | — |
| (4) 4 | (4) 0.5 | (4) VT / GY | (4) 4302 | (4) Passive Entry Left Antenna Signal Low | (4) I | (4) — |
| (5) 5 | (5) 0.5 | (5) BK / WH | (5) 1551 | (5) Signal Ground | (5) I | (5) — |

### A24P Front Side Door Outside Handle - Right




4808321

**Connector Part Information**
- Harness Type: Front Side Door Door Wiring Harness - Right
- OEM Connector: SRVWSB-04A-BS
- Service Connector: Service by Harness - See Part Catalog
- Description: 5-Way M 1.2 Series, Sealed( NA)

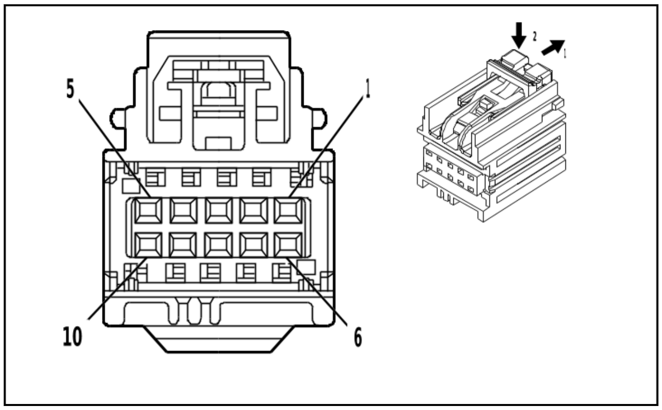
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-13 (BU) | No Tool Required |

## A24P Front Side Door Outside Handle - Right

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) GY / VT | (1) 2676 | (1) Right Front Door Exterior Switch Unlock Signal | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) GN / YE | (2) 4303 | (2) Passive Entry Right Antenna Signal High | (2) I | (2) — |
| 3 | — | — | — | Not Occupied | — | — |
| (4) 4 | (4) 0.5 | (4) GN / BK | (4) 4304 | (4) Passive Entry Right Antenna Signal Low | (4) I | (4) — |
| (5) 5 | (5) 0.5 | (5) BK / WH | (5) 1451 | (5) Signal Ground | (5) I | (5) — |

### A26 Heater and Air Conditioning User Interface Control - Front




4891168

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 7289-4885
- Service Connector: 13509649
- Description: 10-Way F 0.64 Kaizen Series( NA)

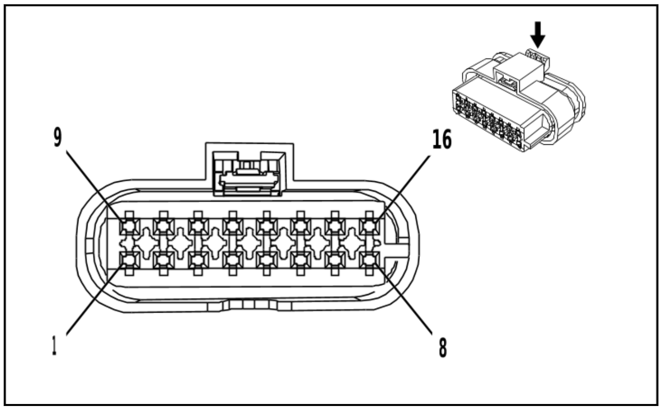
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 19300629 | J-35616-64B (L-BU) | J-38125-215A |

## A26 Heater and Air Conditioning User Interface Control - Front

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) RD / WH | (1) 1340 | (1) Battery Positive Voltage | (1) I | (1) — |
| 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 0.35 | (3) BU / WH | (3) 4985 | (3) AUTOSAR CAN Bus [+] 5 Serial Data | (3) I | (3) — |
| (4) 4 | (4) 0.35 | (4) BU / WH | (4) 4985 | (4) AUTOSAR CAN Bus [+] 5 Serial Data | (4) I | (4) — |
| 5 | — | — | — | Not Occupied | — | — |
| (6) 6 | (6) 0.35 | (6) GY / GN | (6) 4636 | (6) HVAC System Enable Signal | (6) I | (6) — |
| 7 | — | — | — | Not Occupied | — | — |
| (8) 8 | (8) 0.35 | (8) BU / YE | (8) 4984 | (8) AUTOSAR CAN Bus [-] 5 Serial Data | (8) I | (8) — |
| (9) 9 | (9) 0.35 | (9) BU / YE | (9) 4984 | (9) AUTOSAR CAN Bus [-] 5 Serial Data | (9) I | (9) — |
| (10) 10 | (10) 0.5 | (10) BK / WH | (10) 851 | (10) Signal Ground | (10) I | (10) — |

### A38 Reductant Tank Fluid Supply Pump Module




4259227

**Connector Part Information**
- Harness Type: Emission Reduction Fluid Tank Reservoir Wire Harness
- OEM Connector: 805-587-551
- Service Connector: Service by Harness - See Part Catalog
- Description: 16-Way F 1.2 MLK Series, Sealed( BK)

## Terminal Part Information

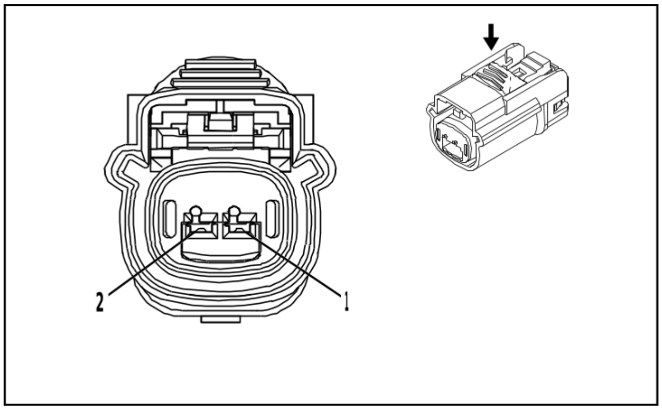
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-14 (GN) | No Tool Required |

## A38 Reductant Tank Fluid Supply Pump Module

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BK | (1) 3244 | (1) Diesel Exhaust Fluid Tank Temperature Sensor Signal | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BN | (2) 3245 | (2) Diesel Exhaust Fluid Tank Temperature Sensor Low Reference | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BU | (3) 3107 | (3) Diesel Exhaust Fluid Pressure Sensor Low Reference | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) BU | (4) 3108 | (4) Diesel Exhaust Fluid Pressure Sensor Signal | (4) I | (4) — |
| (5) 5 | (5) 0.5 | (5) BN | (5) 3106 | (5) Diesel Exhaust Fluid Pressure Sensor 5 Volt Reference | (5) I | (5) — |
| (6) 6 | (6) 1 | (6) BU | (6) 4318 | (6) Diesel Exhaust Fluid Tank Heater Low Control | (6) I | (6) — |
| (7) 7 | (7) 1 | (7) WH | (7) 3103 | (7) Diesel Exhaust Fluid Smart Pump Control | (7) I | (7) — |
| (8) 8 | (8) 1 | (8) BN | (8) 3875 | (8) Diesel Exhaust Fluid Smart Pump Supply Voltage Phase 2 | (8) I | (8) — |
| (9) 9 | (9) 1 | (9) YE | (9) 3677 | (9) Diesel Exhaust Fluid Reservoir Heater Control | (9) I | (9) — |
| 10 - 11 | — | — | — | Not Occupied | — | — |
| (12) 12 | (12) 1 | (12) BN | (12) 3676 | (12) Diesel Exhaust Fluid Heating Tank 2 Heater Control | (12) I | (12) — |
| 13 | — | — | — | Not Occupied | — | — |
| (14) 14 | (14) 1 | (14) BU | (14) 2937 | (14) Diesel Exhaust Fluid Pump Motor Stator Low Reference | (14) I | (14) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (15) 15 | (15) 1 | (15) YE | (15) 3876 | (15) Diesel Exhaust Fluid Smart Pump Supply Voltage Phase 3 | (15) I | (15) — |
| (16) 16 | (16) 1 | (16) BN | (16) 2936 | (16) Diesel Exhaust Fluid Heating Tank 2 Heater Control Low | (16) I | (16) — |

### A99L Pickup Box Endgate Latch - Left




4332222

**Connector Part Information**
- Harness Type: Endgate Wiring Harness
- OEM Connector: 15514573
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.5 OCS Series, Sealed( BK)

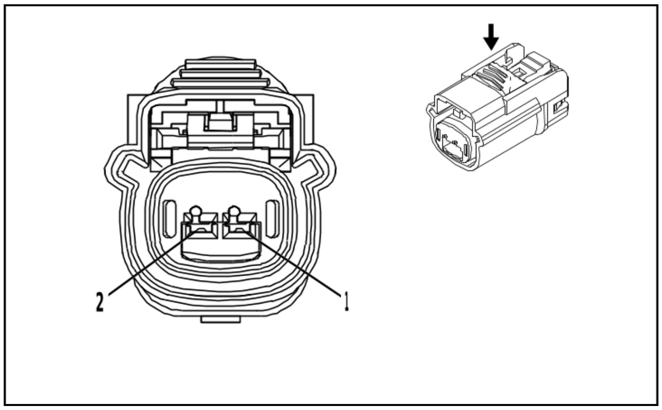
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-2A (GY) | No Tool Required |

## A99L Pickup Box Endgate Latch - Left

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 1 | (1) GN | (1) 1299 | (1) Major Endgate Motor Control | (1) I | (1) — |
| (2) 2 | (2) 1 | (2) YE / BK | (2) 7730 | (2) Major Endgate Motor Low Reference | (2) I | (2) — |

### A99R Pickup Box Endgate Latch - Right




4332222

**Connector Part Information**

- Harness Type: Endgate Wiring Harness
- OEM Connector: 15514573
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.5 OCS Series, Sealed( BK)

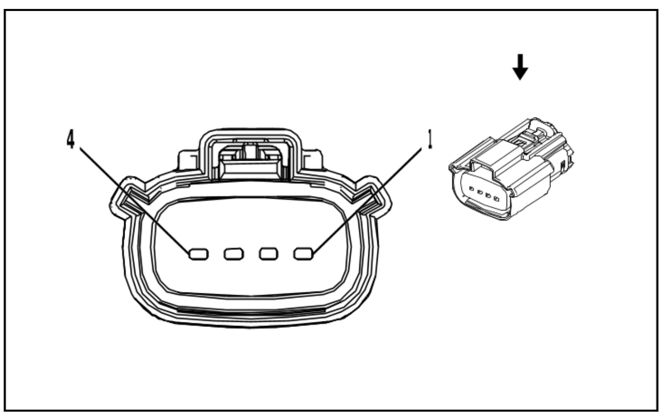
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-2A (GY) | No Tool Required |

## A99R Pickup Box Endgate Latch - Right

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 1 | (1) GN | (1) 1299 | (1) Major Endgate Motor Control | (1) I | (1) — |
| (2) 2 | (2) 1 | (2) YE / BK | (2) 7730 | (2) Major Endgate Motor Low Reference | (2) I | (2) — |

### A100L Pickup Box Auxiliary Endgate Latch - Left




2474747

**Connector Part Information**

- Harness Type: Endgate Wiring Harness
- OEM Connector: 33471-0406
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 1.5 Series, Sealed( BK)

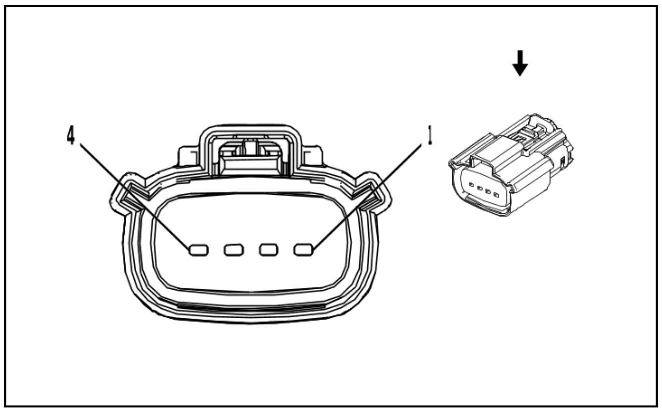
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-2A (GY) | No Tool Required |

## A100L Pickup Box Auxiliary Endgate Latch - Left

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) YE / BU | (1) 7295 | (1) Left Minor Endgate Ajar Signal | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) BK | (2) 1850 | (2) Ground | (2) I | (2) — |
| (3) 3 | (3) 1 | (3) YE / BK | (3) 7730 | (3) Major Endgate Motor Low Reference | (3) I | (3) — |
| (4) 4 | (4) 1 | (4) VT | (4) 7725 | (4) Minor Endgate Motor Control | (4) I | (4) — |

### A100R Pickup Box Auxiliary Endgate Latch - Right




2474747

**Connector Part Information**
- Harness Type: Endgate Wiring Harness
- OEM Connector: 33471-0406
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 1.5 Series, Sealed( BK)

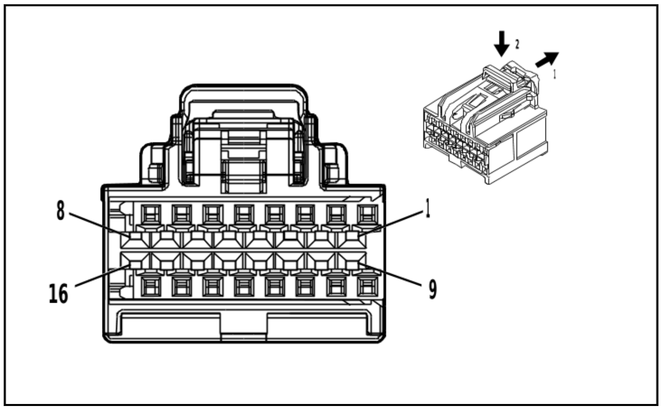
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-2A (GY) | No Tool Required |

## A100R Pickup Box Auxiliary Endgate Latch - Right

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 1 | (1) YE / BK | (1) 7730 | (1) Major Endgate Motor Low Reference | (1) I | (1) — |
| (2) 2 | (2) 1 | (2) VT | (2) 7725 | (2) Minor Endgate Motor Control | (2) I | (2) — |
| 3 - 4 | — | — | — | Not Occupied | — | — |

### A103 Roof Console X1




4873254

**Connector Part Information**

- Harness Type: Dome Lamp Wiring Harness
- OEM Connector: 35016344
- Service Connector: 13519739
- Description: 16-Way F 0.64 OCS Series( GY)

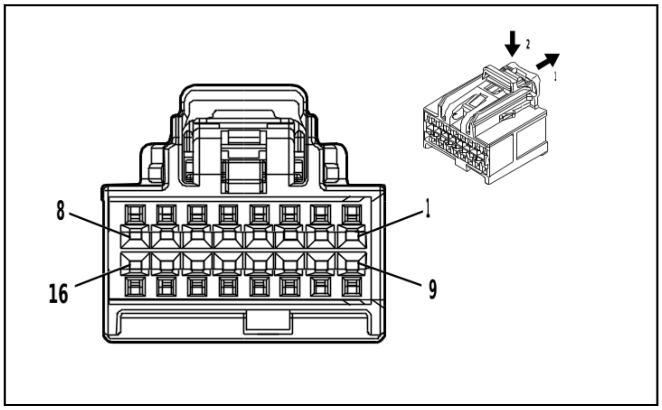
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 84619127 | J-35616-64B (L-BU) | J-38125-215A |

## A103 Roof Console X1

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BK | (1) 1050 | (1) Ground | (1) I | (1) — |
| 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 0.35 | (3) YE | (3) 6817 | (3) LED Backlight Dimming Control 1 | (3) I | (3) — |
| 4 - 6 | — | — | — | Not Occupied | — | — |
| (7) 7 | (7) 0.35 | (7) WH / BN | (7) 2904 | (7) Row 2 Dome Reading Lamp Switch Signal | (7) I | (7) — |
| (8) 8 | (8) 0.35 | (8) VT / GY | (8) 2906 | (8) Row 2 Dome Reading Lamp 2 Switch Signal | (8) I | (8) — |
| (9) 9 | (9) 0.5 | (9) RD / YE | (9) 240 | (9) Battery Positive Voltage | (9) I | (9) — |
| (10) 10 | (10) 0.5 | (10) GN / WH | (10) 2854 | (10) Body Control Module LIN Bus 8 | (10) I | (10) — |
| (11) 11 | (11) 0.35 | (11) BU / GN | (11) 4785 | (11) Interior Lamp Overhead Enable Signal | (11) I | (11) — |
| (12) 12 | (12) 0.35 | (12) GY / WH | (12) 2369 | (12) Interior Lamp Overhead 2 Enable Signal | (12) I | (12) — |
| (13) 13 | (13) 0.35 | (13) GN / YE | (13) 2903 | (13) Row 2 Dome Reading Lamp Interior Lamp Control | (13) I | (13) — |
| (14) 14 | (14) 0.35 | (14) BN / BU | (14) 2905 | (14) Row 2 Dome Reading Lamp 2 Interior Lamp Control | (14) I | (14) — |
| 15 | — | — | — | Not Occupied | — | — |
| (16) 16 | (16) 0.5 | (16) BK | (16) 1050 | (16) Ground | (16) I | (16) — |

### A103 Roof Console X2




4873243

**Connector Part Information**

- Harness Type: Dome Lamp Wiring Harness
- OEM Connector: 35016343
- Service Connector: 13519738
- Description: 16-Way F 0.64 OCS Series( BK)

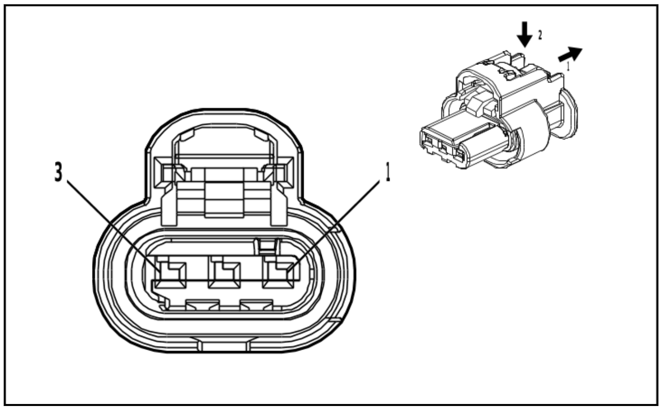
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 84619127 | J-35616-64B (L-BU) | J-38125-215A |

## A103 Roof Console X2

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) YE / VT | (1) 2516 | (1) Telematics Switch Green LED Indicator Control | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) BN / WH | (2) 2517 | (2) Telematics Switch Red LED Indicator Control | (2) I | (2) — |
| (3) 3 | (3) 0.35 | (3) GN / WH | (3) 2514 | (3) Telematics Switch Signal | (3) I | (3) — |
| (4) 4 | (4) 0.35 | (4) GN / BK | (4) 2515 | (4) Telematics Switch Supply Voltage | (4) I | (4) — |
| (5) 5 | (5) 0.35 | (5) BK / WH | (5) 851 | (5) Signal Ground | (5) I | (5) — |
| (6) 6 | (6) 0.35 | (6) YE / VT | (6) 6191 | (6) Power Rear Window Switch Open Signal | (6) I | (6) — |
| (7) 7 | (7) 0.35 | (7) WH | (7) 6192 | (7) Sliding Rear Window Switch Close Signal | (7) I | (7) — |
| (8) 8 | (8) 0.5 | (8) VT | (8) 801 | (8) Retained Accessory Power Control | (8) I | (8) — |
| 9 - 16 | — | — | — | Not Occupied | — | — |

## B1 Air Conditioning Refrigerant Pressure Sensor




4581126

**Connector Part Information**
- Harness Type: Engine Wiring Harness
- OEM Connector: 1-2296695-1
- Service Connector: 86792094
- Description: 3-Way F 1.2 MCON-CB Series, Sealed( BK)

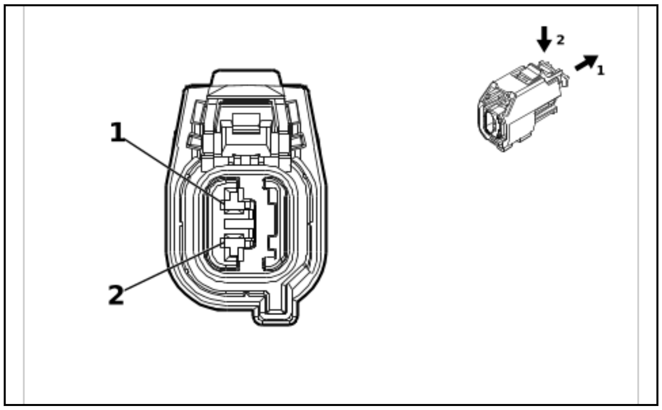
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |

### B1 Air Conditioning Refrigerant Pressure Sensor

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) WH / RD | (1) 480 | (1) Engine Control Vehicle Sensors 5 Volt Reference 1 | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) GN | (2) 380 | (2) Air Conditioning Refrigerant Pressure Sensor Signal | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BK / GY | (3) 626 | (3) Engine Control Vehicle Sensors Low Reference 1 | (3) I | (3) — |

### B5LF Front Wheel Speed Sensor - Left




5666214

**Connector Part Information**
- Harness Type: Chassis Wiring Harness
- OEM Connector: 33189092
- Service Connector: 85526683
- Description: 2-Way F 1.5 OCS Series, Sealed( GY)

## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-2A (GY) | No Tool Required |

## B5LF Front Wheel Speed Sensor - Left

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) GY / WH | (1) 7064 | (1) Left Front Wheel Speed Sensor Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) GY | (2) 830 | (2) Left Front Wheel Speed Sensor Signal | (2) I | (2) — |

### B5LR Rear Wheel Speed Sensor - Left (DZW)

—

**Connector Part Information**
- Harness Type: Chassis Rear Wiring Harness Extension Harness
- OEM Connector: 85016384
- Service Connector: Service by Harness - See Part Catalog
- Description: —

## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## B5LR Rear Wheel Speed Sensor - Left (DZW)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) TN | (1) 7127 | (1) Left Rear Wheel Speed Sensor Control | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) OG | (2) 884 | (2) Left Rear Wheel Speed Sensor Signal | (2) I | (2) — |

### B5LR Rear Wheel Speed Sensor - Left (SRW)

—

**Connector Part Information**
- Harness Type: Chassis Rear Wiring Harness Extension Harness
- OEM Connector: 85016382
- Service Connector: Service by Harness - See Part Catalog
- Description: —

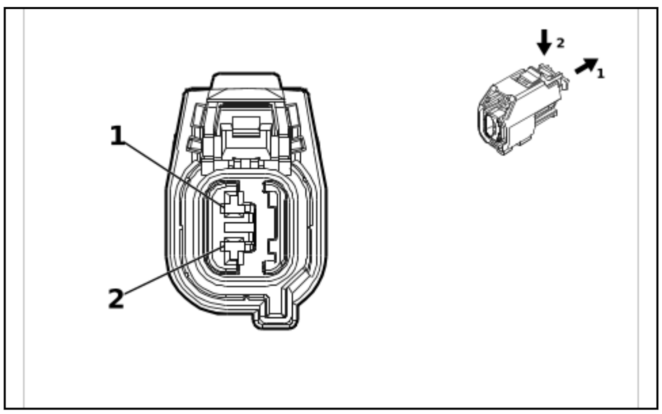
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## B5LR Rear Wheel Speed Sensor - Left (SRW)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) TN | (1) 7127 | (1) Left Rear Wheel Speed Sensor Control | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) OG | (2) 884 | (2) Left Rear Wheel Speed Sensor Signal | (2) I | (2) — |

### B5RF Front Wheel Speed Sensor - Right




5666214

**Connector Part Information**
- Harness Type: Engine Wiring Harness
- OEM Connector: 33189092
- Service Connector: 85526683
- Description: 2-Way F 1.5 OCS Series, Sealed( GY)

## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-14 (GN) | No Tool Required |
| II | Not required | J-35616-2A (GY) | No Tool Required |

## B5RF Front Wheel Speed Sensor - Right

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5<br>(1) 0.5 | (1) GY / BN<br>(1) GY / BN | (1) 7065<br>(1) 7065 | (1) Right Front Wheel Speed Sensor Control<br>(1) Right Front Wheel Speed Sensor Control | (1) I<br>(1) II | (1) —<br>(1) — |
| (2) 2 | (2) 0.5<br>(2) 0.5 | (2) YE<br>(2) YE | (2) 872<br>(2) 872 | (2) Right Front Wheel Speed Sensor Signal<br>(2) Right Front Wheel Speed Sensor Signal | (2) I<br>(2) II | (2) —<br>(2) — |

### B5RR Rear Wheel Speed Sensor - Right (DZW)

—

**Connector Part Information**
- Harness Type: Chassis Rear Wiring Harness Extension Harness
- OEM Connector: 85016385
- Service Connector: Service by Harness - See Part Catalog
- Description: —

## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## B5RR Rear Wheel Speed Sensor - Right (DZW)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) TN | (1) 7128 | (1) Right Rear Wheel Speed Sensor Control | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) OG | (2) 882 | (2) Right Rear Wheel Speed Sensor Signal | (2) I | (2) — |

### B5RR Rear Wheel Speed Sensor - Right (SRW)

—

**Connector Part Information**
- Harness Type: Chassis Rear Wiring Harness Extension Harness
- OEM Connector: 85016383
- Service Connector: Service by Harness - See Part Catalog
- Description: —

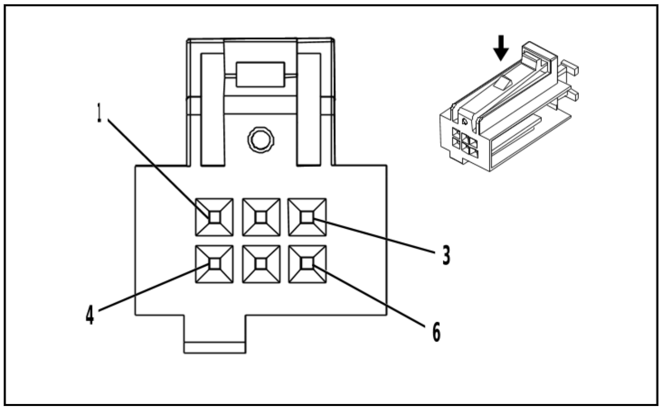
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## B5RR Rear Wheel Speed Sensor - Right (SRW)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) TN | (1) 7128 | (1) Right Rear Wheel Speed Sensor Control | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) OG | (2) 882 | (2) Right Rear Wheel Speed Sensor Signal | (2) I | (2) — |

### B10D Sun Load and Ambient Light and Security Indicator Sensor




2220563

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 13590886
- Service Connector: 85587649
- Description: 6-Way F 0.64 Micro-Quadlock Series( BK)

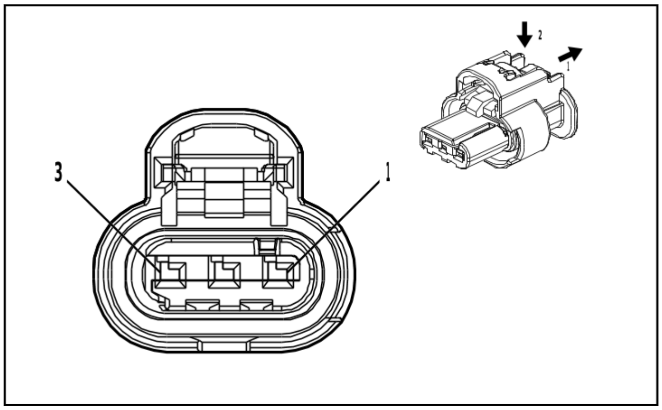
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## B10D Sun Load and Ambient Light and Security Indicator Sensor

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) GY | (1) 590 | (1) Driver Solar Sensor Signal | (1) I | (1) — |
| 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 0.35 | (3) WH / BU | (3) 278 | (3) Ambient Light Sensor Signal | (3) I | (3) — |
| (4) 4 | (4) 0.35 | (4) BU / WH | (4) 734 | (4) Inside Air Temperature Sensor Signal | (4) I | (4) — |
| (5) 5 | (5) 0.35 | (5) GY | (5) 728 | (5) Security Indicator Control | (5) I | (5) — |
| (6) 6 | (6) 0.35 | (6) BK / YE | (6) 407 | (6) Sensor Low Reference | (6) I | (6) — |

## B12P Automatic Transmission Fluid Pressure Sensor - Power Take-Off (NQF / NQH)




4581126

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 1-2296695-1
- Service Connector: 86792094
- Description: 3-Way F 1.2 MCON-CB Series, Sealed( BK)

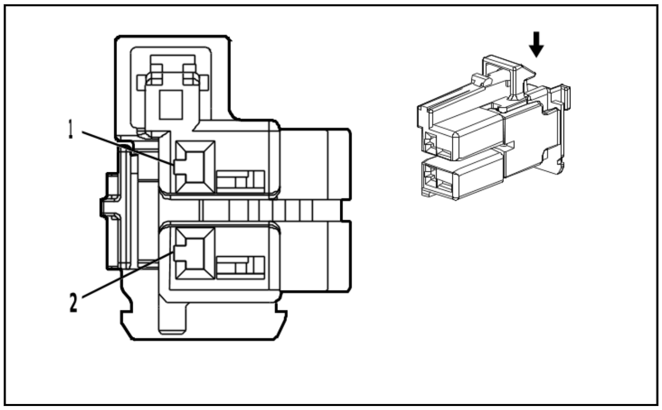
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |

### B12P Automatic Transmission Fluid Pressure Sensor - Power Take-Off (NQF / NQH)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) WH | (1) 8232 | (1) Power Take Off Pressure Sensor 5 Volt Reference | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BN / WH | (2) 8234 | (2) Power Take Off Pressure Sensor Signal | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) YE | (3) 8233 | (3) Power Take Off Pressure Sensor Low Reference | (3) I | (3) — |

### B13 Automatic Transmission Fluid Temperature Sensor




4672650

**Connector Part Information**

- Harness Type: Automatic Transmission Wiring Harness
- OEM Connector: 2356394-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series( BN)

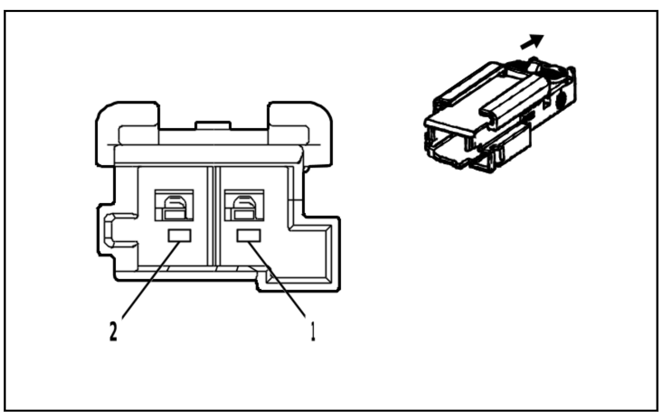
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |

## B13 Automatic Transmission Fluid Temperature Sensor

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BU / BN | (1) 586 | (1) Transmission Fluid Temperature Sensor Low Reference | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BN / YE | (2) 585 | (2) Transmission Fluid Temperature Sensor Signal | (2) I | (2) — |

### B14A Automatic Transmission Output Speed Sensor




4672593

**Connector Part Information**

- Harness Type: Automatic Transmission Wiring Harness
- OEM Connector: 2340311-2
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way M 1.2 MCON Series( BU)

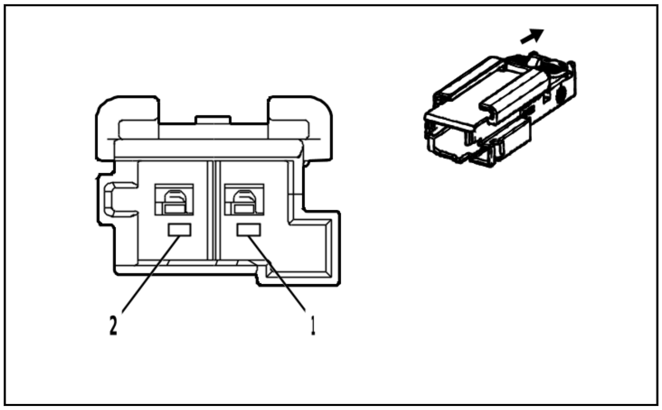
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-13 (BU) | No Tool Required |

## B14A Automatic Transmission Output Speed Sensor

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) YE / OG | (1) 6358 | (1) Output Speed Signal | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) GN | (2) 4170 | (2) Transmission Output Shaft Speed Sensor Circuit 9V Reference | (2) I | (2) — |

### B14C Automatic Transmission Input Speed Sensor




4672611

**Connector Part Information**

- Harness Type: Automatic Transmission Wiring Harness
- OEM Connector: 2340311-3
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way M 1.2 MCON Series( GN)

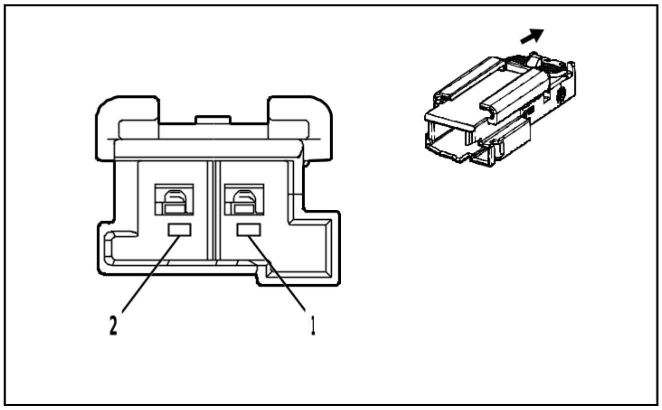
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-13 (BU) | No Tool Required |

## B14C Automatic Transmission Input Speed Sensor

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) WH / VT | (1) 6353 | (1) Input Speed Signal | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BU | (2) 4171 | (2) Transmission Input Shaft Speed Sensor Circuit 9V Reference | (2) I | (2) — |

### B14DA Automatic Transmission Intermediate Speed Sensor 1




4663490

**Connector Part Information**

- Harness Type: Automatic Transmission Wiring Harness
- OEM Connector: 2340311-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way M 1.2 MCON Series( NA)

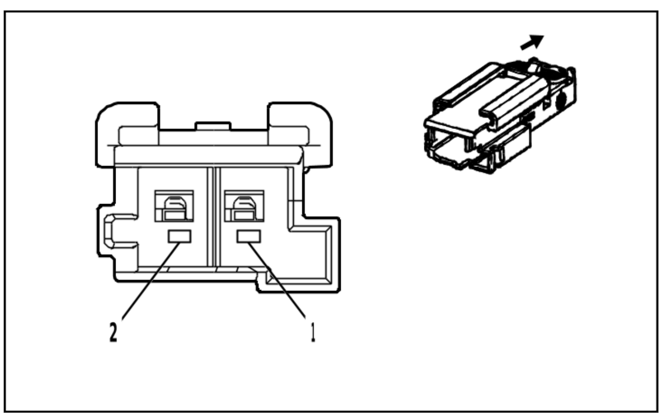
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-13 (BU) | No Tool Required |

## B14DA Automatic Transmission Intermediate Speed Sensor 1

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) VT / GN | (1) 4510 | (1) Transmission Intermediate Speed Signal | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) GN | (2) 4170 | (2) Transmission Output Shaft Speed Sensor Circuit 9V Reference | (2) I | (2) — |

### B14DB Automatic Transmission Intermediate Speed Sensor 2




4672593

**Connector Part Information**

- Harness Type: Automatic Transmission Wiring Harness
- OEM Connector: 2340311-2
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way M 1.2 MCON Series( BU)

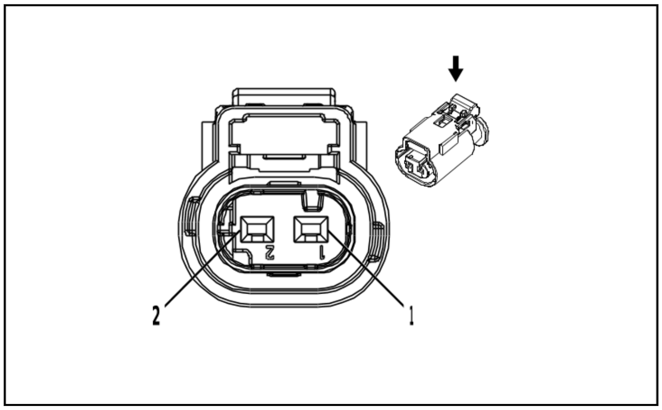
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-13 (BU) | No Tool Required |

## B14DB Automatic Transmission Intermediate Speed Sensor 2

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) WH / BU | (1) 6254 | (1) Transmission Input Speed Sensor Signal | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BU | (2) 4171 | (2) Transmission Input Shaft Speed Sensor Circuit 9V Reference | (2) I | (2) — |

### B20A Brake Fluid Level Indicator Switch




2717066

**Connector Part Information**
- Harness Type: Body Wiring Harness
- OEM Connector: 10010337
- Service Connector: 13587326
- Description: 2-Way F 1.2 Multilock Series, Sealed( BK)

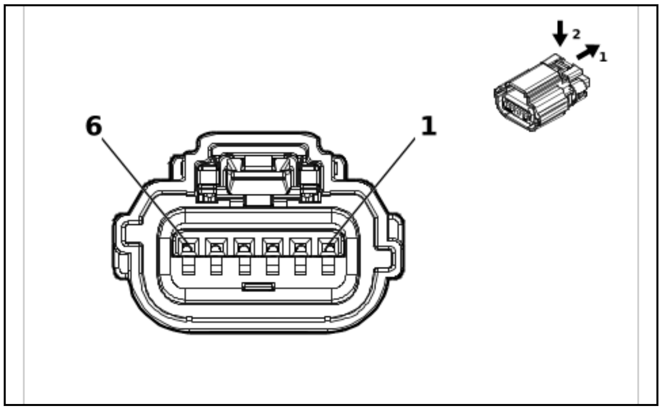
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |
| II | Not required | J-35616-16 (L-GN) | No Tool Required |

## B20A Brake Fluid Level Indicator Switch

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) GN / GY | (1) 333 | (1) Brake Fluid Level Signal | (1) II | (1) — |
| (2) 2 | (2) 1 | (2) BK | (2) 150 | (2) Ground | (2) I | (2) — |

### B22 Brake Pedal Position Sensor




5921818

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 35547326
- Service Connector: 86825468
- Description: 6-Way F 0.64 OCS Series, Sealed( NA)

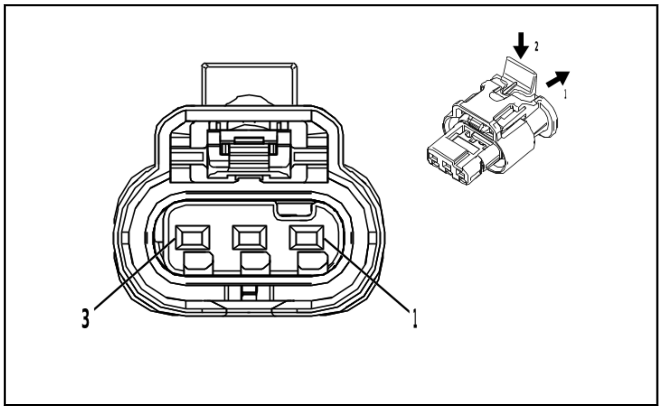
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## B22 Brake Pedal Position Sensor

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) BK / BN | (1) 5360 | (1) Brake Apply Sensor Low Reference | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) WH | (2) 5359 | (2) Brake Apply Sensor Control | (2) I | (2) — |
| (3) 3 | (3) 0.35 | (3) BU / YE | (3) 5361 | (3) Brake Apply Sensor Signal | (3) I | (3) — |
| (4) 4 | (4) 0.35 | (4) WH / GN | (4) 5380 | (4) Brake Position Sensor Signal | (4) I | (4) — |
| (5) 5 | (5) 0.35 | (5) BK / GY | (5) 626 | (5) Engine Control Vehicle Sensors Low Reference 1 | (5) I | (5) — |
| (6) 6 | (6) 0.35 | (6) WH / RD | (6) 480 | (6) Engine Control Vehicle Sensors 5 Volt Reference 1 | (6) I | (6) — |

## B23 Camshaft Position Sensor (L5P)




4249125

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 13594670
- Service Connector: 86792094
- Description: 3-Way F 1.2 MCP Series, Sealed( BN)

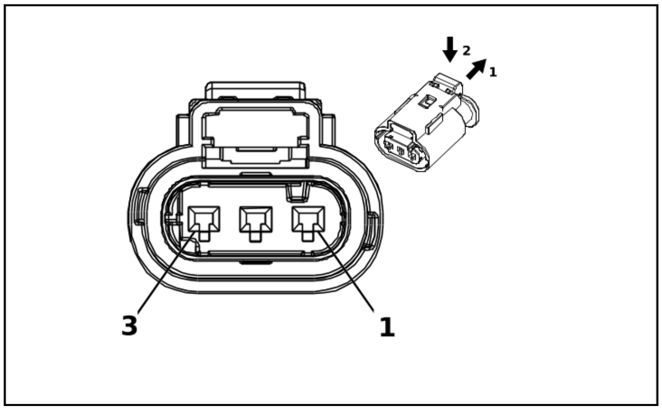
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

### B23 Camshaft Position Sensor (L5P)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) GY / YE | (1) 5297 | (1) Exhaust Camshaft Position Sensor 1 Voltage Reference | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK / GY | (2) 5296 | (2) Exhaust Camshaft Position Sensor Low Reference 1 | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) VT / BK | (3) 5273 | (3) Exhaust Camshaft Position Sensor 1 | (3) I | (3) — |

## B23 Camshaft Position Sensor (L8T)




2717069

**Connector Part Information**

- Harness Type: Camshaft Position Sensor Wire
- OEM Connector: 13503570
- Service Connector: Service by Harness - See Part Catalog
- Description: 3-Way F 1.2 Multilock Series, Sealed( BK)

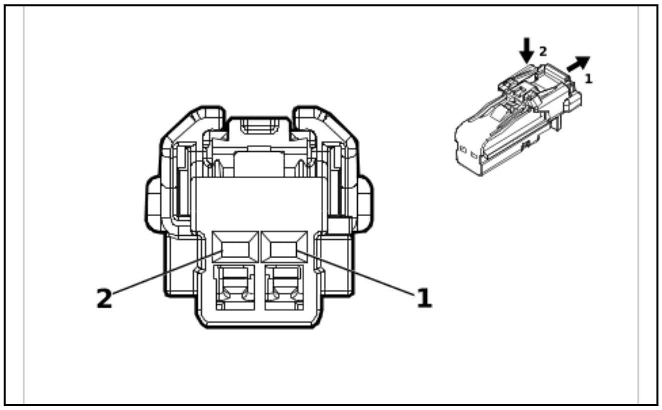
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |

### B23 Camshaft Position Sensor (L8T)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) GY / BU | (1) 5300 | (1) Intake Camshaft Position Sensor 1 Voltage Reference | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK / GN | (2) 5301 | (2) Intake Camshaft Position Sensor Low Reference 1 | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) YE / VT | (3) 5275 | (3) Intake Camshaft Position Sensor 1 | (3) I | (3) — |

### B24LF Mobile Telephone Microphone - Left Front




4115691

**Connector Part Information**

- Harness Type: Dome Lamp Wiring Harness
- OEM Connector: 6098-8988
- Service Connector: 87816612
- Description: 2-Way F 1.2 MCON Series( BK)

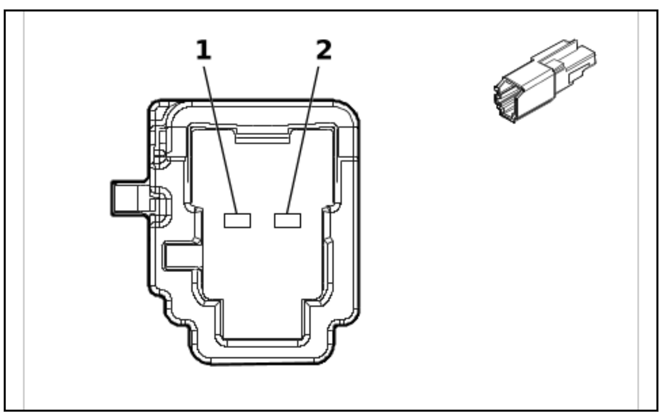
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |

## B24LF Mobile Telephone Microphone - Left Front

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) BK / BN | (1) 654 | (1) Cellular Telephone Microphone Low Reference | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) BU | (2) 655 | (2) Cellular Telephone Microphone Signal | (2) I | (2) — |

### B24RF Mobile Telephone Microphone - Right Front




6529127

**Connector Part Information**

- Harness Type: Dome Lamp Wiring Harness
- OEM Connector: 6099-0611
- Service Connector: 85725004
- Description: 2-Way M 1.2 MBS Series( GY)

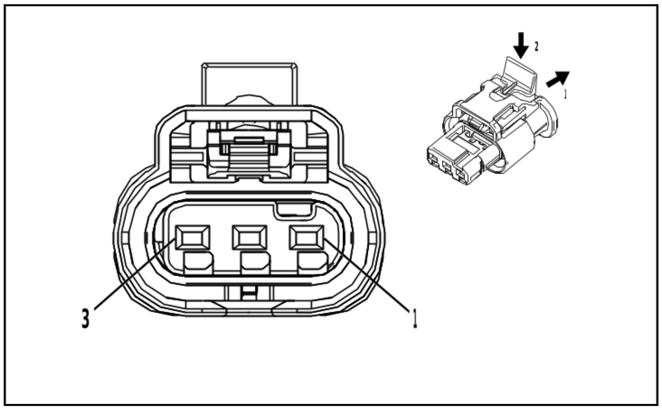
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-13 (BU) | No Tool Required |

## B24RF Mobile Telephone Microphone - Right Front

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) BU / BK | (1) 7044 | (1) Microphone [-] Signal | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) VT / YE | (2) 7043 | (2) Microphone [+] Signal | (2) I | (2) — |

### B26 Crankshaft Position Sensor (L5P)




4249125

**Connector Part Information**
- Harness Type: Engine Wiring Harness
- OEM Connector: 13594670
- Service Connector: 86792094
- Description: 3-Way F 1.2 MCP Series, Sealed( BN)

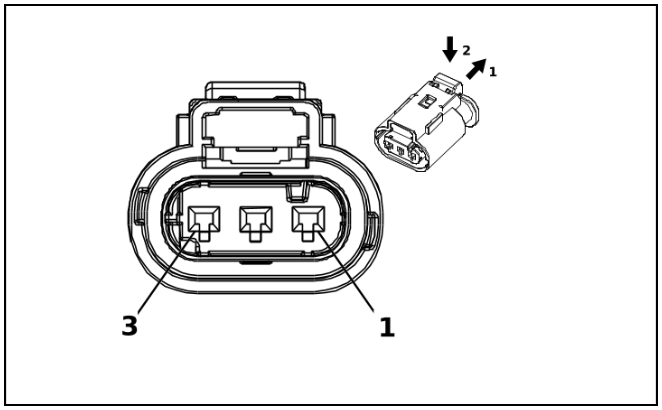
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## B26 Crankshaft Position Sensor (L5P)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) VT / BU | (1) 6270 | (1) Crankshaft Position Sensor Voltage | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK / VT | (2) 6272 | (2) Crankshaft Position Sensor Low Reference | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) GN | (3) 6271 | (3) Crankshaft Position Sensor Signal | (3) I | (3) — |

### B26 Crankshaft Position Sensor (L8T)




2717069

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 10010341
- Service Connector: 84601390
- Description: 3-Way F 1.2 Multilock Series, Sealed( BK)

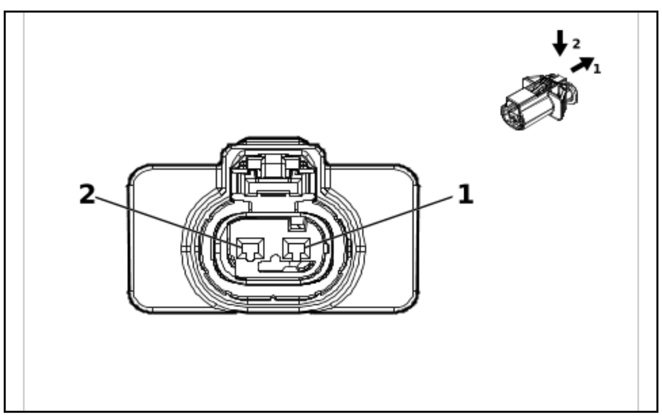
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## B26 Crankshaft Position Sensor (L8T)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) GN | (1) 6271 | (1) Crankshaft Position Sensor Signal | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK / VT | (2) 6272 | (2) Crankshaft Position Sensor Low Reference | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) VT / BU | (3) 6270 | (3) Crankshaft Position Sensor Voltage | (3) I | (3) — |

### B33 Low Coolant Level Switch




5877143

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 35747313
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MLK Series, Sealed( BK)

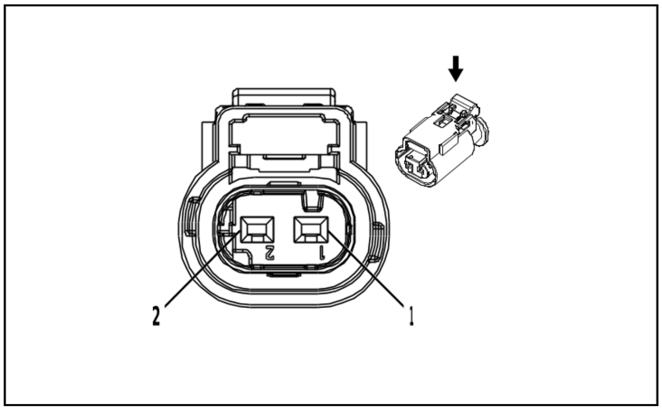
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |
| II | Not required | J-35616-16 (L-GN) | No Tool Required |

## B33 Low Coolant Level Switch

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BU / YE | (1) 68 | (1) Low Coolant Level Indicator Control | (1) II | (1) — |
| (2) 2 | (2) 1 | (2) BK / WH | (2) 251 | (2) Signal Ground | (2) I | (2) — |

### B34 Engine Coolant Temperature Sensor (L5P)




2717066

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 13503566
- Service Connector: 13587326
- Description: 2-Way F 1.2 Multilock Series, Sealed( BK)

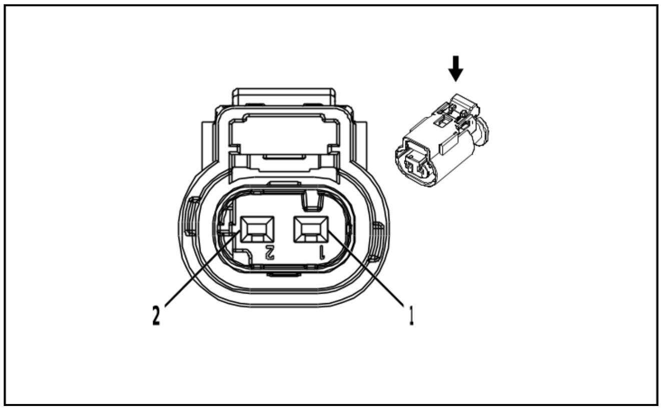
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## B34 Engine Coolant Temperature Sensor (L5P)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BK / WH | (1) 6151 | (1) Engine Control Module Ground | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BN / GN | (2) 1174 | (2) Oil Level Switch Signal | (2) I | (2) — |

### B34 Engine Coolant Temperature Sensor (L8T)




2717066

**Connector Part Information**

- Harness Type: Engine Coolant Temperature Sensor Harness
- OEM Connector: 10010337
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 Multilock Series, Sealed( BK)

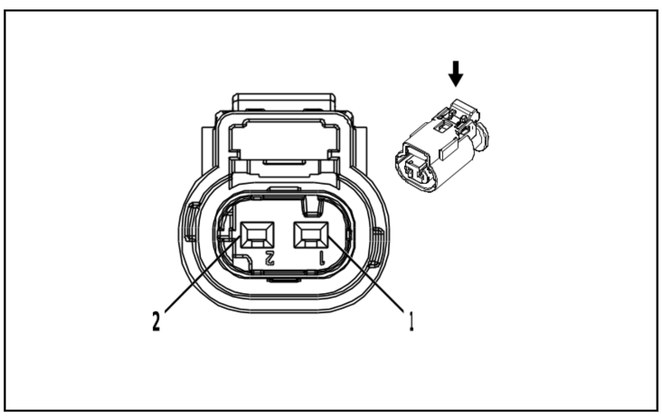
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |

## B34 Engine Coolant Temperature Sensor (L8T)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BU | (1) 410 | (1) Engine Coolant Temperature Sensor Signal | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK / YE | (2) 548 | (2) Engine Control Sensors Low Reference 1 | (2) I | (2) — |

### B35 Engine Oil Level Indicator Switch (L5P)




2717066

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 13503566
- Service Connector: 13587326
- Description: 2-Way F 1.2 Multilock Series, Sealed( BK)

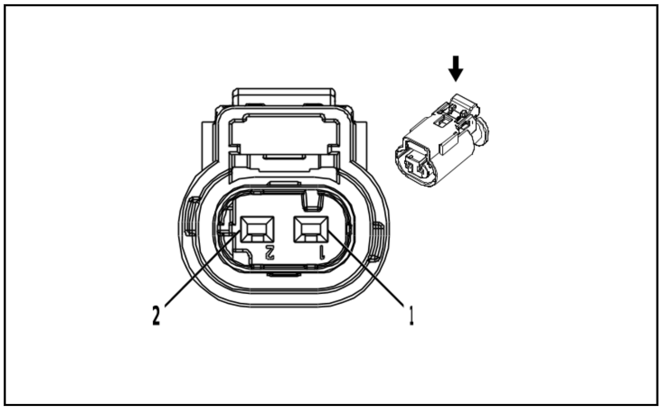
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## B35 Engine Oil Level Indicator Switch (L5P)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BK / WH | (1) 6151 | (1) Engine Control Module Ground | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BN / GN | (2) 1174 | (2) Oil Level Switch Signal | (2) I | (2) — |

### B35 Engine Oil Level Indicator Switch (L8T)




2717066

**Connector Part Information**
- Harness Type: Engine Wiring Harness
- OEM Connector: 10010337
- Service Connector: 13587326
- Description: 2-Way F 1.2 Multilock Series, Sealed( BK)

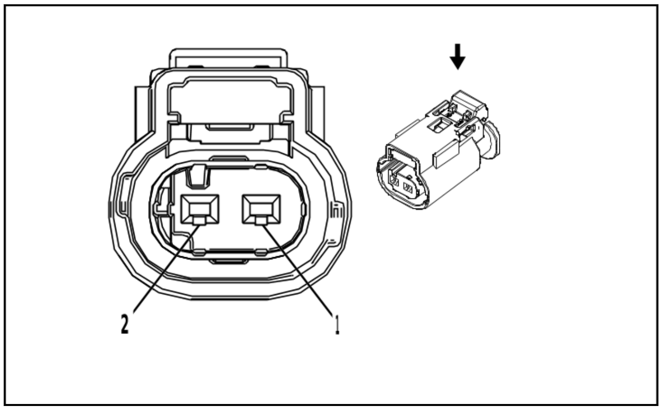
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## B35 Engine Oil Level Indicator Switch (L8T)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BN / GN | (1) 1174 | (1) Oil Level Switch Signal | (1) I | (1) — |
| (2) 2 | (2) 1 | (2) BK / WH | (2) 251 | (2) Signal Ground | (2) I | (2) — |

### B36 Engine Oil Temperature Sensor




2830969

**Connector Part Information**
- Harness Type: Engine Wiring Harness
- OEM Connector: 10010339
- Service Connector: 13587321
- Description: 2-Way F 1.2 Multilock Series, Sealed( D-GY)

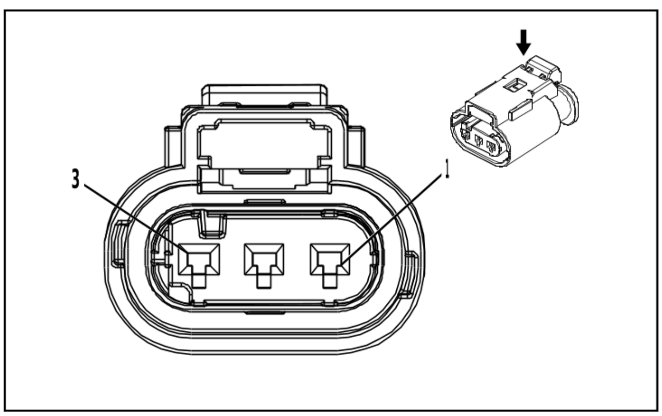
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## B36 Engine Oil Temperature Sensor

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BN / BU | (1) 357 | (1) Oil Temperature Sensor Signal | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK / YE | (2) 548 | (2) Engine Control Sensors Low Reference 1 | (2) I | (2) — |

### B37B Engine Oil Pressure Sensor (L5P)




3240107

**Connector Part Information**
- Harness Type: Engine Wiring Harness
- OEM Connector: 13503573
- Service Connector: 19301717
- Description: 3-Way F 1.2 Multilock Series, Sealed( BK)

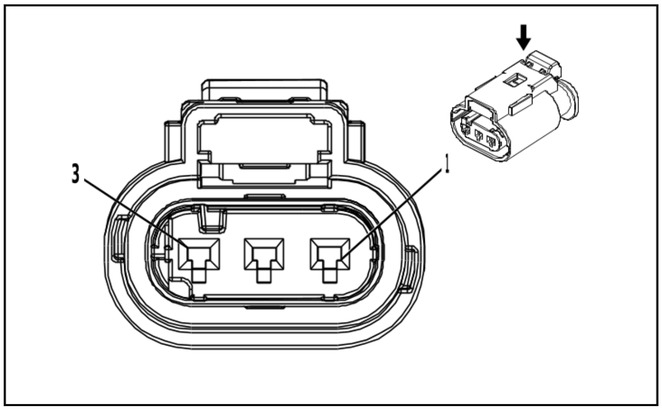
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## B37B Engine Oil Pressure Sensor (L5P)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) YE / BN | (1) 331 | (1) Oil Pressure Sensor Signal | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK / YE | (2) 548 | (2) Engine Control Sensors Low Reference 1 | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BU / RD | (3) 460 | (3) Engine Control Sensors 5 Volt Reference 1 | (3) I | (3) — |

**B37B Engine Oil Pressure Sensor (L8T)**




3240107

**Connector Part Information**

- Harness Type: Engine Coolant Temperature Sensor Harness
- OEM Connector: 10010344
- Service Connector: Service by Harness - See Part Catalog
- Description: 3-Way F 1.2 Multilock Series, Sealed( BK)

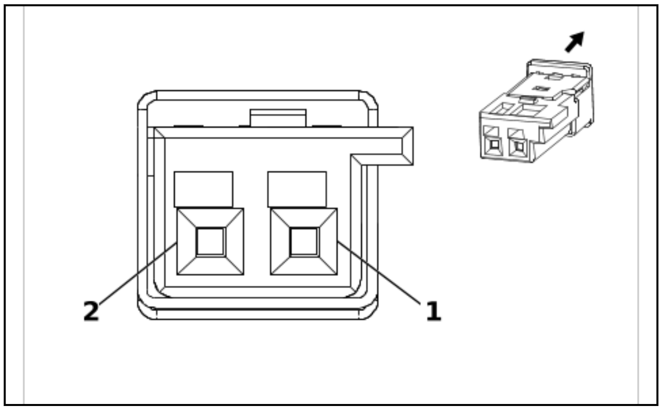
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |

## B37B Engine Oil Pressure Sensor (L8T)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) YE / BN | (1) 331 | (1) Oil Pressure Sensor Signal | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK / YE | (2) 548 | (2) Engine Control Sensors Low Reference 1 | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) WH / RD | (3) 480 | (3) Engine Control Vehicle Sensors 5 Volt Reference 1 | (3) I | (3) — |

### B39 Air Conditioning Evaporator Air Temperature Sensor




2780265

**Connector Part Information**

- Harness Type: Heater Wiring Harness
- OEM Connector: 2-1718333-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 0.64 Micro-Quadlock Series( NA)

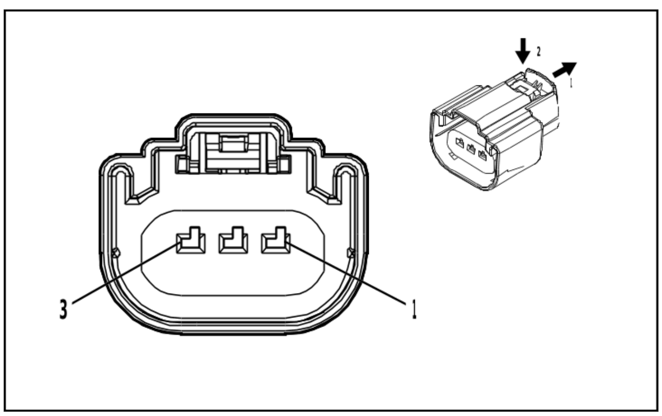
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## B39 Air Conditioning Evaporator Air Temperature Sensor

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) BN | (1) 6137 | (1) Air Conditioning Evaporator Temperature Sensor Signal | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) BK / YE | (2) 407 | (2) Sensor Low Reference | (2) I | (2) — |

### B47 Fuel Pressure Sensor (- FHS)




4569745

**Connector Part Information**

- Harness Type: Chassis Wiring Harness
- OEM Connector: 160073-3105
- Service Connector: 19179750
- Description: 3-Way F 1.5 MX Series, Sealed( BK)

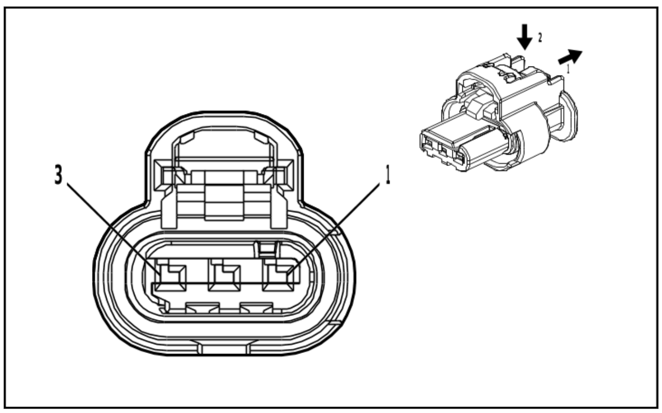
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-14 (GN) | No Tool Required |
| II | Not required | J-35616-2A (GY) | No Tool Required |

## B47 Fuel Pressure Sensor (- FHS)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75<br>(1) 0.5 | (1) BU / WH<br>(1) BU / WH | (1) 7446<br>(1) 7446 | (1) Fuel Pressure Sensor Signal<br>(1) Fuel Pressure Sensor Signal | (1) II<br>(1) I | (1) L5P<br>(1) L8T |
| (2) 2 | (2) 0.5 | (2) BK / YE | (2) 7447 | (2) Fuel Pressure Sensor Low Reference | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BN / RD | (3) 7445 | (3) Fuel Line Pressure Sensor 5V Reference | (3) I | (3) — |

**B47 Fuel Pressure Sensor (FHS)**




4581126

**Connector Part Information**

- Harness Type: Chassis Wiring Harness
- OEM Connector: 1-2296695-1
- Service Connector: 86792094
- Description: 3-Way F 1.2 MCON-CB Series, Sealed( BK)

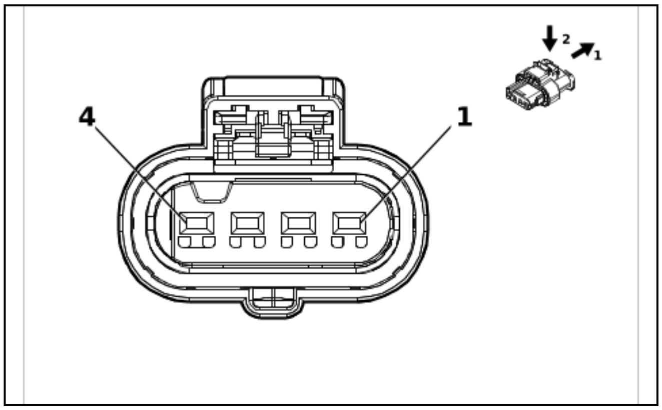
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |

## B47 Fuel Pressure Sensor (FHS)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BN / RD | (1) 7445 | (1) Fuel Line Pressure Sensor 5V Reference | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK / YE | (2) 7447 | (2) Fuel Pressure Sensor Low Reference | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BU / WH | (3) 7446 | (3) Fuel Pressure Sensor Signal | (3) I | (3) — |

### B47B Fuel Rail Pressure Sensor




5985721

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 13534801
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 1.2 HPF Series, Sealed( BK)

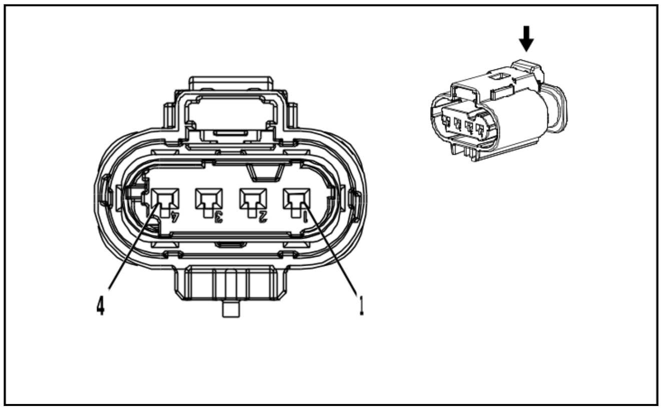
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |

## B47B Fuel Rail Pressure Sensor

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BN / RD | (1) 2917 | (1) Fuel Rail Pressure Sensor 5V Reference | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BN / YE | (2) 2161 | (2) Fuel Rail Pressure Sensor 2 Signal | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BK / GN | (3) 2919 | (3) Fuel Rail Pressure Sensor Low Reference | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) BU / WH | (4) 2918 | (4) Fuel Rail Pressure Sensor Signal | (4) I | (4) — |

### B52C Heated Oxygen Sensor - Bank 1 Sensor 1




4381050

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 10021267
- Service Connector: 85877333
- Description: 4-Way F 1.2 Multilock Series, Sealed( GY)

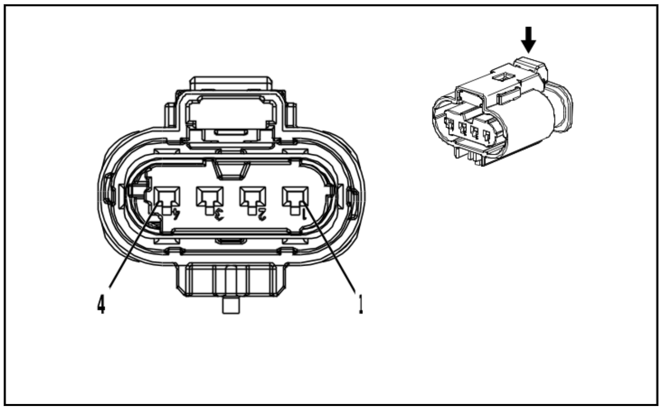
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## B52C Heated Oxygen Sensor - Bank 1 Sensor 1

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) GY / WH | (1) 3113 | (1) HO2S Heater Low Control Bank 1 Sensor 1 | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) VT / BU | (2) 5293 | (2) Powertrain Main Relay Fused Supply Voltage 4 | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) WH / BK | (3) 3111 | (3) HO2S Low Signal Bank 1 Sensor 1 | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) VT / GY | (4) 3110 | (4) HO2S High Signal Bank 1 Sensor 1 | (4) I | (4) — |

### B52D Heated Oxygen Sensor - Bank 1 Sensor 2




4036370

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 10021266
- Service Connector: 19330920
- Description: 4-Way F 1.2 Multilock Series, Sealed( GY)

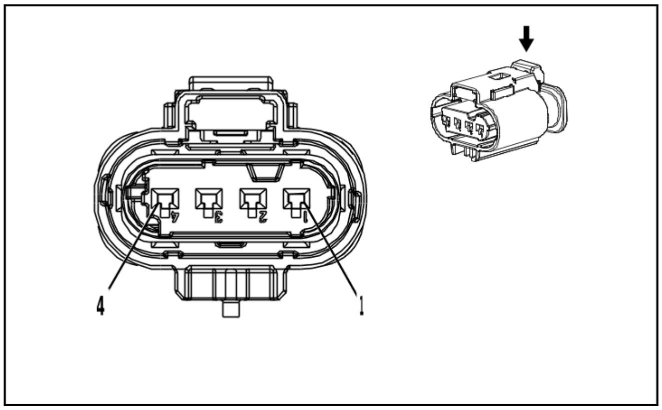
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## B52D Heated Oxygen Sensor - Bank 1 Sensor 2

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) GY / WH | (1) 3122 | (1) HO2S Heater Low Control Bank 1 Sensor 2 | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) VT / BU | (2) 5294 | (2) Powertrain Main Relay Fused Supply Voltage 5 | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) WH / YE | (3) 3121 | (3) HO2S Low Signal Bank 1 Sensor 2 | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) BN | (4) 3120 | (4) HO2S High Signal Bank 1 Sensor 2 | (4) I | (4) — |

### B52E Heated Oxygen Sensor - Bank 2 Sensor 1




4381050

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 10021267
- Service Connector: 85877333
- Description: 4-Way F 1.2 Multilock Series, Sealed( GY)

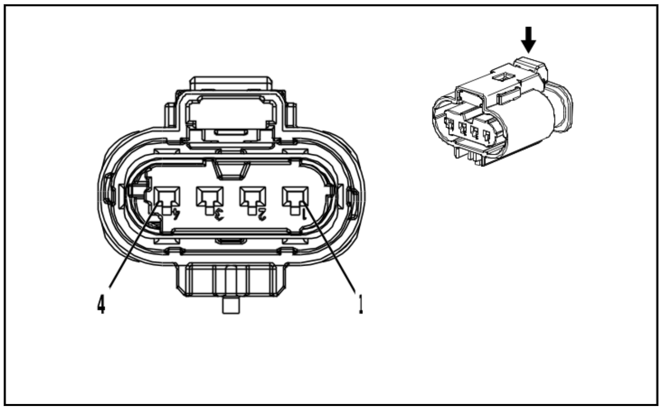
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## B52E Heated Oxygen Sensor - Bank 2 Sensor 1

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) GN / YE | (1) 3212 | (1) HO2S Heater Low Control Bank 2 Sensor 1 | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) VT / BU | (2) 5293 | (2) Powertrain Main Relay Fused Supply Voltage 4 | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) YE / WH | (3) 3211 | (3) HO2S Low Signal Bank 2 Sensor 1 | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) VT / WH | (4) 3210 | (4) HO2S High Signal Bank 2 Sensor 1 | (4) I | (4) — |

### B52F Heated Oxygen Sensor - Bank 2 Sensor 2




4036370

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 10021266
- Service Connector: 19330920
- Description: 4-Way F 1.2 Multilock Series, Sealed( GY)

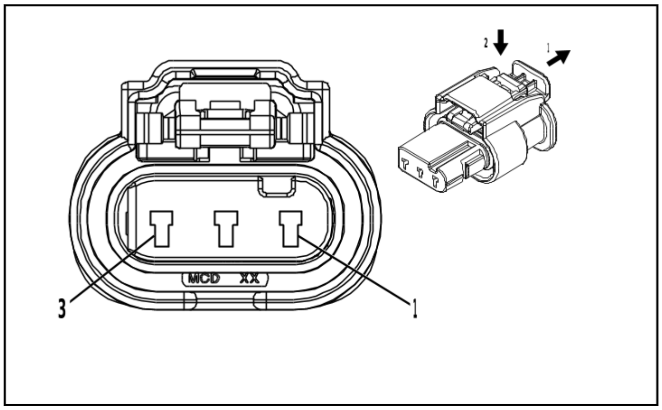
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## B52F Heated Oxygen Sensor - Bank 2 Sensor 2

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) WH / BN | (1) 3223 | (1) HO2S Heater Low Control Bank 2 Sensor 2 | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) VT / BU | (2) 5294 | (2) Powertrain Main Relay Fused Supply Voltage 5 | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) YE / BU | (3) 3221 | (3) HO2S Low Signal Bank 2 Sensor 2 | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) VT / GN | (4) 3220 | (4) HO2S High Signal Bank 2 Sensor 2 | (4) I | (4) — |

### B55 Engine Compartment Cover Switch




4421568

**Connector Part Information**
- Harness Type: Body Wiring Harness
- OEM Connector: 34900-3120
- Service Connector: 19368220
- Description: 3-Way F 1.2 MCON-LL Series, Sealed( BK)

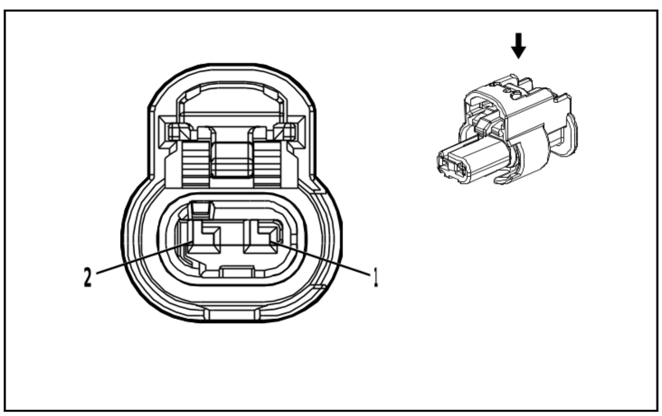
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## B55 Engine Compartment Cover Switch

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) YE | (1) 4063 | (1) Hood Status A Signal | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) BN / GN | (2) 4064 | (2) Hood Status B Signal | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BK | (3) 150 | (3) Ground | (3) I | (3) — |

### B58L Airbag Front End Discriminating Sensor - Left




4690744

**Connector Part Information**
- Harness Type: Body Wiring Harness
- OEM Connector: 1-2296694-3
- Service Connector: 19366871
- Description: 2-Way F 1.2 MCON Series, Sealed( BK)

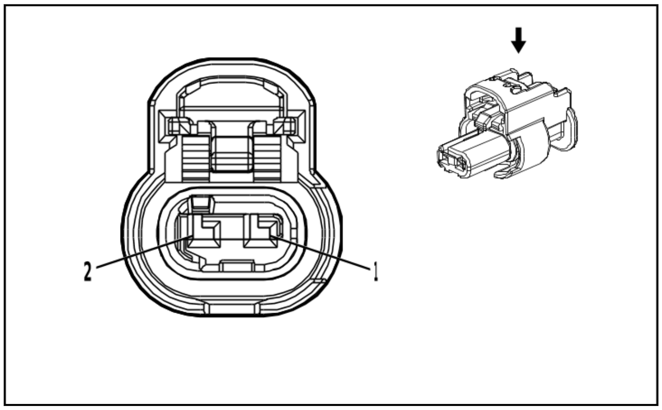
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |

## B58L Airbag Front End Discriminating Sensor - Left

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) OG / YE | (1) 354 | (1) Left Front Impact Discriminating Sensor Signal | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK / OG | (2) 5045 | (2) Left Front Impact Discriminating Sensor Low Reference | (2) I | (2) — |

**B58R Airbag Front End Discriminating Sensor - Right**




4690744

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 1-2296694-3
- Service Connector: 19366871
- Description: 2-Way F 1.2 MCON Series, Sealed( BK)

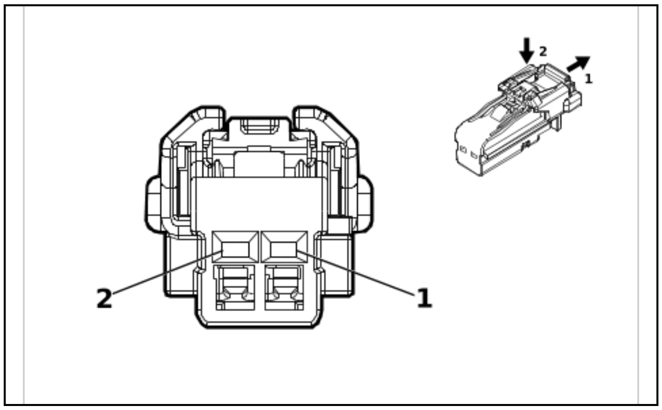
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |

## B58R Airbag Front End Discriminating Sensor - Right

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) OG / GN | (1) 1409 | (1) Right Front Impact Discriminating Sensor Signal | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK / OG | (2) 5600 | (2) Right Front Impact Discriminating Sensor Low Reference | (2) I | (2) — |

### B61P Seat Belt Tension Sensor - Passenger




4115691

**Connector Part Information**
- Harness Type: Body Wiring Harness
- OEM Connector: 6098-8988
- Service Connector: 87816612
- Description: 2-Way F 1.2 MCON Series( BK)

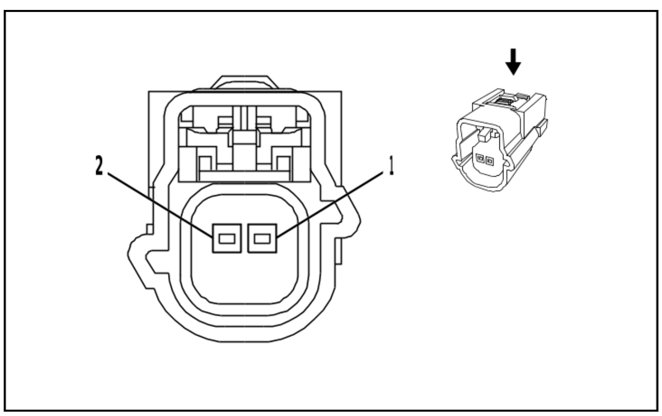
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |

## B61P Seat Belt Tension Sensor - Passenger

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) GY / OG | (1) 3946 | (1) Passenger Automatic Locking Retractor Switch Low Reference | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) OG / BN | (2) 3947 | (2) Passenger Automatic Locking Retractor Switch Signal | (2) I | (2) — |

### B63LF Airbag Side Impact Sensor - Left Front Door




2179777

**Connector Part Information**
- Harness Type: Front Side Door Door Wiring Harness - Left
- OEM Connector: 13610095
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 0.64 Series, Sealed( GY)

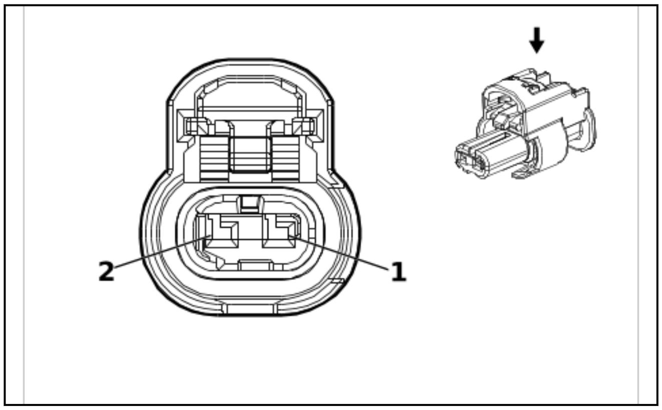
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## B63LF Airbag Side Impact Sensor - Left Front Door

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) OG / GN | (1) 2132 | (1) Left Front Side Impact Sensor Signal | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK / OG | (2) 6628 | (2) Left Front Side Impact Sensor Low Reference | (2) I | (2) — |

### B63LR Airbag Side Impact Rear Sensor - Left Door




4335931

**Connector Part Information**
- Harness Type: Rear Side Door Door Wiring Harness - Left
- OEM Connector: 1-2296694-2
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series, Sealed( BK)

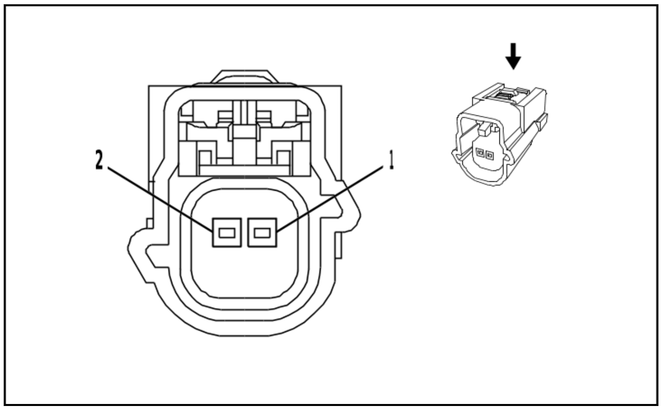
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |

## B63LR Airbag Side Impact Rear Sensor - Left Door

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) OG / BU | (1) 6622 | (1) Left Rear Side Impact Sensor Signal | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK / OG | (2) 6623 | (2) Left Rear Side Impact Sensor Low Reference | (2) I | (2) — |

### B63RF Airbag Side Impact Sensor - Right Front Door




2179777

**Connector Part Information**

- Harness Type: Front Side Door Door Wiring Harness - Right
- OEM Connector: 13610095
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 0.64 Series, Sealed( GY)

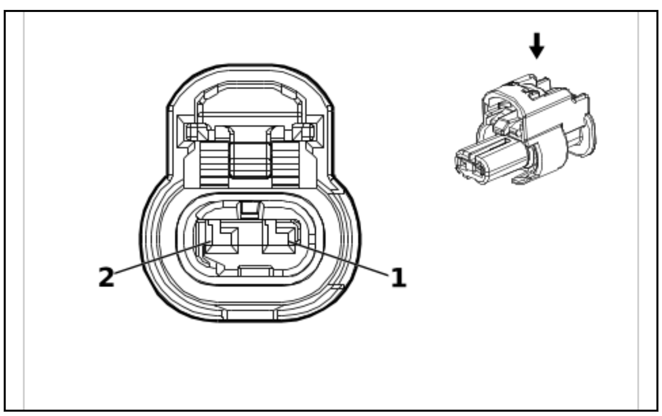
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## B63RF Airbag Side Impact Sensor - Right Front Door

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BN / OG | (1) 2134 | (1) Right Front Side Impact Sensor Signal | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK / OG | (2) 6629 | (2) Right Front Side Impact Sensor Low Reference | (2) I | (2) — |

### B63RR Airbag Side Impact Rear Sensor - Right Door




4335931

**Connector Part Information**

- Harness Type: Rear Side Door Door Wiring Harness - Right
- OEM Connector: 1-2296694-2
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series, Sealed( BK)

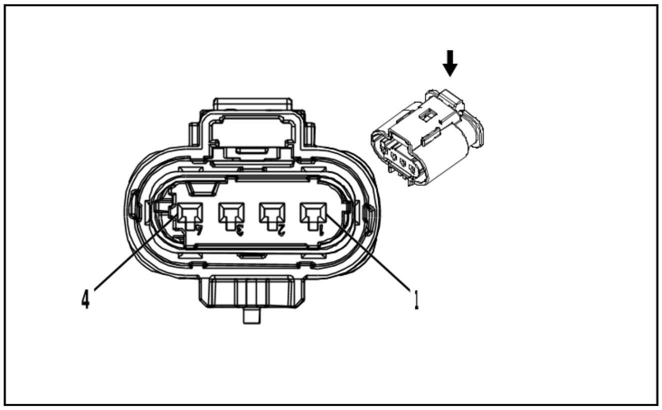
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |

## B63RR Airbag Side Impact Rear Sensor - Right Door

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) OG / WH | (1) 6626 | (1) Right Rear Side Impact Sensor Signal | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK / OG | (2) 6627 | (2) Right Rear Side Impact Sensor Low Reference | (2) I | (2) — |

### B66 Intake Air Temperature Sensor




2717079

**Connector Part Information**
- Harness Type: Engine Wiring Harness
- OEM Connector: 13503575
- Service Connector: 85877329
- Description: 4-Way F 1.2 Multilock Series, Sealed( BK)

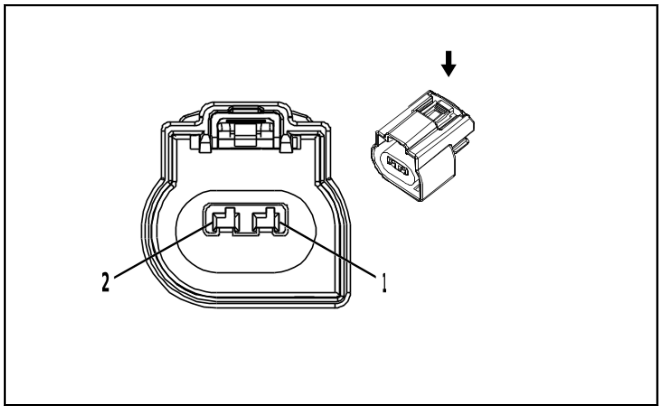
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## B66 Intake Air Temperature Sensor

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) WH / BU | (1) 7329 | (1) Pre-Throttle Air Temperature Signal | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) GY / RD | (2) 10667 | (2) Engine Control Sensors 5 Volt Reference | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BK / GN | (3) 580 | (3) Engine Control Sensors Low Reference 2 | (3) I | (3) — |
| 4 | — | — | — | Not Occupied | — | — |

**B68A Knock Sensor 1**




2717073

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 34752-0204
- Service Connector: 19301207
- Description: 2-Way F 1.5 MX Series, Sealed( BK)

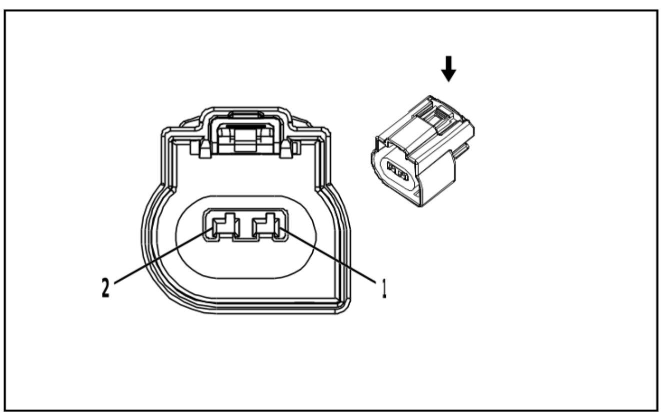
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-2A (GY) | No Tool Required |

## B68A Knock Sensor 1

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) VT / GY | (1) 496 | (1) Knock Sensor 1 Signal | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK / YE | (2) 1716 | (2) Knock Sensor Low Reference 1 | (2) I | (2) — |

**B68B Knock Sensor 2**




2717073

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 34752-0204
- Service Connector: 19301207
- Description: 2-Way F 1.5 MX Series, Sealed( BK)

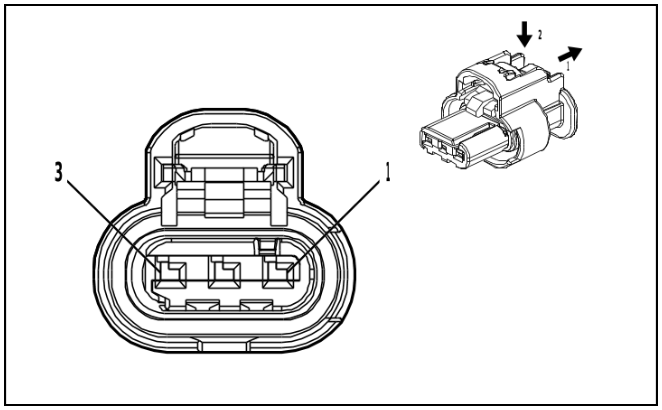
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-2A (GY) | No Tool Required |

## B68B Knock Sensor 2

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) WH / GY | (1) 1876 | (1) Knock Sensor 2 Signal | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK / GY | (2) 2303 | (2) Knock Sensor Low Reference 2 | (2) I | (2) — |

### B74 Manifold Absolute Pressure Sensor (L5P)




4581126

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 13514590
- Service Connector: 86792094
- Description: 3-Way F 1.2 MCON-CB Series, Sealed( BK)

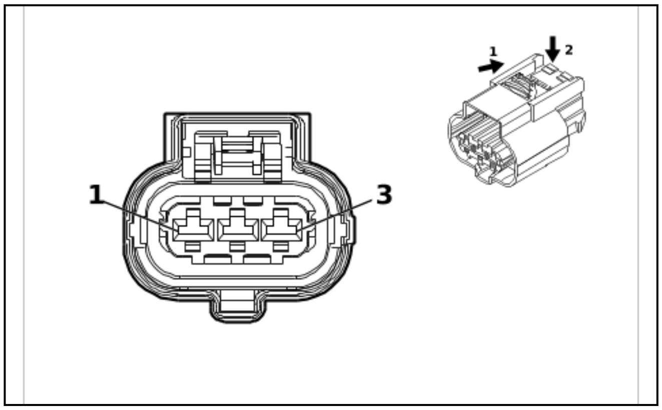
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## B74 Manifold Absolute Pressure Sensor (L5P)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BU / RD | (1) 460 | (1) Engine Control Sensors 5 Volt Reference 1 | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK / YE | (2) 548 | (2) Engine Control Sensors Low Reference 1 | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) GN / WH | (3) 432 | (3) Manifold Absolute Pressure Sensor Signal | (3) I | (3) — |

## B74 Manifold Absolute Pressure Sensor (L8T)




4900977

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 35133579
- Service Connector: 84815530
- Description: 3-Way F 2.8 CTS Series, Sealed( BK)

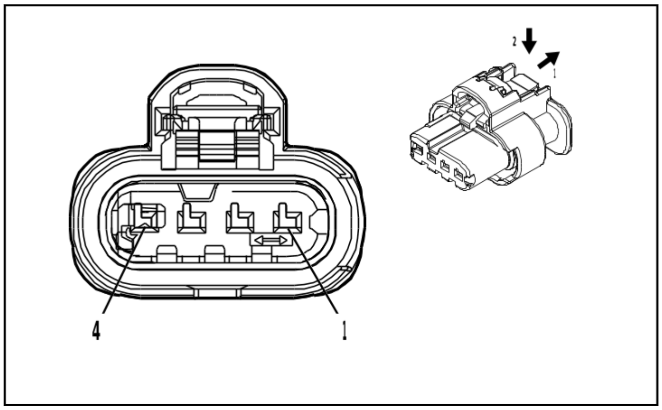
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-35 (VT) | No Tool Required |

### B74 Manifold Absolute Pressure Sensor (L8T)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) GY / RD | (1) 2704 | (1) Manifold Absolute Pressure Sensor 5V Reference | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK / GN | (2) 469 | (2) Manifold Absolute Pressure Sensor Low Reference | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) GN / WH | (3) 432 | (3) Manifold Absolute Pressure Sensor Signal | (3) I | (3) — |

### B75 Mass Airflow Sensor




4934614

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 1-2296696-2
- Service Connector: 85519071
- Description: 4-Way F 1.2 MCON-CB Series, Sealed( BK)

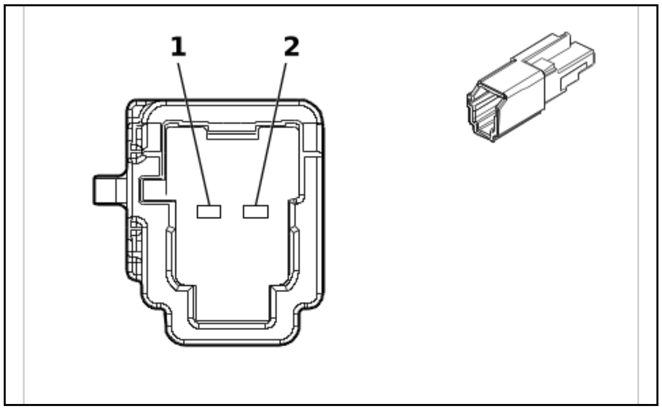
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## B75 Mass Airflow Sensor

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75<br>(1) 0.5 | (1) VT / BU<br>(1) VT / BU | (1) 5294<br>(1) 5294 | (1) Powertrain Main Relay Fused Supply Voltage 5<br>(1) Powertrain Main Relay Fused Supply Voltage 5 | (1) I<br>(1) I | (1) L5P<br>(1) L8T |
| (2) 2 | (2) 0.5 | (2) BU | (2) 492 | (2) Mass Air Flow Sensor Signal | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) GN / WH | (3) 4622 | (3) Engine Control Module LIN Bus 2 | (3) I | (3) — |
| (4) 4 | (4) 0.5<br>(4) 1 | (4) BK / WH<br>(4) BK / WH | (4) 6151<br>(4) 251 | (4) Engine Control Module Ground<br>(4) Signal Ground | (4) I<br>(4) I | (4) L5P<br>(4) L8T |

### B77 Radio Volume Compensator Interior Noise Microphone




6529124

**Connector Part Information**

- Harness Type: Dome Lamp Wiring Harness
- OEM Connector: 6099-0610
- Service Connector: 85725003
- Description: 2-Way M 1.2 MBS Series( BK)

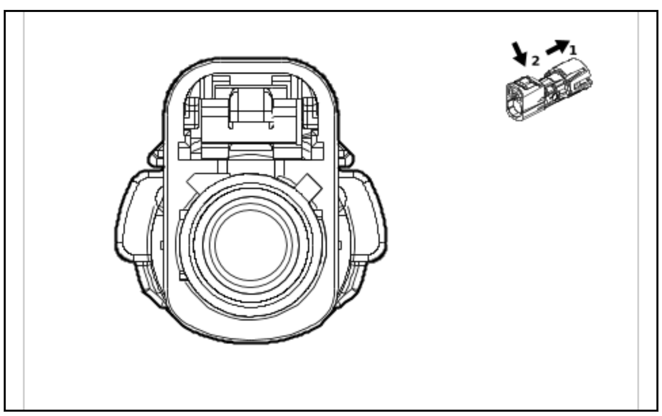
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-13 (BU) | No Tool Required |

## B77 Radio Volume Compensator Interior Noise Microphone

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) GN / BK | (1) 3008 | (1) Active Noise Cancellation Microphone 1 Feedback Signal | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) GN / BN | (2) 3005 | (2) Active Noise Cancellation Microphone 1 Signal | (2) I | (2) — |

### B87 Rearview Driver Information Camera (UV2)




5758030

**Connector Part Information**

- Harness Type: Endgate Wiring Harness COAX
- OEM Connector: 35187032
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type( BK)

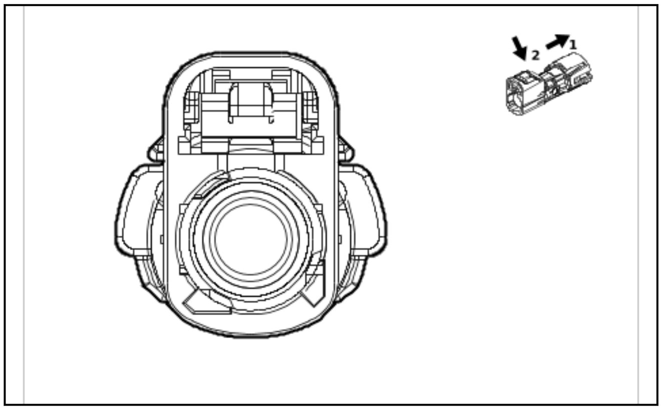
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## B87 Rearview Driver Information Camera (UV2)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| — | — | Coax Cable | — | Rear Vision Camera Coaxial Video Signal | I | — |

### B87 Rearview Driver Information Camera (UVB)




5757455

**Connector Part Information**

- Harness Type: Endgate Wiring Harness
- OEM Connector: 35187043
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type( OG)

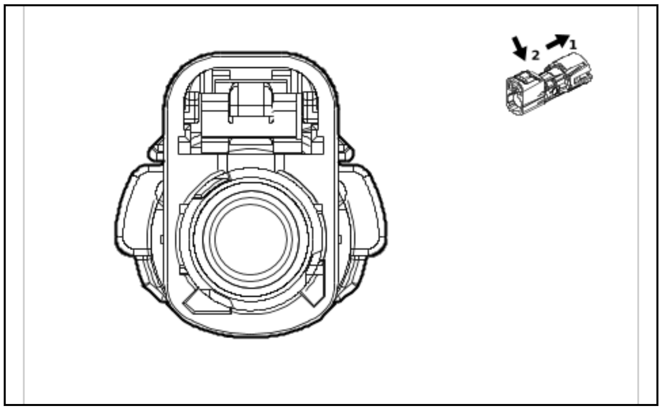
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## B87 Rearview Driver Information Camera (UVB)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| OG | —<br>— | BARE<br>WH | 4721<br>4721 | Rearview Camera LVDS (Low Voltage Differential Signaling) Coaxial Signal<br>Rearview Camera LVDS (Low Voltage Differential Signaling) Coaxial Signal | I<br>I | —<br>— |

### B87 Rearview Driver Information Camera (ZW9 & 5N5)




5757455

**Connector Part Information**

- Harness Type: Rearview Camera Wiring Harness
- OEM Connector: 13516802
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type( OG)

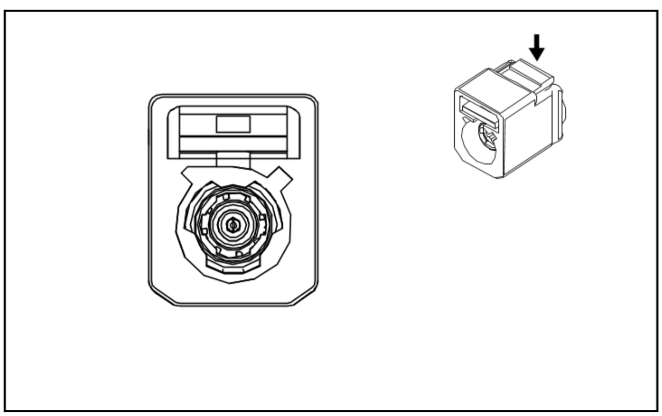
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## B87 Rearview Driver Information Camera (ZW9 & 5N5)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| OG | — | BARE | 5081 | Equalization Power Signal | I | — |

### B87CA Auxiliary Rearview Camera - Cargo Area (UVN)



3293633

**Connector Part Information**

- Harness Type: Inside Rearview Mirror Wiring Harness COAX
- OEM Connector: 3FA1ENARJ-C01ER
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type( BK)

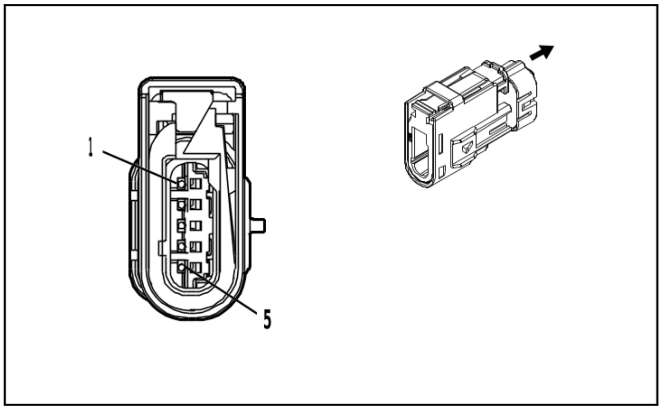
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## B87CA Auxiliary Rearview Camera - Cargo Area (UVN)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| — | — | Coax Cable | — | Cargo Bed Rear Vision Camera Coaxial Video Signal | I | — |

### B87CA Auxiliary Rearview Camera - Cargo Area (UVO)




4808321

**Connector Part Information**

- Harness Type: Inside Rearview Mirror Wiring Harness
- OEM Connector: SRVWSB-05A-AH
- Service Connector: Service by Harness - See Part Catalog
- Description: 5-Way M 1.2 Series, Sealed( GY)

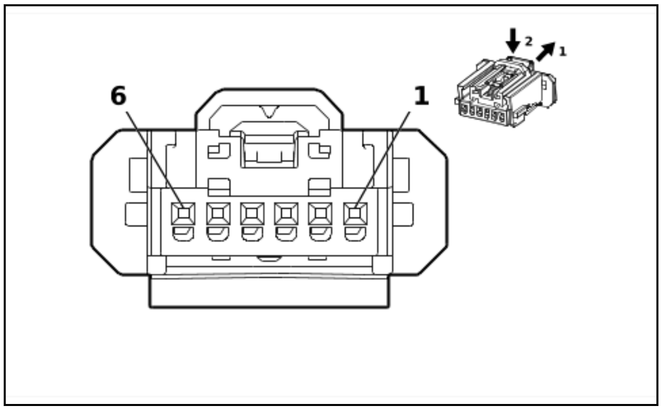
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-17 (L-GN) | No Tool Required |

## B87CA Auxiliary Rearview Camera - Cargo Area (UVO)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) GY / YE | (1) 6972 | (1) Rearview Camera Signal [+] | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) WH / BU | (2) 6973 | (2) Rearview Camera Signal [-] | (2) I | (2) — |
| (3) 3 | (3) 0.35 | (3) BU | (3) 6974 | (3) Rearview Camera Low Reference | (3) I | (3) — |
| (4) 4 | (4) 0.35 | (4) BK / WH | (4) 851 | (4) Signal Ground | (4) I | (4) — |
| (5) 5 | (5) 0.35 | (5) VT / GN | (5) 339 | (5) Run/Crank Ignition 1 Voltage | (5) I | (5) — |

### B99 Steering Angle Sensor Module




6171406

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 2292884-5
- Service Connector: 85669157
- Description: 6-Way F 2.0 Gen 50 Series( BK)

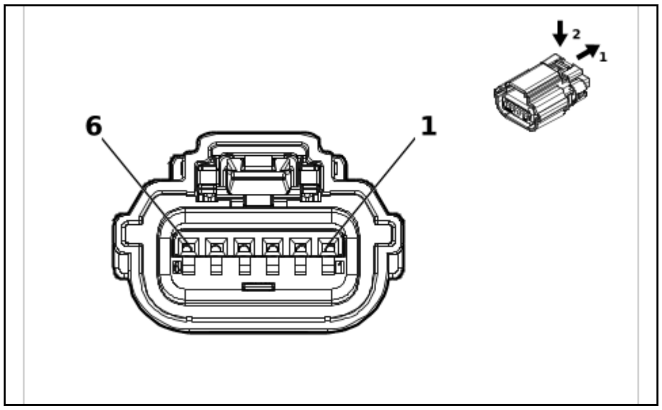
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | EL-35616-58 (BK) | No Tool Required |

## B99 Steering Angle Sensor Module

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) BU / WH | (1) 10279 | (1) Private Steering Angle CAN Bus [-] Serial Data | (1) I | (1) — |
| 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 0.35 | (3) YE | (3) 10280 | (3) Private Steering Angle CAN Bus [+] Serial Data | (3) I | (3) — |
| 4 | — | — | — | Not Occupied | — | — |
| (5) 5 | (5) 0.35 | (5) GN / BN | (5) 2087 | (5) Multi-axis Acceleration Sensor Supply Volt-age | (5) I | (5) — |
| (6) 6 | (6) 0.35 | (6) BK / WH | (6) 851 | (6) Signal Ground | (6) I | (6) — |

## B107 Accelerator Pedal Position Sensor




5921819

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 35390637
- Service Connector: 86825466
- Description: 6-Way F 0.64 OCS Series, Sealed( BK)

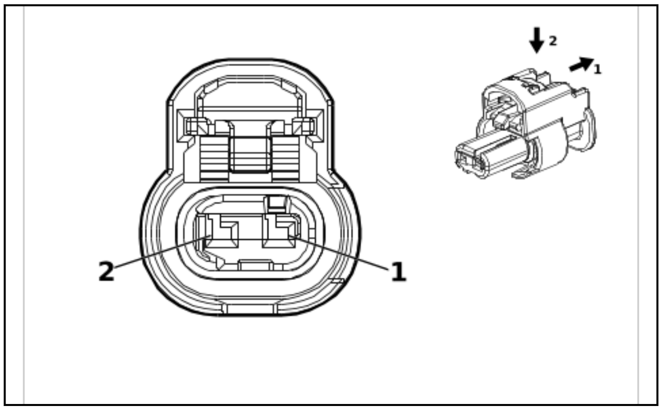
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## B107 Accelerator Pedal Position Sensor

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) WH / RD | (1) 1164 | (1) Accelerator Pedal Position 5V Reference 1 | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) YE / WH | (2) 1161 | (2) Accelerator Pedal Position Signal 1 | (2) I | (2) — |
| (3) 3 | (3) 0.35 | (3) BK / BU | (3) 1271 | (3) Accelerator Pedal Position Low Reference 1 | (3) I | (3) — |
| (4) 4 | (4) 0.35 | (4) BK / VT | (4) 1272 | (4) Accelerator Pedal Position Low Reference 2 | (4) I | (4) — |
| (5) 5 | (5) 0.35 | (5) GN / WH | (5) 1162 | (5) Accelerator Pedal Position Signal 2 | (5) I | (5) — |
| (6) 6 | (6) 0.35 | (6) BN / RD | (6) 1274 | (6) Accelerator Pedal Position 5V Reference 2 | (6) I | (6) — |

### B110 Battery Monitor Module X1




4649903

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 1-2296694-1
- Service Connector: 85761014
- Description: 2-Way F 1.2 MCON Series, Sealed( BK)

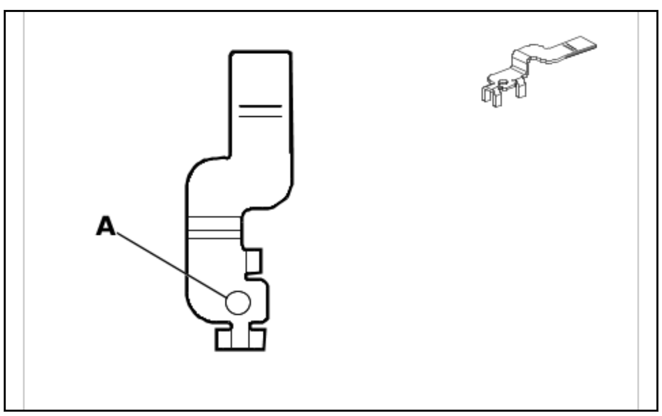
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |

## B110 Battery Monitor Module X1

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) GN / YE | (1) 2855 | (1) Body Control Module LIN Bus 9 | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) RD / YE | (2) 2340 | (2) Battery Positive Voltage | (2) I | (2) — |

### B110 Battery Monitor Module X2




6444803

**Connector Part Information**

- Harness Type: Battery Negative Cable
- OEM Connector: 86816602
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way Ring Terminal

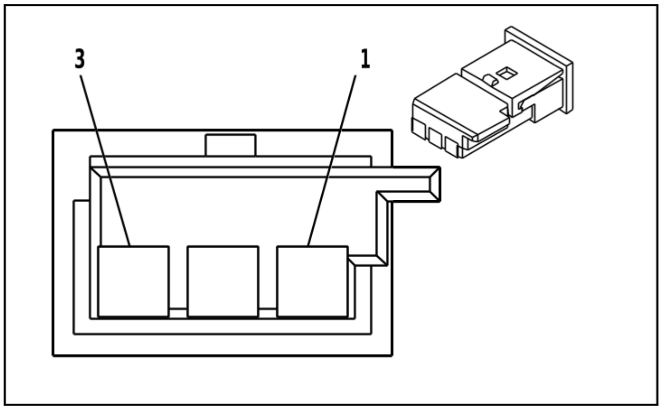
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## B110 Battery Monitor Module X2

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| A | 50 | BK | 550 | Ground | I | — |

### B117A Windshield Outside Moisture/Ambient Light and Humidity Sensor




647970

**Connector Part Information**

- Harness Type: Windshield Outside Moisture_Ambient Light and Humidity Sensor
- OEM Connector: 13153088
- Service Connector: Service by Harness - See Part Catalog
- Description: 3-Way F 0.64 Micro-Quadlock Series( BK)

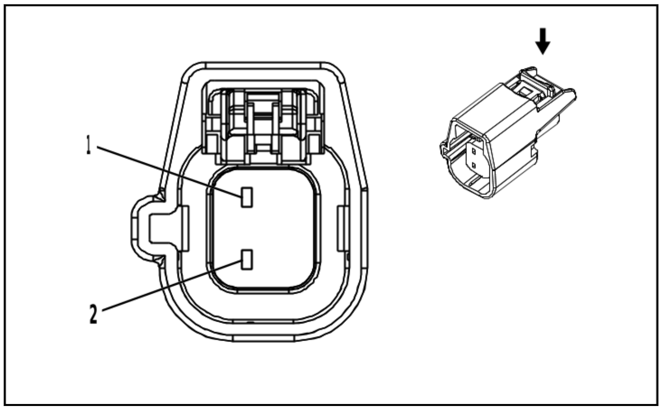
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## B117A Windshield Outside Moisture/Ambient Light and Humidity Sensor

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) RD / VT | (1) 1340 | (1) Battery Positive Voltage | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) GN / BN | (2) 4115 | (2) Body Control Module LIN Bus 5 | (2) I | (2) — |
| (3) 3 | (3) 0.35 | (3) BK | (3) 1050 | (3) Ground | (3) I | (3) — |

### B118 Windshield Washer Solvent Container Level Sensor




3958652

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 7287-8378-40
- Service Connector: 13593220
- Description: 2-Way F 1.5 Series, Sealed( L-GY)

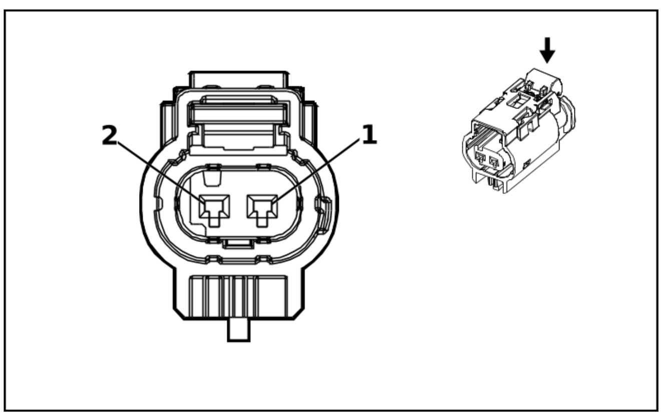
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-14 (GN) | No Tool Required |

## B118 Windshield Washer Solvent Container Level Sensor

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) VT | (1) 185 | (1) Low Washer Fluid Indicator Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK | (2) 150 | (2) Ground | (2) I | (2) — |

### B130 Exhaust Gas Recirculation Temperature Sensor




5207726

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 13583199
- Service Connector: 19332628
- Description: 2-Way F 1.2 Multilock Series, Sealed( GY)

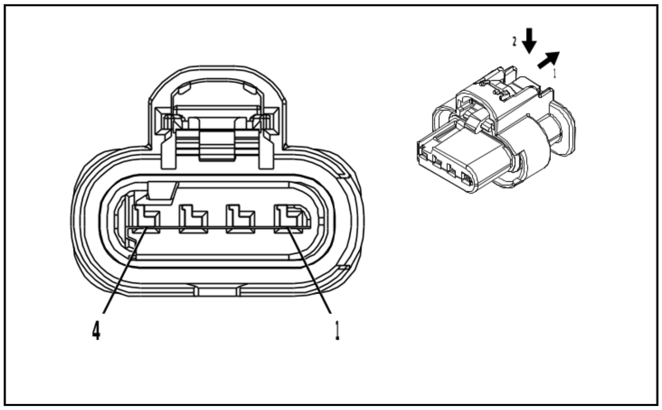
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## B130 Exhaust Gas Recirculation Temperature Sensor

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) YE / GN | (1) 3236 | (1) Exhaust Gas Recirculation Temperature Sensor 2 Signal | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK / YE | (2) 6275 | (2) Exhaust Gas Recirculation Temperature Sensor 2 Low Reference | (2) I | (2) — |

### B136 Exhaust Particulate Matter Sensor




4210809

**Connector Part Information**
- Harness Type: Chassis Wiring Harness
- OEM Connector: 1-2296696-1
- Service Connector: 85518225
- Description: 4-Way F 1.2 MCON-CB Series, Sealed( BK)

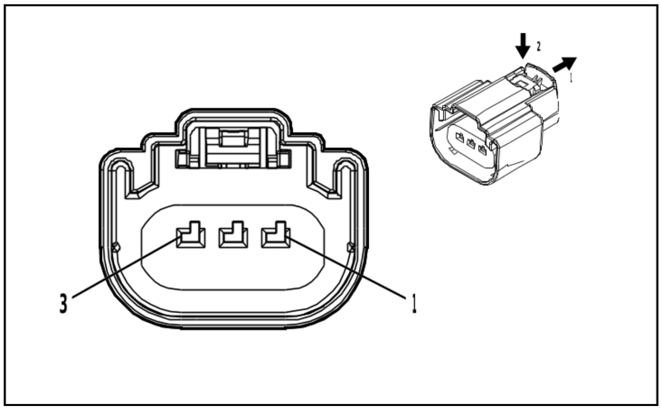
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## B136 Exhaust Particulate Matter Sensor

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 1 | (1) BK / WH | (1) 1151 | (1) Signal Ground | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BU / GY | (2) 4054 | (2) Private Serial Data Powertrain CAN Bus [-] Serial Data | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) WH | (3) 4055 | (3) Private Serial Data Powertrain CAN Bus [+] Serial Data | (3) I | (3) — |
| (4) 4 | (4) 1 | (4) VT / GN | (4) 4320 | (4) Powertrain Sensor Bus Enable | (4) I | (4) — |

## B139 Transfer Case Two/Four Wheel Drive Actuator Position Sensor




4569745

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 160073-3105
- Service Connector: 19179750
- Description: 3-Way F 1.5 MX Series, Sealed( BK)

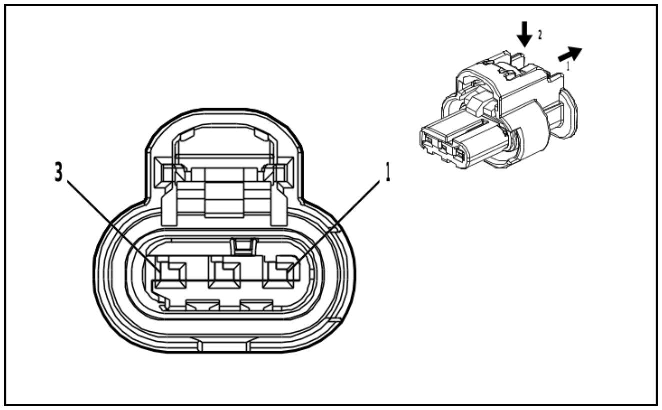
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-2A (GY) | No Tool Required |

### B139 Transfer Case Two/Four Wheel Drive Actuator Position Sensor

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) WH / RD | (1) 7477 | (1) Gear Position Sensor 5V Reference | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) WH / GN | (2) 7479 | (2) Rotary Position Sensor Signal | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) YE / BK | (3) 7478 | (3) Gear Position Sensor Low Reference | (3) I | (3) — |

## B150 Fuel Tank Pressure Sensor (- N2N)




4778903

**Connector Part Information**

- Harness Type: Chassis Wiring Harness
- OEM Connector: 1-2296695-2
- Service Connector: 86792095
- Description: 3-Way F 1.2 MCON-CB Series, Sealed( BK)

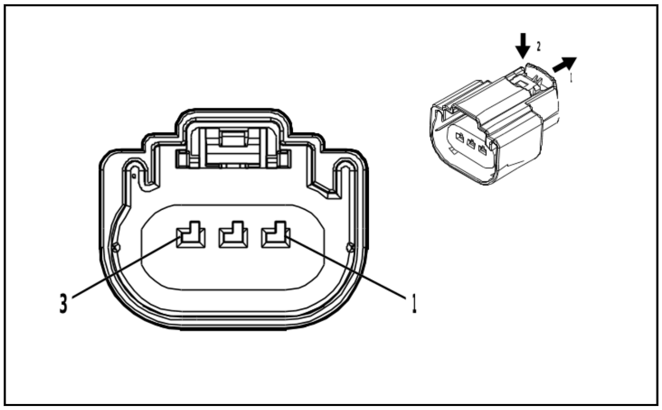
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |

### B150 Fuel Tank Pressure Sensor (- N2N)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BU / GN | (1) 890 | (1) Fuel Tank Pressure Sensor Signal | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK / BN | (2) 6284 | (2) Fuel Tank Pressure Sensor Low Reference | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) YE / RD | (3) 2709 | (3) Fuel Tank Pressure Sensor 5V Reference | (3) I | (3) — |

### B150 Fuel Tank Pressure Sensor (N2N)




4589538

**Connector Part Information**

- Harness Type: Chassis Wiring Harness
- OEM Connector: 160073-3106
- Service Connector: 84569854
- Description: 3-Way F 1.5 MX Series, Sealed( GY)

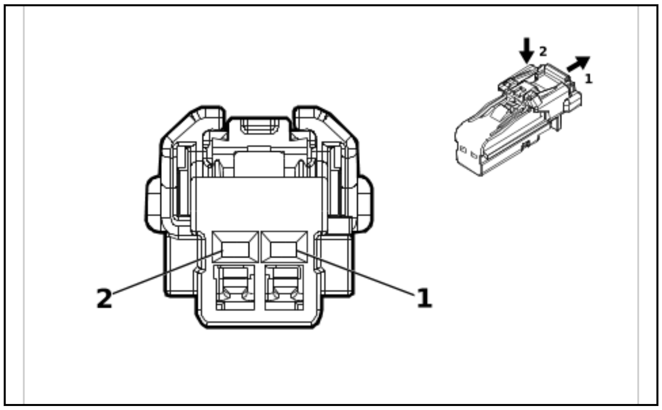
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-14 (GN) | No Tool Required |

## B150 Fuel Tank Pressure Sensor (N2N)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BU / GN | (1) 890 | (1) Fuel Tank Pressure Sensor Signal | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK / BN | (2) 6284 | (2) Fuel Tank Pressure Sensor Low Reference | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) YE / RD | (3) 2709 | (3) Fuel Tank Pressure Sensor 5V Reference | (3) I | (3) — |

### B153D Front Seat Belt Buckle - Driver




4115691

**Connector Part Information**
- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 6098-8988
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series( BK)

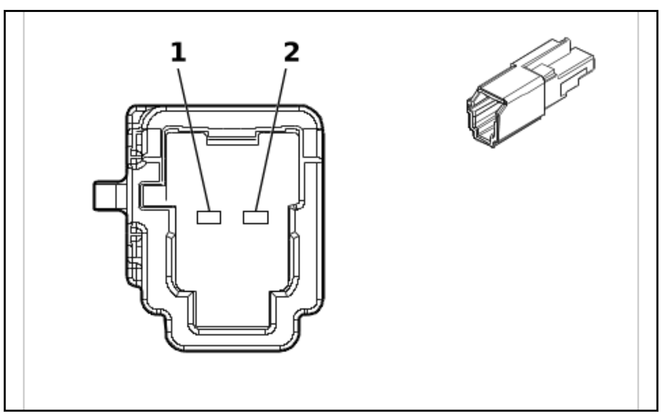
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## B153D Front Seat Belt Buckle - Driver

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BK / OG | (1) 1363 | (1) Driver Seat Belt Switch Low Reference | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) OG / GY | (2) 2652 | (2) Driver Seat Belt Sensor Signal | (2) I | (2) — |

### B153LR Rear Seat Belt Buckle - Left




6529124

**Connector Part Information**
- Harness Type: Body Wiring Harness
- OEM Connector: 6099-0610
- Service Connector: 85725003
- Description: 2-Way M 1.2 MBS Series( BK)

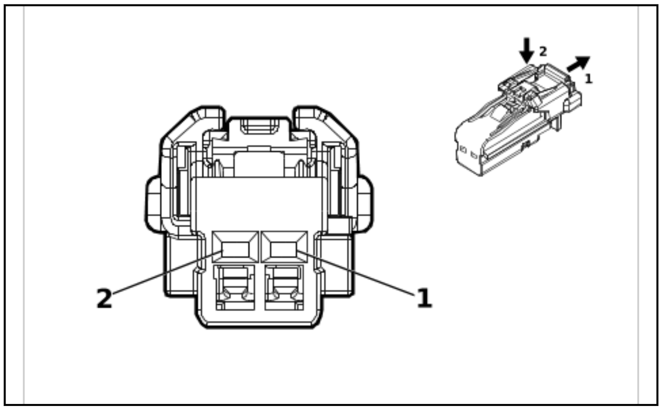
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-17 (L-GN) | No Tool Required |

## B153LR Rear Seat Belt Buckle - Left

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BK / OG | (1) 1363 | (1) Driver Seat Belt Switch Low Reference | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) YE / OG | (2) 5161 | (2) Left Rear Seat Belt Switch Signal | (2) I | (2) — |

### B153P Front Seat Belt Buckle - Passenger




4115691

**Connector Part Information**
- Harness Type: Front Seat Wiring Harness - Passenger
- OEM Connector: 6098-8988
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series( BK)

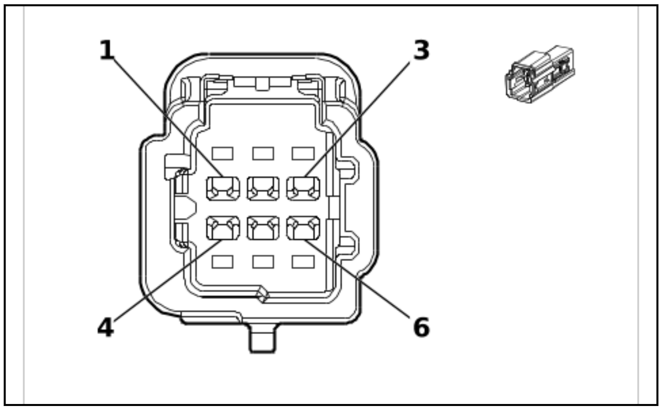
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## B153P Front Seat Belt Buckle - Passenger

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BK / OG | (1) 1363 | (1) Driver Seat Belt Switch Low Reference | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) OG / VT | (2) 1362 | (2) Passenger Seat Belt Switch Signal | (2) I | (2) — |

## B153RR Rear Seat Belt Buckle - Right




5714613

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 6098-9120
- Service Connector: 86825467
- Description: 6-Way M 1.2 MBS Series( BK)

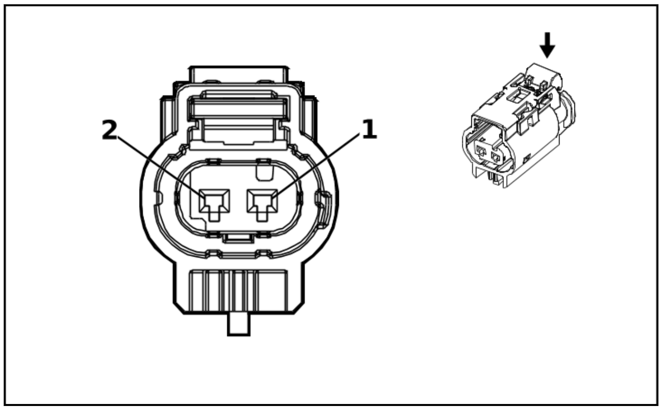
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-17 (L-GN) | No Tool Required |

### B153RR Rear Seat Belt Buckle - Right

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 | — | — | — | Not Occupied | — | — |
| (2) 2 | (2) 0.5 | (2) BU / OG | (2) 5163 | (2) Rear Center Seat Belt Switch Signal | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BK / OG | (3) 1363 | (3) Driver Seat Belt Switch Low Reference | (3) I | (3) — |
| 4 | — | — | — | Not Occupied | — | — |
| (5) 5 | (5) 0.5 | (5) BN / OG | (5) 5162 | (5) Right Rear Seat Belt Switch Signal | (5) I | (5) — |
| (6) 6 | (6) 0.5 | (6) BK / OG | (6) 1363 | (6) Driver Seat Belt Switch Low Reference | (6) I | (6) — |

### B172LF Front Disc Brake Pad Wear Sensor - Left




3747581

**Connector Part Information**

- Harness Type: Chassis Wiring Harness
- OEM Connector: 10094234
- Service Connector: 84727362
- Description: 2-Way F 1.2 Multilock Series, Sealed( BK)

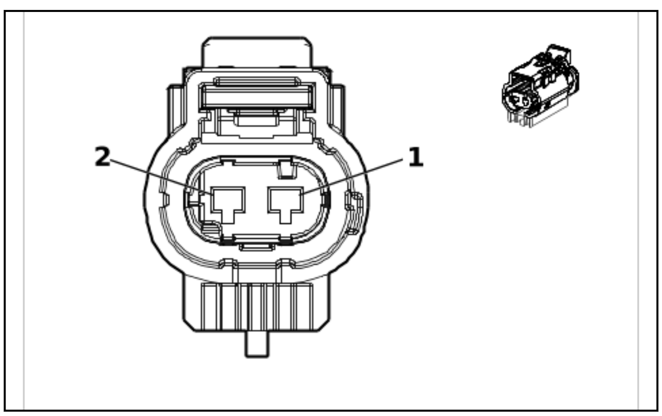
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## B172LF Front Disc Brake Pad Wear Sensor - Left

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BN / BU | (1) 1602 | (1) Front Brake Pad Wear Sensor Signal | (1) I | (1) — |
| (2) 2 | (2) 1 | (2) BK / WH | (2) 1151 | (2) Signal Ground | (2) I | (2) — |

### B172LR Rear Disc Brake Pad Wear Sensor - Left




6819415

**Connector Part Information**

- Harness Type: Chassis Rear Wiring Harness Extension Harness
- OEM Connector: 13551877
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MLK Series, Sealed( BK)

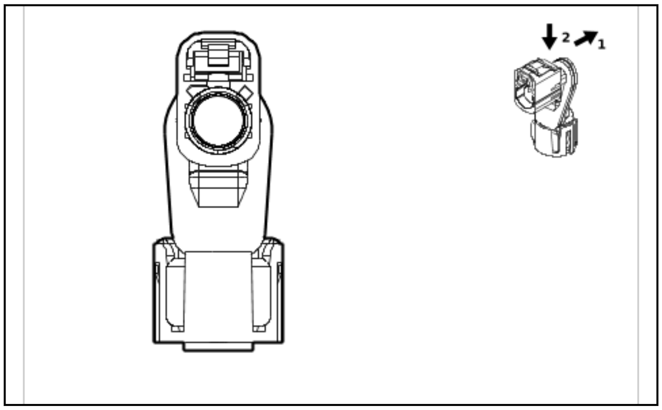
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## B172LR Rear Disc Brake Pad Wear Sensor - Left

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) GN / YE | (1) 1616 | (1) Rear Brake Pad Wear Sensor Signal | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) BK / WH | (2) 1751 | (2) Signal Ground | (2) I | (2) — |

### B174G Front View Driver Information Camera - Grille




5920539

**Connector Part Information**

- Harness Type: Front View Camera Switch Wiring Harness COAX
- OEM Connector: 13537644
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type( BK)

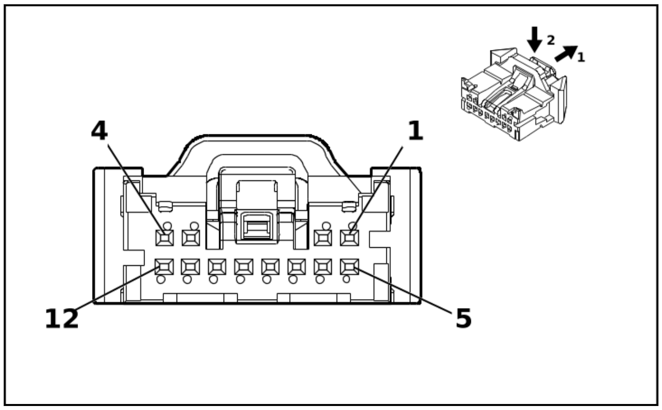
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## B174G Front View Driver Information Camera - Grille

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| — | — | Coax Cable | — | Front Vision Camera 1 Coaxial Video Signal | I | — |

## B174W Front View Camera - Windshield




5360826

**Connector Part Information**

- Harness Type: Dome Lamp Wiring Harness
- OEM Connector: 35068239
- Service Connector: 13529935
- Description: 12-Way F 050 CTS Series( BK)

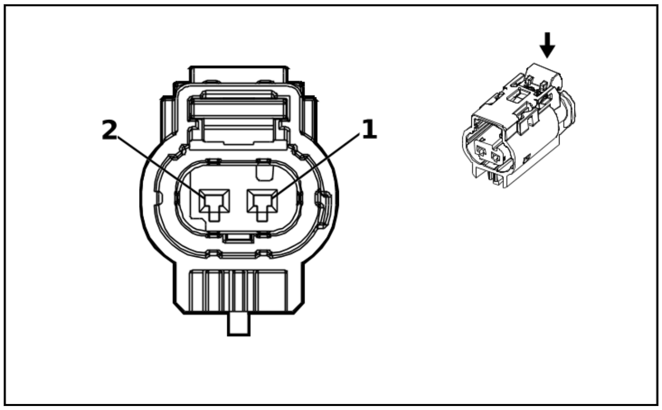
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 84944580 | EL-35616-58 (BK) | EL-38125-58 |

### B174W Front View Camera - Windshield

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) BK / WH | (1) 851 | (1) Signal Ground | (1) I | (1) — |
| 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 0.35 | (3) RD / YE | (3) 240 | (3) Battery Positive Voltage | (3) I | (3) — |
| 4 | — | — | — | Not Occupied | — | — |
| (5) 5 | (5) 0.35 | (5) BU / YE | (5) 4979 | (5) AUTOSAR CAN Bus [+] 2 Serial Data | (5) I | (5) — |
| (6) 6 | (6) 0.35 | (6) WH | (6) 4978 | (6) AUTOSAR CAN Bus [-] 2 Serial Data | (6) I | (6) — |
| (7) 7 | (7) 0.35 | (7) BU / YE | (7) 4979 | (7) AUTOSAR CAN Bus [+] 2 Serial Data | (7) I | (7) — |
| (8) 8 | (8) 0.35 | (8) WH | (8) 4978 | (8) AUTOSAR CAN Bus [-] 2 Serial Data | (8) I | (8) — |
| 9 - 12 | — | — | — | Not Occupied | — | — |

**B193A Charge Air Cooler Air Temperature Sensor - Inlet**




3747581

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 13583195
- Service Connector: 84727362
- Description: 2-Way F 1.2 Multilock Series, Sealed( BK)

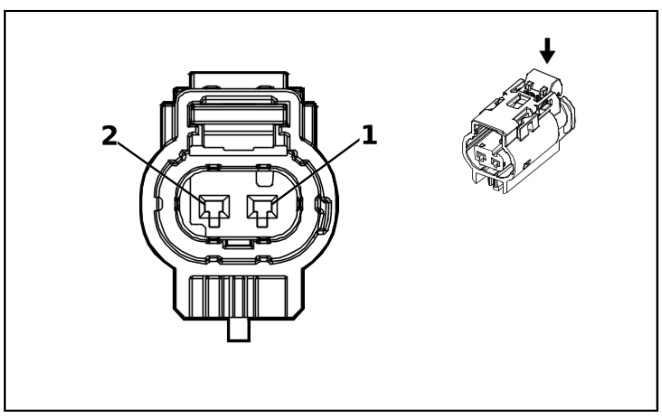
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## B193A Charge Air Cooler Air Temperature Sensor - Inlet

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BK / GN | (1) 580 | (1) Engine Control Sensors Low Reference 2 | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) GN | (2) 3683 | (2) Charge Air Cooler Inlet Temperature Sensor Signal | (2) I | (2) — |

**B193B Charge Air Cooler Air Temperature Sensor - Outlet**




3747581

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 10094234
- Service Connector: 84727362
- Description: 2-Way F 1.2 Multilock Series, Sealed( BK)

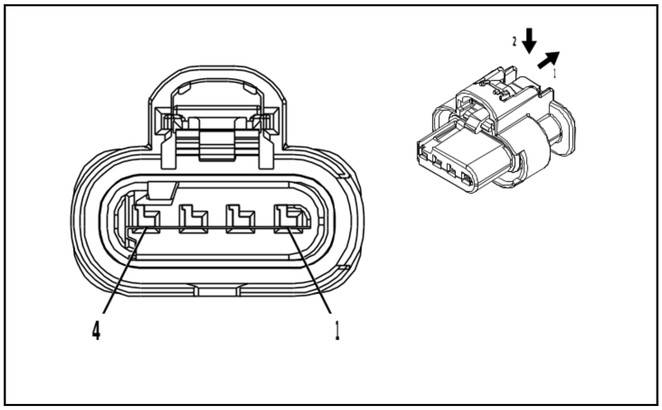
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## B193B Charge Air Cooler Air Temperature Sensor - Outlet

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BK / BU | (1) 10597 | (1) Engine Control Sensors Low Reference 3 | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BN | (2) 3681 | (2) Charge Air Cooler Outlet Temperature Sensor Signal | (2) I | (2) — |

### B195A Nitrogen Oxides Sensor 1




4210809

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 1-2296696-1
- Service Connector: 85518225
- Description: 4-Way F 1.2 MCON-CB Series, Sealed( BK)

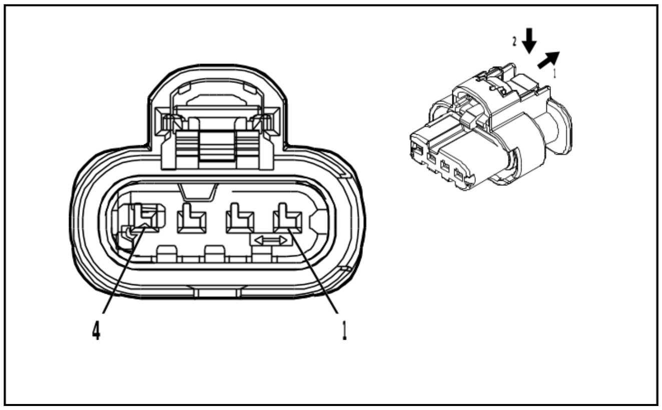
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## B195A Nitrogen Oxides Sensor 1

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) VT / GN | (1) 4320 | (1) Powertrain Sensor Bus Enable | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) WH | (2) 4055 | (2) Private Serial Data Powertrain CAN Bus [+] Serial Data | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BU / GY | (3) 4054 | (3) Private Serial Data Powertrain CAN Bus [-] Serial Data | (3) I | (3) — |
| (4) 4 | (4) 0.75 | (4) BK / WH | (4) 1151 | (4) Signal Ground | (4) I | (4) — |

### B195B Nitrogen Oxides Sensor 2




4934614

**Connector Part Information**

- Harness Type: Chassis Wiring Harness
- OEM Connector: 1-2296696-2
- Service Connector: 85519071
- Description: 4-Way F 1.2 MCON-CB Series, Sealed( BK)

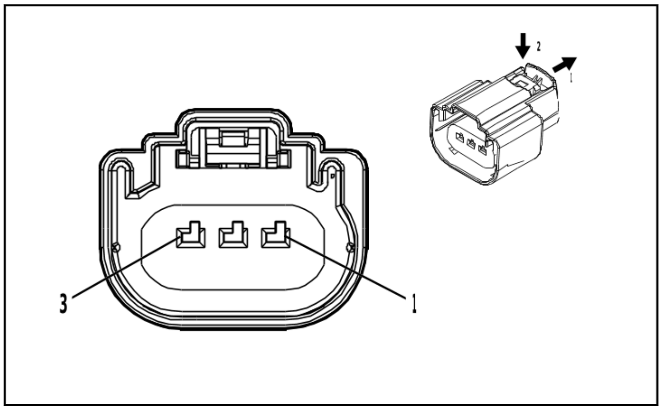
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## B195B Nitrogen Oxides Sensor 2

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 1 | (1) VT / GN | (1) 4320 | (1) Powertrain Sensor Bus Enable | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) WH | (2) 4055 | (2) Private Serial Data Powertrain CAN Bus [+] Serial Data | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BU / GY | (3) 4054 | (3) Private Serial Data Powertrain CAN Bus [-] Serial Data | (3) I | (3) — |
| (4) 4 | (4) 1 | (4) BK / WH | (4) 1151 | (4) Signal Ground | (4) I | (4) — |

**B198 Fuel Composition Sensor**




4829227

**Connector Part Information**

- Harness Type: Chassis Wiring Harness
- OEM Connector: 160073-3107
- Service Connector: 19371197
- Description: 3-Way F 1.5 MX Series, Sealed( GY)

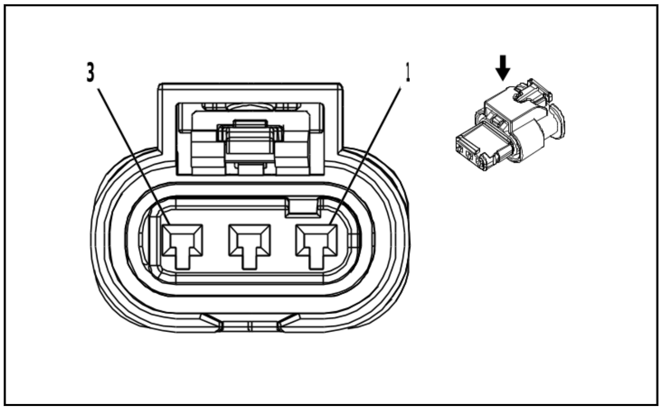
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-14 (GN) | No Tool Required |

## B198 Fuel Composition Sensor

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) VT / GN | (1) 4320 | (1) Powertrain Sensor Bus Enable | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK / GY | (2) 3802 | (2) Fuel Composition Sensor Low Reference | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) VT / BN | (3) 3803 | (3) Fuel Composition Sensor Signal | (3) I | (3) — |

### B212 Reductant Tank Fluid Sensor




2750649

**Connector Part Information**

- Harness Type: Emission Reduction Fluid Tank Reservoir Wire Harness
- OEM Connector: 1-1718644-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 3-Way F 1.2 MCON Series, Sealed( BK)

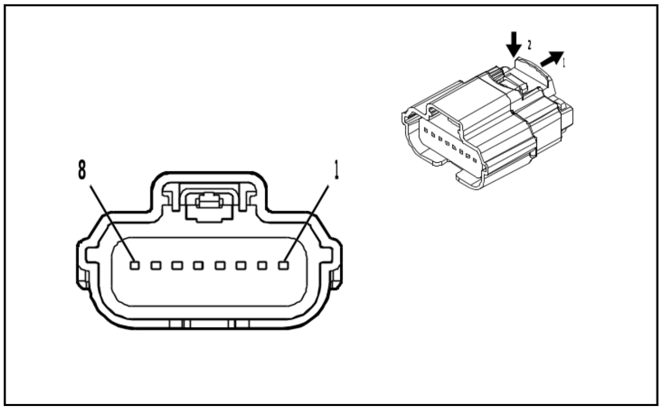
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## B212 Reductant Tank Fluid Sensor

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BK | (1) 7286 | (1) Diesel Exhaust Fluid Sensor Voltage Reference 2 | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BN | (2) 7284 | (2) Diesel Exhaust Fluid Liquid Quality Temperature Signal | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BK | (3) 7284 | (3) Diesel Exhaust Fluid Liquid Quality Temperature Signal | (3) I | (3) — |

### B218L Side Obstacle Detection Control Module - Left




4708234

**Connector Part Information**

- Harness Type: Rear Object Alarm Sensor Wiring Harness
- OEM Connector: 31404-9110
- Service Connector: Service by Harness - See Part Catalog
- Description: 8-Way F 64 Series, Sealed( BK)

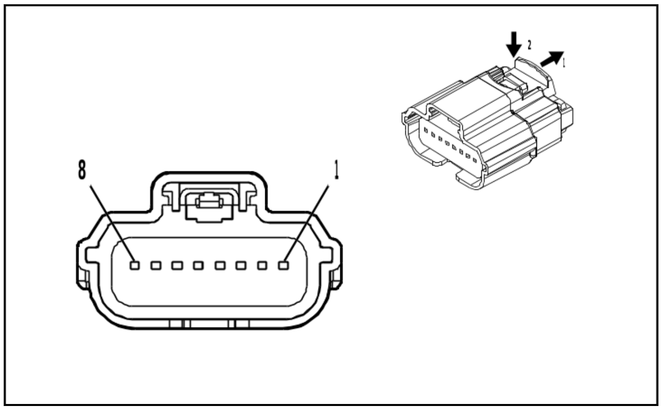
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## B218L Side Obstacle Detection Control Module - Left

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) WH | (1) 4087 | (1) Private Serial Data Side Obstacle Detection CAN Bus [-] Serial Data | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BU / VT | (2) 4088 | (2) Private Serial Data Side Obstacle Detection CAN Bus [+] Serial Data | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BK / WH | (3) 1951 | (3) Signal Ground | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) WH | (4) 4100 | (4) AUTOSAR CAN Bus [-] 4 Serial Data | (4) I | (4) — |
| (5) 5 | (5) 0.5 | (5) WH | (5) 4100 | (5) AUTOSAR CAN Bus [-] 4 Serial Data | (5) I | (5) — |
| (6) 6 | (6) 0.5 | (6) BU / VT | (6) 4101 | (6) AUTOSAR CAN Bus [+] 4 Serial Data | (6) I | (6) — |
| (7) 7 | (7) 0.5 | (7) BU / VT | (7) 4101 | (7) AUTOSAR CAN Bus [+] 4 Serial Data | (7) I | (7) — |
| (8) 8 | (8) 0.5 | (8) RD / GN | (8) 6940 | (8) Battery Positive Voltage | (8) I | (8) — |

### B218R Side Obstacle Detection Control Module - Right




4708234

**Connector Part Information**

- Harness Type: Rear Object Alarm Sensor Wiring Harness
- OEM Connector: 31404-9532
- Service Connector: Service by Harness - See Part Catalog
- Description: 8-Way F 64 Series, Sealed( BK)

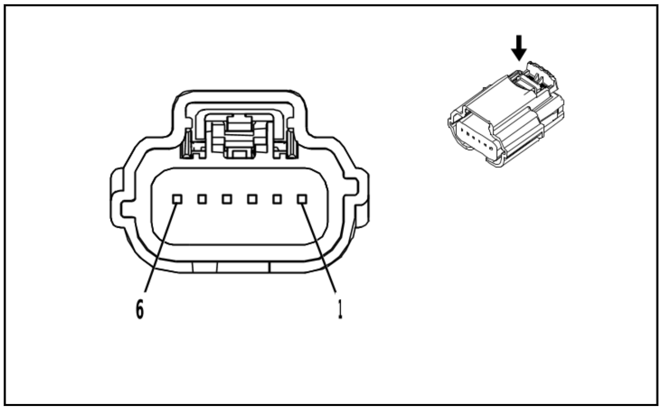
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## B218R Side Obstacle Detection Control Module - Right

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) WH | (1) 4087 | (1) Private Serial Data Side Obstacle Detection CAN Bus [-] Serial Data | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BU / VT | (2) 4088 | (2) Private Serial Data Side Obstacle Detection CAN Bus [+] Serial Data | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BK / WH | (3) 1951 | (3) Signal Ground | (3) I | (3) — |
| 4 | — | — | — | Not Occupied | — | — |
| (5) 5 | (5) 0.5 | (5) WH | (5) 4100 | (5) AUTOSAR CAN Bus [-] 4 Serial Data | (5) I | (5) — |
| (6) 6 | (6) 0.5 | (6) BU / VT | (6) 4101 | (6) AUTOSAR CAN Bus [+] 4 Serial Data | (6) I | (6) — |
| 7 | — | — | — | Not Occupied | — | — |
| (8) 8 | (8) 0.5 | (8) RD / GN | (8) 6940 | (8) Battery Positive Voltage | (8) I | (8) — |

### B302 Steering Gear Pressure Sensor (NV8)




2871903

**Connector Part Information**

- Harness Type: Power Steering Control Module Wiring Harness
- OEM Connector: 31404-7213
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 64 Series, Sealed( GY)

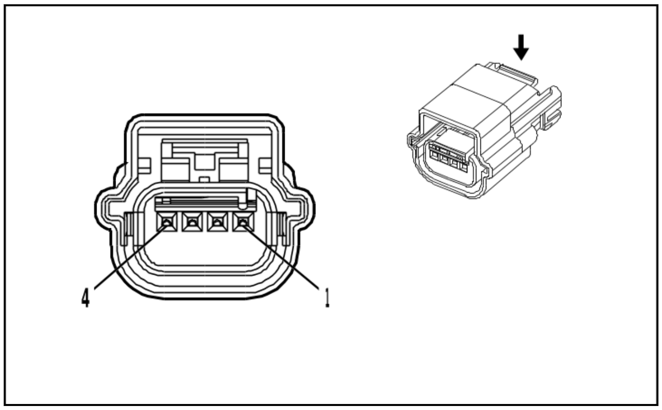
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## B302 Steering Gear Pressure Sensor (NV8)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) — | (1) — | (1) — | (1) — | (1) I | (1) — |
| (2) 2 | (2) — | (2) — | (2) — | (2) — | (2) I | (2) — |
| (3) 3 | (3) — | (3) — | (3) — | (3) — | (3) I | (3) — |
| (4) 4 | (4) — | (4) — | (4) — | (4) — | (4) I | (4) — |
| (5) 5 | (5) — | (5) — | (5) — | (5) — | (5) I | (5) — |
| (6) 6 | (6) — | (6) — | (6) — | (6) — | (6) I | (6) — |

### B303 Transmission Range Sensor




4789353

**Connector Part Information**

- Harness Type: Automatic Transmission Wiring Harness
- OEM Connector: 6006314801
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 0.64 Series, Sealed( BK)

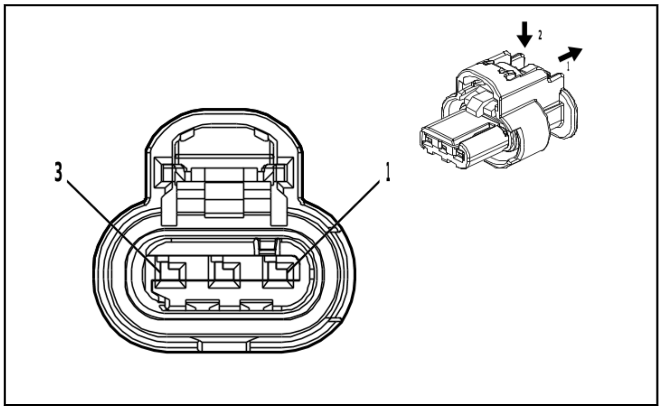
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## B303 Transmission Range Sensor

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BK / GY | (1) 0 | (1) — | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) YE | (2) 0 | (2) — | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) YE / GY | (3) 0 | (3) — | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) OG | (4) 0 | (4) — | (4) I | (4) — |

### B306A Parking Assist Alarm Sensor - Front Left Outer




4581126

**Connector Part Information**

- Harness Type: Front Object Alarm Sensor Wiring Harness
- OEM Connector: 1-2296695-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 3-Way F 1.2 MCON-CB Series, Sealed( BK)

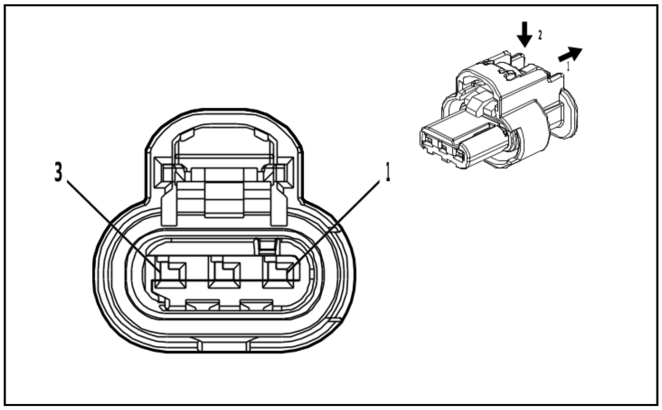
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## B306A Parking Assist Alarm Sensor - Front Left Outer

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BN | (1) 6581 | (1) Front Parking Assist Display Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) VT / WH | (2) 5215 | (2) Left Front Outer Parking Assist Sensor | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BK / BU | (3) 5214 | (3) Front Parking Assist Sensor Low Reference | (3) I | (3) — |

### B306B Parking Assist Alarm Sensor - Front Left Middle




4581126

**Connector Part Information**

- Harness Type: Front Object Alarm Sensor Wiring Harness
- OEM Connector: 1-2296695-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 3-Way F 1.2 MCON-CB Series, Sealed( BK)

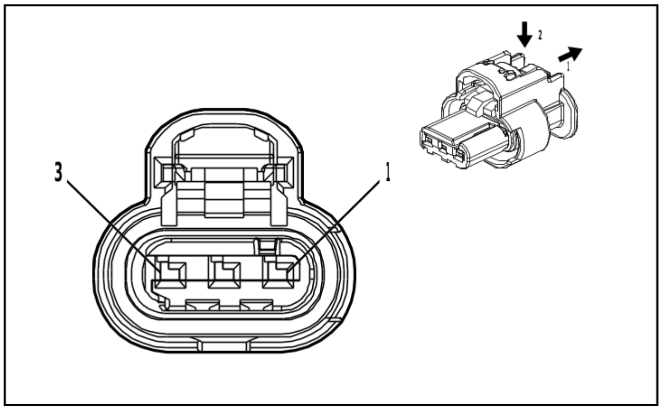
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## B306B Parking Assist Alarm Sensor - Front Left Middle

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BN | (1) 6581 | (1) Front Parking Assist Display Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) YE / GY | (2) 5216 | (2) Left Front Middle Parking Assist Sensor | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BK / BU | (3) 5214 | (3) Front Parking Assist Sensor Low Reference | (3) I | (3) — |

### B306C Parking Assist Alarm Sensor - Front Right Middle




4581126

**Connector Part Information**

- Harness Type: Front Object Alarm Sensor Wiring Harness
- OEM Connector: 1-2296695-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 3-Way F 1.2 MCON-CB Series, Sealed( BK)

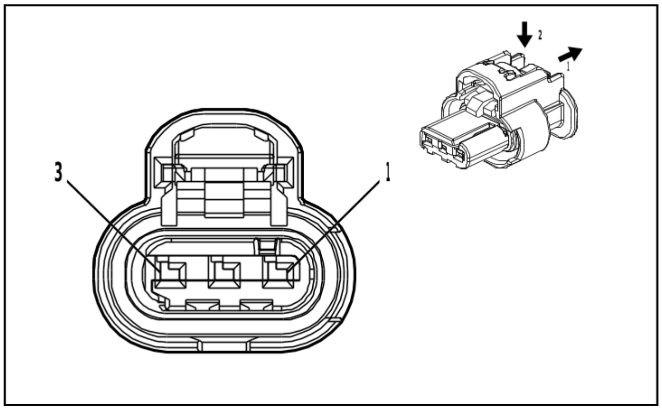
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## B306C Parking Assist Alarm Sensor - Front Right Middle

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BN | (1) 6581 | (1) Front Parking Assist Display Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) VT / GY | (2) 5218 | (2) Right Front Middle Parking Assist Sensor | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BK / BU | (3) 5214 | (3) Front Parking Assist Sensor Low Reference | (3) I | (3) — |

## B306D Parking Assist Alarm Sensor - Front Right Outer




4581126

**Connector Part Information**

- Harness Type: Front Object Alarm Sensor Wiring Harness
- OEM Connector: 1-2296695-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 3-Way F 1.2 MCON-CB Series, Sealed( BK)

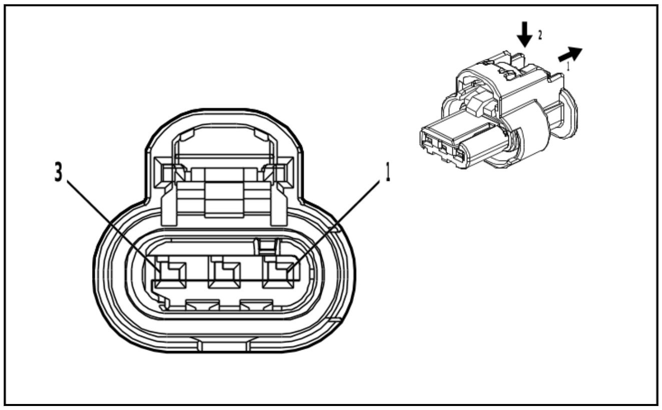
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

### B306D Parking Assist Alarm Sensor - Front Right Outer

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BN | (1) 6581 | (1) Front Parking Assist Display Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) WH / GY | (2) 5217 | (2) Right Front Outer Parking Assist Sensor | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BK / BU | (3) 5214 | (3) Front Parking Assist Sensor Low Reference | (3) I | (3) — |

## B306E Parking Assist Alarm Sensor - Rear Left Outer




4581126

**Connector Part Information**

- Harness Type: Rear Object Alarm Sensor Wiring Harness
- OEM Connector: 1-2296695-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 3-Way F 1.2 MCON-CB Series, Sealed( BK)

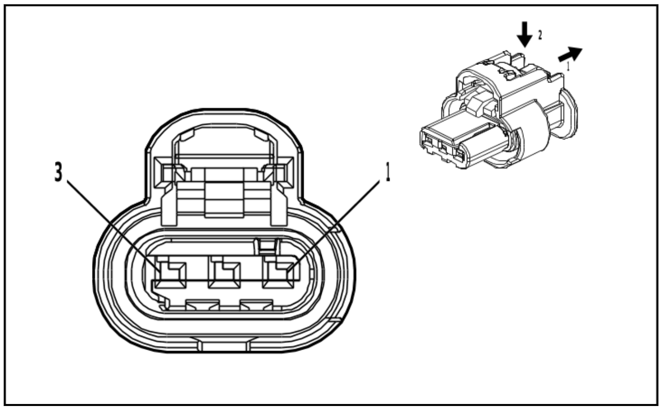
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

### B306E Parking Assist Alarm Sensor - Rear Left Outer

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BN / WH | (1) 2374 | (1) Object Sensor Voltage Reference | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) YE | (2) 2375 | (2) Left Rear Outer Parking Assist Sensor Signal | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BK / GY | (3) 2379 | (3) Object Sensor Low Reference | (3) I | (3) — |

### B306F Parking Assist Alarm Sensor - Rear Left Middle




4581126

**Connector Part Information**

- Harness Type: Rear Object Alarm Sensor Wiring Harness
- OEM Connector: 1-2296695-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 3-Way F 1.2 MCON-CB Series, Sealed( BK)

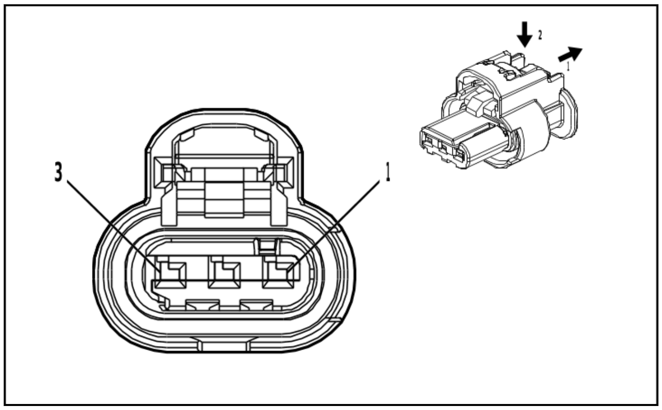
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## B306F Parking Assist Alarm Sensor - Rear Left Middle

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BN / WH | (1) 2374 | (1) Object Sensor Voltage Reference | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) YE / BU | (2) 2376 | (2) Left Rear Middle Parking Assist Sensor Signal | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BK / GY | (3) 2379 | (3) Object Sensor Low Reference | (3) I | (3) — |

### B306G Parking Assist Alarm Sensor - Rear Right Middle




4581126

**Connector Part Information**

- Harness Type: Rear Object Alarm Sensor Wiring Harness
- OEM Connector: 1-2296695-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 3-Way F 1.2 MCON-CB Series, Sealed( BK)

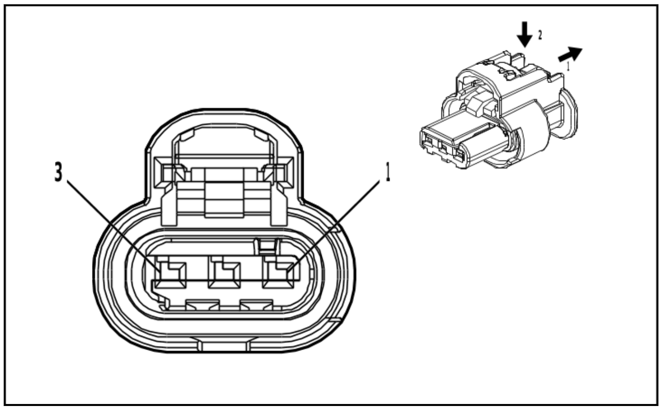
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## B306G Parking Assist Alarm Sensor - Rear Right Middle

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BN / WH | (1) 2374 | (1) Object Sensor Voltage Reference | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) YE / WH | (2) 2377 | (2) Right Rear Middle Parking Assist Sensor Signal | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BK / GY | (3) 2379 | (3) Object Sensor Low Reference | (3) I | (3) — |

### B306H Parking Assist Alarm Sensor - Rear Right Outer




4581126

**Connector Part Information**

- Harness Type: Rear Object Alarm Sensor Wiring Harness
- OEM Connector: 1-2296695-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 3-Way F 1.2 MCON-CB Series, Sealed( BK)

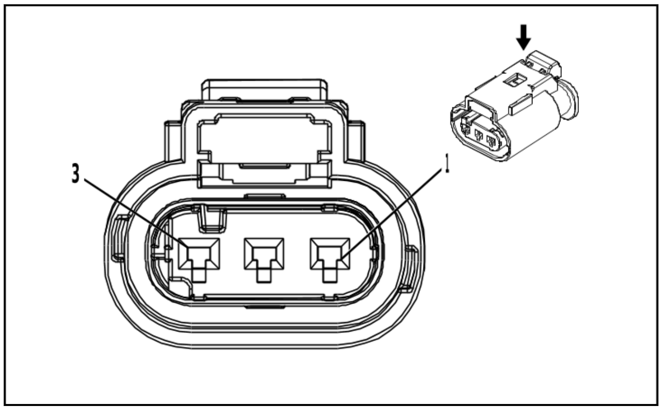
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## B306H Parking Assist Alarm Sensor - Rear Right Outer

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BN / WH | (1) 2374 | (1) Object Sensor Voltage Reference | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) YE / VT | (2) 2378 | (2) Right Rear Outer Parking Assist Sensor Signal | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BK / GY | (3) 2379 | (3) Object Sensor Low Reference | (3) I | (3) — |

### B310 Fuel Pressure and Temperature Sensor




3240107

**Connector Part Information**

- Harness Type: Fuel Injector Wiring Harness - Left
- OEM Connector: 10010344
- Service Connector: Service by Harness - See Part Catalog
- Description: 3-Way F 1.2 Multilock Series, Sealed( BK)

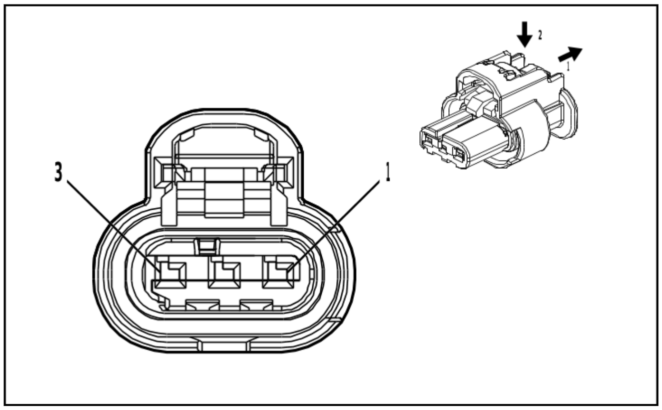
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## B310 Fuel Pressure and Temperature Sensor

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BK / GN | (1) 548 | (1) Engine Control Sensors Low Reference 1 | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BU / WH | (2) 10786 | (2) Fuel Rail Pressure Sensor SENT 1 Signal | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BN / RD | (3) 480 | (3) Engine Control Vehicle Sensors 5 Volt Reference 1 | (3) I | (3) — |

### B321 Crankcase Pressure Sensor




4994602

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 13514592
- Service Connector: 19371199
- Description: 3-Way F 1.2 MCON-CB Series, Sealed( BK)

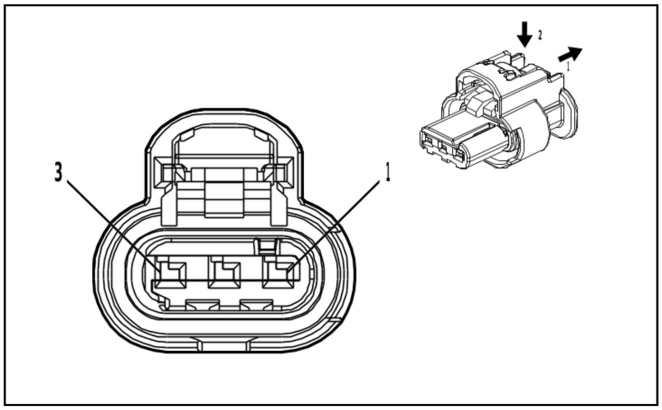
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## B321 Crankcase Pressure Sensor

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) YE / GY | (1) 3926 | (1) Crankcase Differential Pressure Sensor Signal | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK / GN | (2) 580 | (2) Engine Control Sensors Low Reference 2 | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) GY / RD | (3) 10667 | (3) Engine Control Sensors 5 Volt Reference | (3) I | (3) — |

### B345P Exhaust Pressure Differential Sensor - Particulate Filter




4581126

**Connector Part Information**

- Harness Type: Chassis Wiring Harness
- OEM Connector: 1-2296695-1
- Service Connector: 86792094
- Description: 3-Way F 1.2 MCON-CB Series, Sealed( BK)

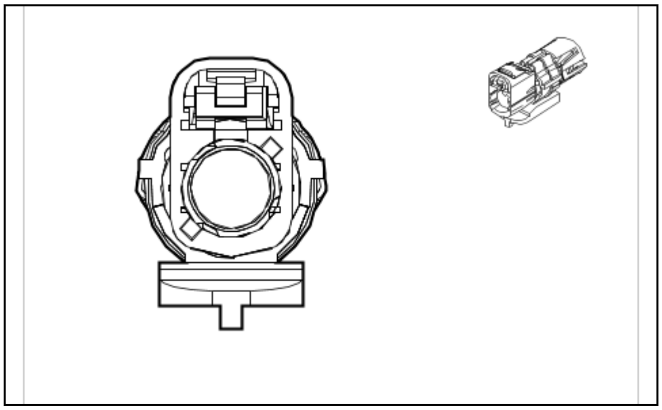
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## B345P Exhaust Pressure Differential Sensor - Particulate Filter

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 1 | (1) WH / RD | (1) 480 | (1) Engine Control Vehicle Sensors 5 Volt Reference 1 | (1) I | (1) — |
| (2) 2 | (2) 1 | (2) WH / BN | (2) 2363 | (2) Exhaust Pressure Sensor SENT 1 Signal | (2) I | (2) — |
| (3) 3 | (3) 1 | (3) BK / GY | (3) 626 | (3) Engine Control Vehicle Sensors Low Reference 1 | (3) I | (3) — |

### B352 Video Display Inside Rearview Mirror Camera (DRZ)



5633894

**Connector Part Information**

- Harness Type: Inside Rearview Mirror Wiring Harness
- OEM Connector: 35187049
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type, Sealed( BU)

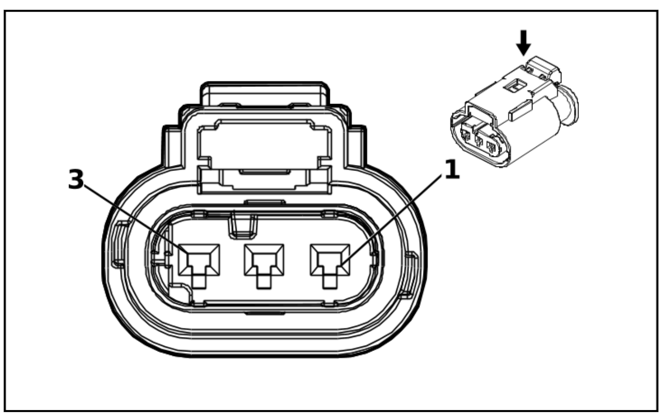
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## B352 Video Display Inside Rearview Mirror Camera (DRZ)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| BU | — | BARE | 2387 | Full Display Mirror Rear Camera LVDS (Low Voltage Differential Signaling) Coaxial Signal | I | — |

### B359 Exhaust Gas Temperature Sensor Module




5192187

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 13503572
- Service Connector: 84777453
- Description: 3-Way F 1.2 Multilock Series, Sealed( BK)

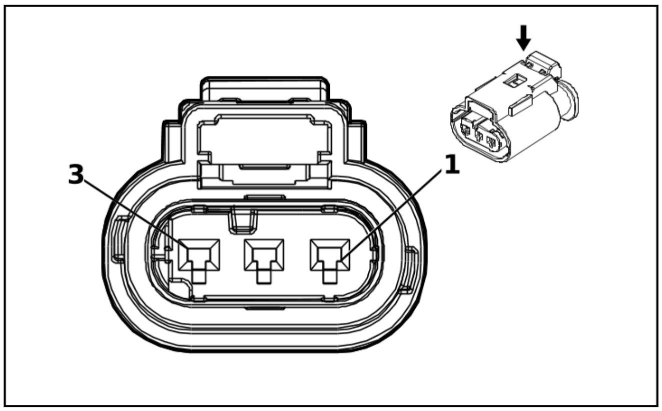
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## B359 Exhaust Gas Temperature Sensor Module

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) GN | (1) 10289 | (1) Exhaust Gas Temperature Sensor SENT 1 Signal | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK / GN | (2) 580 | (2) Engine Control Sensors Low Reference 2 | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) GY / RD | (3) 10667 | (3) Engine Control Sensors 5 Volt Reference | (3) I | (3) — |

### B359B Exhaust Gas Temperature Sensor Module 2




5192187

**Connector Part Information**

- Harness Type: Chassis Wiring Harness
- OEM Connector: 10010343
- Service Connector: 84777453
- Description: 3-Way F 1.2 Multilock Series, Sealed( BK)

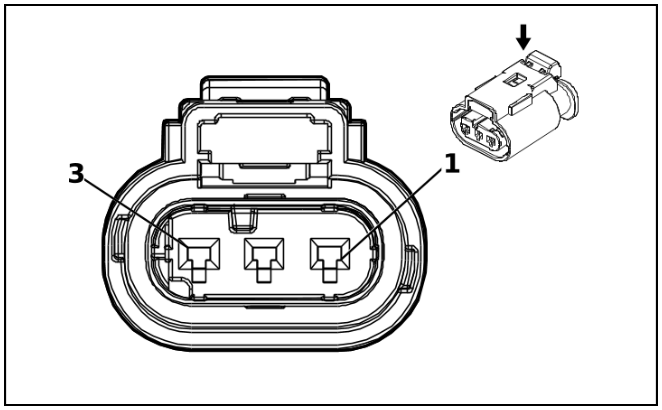
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## B359B Exhaust Gas Temperature Sensor Module 2

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BU | (1) 10290 | (1) Exhaust Gas Temperature Sensor SENT 2 Signal | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK / GY | (2) 626 | (2) Engine Control Vehicle Sensors Low Reference 1 | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) YE / RD | (3) 10595 | (3) Engine Control Vehicle Sensors 5 Volt Reference 2 | (3) I | (3) — |

### B359C Exhaust Gas Temperature Sensor Module 3




5192187

**Connector Part Information**

- Harness Type: Chassis Wiring Harness
- OEM Connector: 10010343
- Service Connector: 84777453
- Description: 3-Way F 1.2 Multilock Series, Sealed( BK)

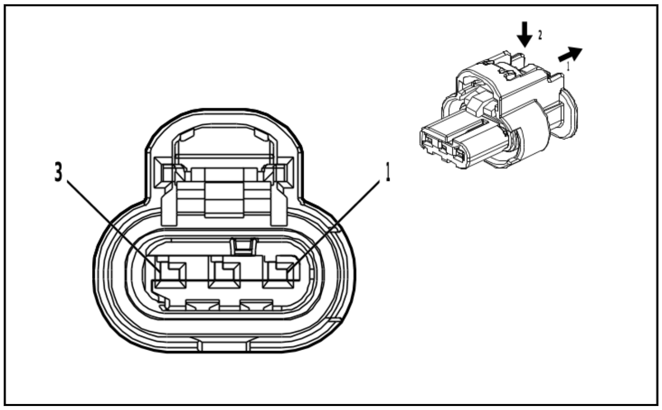
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## B359C Exhaust Gas Temperature Sensor Module 3

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) YE | (1) 10291 | (1) Exhaust Gas Temperature Sensor SENT 3 Signal | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK / GY | (2) 626 | (2) Engine Control Vehicle Sensors Low Reference 1 | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) YE / RD | (3) 10595 | (3) Engine Control Vehicle Sensors 5 Volt Reference 2 | (3) I | (3) — |

### B394 Evaporative Emission Canister Purge System Pressure Sensor




4778903

**Connector Part Information**
- Harness Type: Chassis Wiring Harness
- OEM Connector: 1-2296695-2
- Service Connector: 86792095
- Description: 3-Way F 1.2 MCON-CB Series, Sealed( BK)

## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |

## B394 Evaporative Emission Canister Purge System Pressure Sensor

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) YE / GY | (1) 11029 | (1) Canister Vapor Pressure Sensor Signal | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK / GY | (2) 626 | (2) Engine Control Vehicle Sensors Low Reference 1 | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) WH / RD | (3) 480 | (3) Engine Control Vehicle Sensors 5 Volt Reference 1 | (3) I | (3) — |

### C1D Battery 2

—

**Connector Part Information**
- Harness Type: Auxiliary Battery Negative Cable
- OEM Connector: 87865365
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: Ring Terminal

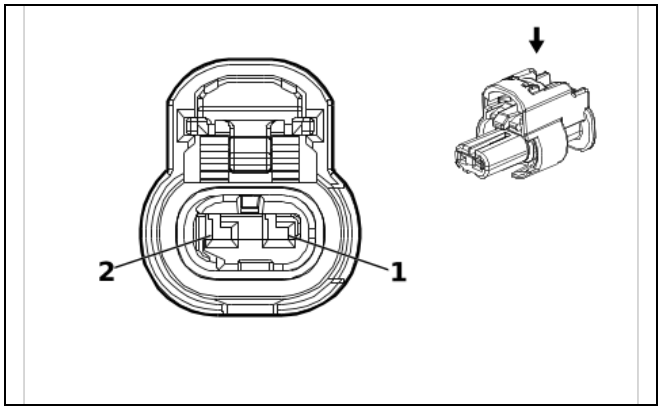
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## C1D Battery 2

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| A | 35 | BK | 350 | Ground | I | K4Z/ KHF |

### E2LF Front Side Marker Lamp - Left




4335931

**Connector Part Information**
- Harness Type: Front Side Marker Lamp Wiring Harness
- OEM Connector: 1-2296694-2
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series, Sealed( BK)

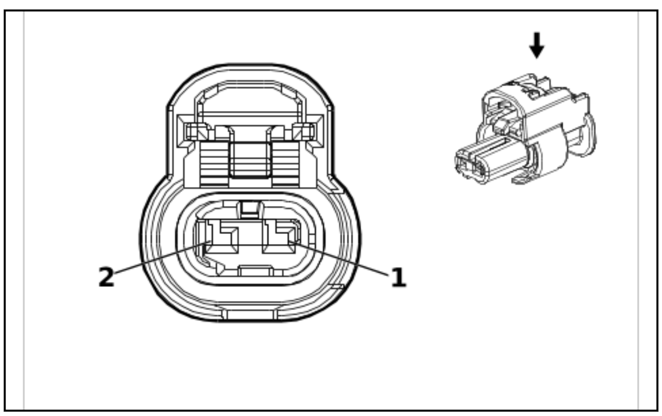
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |

## E2LF Front Side Marker Lamp - Left

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 20 | (1) GY | (1) 150 | (1) Ground | (1) I | (1) — |
| (2) 2 | (2) 20 | (2) WH / YE | (2) 1254 | (2) Left Front Park Lamp Control | (2) I | (2) — |

### E2LRW Rear Side Marker Lamp - Left Wheel Opening Molding




4335931

**Connector Part Information**
- Harness Type: Rear Lamp Wiring Harness
- OEM Connector: 13512366
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON-CB Series, Sealed( BK)

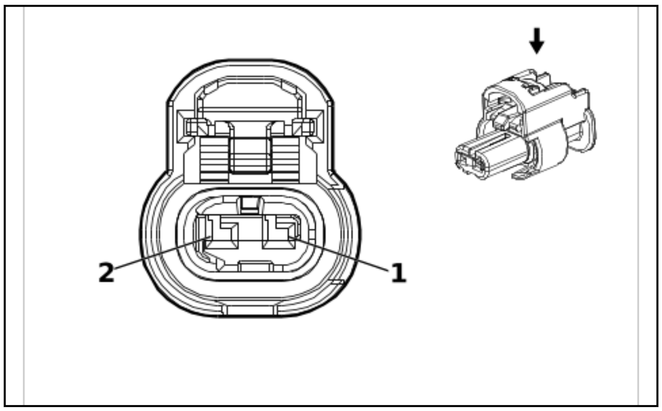
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |
| II | Not required | No Tool Required | No Tool Required |

## E2LRW Rear Side Marker Lamp - Left Wheel Opening Molding

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 20 | (1) GY | (1) 1850 | (1) Ground | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BN / GN | (2) 4246 | (2) Identification Lamp Control | (2) II | (2) — |

### E2RF Front Side Marker Lamp - Right




4335931

**Connector Part Information**
- Harness Type: Front Side Marker Lamp Wiring Harness
- OEM Connector: 1-2296694-2
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series, Sealed( BK)

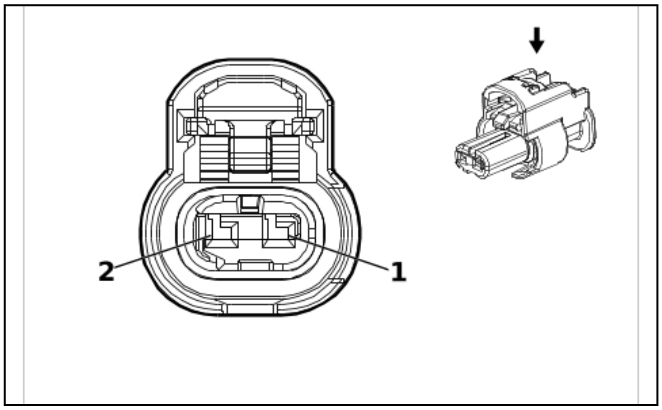
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |

## E2RF Front Side Marker Lamp - Right

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 20 | (1) GY | (1) 650 | (1) Ground | (1) I | (1) — |
| (2) 2 | (2) 20 | (2) WH / GN | (2) 1253 | (2) Right Front Park Lamp Control | (2) I | (2) — |

### E2RRW Rear Side Marker Lamp - Right Wheel Opening Molding




4335931

**Connector Part Information**
- Harness Type: Rear Lamp Wiring Harness
- OEM Connector: 13512366
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON-CB Series, Sealed( BK)

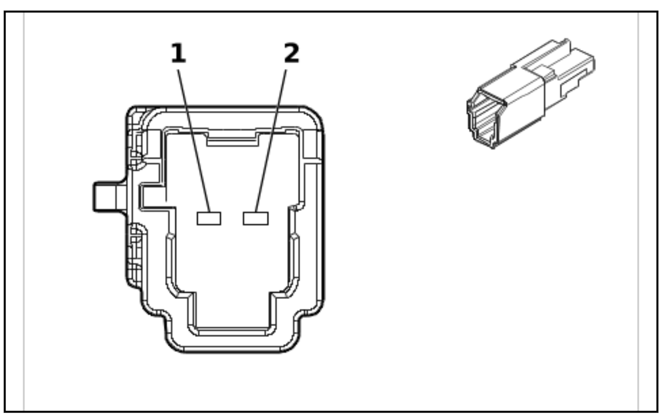
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |
| II | Not required | No Tool Required | No Tool Required |

## E2RRW Rear Side Marker Lamp - Right Wheel Opening Molding

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 20 | (1) GY | (1) 1850 | (1) Ground | (1) I | (1) — |
| (2) 2 | (2) — | (2) BN / GN | (2) 4246 | (2) Identification Lamp Control | (2) II | (2) — |

### E3A Front Clearance Lamp - Roof Left Outer




6529124

**Connector Part Information**
- Harness Type: Roof Wiring Harness
- OEM Connector: 6099-0610
- Service Connector: 85725003
- Description: 2-Way M 1.2 MBS Series( BK)

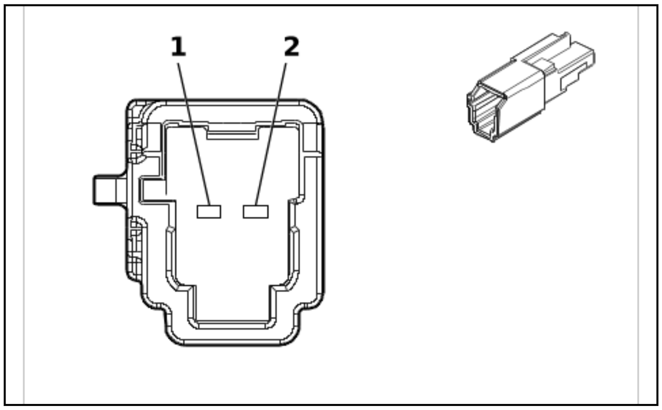
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-17 (L-GN) | No Tool Required |

## E3A Front Clearance Lamp - Roof Left Outer

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BK | (1) 1050 | (1) Ground | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BN / GN | (2) 4246 | (2) Identification Lamp Control | (2) I | (2) — |

### E3E Front Clearance Lamp - Roof Right Outer




6529124

**Connector Part Information**
- Harness Type: Roof Wiring Harness
- OEM Connector: 6099-0610
- Service Connector: 85725003
- Description: 2-Way M 1.2 MBS Series( BK)

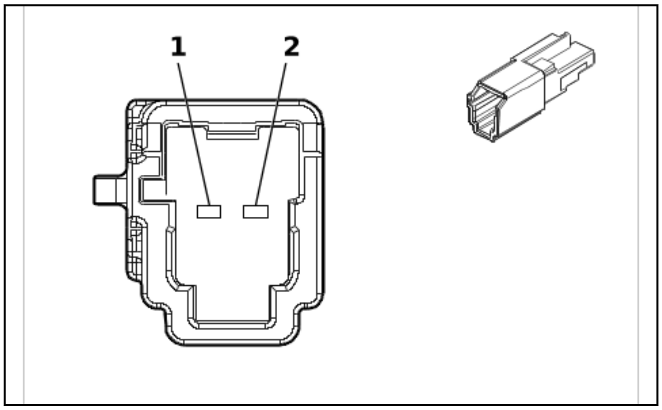
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-17 (L-GN) | No Tool Required |

## E3E Front Clearance Lamp - Roof Right Outer

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BK | (1) 1050 | (1) Ground | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BN / GN | (2) 4246 | (2) Identification Lamp Control | (2) I | (2) — |

### E3FA Front Identification Lamp




6529124

**Connector Part Information**

- Harness Type: Roof Wiring Harness
- OEM Connector: 6099-0610
- Service Connector: 85725003
- Description: 2-Way M 1.2 MBS Series( BK)

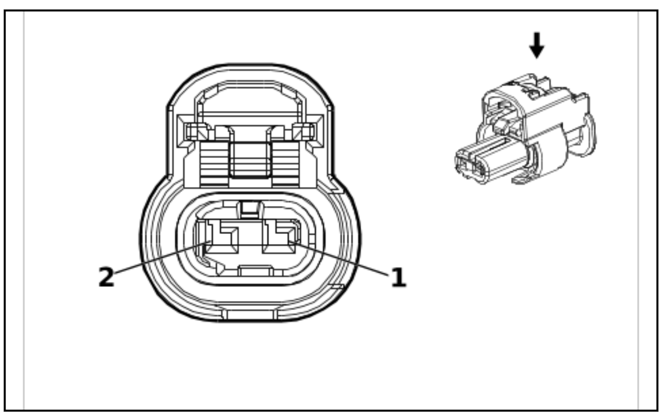
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-17 (L-GN) | No Tool Required |

## E3FA Front Identification Lamp

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BK | (1) 1050 | (1) Ground | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BN / GN | (2) 4246 | (2) Identification Lamp Control | (2) I | (2) — |

### E3LF Rear Clearance Lamp - Fender Left Front




4335931

**Connector Part Information**

- Harness Type: Rear License Plate Lamp Wiring Harness Extension Harness - Left
- OEM Connector: 1-2296694-2
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series, Sealed( BK)

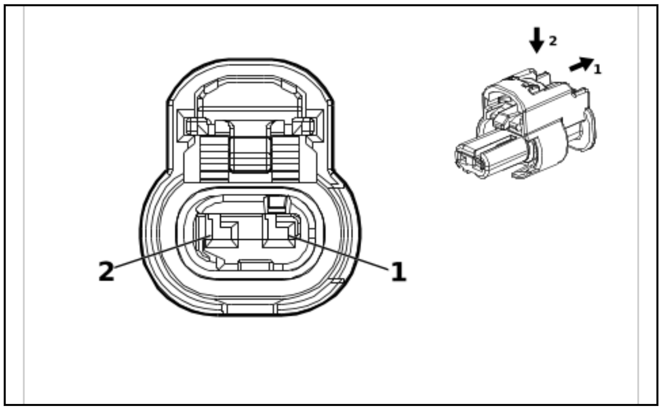
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |

## E3LF Rear Clearance Lamp - Fender Left Front

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BK | (1) 1850 | (1) Ground | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BN / GN | (2) 4246 | (2) Identification Lamp Control | (2) I | (2) — |

### E3LR Rear Clearance Lamp - Fender Left Rear




4649903

**Connector Part Information**

- Harness Type: Rear License Plate Lamp Wiring Harness Extension Harness - Left
- OEM Connector: 1-2296694-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series, Sealed( BK)

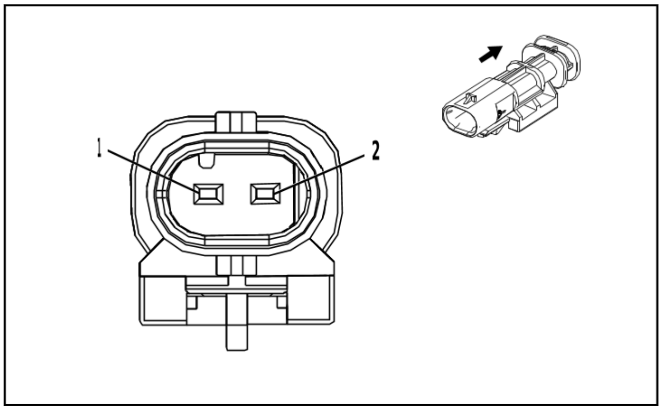
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |

## E3LR Rear Clearance Lamp - Fender Left Rear

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BK | (1) 1850 | (1) Ground | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BN / GN | (2) 4246 | (2) Identification Lamp Control | (2) I | (2) — |

### E3RA Rear Identification Lamp




2474755

**Connector Part Information**
- Harness Type: Rear License Plate Lamp Wiring Harness Extension Harness - Right
- OEM Connector: 2203314-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way M 1.2 MCON Series, Sealed( BK)

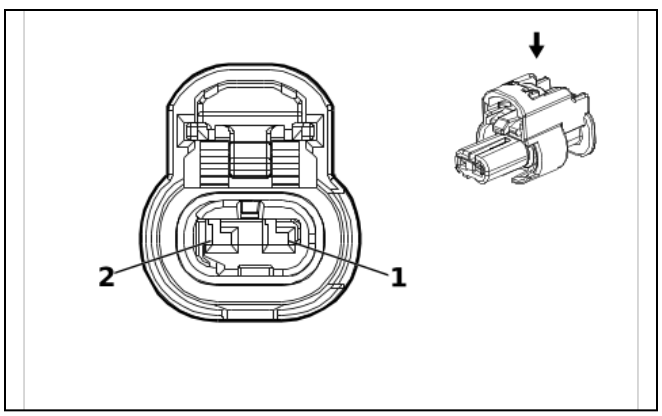
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-17 (L-GN) | No Tool Required |

## E3RA Rear Identification Lamp

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BK | (1) 1850 | (1) Ground | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BN / GN | (2) 4246 | (2) Identification Lamp Control | (2) I | (2) — |

### E3RF Rear Clearance Lamp - Fender Right Front




4335931

**Connector Part Information**
- Harness Type: Rear License Plate Lamp Wiring Harness Extension Harness - Right
- OEM Connector: 1-2296694-2
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series, Sealed( BK)

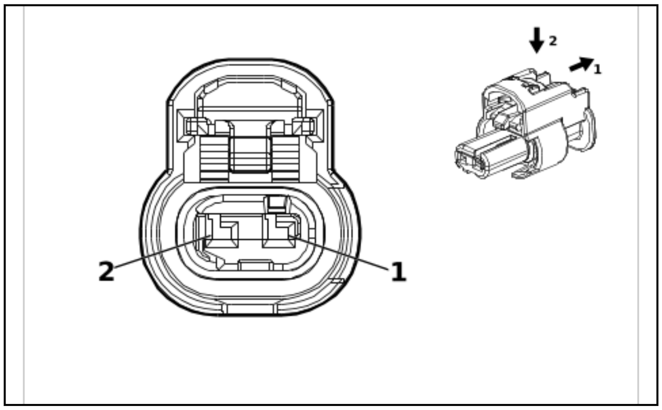
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |

## E3RF Rear Clearance Lamp - Fender Right Front

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BK | (1) 1850 | (1) Ground | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BN / GN | (2) 4246 | (2) Identification Lamp Control | (2) I | (2) — |

### E3RR Rear Clearance Lamp - Fender Right Rear




4649903

**Connector Part Information**
- Harness Type: Rear License Plate Lamp Wiring Harness Extension Harness - Right
- OEM Connector: 1-2296694-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series, Sealed( BK)

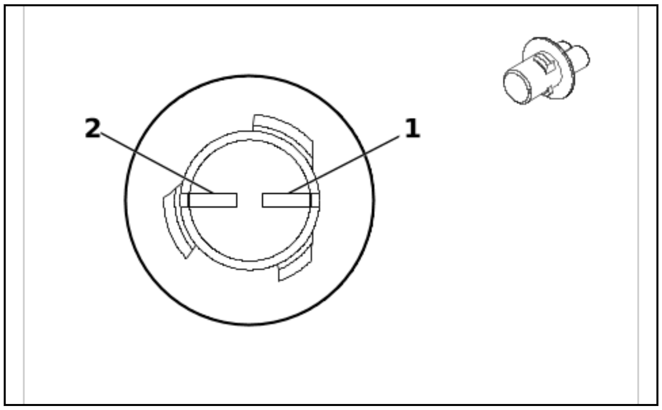
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |

## E3RR Rear Clearance Lamp - Fender Right Rear

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BK | (1) 1850 | (1) Ground | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BN / GN | (2) 4246 | (2) Identification Lamp Control | (2) I | (2) — |

### E5A Backup Bulb - Left




6157373

**Connector Part Information**

- Harness Type: Tail Lamp Wiring Harness
- OEM Connector: EEM0323
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F Lamp Socket( BK)

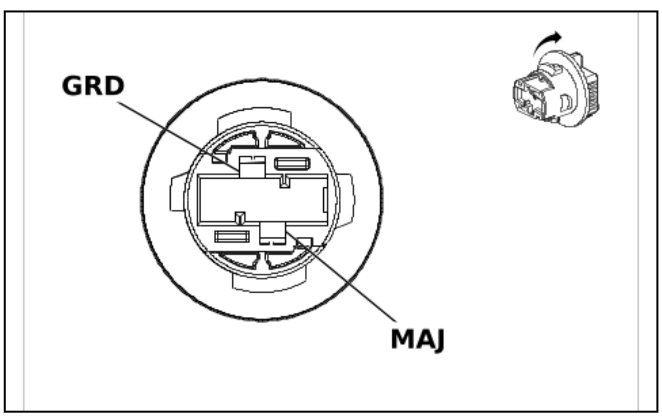
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-3 (GY) | No Tool Required |

## E5A Backup Bulb - Left

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 18 | (1) GN | (1) 24 | (1) Backup Lamp Control | (1) I | (1) — |
| (2) 2 | (2) 18 | (2) BK | (2) 1951 | (2) Signal Ground | (2) I | (2) — |

### E5AM Stop/Turn Signal Lamp - Left




6458333

**Connector Part Information**

- Harness Type: Tail Lamp Wiring Harness
- OEM Connector: EEM1214
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F T20 Lamp Socket( BK)

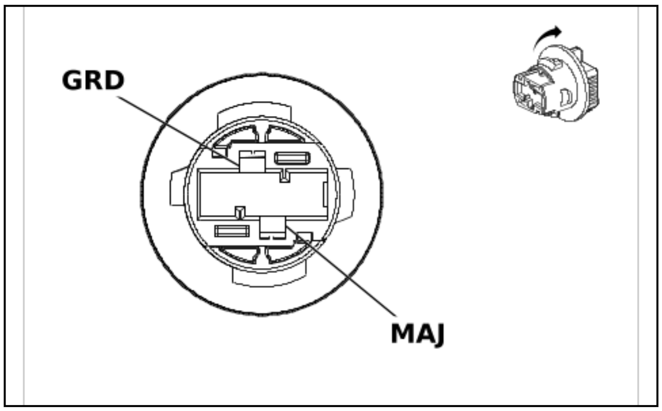
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## E5AM Stop/Turn Signal Lamp - Left

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| GND | 18 | BK | 1951 | Signal Ground | I | — |
| GRD | — | — | — | Not Occupied | — | — |
| MAJ | 18 | GN | 1334 | Left Rear Turn Signal Lamp Control 2 | I | — |

### E5AN Stop/Turn Signal Lamp - Right




6458333

**Connector Part Information**

- Harness Type: Tail Lamp Wiring Harness
- OEM Connector: EEM1214
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F T20 Lamp Socket( BK)

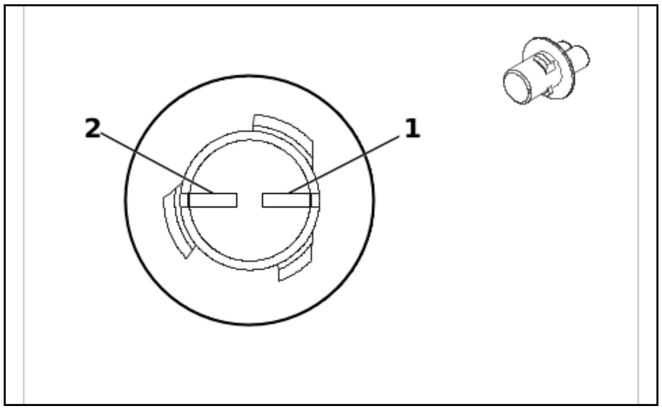
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## E5AN Stop/Turn Signal Lamp - Right

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| GND | 18 | BK | 1850 | Ground | I | — |
| GRD | — | — | — | Not Occupied | — | — |
| MAJ | 18 | GN | 1335 | Right Rear Turn Signal Lamp Control 2 | I | — |

### E5B Backup Bulb - Right




6157373

**Connector Part Information**

- Harness Type: Tail Lamp Wiring Harness
- OEM Connector: EEM0323
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F Lamp Socket( BK)

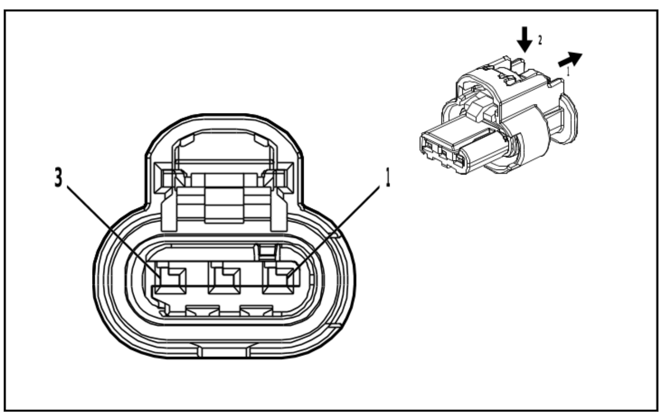
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-3 (GY) | No Tool Required |

## E5B Backup Bulb - Right

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 18 | (1) GN | (1) 24 | (1) Backup Lamp Control | (1) I | (1) — |
| (2) 2 | (2) 18 | (2) BK | (2) 1850 | (2) Ground | (2) I | (2) — |

### E6A High Mount Stop and Cargo Lamp (- U95)




4581126

**Connector Part Information**

- Harness Type: Inside Rearview Mirror Wiring Harness
- OEM Connector: 1-2296695-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 3-Way F 1.2 MCON-CB Series, Sealed( BK)

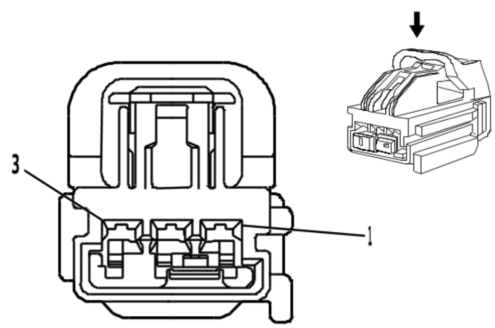
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |

## E6A High Mount Stop and Cargo Lamp (- U95)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35<br>(1) 0.5 | (1) WH / VT<br>(1) WH / VT | (1) 1430<br>(1) 1430 | (1) Exterior Courtesy Lamp Control<br>(1) Exterior Courtesy Lamp Control | (1) I<br>(1) I | (1) —<br>(1) — |
| (2) 2 | (2) 0.35<br>(2) 0.5 | (2) VT / WH<br>(2) BN / YE | (2) 820<br>(2) 820 | (2) Center High Mounted Stop Lamp Supply Voltage<br>(2) Center High Mounted Stop Lamp Supply Voltage | (2) I<br>(2) I | (2) —<br>(2) — |
| (3) 3 | (3) 0.35<br>(3) 0.5 | (3) BK<br>(3) BK | (3) 1050<br>(3) 1050 | (3) Ground<br>(3) Ground | (3) I<br>(3) I | (3) —<br>(3) — |

### E6A High Mount Stop and Cargo Lamp (U95)




1787799

**Connector Part Information**

- Harness Type: Dome Lamp Wiring Harness
- OEM Connector: 7283-3440-40
- Service Connector: 86825460
- Description: 3-Way F 1.5 Kaizen Series( L-GY)

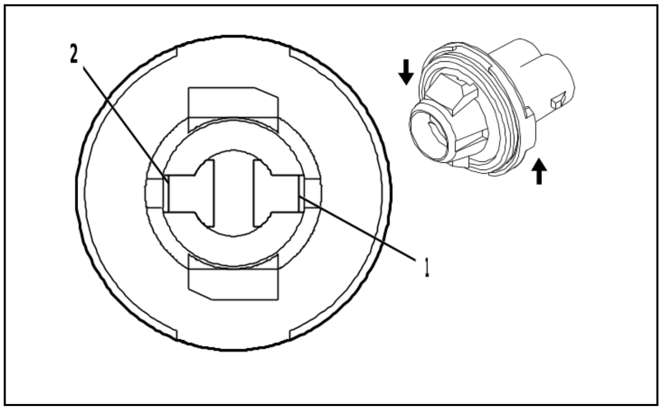
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-2A (GY) | No Tool Required |

## E6A High Mount Stop and Cargo Lamp (U95)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) WH / VT | (1) 1430 | (1) Exterior Courtesy Lamp Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BU / BK | (2) 1053 | (2) Center High Mounted Stop Lamp Control 3 | (2) I | (2) — |
| (3) 3 | (3) 1 | (3) BK | (3) 1050 | (3) Ground | (3) I | (3) — |

### E7 Rear License Plate Lamp (ZW9)




5153536

**Connector Part Information**
- Harness Type: Rear Object Alarm Sensor Wiring Harness
- OEM Connector: 15324946
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F Lamp Socket Wedge Base, Type W-2( D-GY)

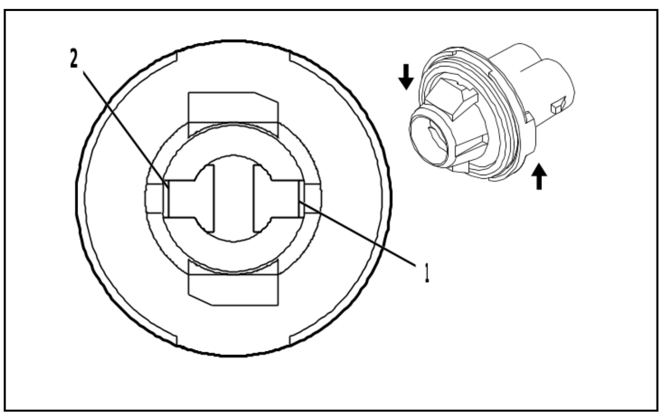
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## E7 Rear License Plate Lamp (ZW9)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) — | (1) GN / YE | (1) 6846 | (1) Rear License Plate Lamp Control | (1) I | (1) — |
| (2) 2 | (2) — | (2) BK | (2) 1850 | (2) Ground | (2) I | (2) — |

### E7L Rear License Plate Lamp - Left




5153536

**Connector Part Information**
- Harness Type: Rear Object Alarm Sensor Wiring Harness
- OEM Connector: 15324946
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F Lamp Socket Wedge Base, Type W-2( D-GY)

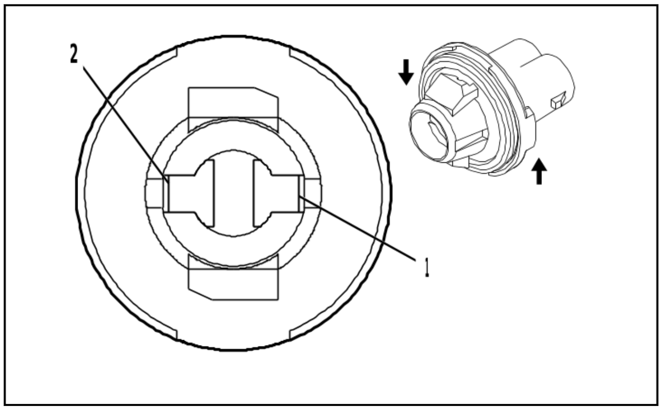
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## E7L Rear License Plate Lamp - Left

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) GN / YE | (1) 6846 | (1) Rear License Plate Lamp Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK | (2) 1850 | (2) Ground | (2) I | (2) — |

**E7R Rear License Plate Lamp - Right**




5153536

**Connector Part Information**
- Harness Type: Rear Object Alarm Sensor Wiring Harness
- OEM Connector: 15324946
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F Lamp Socket Wedge Base, Type W-2( D-GY)

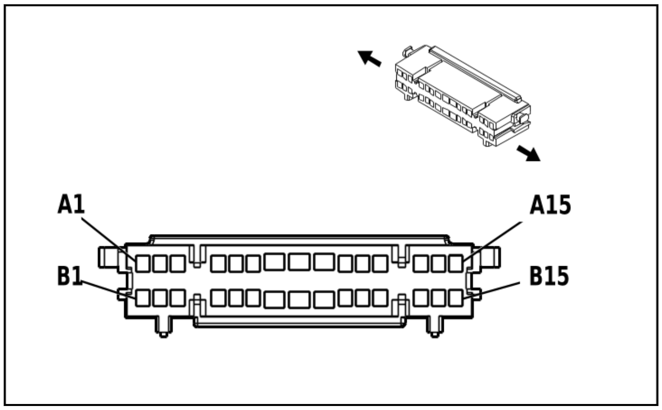
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## E7R Rear License Plate Lamp - Right

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) GN / YE | (1) 6846 | (1) Rear License Plate Lamp Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK | (2) 1850 | (2) Ground | (2) I | (2) — |

### E8ZL Assist Step Lamp - Left (BRS)




655763

**Connector Part Information**
- Harness Type: Left Running Board Harness
- OEM Connector: 13583926
- Service Connector: Service by Harness - See Part Catalog
- Description: 30-Way F 150, 280 GT FBT Series( BK)

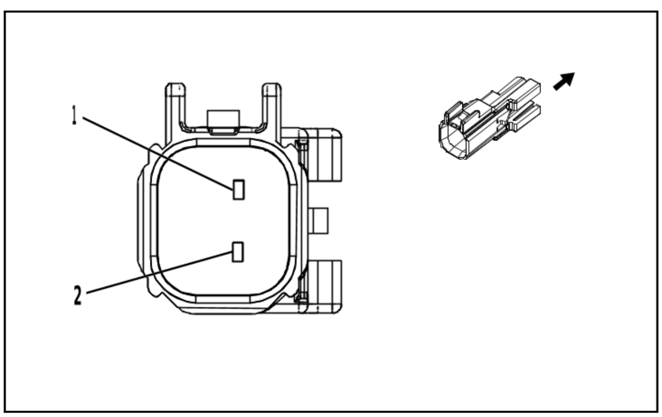
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## E8ZL Assist Step Lamp - Left (BRS)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) — | (1) BN | (1) 4748 | (1) Left Running Board Step Courtesy Lamp Control | (1) I | (1) — |
| (2) 2 | (2) — | (2) BK | (2) 1850 | (2) Ground | (2) I | (2) — |
| A1 - B15 | — | — | — | Not Occupied | — | — |

### E8ZR Assist Step Lamp - Right (BRS)




3271068

**Connector Part Information**
- Harness Type: Right Running Board Harness
- OEM Connector: 13503926
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way M 1.5 Series, Sealed( BK)

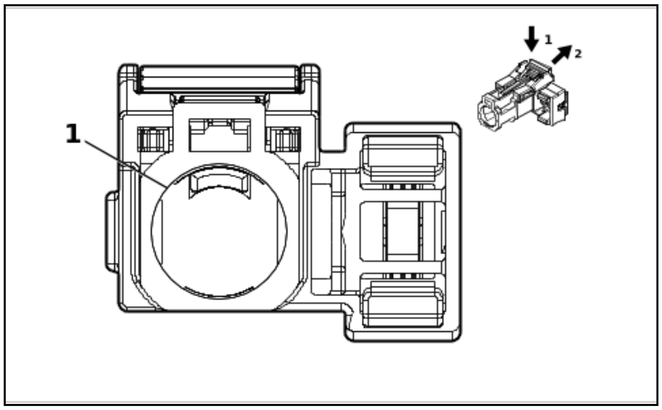
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## E8ZR Assist Step Lamp - Right (BRS)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) — | (1) GY / VT | (1) 4749 | (1) Right Running Board Step Courtesy Lamp Control | (1) I | (1) — |
| (2) 2 | (2) — | (2) BK | (2) 1850 | (2) Ground | (2) I | (2) — |

### E12A Glow Plug 1




6166047

**Connector Part Information**
- Harness Type: Engine Wiring Harness
- OEM Connector: 13551815
- Service Connector: Service by Cable Assembly - See Part Catalog
- Description: 1-Way F RK4 Receptacle( BK)

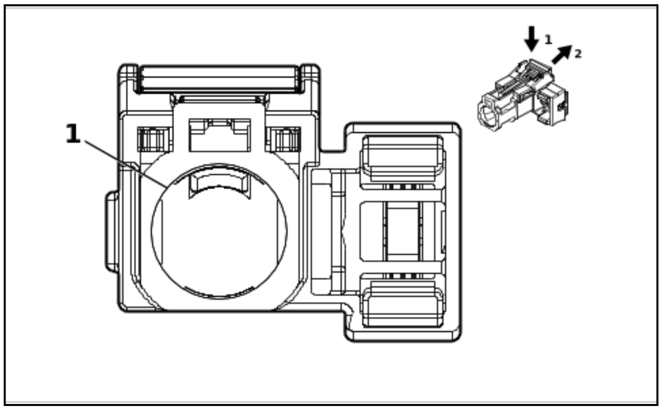
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## E12A Glow Plug 1

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 2.5 | (1) GY / BU | (1) 1581 | (1) Glow Plug 1 Control | (1) I | (1) — |

## E12B Glow Plug 2




6166047

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 13551815
- Service Connector: Service by Cable Assembly - See Part Catalog
- Description: 1-Way F RK4 Receptacle( BK)

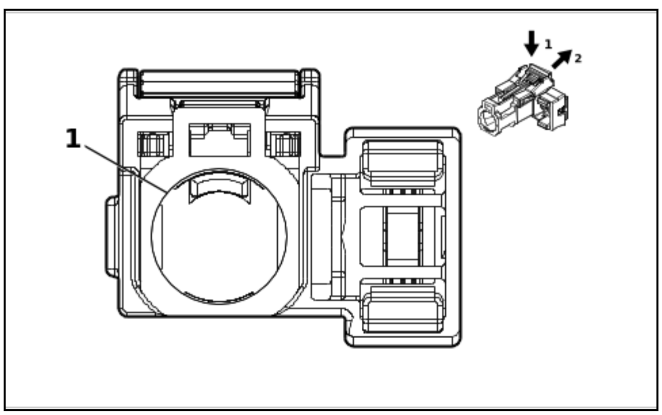
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

### E12B Glow Plug 2

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 2.5 | (1) GY / BN | (1) 1582 | (1) Glow Plug 2 Control | (1) I | (1) — |

## E12C Glow Plug 3




6166047

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 13551815
- Service Connector: Service by Cable Assembly - See Part Catalog
- Description: 1-Way F RK4 Receptacle( BK)

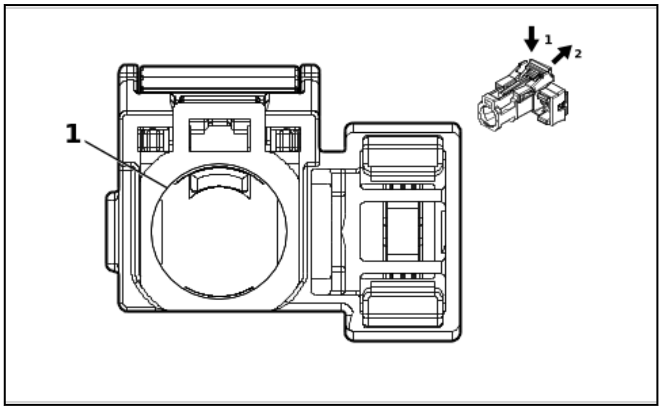
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## E12C Glow Plug 3

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 2.5 | (1) GY / GN | (1) 1583 | (1) Glow Plug 3 Control | (1) I | (1) — |

### E12D Glow Plug 4




6166047

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 13551815
- Service Connector: Service by Cable Assembly - See Part Catalog
- Description: 1-Way F RK4 Receptacle( BK)

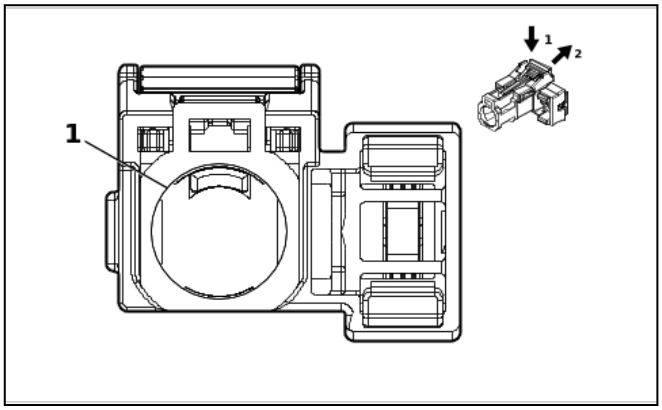
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## E12D Glow Plug 4

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 2.5 | (1) GY / YE | (1) 1584 | (1) Glow Plug 4 Control | (1) I | (1) — |

### E12E Glow Plug 5




6166047

**Connector Part Information**
- Harness Type: Engine Wiring Harness
- OEM Connector: 13551815
- Service Connector: Service by Cable Assembly - See Part Catalog
- Description: 1-Way F RK4 Receptacle( BK)

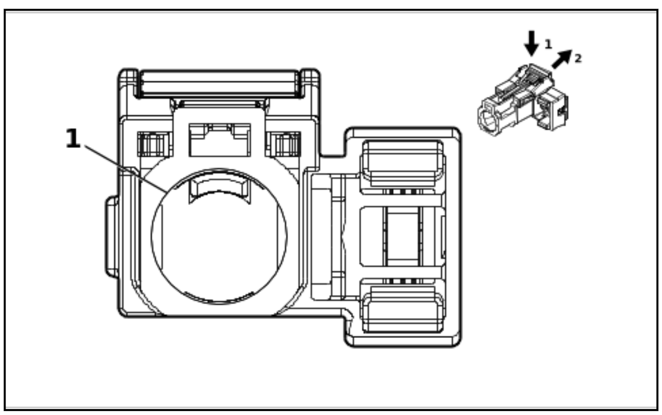
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## E12E Glow Plug 5

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 2.5 | (1) GY / WH | (1) 1585 | (1) Glow Plug 5 Control | (1) I | (1) — |

### E12F Glow Plug 6




6166047

**Connector Part Information**
- Harness Type: Engine Wiring Harness
- OEM Connector: 13551815
- Service Connector: Service by Cable Assembly - See Part Catalog
- Description: 1-Way F RK4 Receptacle( BK)

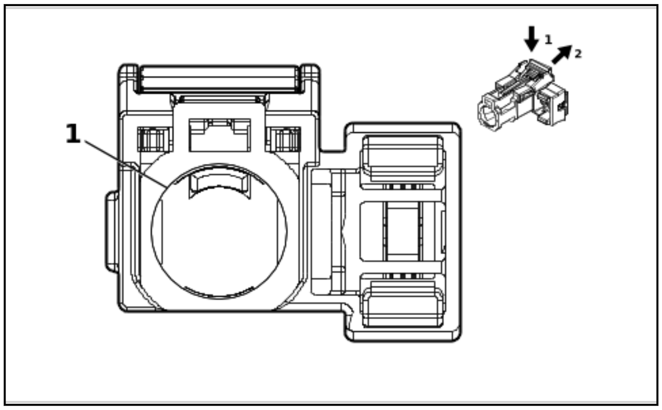
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## E12F Glow Plug 6

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 2.5 | (1) GY / VT | (1) 1586 | (1) Glow Plug 6 Control | (1) I | (1) — |

### E12G Glow Plug 7




6166047

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 13551815
- Service Connector: Service by Cable Assembly - See Part Catalog
- Description: 1-Way F RK4 Receptacle( BK)

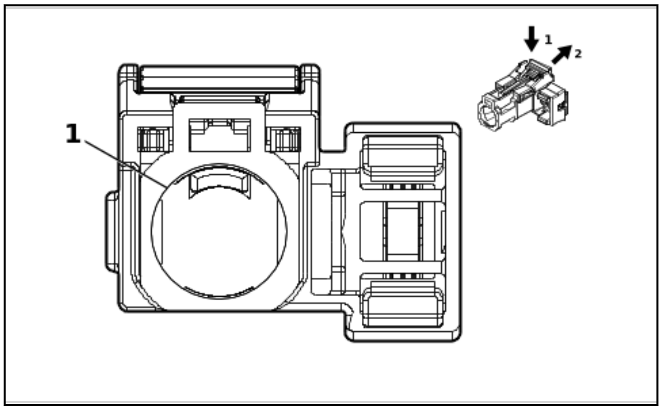
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## E12G Glow Plug 7

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 2.5 | (1) WH / BK | (1) 1587 | (1) Glow Plug 7 Control | (1) I | (1) — |

### E12H Glow Plug 8




6166047

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 13551815
- Service Connector: Service by Cable Assembly - See Part Catalog
- Description: 1-Way F RK4 Receptacle( BK)

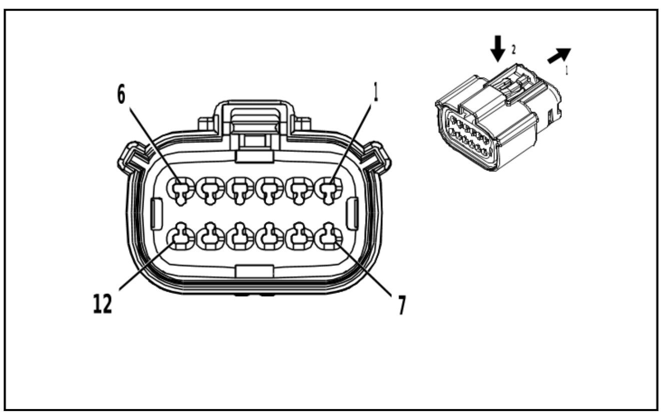
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## E12H Glow Plug 8

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 2.5 | (1) WH / BU | (1) 1588 | (1) Glow Plug 8 Control | (1) I | (1) — |

### E13LA Front Headlamp - Left X1




2871860

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 33472-1266
- Service Connector: 19352907
- Description: 12-Way F 1.5 MX Series, Sealed( BK)

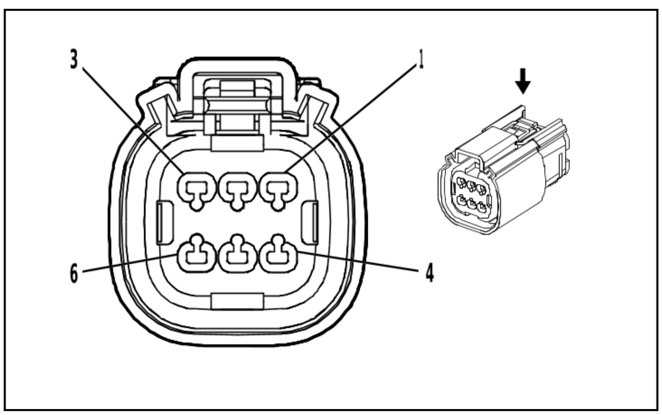
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 85528055 | J-35616-2A (GY) | J-38125-217 |

## E13LA Front Headlamp - Left X1

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 1 | (1) BK | (1) 150 | (1) Ground | (1) I | (1) — |
| (2) 2 | (2) 1.5 | (2) RD / WH | (2) 640 | (2) Battery Positive Voltage | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) YE | (3) 712 | (3) Left Headlamp Low Beam Control | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) WH | (4) 711 | (4) Left Headlamp High Beam Control | (4) I | (4) — |
| (5) 5 | (5) 0.35 | (5) GY / BU | (5) 7538 | (5) Left Front DRL Control | (5) I | (5) — |
| (6) 6 | (6) 0.5 | (6) WH / YE | (6) 1254 | (6) Left Front Park Lamp Control | (6) I | (6) — |
| (7) 7 | (7) 0.5 | (7) BU / WH | (7) 1314 | (7) Left Front Turn Signal Lamp Control | (7) I | (7) — |
| (8) 8 | (8) 0.35 | (8) VT / BK | (8) 6568 | (8) Front Turn Signal Lamp Feedback Signal | (8) I | (8) — |
| (9) 9 | (9) 0.5 | (9) YE / GN | (9) 2024 | (9) Animation Lighting Control | (9) I | (9) — |
| (10) 10 | (10) 0.5 | (10) GN / VT | (10) 1315 | (10) Right Front Turn Signal Lamp Control | (10) I | (10) — |
| 11 - 12 | — | — | — | Not Occupied | — | — |

### E13LA Front Headlamp - Left X2




4974077

**Connector Part Information**

- Harness Type: Front Side Marker Lamp Wiring Harness
- OEM Connector: 33472-0654
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 1.5 MX Series, Sealed( GY)

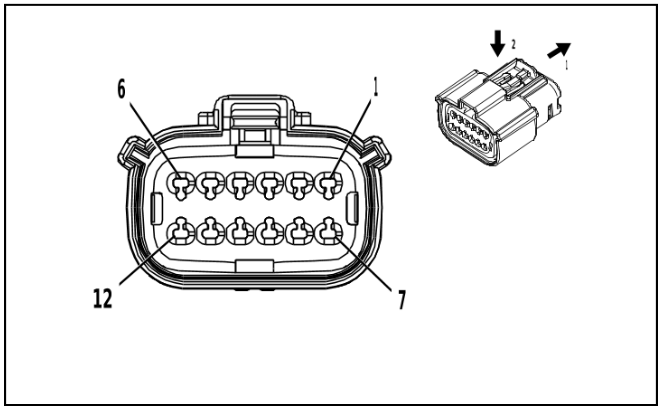
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-2A (GY) | No Tool Required |

## E13LA Front Headlamp - Left X2

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) GY | (1) 150 | (1) Ground | (1) I | (1) — |
| 2 - 4 | — | — | — | Not Occupied | — | — |
| (5) 5 | (5) 0.5 | (5) WH / YE | (5) 1254 | (5) Left Front Park Lamp Control | (5) I | (5) — |
| 6 | — | — | — | Not Occupied | — | — |

### E13RA Front Headlamp - Right X1




2871860

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 33472-1266
- Service Connector: 19352907
- Description: 12-Way F 1.5 MX Series, Sealed( BK)

## Terminal Part Information

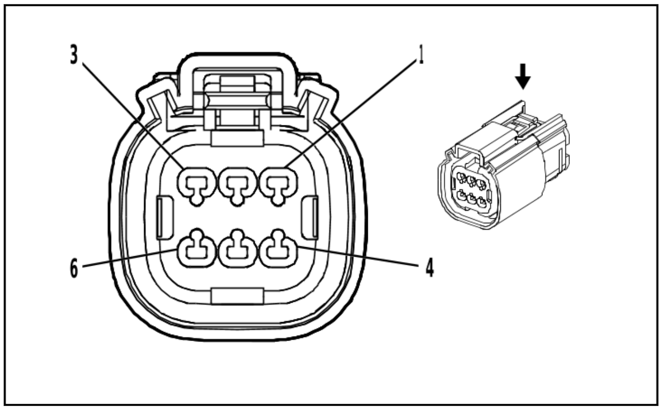
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 85528055 | J-35616-2A (GY) | J-38125-217 |

## E13RA Front Headlamp - Right X1

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 1 | (1) BK | (1) 650 | (1) Ground | (1) I | (1) — |
| (2) 2 | (2) 1.5 | (2) RD / YE | (2) 740 | (2) Battery Positive Voltage | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) YE | (3) 312 | (3) Right Headlamp Low Beam Control | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) WH | (4) 311 | (4) Right Headlamp High Beam Control | (4) I | (4) — |
| (5) 5 | (5) 0.35 | (5) BU / BN | (5) 7539 | (5) Right Front DRL Control | (5) I | (5) — |
| (6) 6 | (6) 0.5 | (6) BU / GN | (6) 1253 | (6) Right Front Park Lamp Control | (6) I | (6) — |
| (7) 7 | (7) 0.5 | (7) GN / VT | (7) 1315 | (7) Right Front Turn Signal Lamp Control | (7) I | (7) — |
| (8) 8 | (8) 0.35 | (8) WH / YE | (8) 7545 | (8) Right Front Turn Signal Lamp Feedback Signal | (8) I | (8) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (9) 9 | (9) 0.5 | (9) YE / GN | (9) 2024 | (9) Animation Lighting Control | (9) I | (9) — |
| (10) 10 | (10) 0.5 | (10) BU / WH | (10) 1314 | (10) Left Front Turn Signal Lamp Control | (10) I | (10) — |
| 11 - 12 | — | — | — | Not Occupied | — | — |

**E13RA Front Headlamp - Right X2**




4974077

**Connector Part Information**

- Harness Type: Front Side Marker Lamp Wiring Harness
- OEM Connector: 33472-0654
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 1.5 MX Series, Sealed( GY)

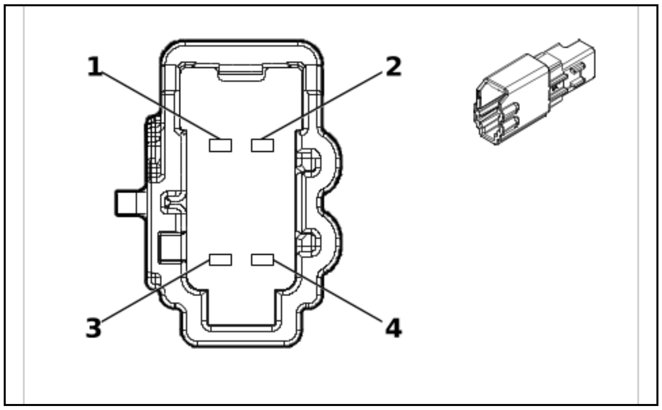
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-2A (GY) | No Tool Required |

## E13RA Front Headlamp - Right X2

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) GY | (1) 650 | (1) Ground | (1) I | (1) — |
| 2 - 4 | — | — | — | Not Occupied | — | — |
| (5) 5 | (5) 0.5 | (5) WH / GN | (5) 1253 | (5) Right Front Park Lamp Control | (5) I | (5) — |
| 6 | — | — | — | Not Occupied | — | — |

### E14A Front Seat Back Heater - Driver (KA1)




5423974

**Connector Part Information**

- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 6098-9049
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way M 1.2 MCON Series( GY)

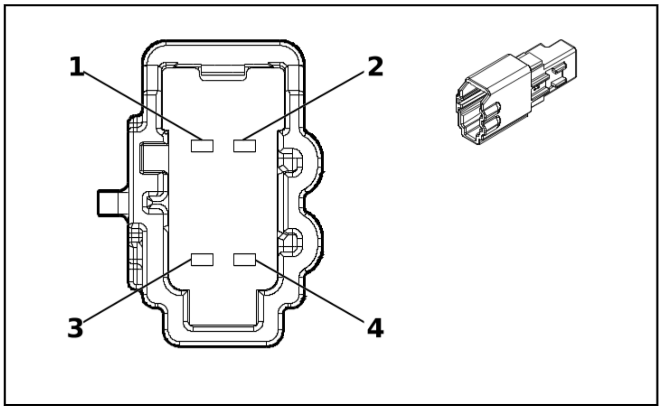
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-13 (BU) | No Tool Required |
| II | Not required | J-35616-17 (L-GN) | No Tool Required |

## E14A Front Seat Back Heater - Driver (KA1)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) BN | (1) 2432 | (1) Driver Seat Back Heating Element Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BU | (2) 2425 | (2) Driver Seat Back Heating Temperature Sensor Signal | (2) II | (2) — |
| (3) 3 | (3) 0.5 | (3) BK / YE | (3) 2080 | (3) Driver Heated Seat Thermistor Low Reference | (3) II | (3) — |
| (4) 4 | (4) 0.75 | (4) BN / BK | (4) 2078 | (4) Driver Seat Heating Element Low Reference | (4) I | (4) — |

### E14B Front Seat Cushion Heater - Driver (KA1)




5360963

**Connector Part Information**

- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 6098-9046
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way M 1.2 MCON Series( BK)

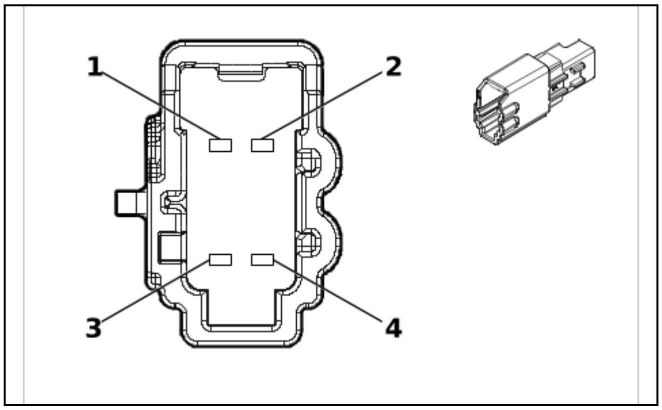
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-13 (BU) | No Tool Required |
| II | Not required | J-35616-17 (L-GN) | No Tool Required |

## E14B Front Seat Cushion Heater - Driver (KA1)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) BN / VT | (1) 2077 | (1) Driver Seat Heating Element Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) YE / GY | (2) 2079 | (2) Driver Seat Heating Temperature Sensor Signal | (2) II | (2) — |
| (3) 3 | (3) 0.5 | (3) BK / YE | (3) 2080 | (3) Driver Heated Seat Thermistor Low Reference | (3) II | (3) — |
| (4) 4 | (4) 0.75 | (4) BN / BK | (4) 2078 | (4) Driver Seat Heating Element Low Reference | (4) I | (4) — |

### E14C Front Seat Back Heater - Passenger (KA1)




5423974

**Connector Part Information**

- Harness Type: Front Seat Wiring Harness - Passenger
- OEM Connector: 6098-9049
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way M 1.2 MCON Series( GY)

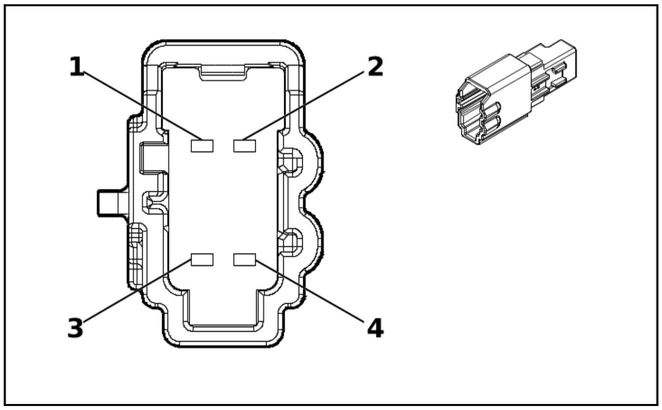
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-13 (BU) | No Tool Required |
| II | Not required | J-35616-17 (L-GN) | No Tool Required |

## E14C Front Seat Back Heater - Passenger (KA1)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) WH / BN | (1) 2481 | (1) Passenger Seat Back Heating Element Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) WH / BU | (2) 2436 | (2) Passenger Seat Back Heating Temperature Sensor Signal | (2) II | (2) — |
| (3) 3 | (3) 0.5 | (3) BK / GN | (3) 2482 | (3) Passenger Heated Back Thermistor Low Reference | (3) II | (3) — |
| (4) 4 | (4) 0.75 | (4) GY / BK | (4) 2480 | (4) Passenger Seat Heating Element Low Reference | (4) I | (4) — |

### E14D Front Seat Cushion Heater - Passenger (KA1)




5360963

**Connector Part Information**

- Harness Type: Front Seat Wiring Harness - Passenger
- OEM Connector: 6098-9046
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way M 1.2 MCON Series( BK)

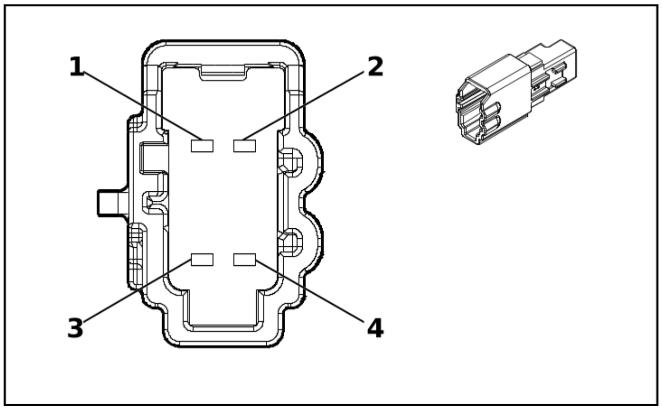
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-13 (BU) | No Tool Required |
| II | Not required | J-35616-17 (L-GN) | No Tool Required |

## E14D Front Seat Cushion Heater - Passenger (KA1)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) BN / BU | (1) 2479 | (1) Passenger Seat Heating Element Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) WH / GY | (2) 2434 | (2) Passenger Seat Heating Temperature Sensor Signal | (2) II | (2) — |
| (3) 3 | (3) 0.5 | (3) BK / GY | (3) 2435 | (3) Passenger Heated Seat Thermistor Low Reference | (3) II | (3) — |
| (4) 4 | (4) 0.75 | (4) GY / BK | (4) 2480 | (4) Passenger Seat Heating Element Low Reference | (4) I | (4) — |

### E14F Rear Seat Cushion Heater - Left Rear (KA6)




5360963

**Connector Part Information**

- Harness Type: Rear Seat Heater Control Wiring Harness
- OEM Connector: 6098-9046
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way M 1.2 MCON Series( BK)

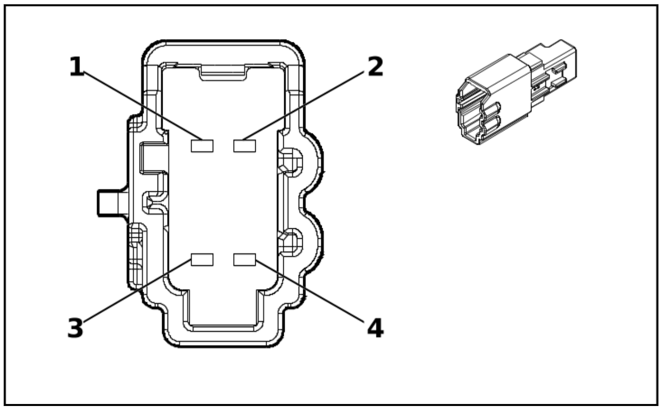
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-13 (BU) | No Tool Required |

## E14F Rear Seat Cushion Heater - Left Rear (KA6)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) GY | (1) 2294 | (1) Left Rear Seat Cushion Heating Element Control | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) WH / BU | (2) 7047 | (2) Left Rear Seat Cushion Temperature Sensor Signal | (2) I | (2) — |
| (3) 3 | (3) 0.75 | (3) BU / WH | (3) 7048 | (3) Left Rear Cushion Thermistor Feedback Signal | (3) I | (3) — |
| (4) 4 | (4) 0.75 | (4) BN / BK | (4) 2295 | (4) Left Rear Seat Cushion Heating Element Low Reference | (4) I | (4) — |

### E14H Rear Seat Cushion Heater - Right Rear (KA6)




5360963

**Connector Part Information**

- Harness Type: Rear Seat Heater Control Wiring Harness
- OEM Connector: 6098-9046
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way M 1.2 MCON Series( BK)

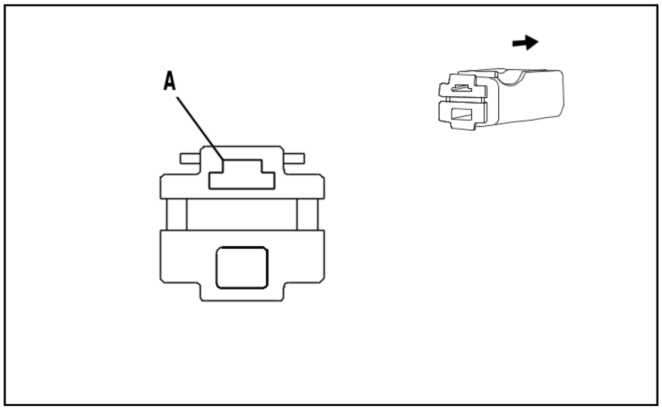
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-13 (BU) | No Tool Required |

## E14H Rear Seat Cushion Heater - Right Rear (KA6)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) GN / BN | (1) 2296 | (1) Right Rear Seat Cushion Heating Element Control | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) YE / WH | (2) 7053 | (2) Right Rear Seat Cushion Temperature Sensor Signal | (2) I | (2) — |
| (3) 3 | (3) 0.75 | (3) WH / BK | (3) 7054 | (3) Right Rear Cushion Thermistor Feedback Signal | (3) I | (3) — |
| (4) 4 | (4) 0.75 | (4) GN / BK | (4) 2297 | (4) Right Rear Seat Cushion Heating Element Low Reference | (4) I | (4) — |

### E18 Rear Window Defogger Grid X1




4248834

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 7123-5014-30
- Service Connector: 19367647
- Description: 1-Way F 250 Series( BK)

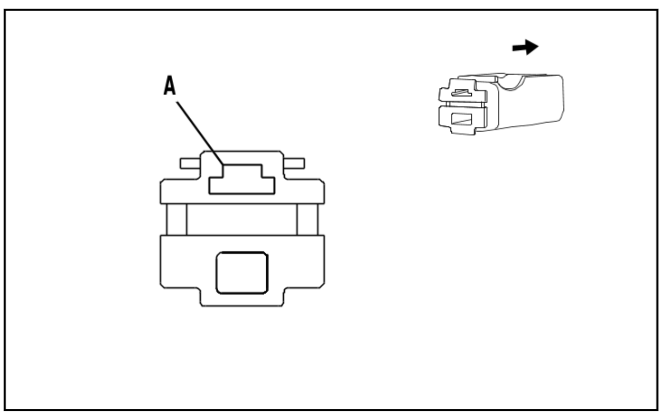
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-42 (RD) | No Tool Required |

## E18 Rear Window Defogger Grid X1

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| A | 2.5 | BN / VT | 293 | Rear Defogger Grid Control | I | — |

### E18 Rear Window Defogger Grid X2




4248834

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 7123-5014-30
- Service Connector: 19367647
- Description: 1-Way F 250 Series( BK)

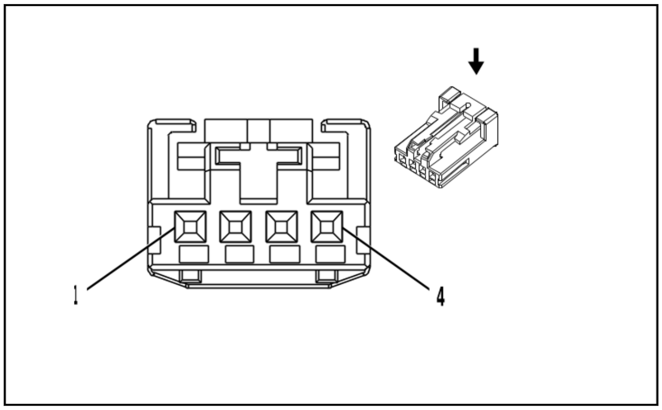
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-42 (RD) | No Tool Required |

## E18 Rear Window Defogger Grid X2

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| A | 2.5 | BK | 1450 | Ground | I | — |

### E28 Front Floor Console Compartment Lamp




2717162

**Connector Part Information**

- Harness Type: Front Floor Console Wiring Harness
- OEM Connector: 1-936119-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 0.64 Micro-Quadlock Series( BK)

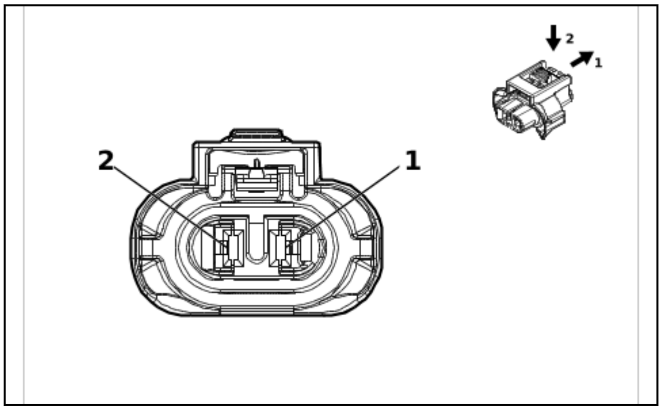
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## E28 Front Floor Console Compartment Lamp

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) BK | (1) 1350 | (1) Ground | (1) I | (1) — |
| 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 0.5 | (3) GN / VT | (3) 4786 | (3) Dome/Reading Lamp Enable Signal | (3) I | (3) — |
| 4 | — | — | — | Not Occupied | — | — |

### E29LF Front Fog Lamp - Left




6543452

**Connector Part Information**
- Harness Type: Front Object Alarm Sensor Wiring Harness
- OEM Connector: 33342774
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 2.8 APEX Series, Sealed( BK)

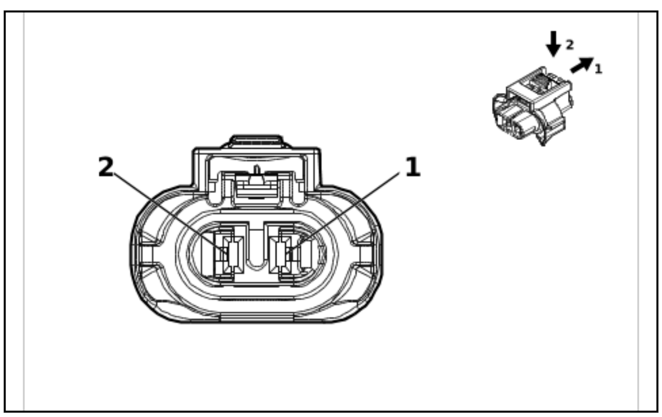
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-4A (PU) | No Tool Required |

## E29LF Front Fog Lamp - Left

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BN / GY | (1) 5061 | (1) Left Front Fog Lamp Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK | (2) 650 | (2) Ground | (2) I | (2) — |

### E29RF Front Fog Lamp - Right




6543452

**Connector Part Information**
- Harness Type: Front Object Alarm Sensor Wiring Harness
- OEM Connector: 33342774
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 2.8 APEX Series, Sealed( BK)

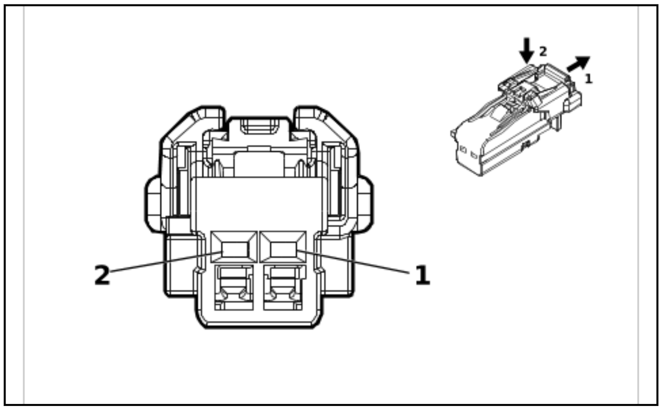
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-4A (PU) | No Tool Required |

## E29RF Front Fog Lamp - Right

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BN / GN | (1) 5062 | (1) Right Front Fog Lamp Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK | (2) 650 | (2) Ground | (2) I | (2) — |

### E31L Sunshade Mirror Lamp - Left




5377746

**Connector Part Information**

- Harness Type: Dome Lamp Wiring Harness
- OEM Connector: 6098-8990
- Service Connector: 84867147
- Description: 2-Way F 1.2 MCON Series( BN)

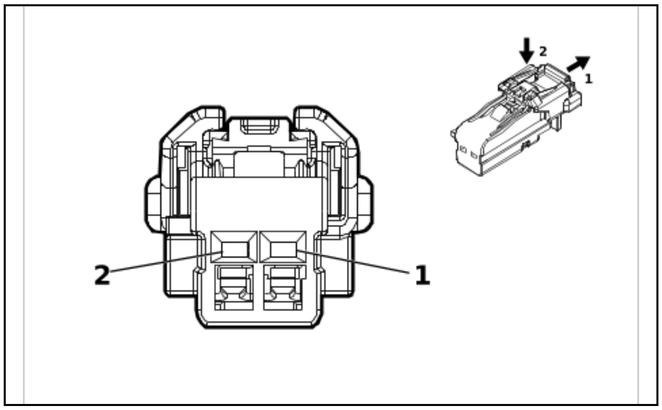
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |
| II | Not required | J-35616-16 (L-GN) | No Tool Required |

## E31L Sunshade Mirror Lamp - Left

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) BU / GN | (1) 4785 | (1) Interior Lamp Overhead Enable Signal | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK | (2) 1050 | (2) Ground | (2) II | (2) — |

### E31R Sunshade Mirror Lamp - Right




5377746

**Connector Part Information**

- Harness Type: Dome Lamp Wiring Harness
- OEM Connector: 6098-8990
- Service Connector: 84867147
- Description: 2-Way F 1.2 MCON Series( BN)

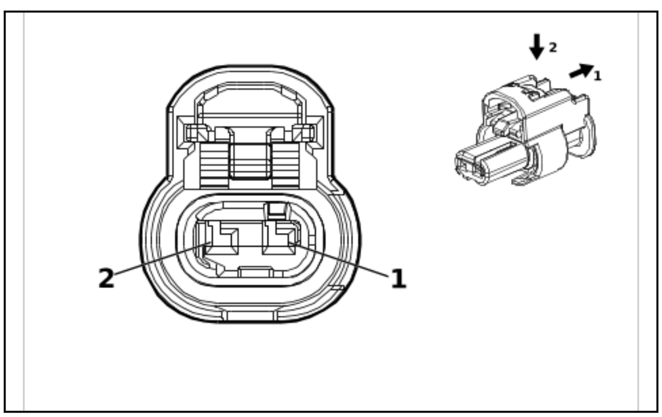
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |
| II | Not required | J-35616-16 (L-GN) | No Tool Required |

## E31R Sunshade Mirror Lamp - Right

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) GY / WH | (1) 2369 | (1) Interior Lamp Overhead 2 Enable Signal | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK | (2) 1050 | (2) Ground | (2) II | (2) — |

### E33L Cargo Lamp - Left




4649903

**Connector Part Information**

- Harness Type: Tail Lamp Wiring Harness
- OEM Connector: 1-2296694-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series, Sealed( BK)

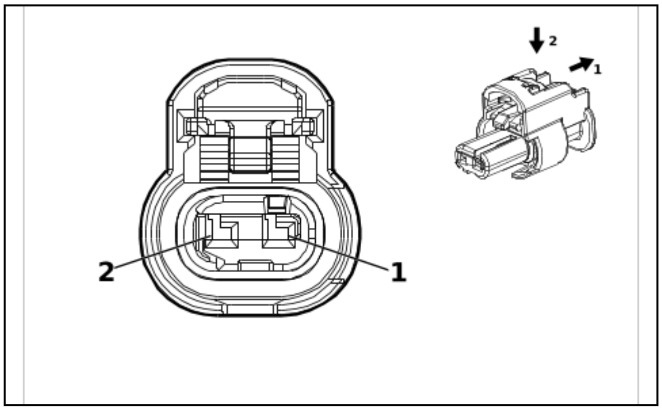
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |

## E33L Cargo Lamp - Left

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75<br>(1) 18 | (1) YE<br>(1) BU | (1) 7762<br>(1) 7762 | (1) Cargo Lamp Control<br>(1) Cargo Lamp Control | (1) I<br>(1) I | (1) —<br>(1) — |
| (2) 2 | (2) 0.75<br>(2) 18 | (2) BK<br>(2) BK | (2) 1850<br>(2) 1951 | (2) Ground<br>(2) Signal Ground | (2) I<br>(2) I | (2) —<br>(2) — |

### E33R Cargo Lamp - Right




4649903

**Connector Part Information**
- Harness Type: Tail Lamp Wiring Harness
- OEM Connector: 1-2296694-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series, Sealed( BK)

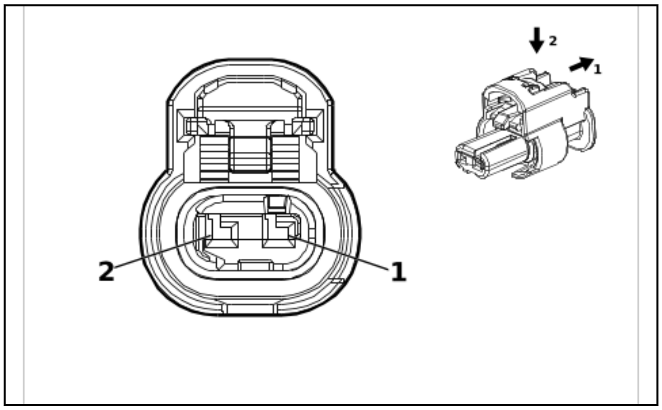
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |

## E33R Cargo Lamp - Right

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 18 | (1) BU | (1) 7762 | (1) Cargo Lamp Control | (1) I | (1) — |
| (2) 2 | (2) 18 | (2) BK | (2) 1850 | (2) Ground | (2) I | (2) — |

### E33TH Rear Closure Auxiliary Signal Lamp




4649903

**Connector Part Information**

- Harness Type: Endgate Wiring Harness
- OEM Connector: 1-2296694-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series, Sealed( BK)

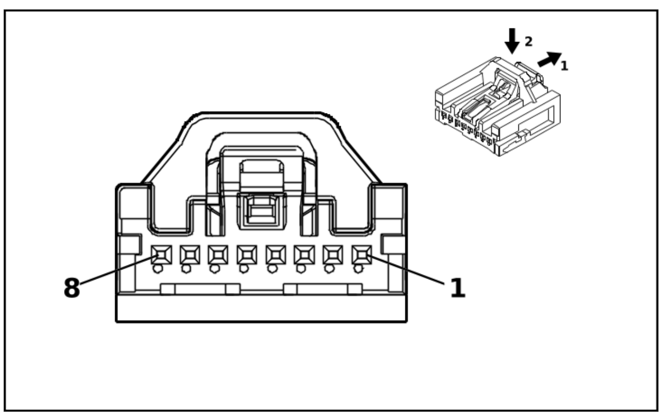
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |

## E33TH Rear Closure Auxiliary Signal Lamp

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) WH / VT | (1) 1430 | (1) Exterior Courtesy Lamp Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK | (2) 1850 | (2) Ground | (2) I | (2) — |

### E37SMC Rear Seat Position Center Reading and Courtesy Lamp




5200269

**Connector Part Information**

- Harness Type: Dome Lamp Wiring Harness
- OEM Connector: 35068228
- Service Connector: 84769201
- Description: 8-Way F Mini 50 Series( BK)

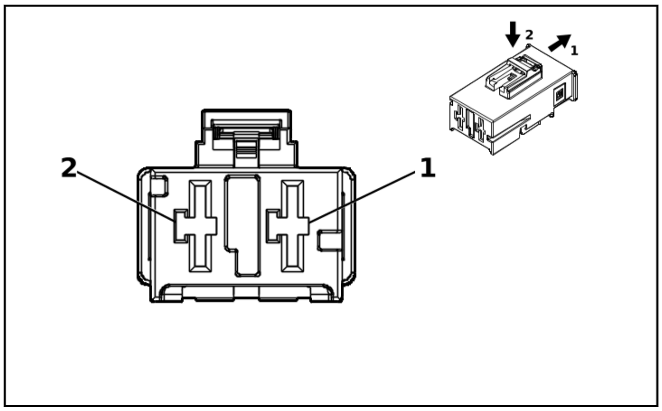
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | EL-35616-58 (BK) | No Tool Required |

## E37SMC Rear Seat Position Center Reading and Courtesy Lamp

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) GN / YE | (1) 2903 | (1) Row 2 Dome Reading Lamp Interior Lamp Control | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) BN / BU | (2) 2905 | (2) Row 2 Dome Reading Lamp 2 Interior Lamp Control | (2) I | (2) — |
| (3) 3 | (3) 0.35 | (3) BK | (3) 1050 | (3) Ground | (3) I | (3) — |
| (4) 4 | (4) 0.35 | (4) WH / BN | (4) 2904 | (4) Row 2 Dome Reading Lamp Switch Signal | (4) I | (4) — |
| (5) 5 | (5) 0.35 | (5) VT / GY | (5) 2906 | (5) Row 2 Dome Reading Lamp 2 Switch Signal | (5) I | (5) — |
| 6 - 8 | — | — | — | Not Occupied | — | — |

### E40 Air Heater X1 (C32)




5187955

**Connector Part Information**

- Harness Type: Auxiliary Heater
- OEM Connector: 13525311
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 9.5 MCON-LL Series( BK)

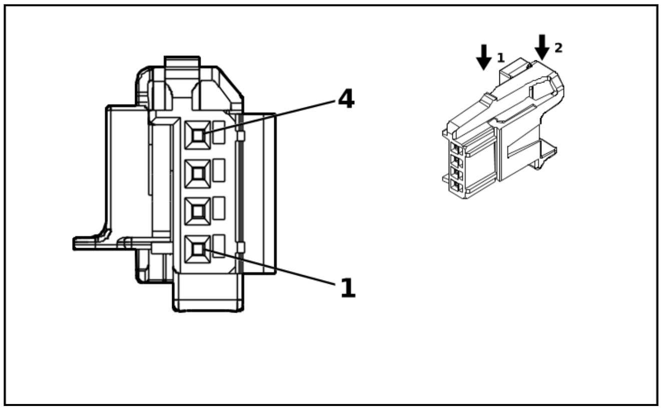
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## E40 Air Heater X1 (C32)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) — | (1) — | (1) — | (1) — | (1) I | (1) — |
| (2) 2 | (2) — | (2) — | (2) — | (2) — | (2) I | (2) — |

### E40 Air Heater X2 (C32)




5191926

**Connector Part Information**
- Harness Type: Heater Wiring Harness
- OEM Connector: 2294399-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 0.64 Micro-Quadlock Series( BK)

## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## E40 Air Heater X2 (C32)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 | — | — | — | Not Occupied | — | — |
| (2) 2 | (2) 0.35 | (2) BN / VT | (2) 339 | (2) Run/Crank Ignition 1 Voltage | (2) I | (2) — |
| (3) 3 | (3) 0.35 | (3) BU | (3) 2852 | (3) Body Control Module LIN Bus 6 | (3) I | (3) — |
| (4) 4 | (4) 0.35 | (4) BK | (4) 1050 | (4) Ground | (4) I | (4) — |

### E40 Air Heater X3 (C32)

—

**Connector Part Information**
- Harness Type: Auxiliary Heater harness
- OEM Connector: 84434840
- Service Connector: Service by Harness - See Part Catalog
- Description: 1-Way F

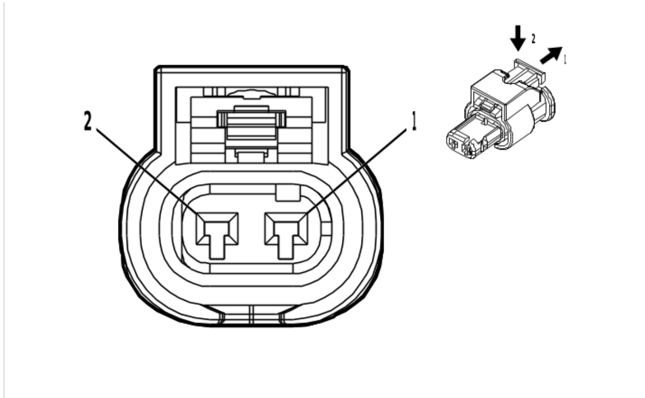
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## E40 Air Heater X3 (C32)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) — | (1) — | (1) — | (1) — | (1) I | (1) — |

### E52 Reductant Heater 2 - Injector Supply Pipe




2698576

**Connector Part Information**
- Harness Type: Emission Reduction Fluid Tank Reservoir Wire Harness
- OEM Connector: 1-1823608-5
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series, Sealed( BK)

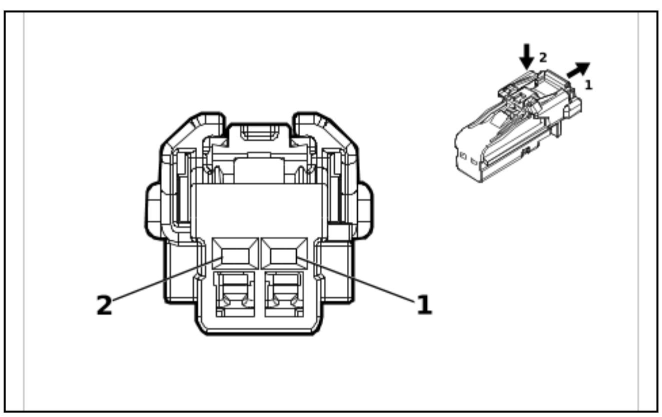
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## E52 Reductant Heater 2 - Injector Supply Pipe

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 1 | (1) WH | (1) 3199 | (1) Diesel Exhaust Fluid Pressure Line Heater Control | (1) I | (1) — |
| (2) 2 | (2) 1 | (2) BN | (2) 4319 | (2) Diesel Exhaust Fluid Line Heater Low Control | (2) I | (2) — |

### E63D Front Side Door Inside Handle Illumination Lamp - Left




4115691

**Connector Part Information**
- Harness Type: Front Side Door Door Lock Door Wiring Harness - Left
- OEM Connector: 6098-8988
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series( BK)

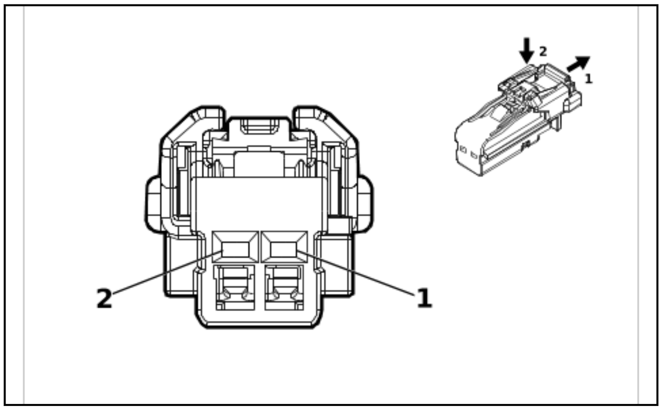
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## E63D Front Side Door Inside Handle Illumination Lamp - Left

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) GY / VT | (1) 2767 | (1) LED Ambient Lighting Control Left Front Door | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK | (2) 1550 | (2) Ground | (2) I | (2) — |

### E63P Front Side Door Inside Handle Illumination Lamp - Right




4115691

**Connector Part Information**

- Harness Type: Front Side Door Door Lock Door Wiring Harness - Right
- OEM Connector: 6098-8988
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series( BK)

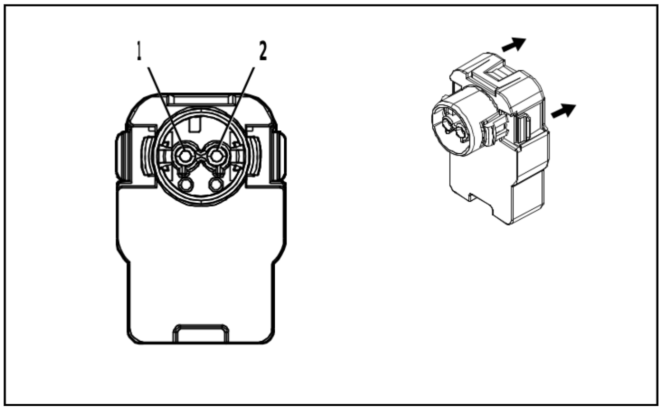
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## E63P Front Side Door Inside Handle Illumination Lamp - Right

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) WH / BN | (1) 2768 | (1) LED Ambient Lighting Control Right Front Door | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) BK | (2) 1350 | (2) Ground | (2) I | (2) — |

### F101 Instrument Panel Airbag X1




4823732

**Connector Part Information**
- Harness Type: Instrument Panel Airbag Wiring Harness
- OEM Connector: 13530531
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F ABX-5 Series( PK with YE Cover)

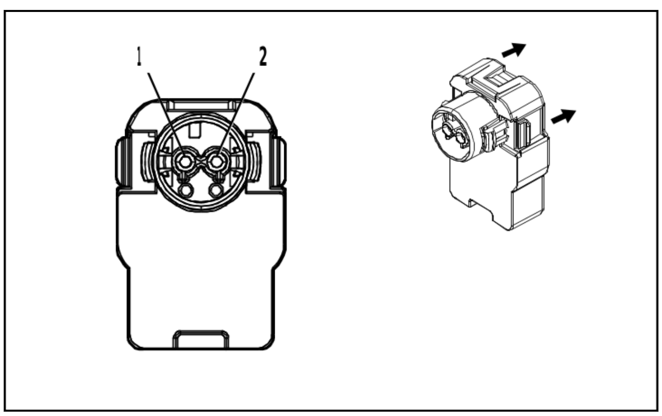
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## F101 Instrument Panel Airbag X1

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) — | (1) YE / OG | (1) 3025 | (1) Passenger Instrument Panel Air Bag Stage 1 High Control | (1) I | (1) — |
| (2) 2 | (2) — | (2) OG / WH | (2) 3024 | (2) Passenger Instrument Panel Air Bag Stage 1 Low Control | (2) I | (2) — |

### F101 Instrument Panel Airbag X2




4823732

**Connector Part Information**
- Harness Type: Instrument Panel Airbag Wiring Harness
- OEM Connector: 13530531
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F ABX-5 Series( PK with YE Cover)

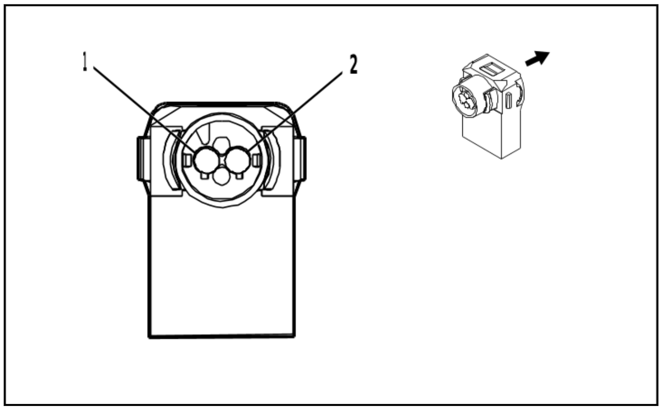
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## F101 Instrument Panel Airbag X2

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) — | (1) GY / OG | (1) 3027 | (1) Passenger Instrument Panel Air Bag Stage 2 High Control | (1) I | (1) — |
| (2) 2 | (2) — | (2) OG / VT | (2) 3026 | (2) Passenger Instrument Panel Air Bag Stage 2 Low Control | (2) I | (2) — |

### F105L Front and Rear Row Roof Rail Airbag - Left




4679778

**Connector Part Information**
- Harness Type: Body Wiring Harness
- OEM Connector: 35504154
- Service Connector: 85666124
- Description: 2-Way F ABX-5 Series( GY with YE Cover)

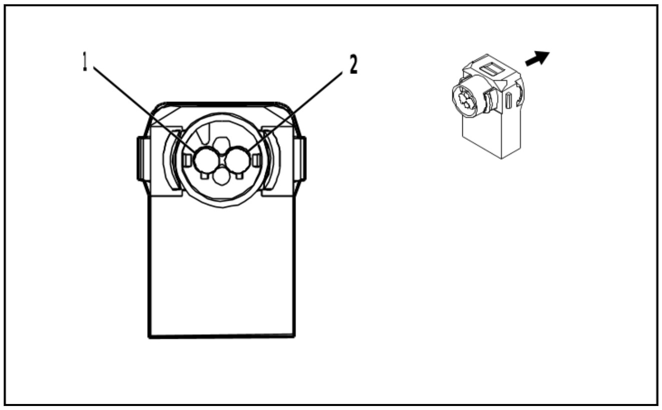
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-10 (GN) | No Tool Required |

## F105L Front and Rear Row Roof Rail Airbag - Left

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) OG / GN | (1) 5019 | (1) Left Front Roof Rail Air Bag High Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) VT / OG | (2) 5020 | (2) Left Front Roof Rail Air Bag Low Control | (2) I | (2) — |

### F105LF Front Row Roof Rail Airbag - Left




4679778

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 35504154
- Service Connector: 85666124
- Description: 2-Way F ABX-5 Series( GY with YE Cover)

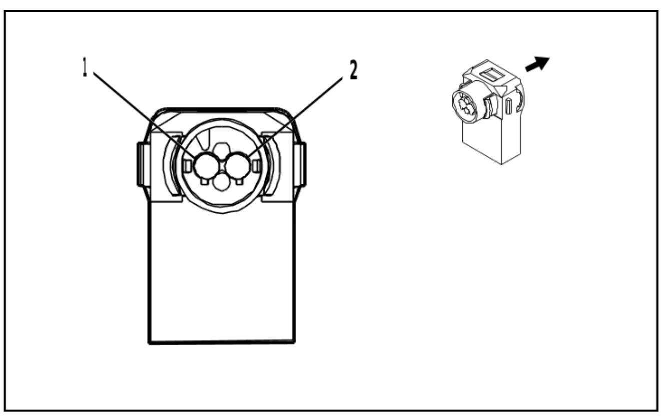
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-10 (GN) | No Tool Required |

## F105LF Front Row Roof Rail Airbag - Left

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) OG / GN | (1) 5019 | (1) Left Front Roof Rail Air Bag High Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) VT / OG | (2) 5020 | (2) Left Front Roof Rail Air Bag Low Control | (2) I | (2) — |

### F105R Front and Rear Row Roof Rail Airbag - Right




4679778

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 35504154
- Service Connector: 85666124
- Description: 2-Way F ABX-5 Series( GY with YE Cover)

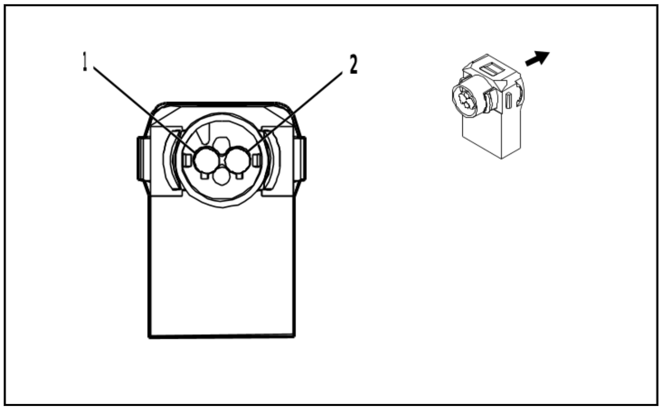
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-10 (GN) | No Tool Required |

## F105R Front and Rear Row Roof Rail Airbag - Right

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) OG / GY | (1) 5021 | (1) Right Front Roof Rail Air Bag High Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) WH / OG | (2) 5022 | (2) Right Front Roof Rail Air Bag Low Control | (2) I | (2) — |

### F105RF Front Row Roof Rail Airbag - Right




4679778

**Connector Part Information**
- Harness Type: Body Wiring Harness
- OEM Connector: 35504154
- Service Connector: 85666124
- Description: 2-Way F ABX-5 Series( GY with YE Cover)

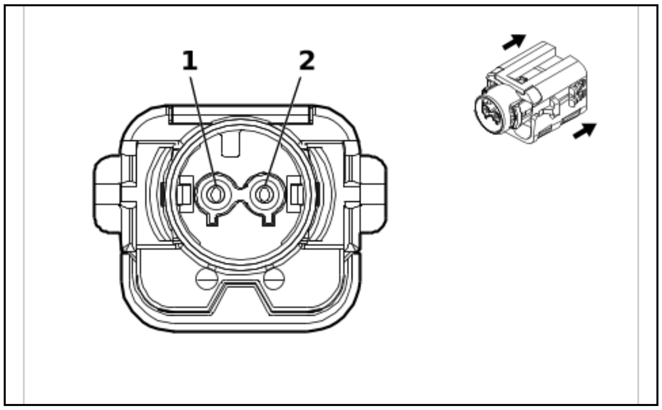
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-10 (GN) | No Tool Required |

## F105RF Front Row Roof Rail Airbag - Right

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) OG / GY | (1) 5021 | (1) Right Front Roof Rail Air Bag High Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) WH / OG | (2) 5022 | (2) Right Front Roof Rail Air Bag Low Control | (2) I | (2) — |

### F106D Front Seat Outboard Seat Back Airbag - Driver




5499727

**Connector Part Information**
- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 35212936
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F ABX-5 Series( PK with YE Cover)

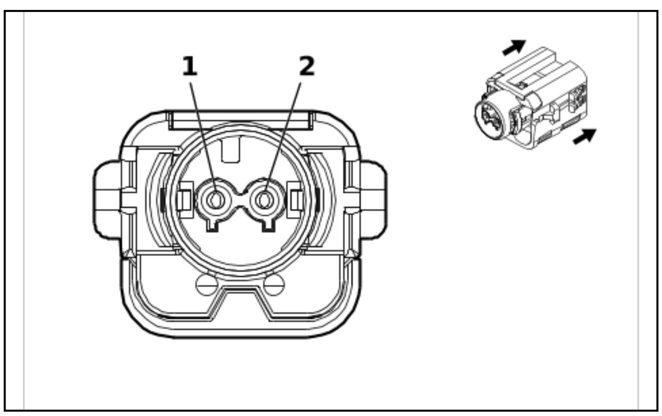
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-10 (GN) | No Tool Required |

## F106D Front Seat Outboard Seat Back Airbag - Driver

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) OG / BU | (1) 4962 | (1) Driver Seat Back Air Bag High Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK / OG | (2) 4963 | (2) Driver Seat Back Air Bag Low Control | (2) I | (2) — |

### F106P Front Seat Outboard Seat Back Airbag - Passenger




5499727

**Connector Part Information**
- Harness Type: Front Seat Wiring Harness - Passenger
- OEM Connector: 35212936
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F ABX-5 Series( PK with YE Cover)

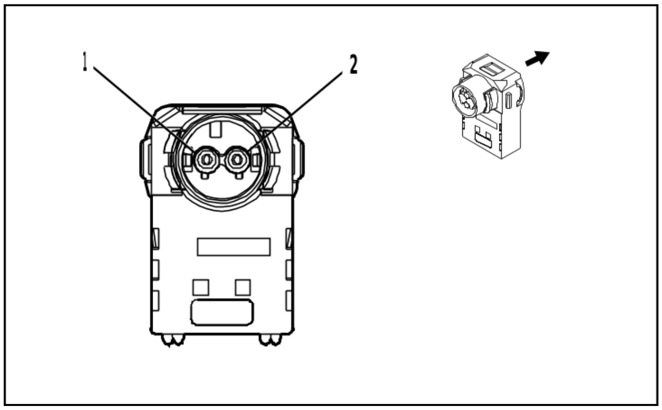
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-10 (GN) | No Tool Required |

## F106P Front Seat Outboard Seat Back Airbag - Passenger

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) OG / GY | (1) 4956 | (1) Passenger Seat Back Air Bag High Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BU / OG | (2) 4957 | (2) Passenger Seat Back Air Bag Low Control | (2) I | (2) — |

### F107 Steering Wheel Airbag X1




4231869

**Connector Part Information**

- Harness Type: Steering Wheel Horn Switch Wiring Harness
- OEM Connector: 35504152
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F ABX-5 Series( PK with YE Cover)

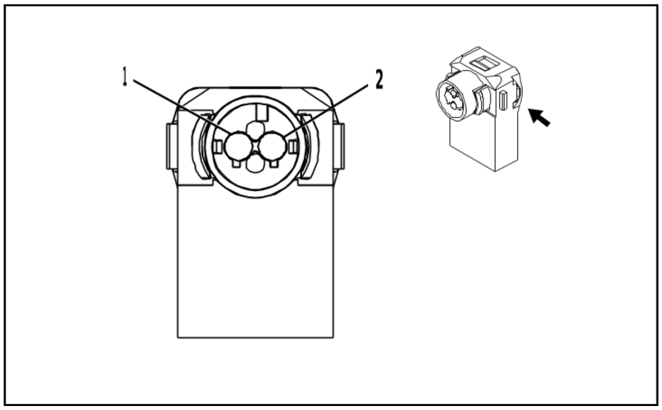
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-10 (GN) | No Tool Required |

## F107 Steering Wheel Airbag X1

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5<br>(1) 0.5 | (1) OG / VT<br>(1) YE / OG | (1) 3021<br>(1) 3021 | (1) Steering Wheel Air Bag Stage 1 High Control<br>(1) Steering Wheel Air Bag Stage 1 High Control | (1) I<br>(1) I | (1) —<br>(1) — |
| (2) 2 | (2) 0.5<br>(2) 0.5 | (2) BN / OG<br>(2) OG / WH | (2) 3020<br>(2) 3020 | (2) Steering Wheel Air Bag Stage 1 Low Control<br>(2) Steering Wheel Air Bag Stage 1 Low Control | (2) I<br>(2) I | (2) —<br>(2) — |

### F107 Steering Wheel Airbag X2




4241364

**Connector Part Information**

- Harness Type: Steering Wheel Horn Switch Wiring Harness
- OEM Connector: 35504153
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F ABX-5 Series( PU with YE Cover)

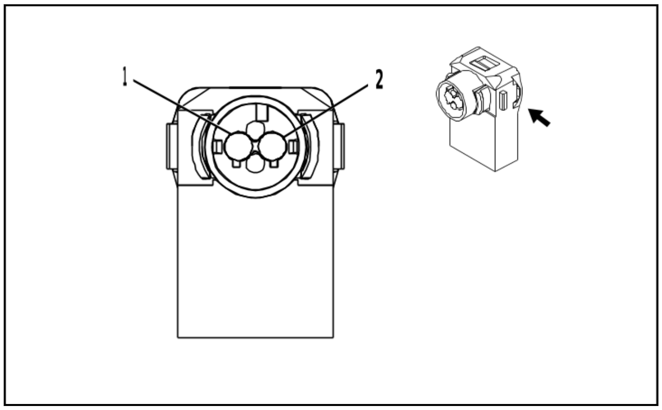
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-10 (GN) | No Tool Required |

## F107 Steering Wheel Airbag X2

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5<br>(1) 0.5 | (1) GY / OG<br>(1) OG / GN | (1) 3023<br>(1) 3023 | (1) Steering Wheel Air Bag Stage 2 High Control<br>(1) Steering Wheel Air Bag Stage 2 High Control | (1) I<br>(1) I | (1) —<br>(1) — |
| (2) 2 | (2) 0.5<br>(2) 0.5 | (2) OG / VT<br>(2) WH / OG | (2) 3022<br>(2) 3022 | (2) Steering Wheel Air Bag Stage 2 Low Control<br>(2) Steering Wheel Air Bag Stage 2 Low Control | (2) I<br>(2) I | (2) —<br>(2) — |

### F112D Front Seat Belt Retractor - Driver




4241364

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 35504153
- Service Connector: 85666123
- Description: 2-Way F ABX-5 Series( PU with YE Cover)

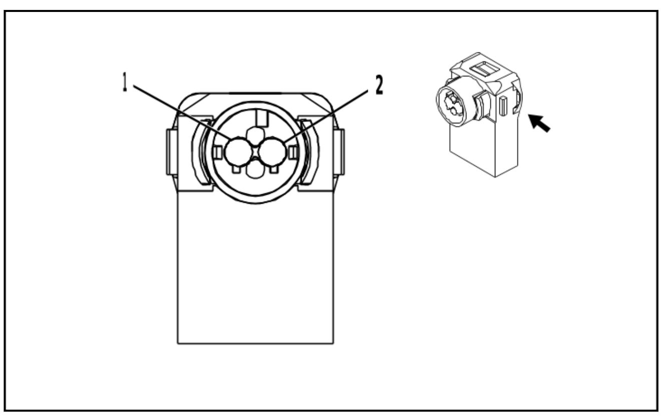
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-10 (GN) | No Tool Required |

## F112D Front Seat Belt Retractor - Driver

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) OG / WH | (1) 3477 | (1) Driver Seat Belt Retractor Pretensioner High Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) VT / OG | (2) 3478 | (2) Driver Seat Belt Retractor Pretensioner Low Control | (2) I | (2) — |

### F112P Front Seat Belt Retractor - Passenger




4241364

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 35504153
- Service Connector: 85666123
- Description: 2-Way F ABX-5 Series( PU with YE Cover)

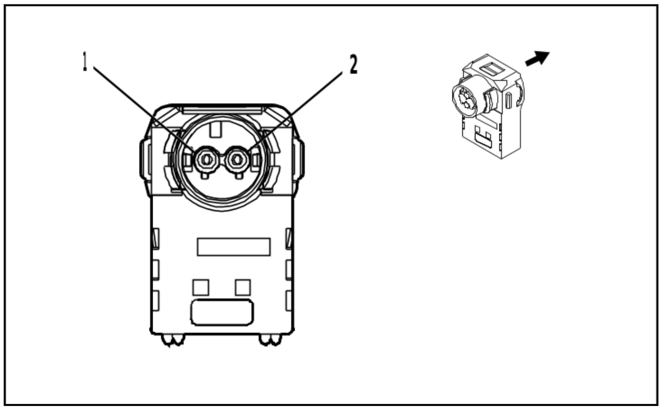
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-10 (GN) | No Tool Required |

## F112P Front Seat Belt Retractor - Passenger

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) OG / GN | (1) 3475 | (1) Passenger Seat Belt Retractor Pretensioner High Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) WH / OG | (2) 3476 | (2) Passenger Seat Belt Retractor Pretensioner Low Control | (2) I | (2) — |

### F113D Front Seat Belt Anchor Plate Tensioner - Driver




4231869

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 35504152
- Service Connector: 85666122
- Description: 2-Way F ABX-5 Series( PK with YE Cover)

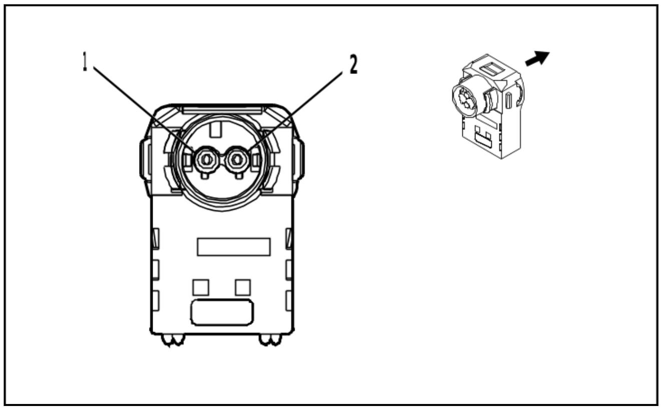
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-10 (GN) | No Tool Required |

## F113D Front Seat Belt Anchor Plate Tensioner - Driver

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) OG / YE | (1) 3481 | (1) Driver Seat Belt Anchor Pretensioner High Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) VT / OG | (2) 3482 | (2) Driver Seat Belt Anchor Pretensioner Low Control | (2) I | (2) — |

### F113P Front Seat Belt Anchor Plate Tensioner - Passenger




4231869

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 35504152
- Service Connector: 85666122
- Description: 2-Way F ABX-5 Series( PK with YE Cover)

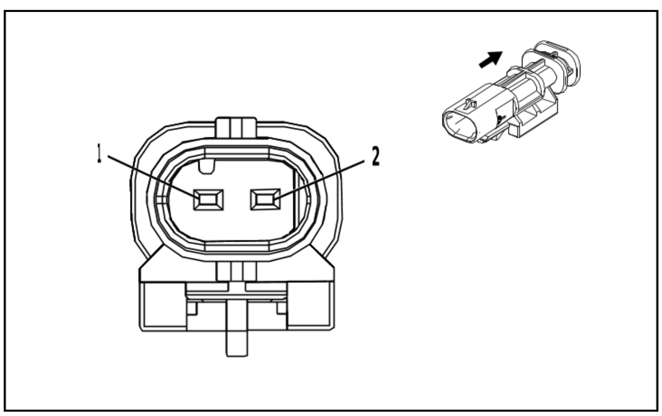
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-10 (GN) | No Tool Required |

## F113P Front Seat Belt Anchor Plate Tensioner - Passenger

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) OG / BN | (1) 3479 | (1) Passenger Seat Belt Anchor Pretensioner High Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) GY / OG | (2) 3480 | (2) Passenger Seat Belt Anchor Pretensioner Low Control | (2) I | (2) — |

### G12AX Fuel Pump - Auxiliary (L5P)




2474755

**Connector Part Information**

- Harness Type: Chassis Wiring Harness
- OEM Connector: 2203314-1
- Service Connector: 85533165
- Description: 2-Way M 1.2 MCON Series, Sealed( BK)

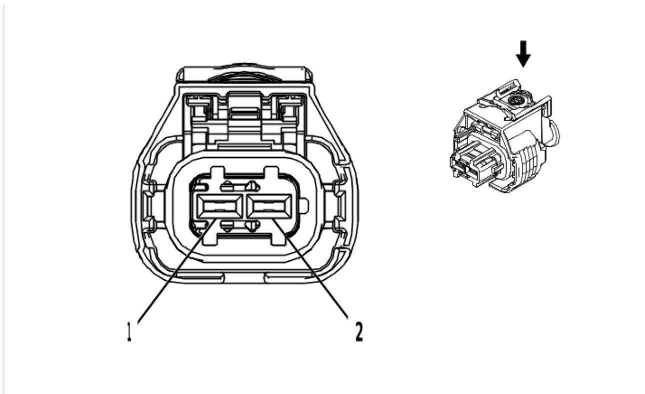
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-17 (L-GN) | No Tool Required |

## G12AX Fuel Pump - Auxiliary (L5P)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 1 | (1) BU / GN | (1) 2120 | (1) Secondary Fuel Pump Control | (1) I | (1) — |
| (2) 2 | (2) 1 | (2) BK / GN | (2) 1580 | (2) Fuel Pump Low Reference | (2) I | (2) — |

### G13 Generator X1 (- VYU)




2577394

**Connector Part Information**
- Harness Type: Engine Wiring Harness
- OEM Connector: 1 928 405 714
- Service Connector: 13384371
- Description: 2-Way F 2.8 Series, Sealed( BK)

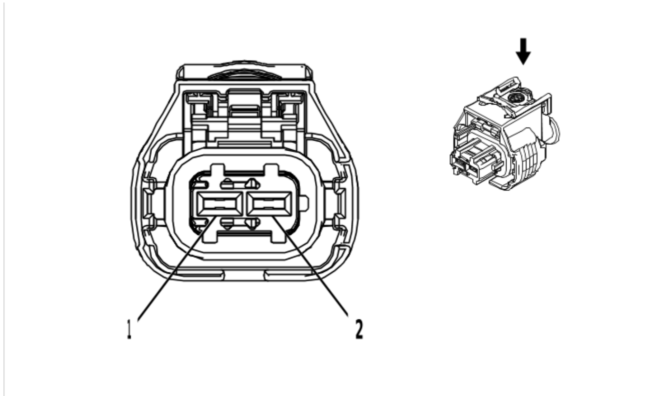
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-35 (VT) | No Tool Required |

## G13 Generator X1 (- VYU)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BN | (1) 25 | (1) Charge Indicator Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) GY | (2) 23 | (2) Generator Field Duty Cycle Signal | (2) I | (2) — |

### G13 Generator X1 (VYU)




2577394

**Connector Part Information**

- Harness Type: Accessory Wiring Harness
- OEM Connector: 1 928 405 714
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 2.8 Series, Sealed( BK)

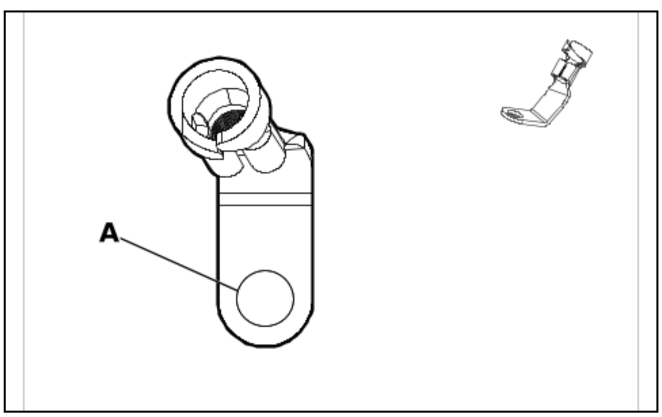
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-35 (VT) | No Tool Required |

## G13 Generator X1 (VYU)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BN | (1) 25 | (1) Charge Indicator Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) GY | (2) 23 | (2) Generator Field Duty Cycle Signal | (2) I | (2) — |

### G13 Generator X2




6444138

**Connector Part Information**

- Harness Type: Generator Battery Jumper Cable
- OEM Connector: 84386100
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way Ring Terminal

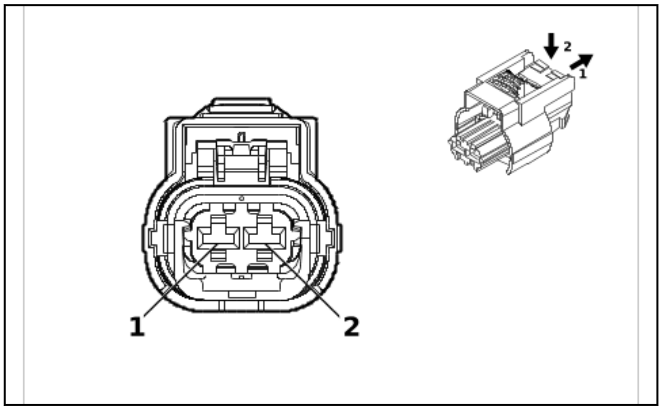
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## G13 Generator X2

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| A | 35<br>35 | RD / YE<br>RD / YE | 2<br>2 | Battery Positive Voltage<br>Battery Positive Voltage | I<br>I | L5P<br>L8T |

### G13A Auxiliary Generator X1 (- VYU)




4992524

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 35182447
- Service Connector: 84941154
- Description: 2-Way F 2.8 MCP Series, Sealed( BK)

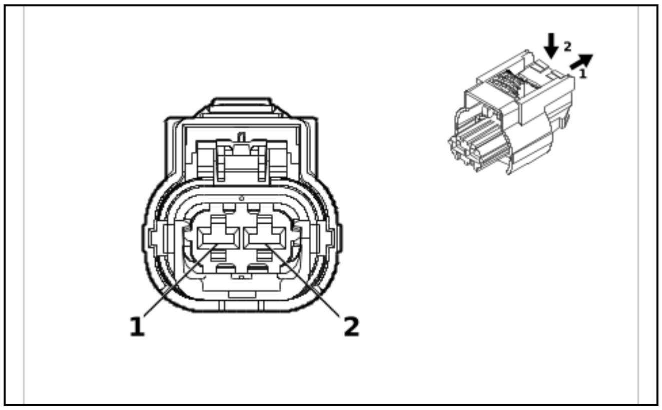
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-35 (VT) | No Tool Required |

## G13A Auxiliary Generator X1 (- VYU)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BN | (1) 25 | (1) Charge Indicator Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) GY | (2) 23 | (2) Generator Field Duty Cycle Signal | (2) I | (2) — |

### G13A Auxiliary Generator X1 (VYU)




4992524

**Connector Part Information**

- Harness Type: Accessory Wiring Harness
- OEM Connector: 35182447
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 2.8 MCP Series, Sealed( BK)

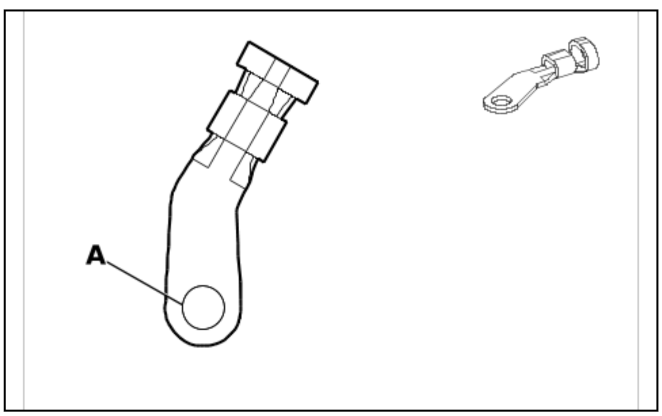
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-35 (VT) | No Tool Required |

## G13A Auxiliary Generator X1 (VYU)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BN | (1) 25 | (1) Charge Indicator Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) GY | (2) 23 | (2) Generator Field Duty Cycle Signal | (2) I | (2) — |

### G13A Auxiliary Generator X2 (L5P & KHF)




6444786

**Connector Part Information**

- Harness Type: Auxiliary Generator Battery Jumper Cable
- OEM Connector: 84223343
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way Ring Terminal

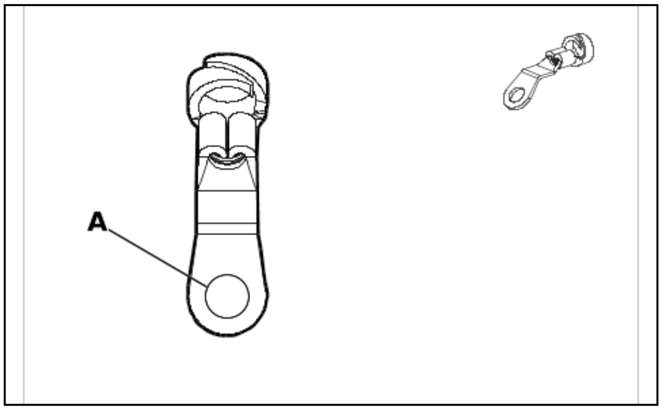
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## G13A Auxiliary Generator X2 (L5P & KHF)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| A | 25 | RD / YE | 2 | Battery Positive Voltage | I | KHF+ L5P |

### G13A Auxiliary Generator X2 (L8T & KHF)




6444145

**Connector Part Information**

- Harness Type: Auxiliary Generator Battery Jumper Cable
- OEM Connector: 13531265
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way Ring Terminal

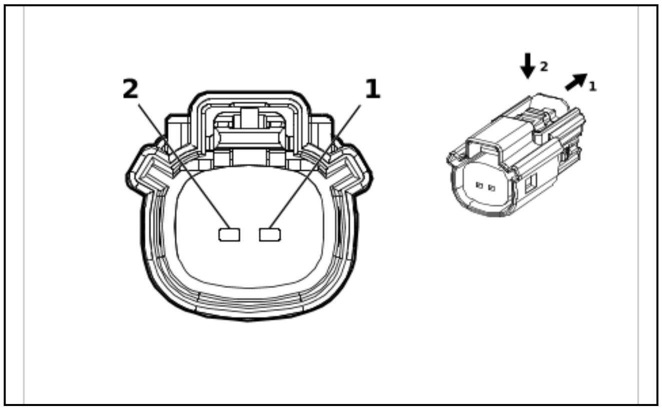
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## G13A Auxiliary Generator X2 (L8T & KHF)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| A | 25 | RD / YE | 2 | Battery Positive Voltage | I | KHF+ L8T |

### G18 Fuel Pump - High Pressure




2474713

**Connector Part Information**

- Harness Type: Fuel Injector Wiring Harness - Right
- OEM Connector: 33471-0206
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.5 Series, Sealed( BK)

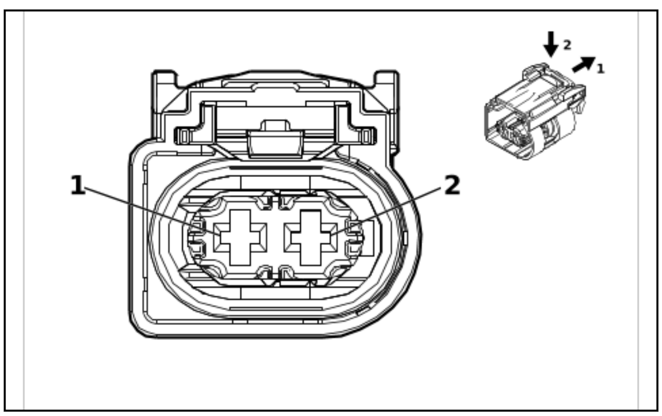
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-14 (GN) | No Tool Required |

## G18 Fuel Pump - High Pressure

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) VT / BK | (1) 7300 | (1) High Pressure Fuel Pump Low Control | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) YE | (2) 7301 | (2) High Pressure Fuel Pump High Control | (2) I | (2) — |

### G24 Windshield Washer Pump




5580410

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 2425741-1
- Service Connector: 85005016
- Description: 2-Way F 2.8 MCP Series, Sealed( BK)

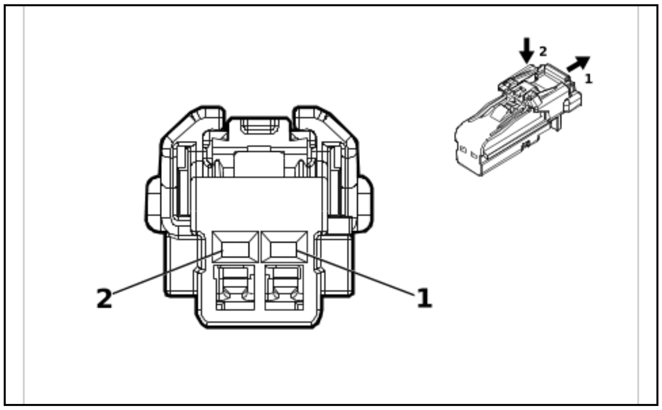
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-4A (PU) | No Tool Required |

## G24 Windshield Washer Pump

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) GY / VT | (1) 228 | (1) Windshield Washer Pump Control | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) BK | (2) 150 | (2) Ground | (2) I | (2) — |

### G31D Front Seat Back Lumbar Pump - Driver (AVK)




4115691

**Connector Part Information**

- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 6098-8988
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series( BK)

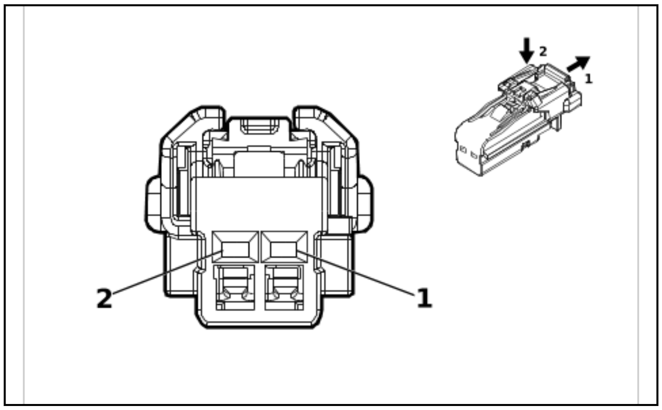
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## G31D Front Seat Back Lumbar Pump - Driver (AVK)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) WH / BU | (1) 4891 | (1) Driver Seat Lumbar/Bolster Pump Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BN / BK | (2) 2305 | (2) Driver Seat Bolster Pump Low Reference | (2) I | (2) — |

## G31P Front Seat Back Lumbar Pump - Passenger (AVU)




4115691

**Connector Part Information**

- Harness Type: Front Seat Wiring Harness - Passenger
- OEM Connector: 6098-8988
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series( BK)

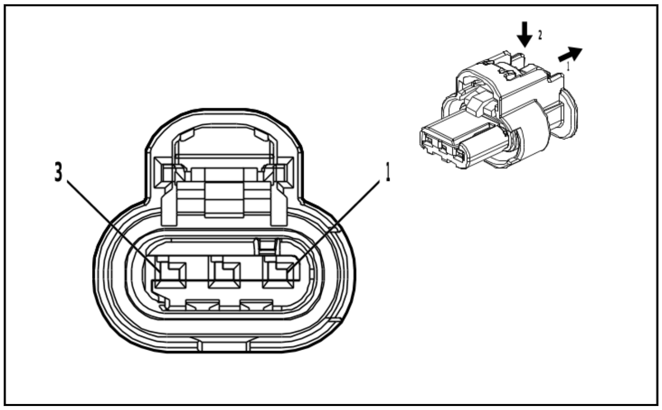
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

### G31P Front Seat Back Lumbar Pump - Passenger (AVU)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) GY / WH | (1) 4890 | (1) Passenger Seat Lumbar/Bolster Pump Control | (1) I | (1) — |
| (2) 2 | (2) 0.5<br>(2) 0.5 | (2) GY / BK<br>(2) BK | (2) 2306<br>(2) 1350 | (2) Passenger Seat Bolster Pump Low Reference<br>(2) Ground | (2) I<br>(2) I | (2) AKE<br>(2) - AKE |

### G73 Low Temperature Loop Coolant Pump




4581126

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 1-2296695-1
- Service Connector: 86792094
- Description: 3-Way F 1.2 MCON-CB Series, Sealed( BK)

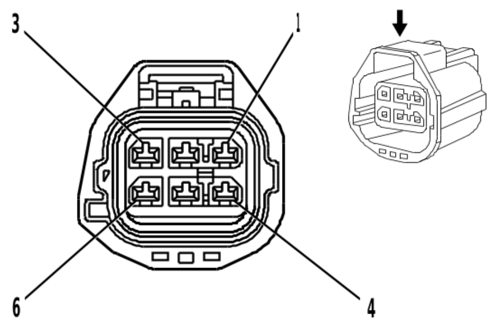
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## G73 Low Temperature Loop Coolant Pump

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 1 | (1) BK | (1) 6150 | (1) Engine Odd Bank Ground | (1) I | (1) — |
| (2) 2 | (2) 1 | (2) VT / BU | (2) 5294 | (2) Powertrain Main Relay Fused Supply Voltage 5 | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) GN / VT | (3) 4621 | (3) Engine Control Module LIN Bus 1 | (3) I | (3) — |

### K4 Running Board Control Module X1




1420587

**Connector Part Information**

- Harness Type: Chassis Wiring Harness
- OEM Connector: 7287-9814-10
- Service Connector: 19368306
- Description: 6-Way F 2.8 Series, Sealed( GY)

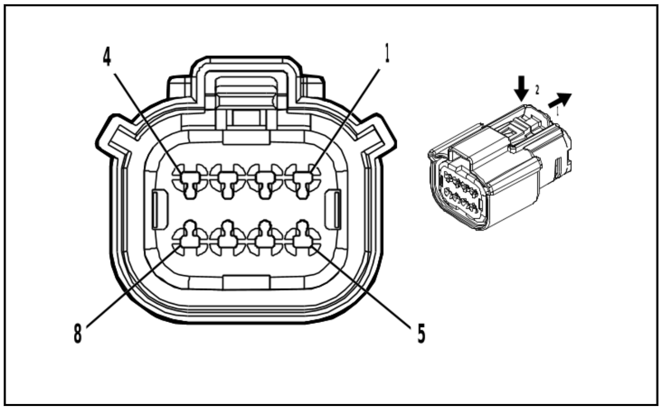
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-35 (VT) | No Tool Required |

## K4 Running Board Control Module X1

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 2.5 | (1) RD / WH | (1) 1040 | (1) Battery Positive Voltage | (1) I | (1) — |
| (2) 2 | (2) 2 | (2) GY | (2) 7472 | (2) Left Running Board Step Motor Control Retract | (2) I | (2) — |
| (3) 3 | (3) 2 | (3) BU | (3) 7470 | (3) Right Running Board Step Motor Control Extend | (3) I | (3) — |
| (4) 4 | (4) 2.5 | (4) BK / WH | (4) 1151 | (4) Signal Ground | (4) I | (4) — |
| (5) 5 | (5) 2 | (5) WH / BN | (5) 7471 | (5) Left Running Board Step Motor Control Extend | (5) I | (5) — |
| (6) 6 | (6) 2 | (6) GN | (6) 7469 | (6) Right Left Running Board Step Motor Control Retract | (6) I | (6) — |

## K4 Running Board Control Module X2




4846407

**Connector Part Information**

- Harness Type: Chassis Wiring Harness
- OEM Connector: 33472-4806
- Service Connector: 84928314
- Description: 8-Way F 1.5 MX Series, Sealed( BK)

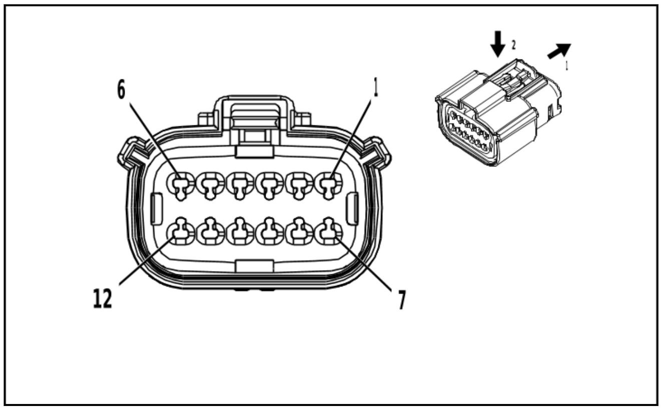
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-2A (GY) | No Tool Required |

### K4 Running Board Control Module X2

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) WH | (1) 4986 | (1) AUTOSAR CAN Bus [-] 1 Serial Data | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) WH | (2) 4986 | (2) AUTOSAR CAN Bus [-] 1 Serial Data | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BU | (3) 4987 | (3) AUTOSAR CAN Bus [+] 1 Serial Data | (3) I | (3) — |
| 4 | — | — | — | Not Occupied | — | — |
| (5) 5 | (5) 0.5 | (5) BU | (5) 4987 | (5) AUTOSAR CAN Bus [+] 1 Serial Data | (5) I | (5) — |
| (6) 6 | (6) 0.5 | (6) WH | (6) 4986 | (6) AUTOSAR CAN Bus [-] 1 Serial Data | (6) I | (6) — |
| (7) 7 | (7) 0.5 | (7) BU | (7) 4987 | (7) AUTOSAR CAN Bus [+] 1 Serial Data | (7) I | (7) — |
| 8 | — | — | — | Not Occupied | — | — |

### K4 Running Board Control Module X3




2871860

**Connector Part Information**

- Harness Type: Chassis Wiring Harness
- OEM Connector: 33472-6223
- Service Connector: 19352907
- Description: 12-Way F 1.5 MX Series, Sealed( BK)

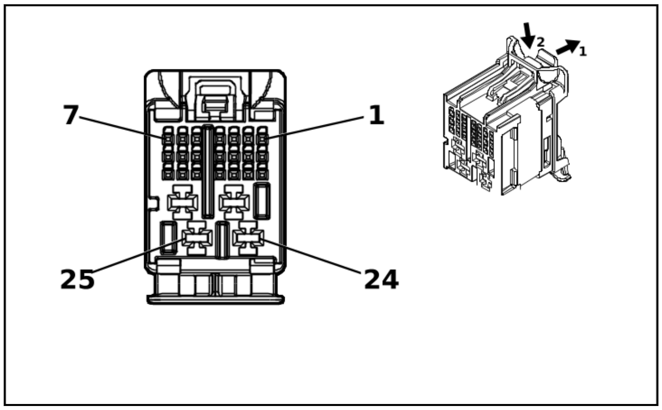
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 85528055 | J-35616-2A (GY) | J-38125-217 |

## K4 Running Board Control Module X3

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) GN / RD | (1) 7464 | (1) Right Running Board Step Motor Hall Sensor 5V Reference | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) VT | (2) 7465 | (2) Right Running Board Step Motor Hall Sensor Signal | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) YE / BK | (3) 7463 | (3) Right Running Board Step Motor Hall Sensor Low Reference | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) BN | (4) 4748 | (4) Left Running Board Step Courtesy Lamp Control | (4) I | (4) — |
| (5) 5 | (5) 0.5 | (5) GY / VT | (5) 4749 | (5) Right Running Board Step Courtesy Lamp Control | (5) I | (5) — |
| 6 | — | — | — | Not Occupied | — | — |
| (7) 7 | (7) 0.5 | (7) VT / RD | (7) 7468 | (7) Left Running Board Step Motor Hall Sensor 5V Reference | (7) I | (7) — |
| (8) 8 | (8) 0.5 | (8) YE | (8) 7467 | (8) Left Running Board Step Motor Hall Sensor Signal | (8) I | (8) — |
| (9) 9 | (9) 0.5 | (9) YE / BN | (9) 7466 | (9) Left Running Board Step Motor Hall Sensor Low Reference | (9) I | (9) — |
| 10 - 12 | — | — | — | Not Occupied | — | — |

### K9 Body Control Module X1




5203995

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 160027-0013
- Service Connector: 13534967
- Description: 25-Way F 0.5 MQS, 2.8 MCP Series( BK with GY Inner Connector)

## Terminal Part Information

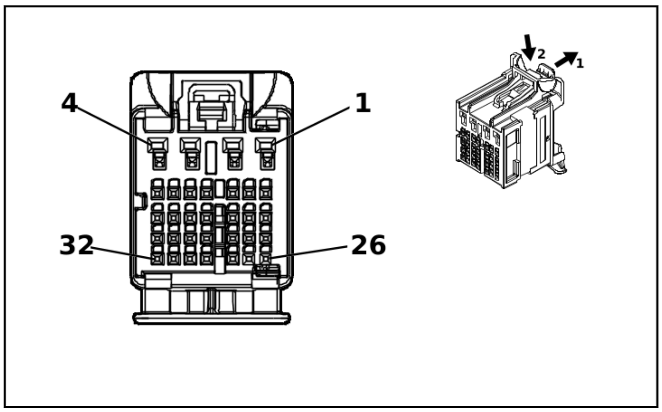
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 19370262 | EL-35616-58 (BK) | EL-38125-58 |
| II | 87814662 | J-35616-35 (VT) | J-38125-557 |

## K9 Body Control Module X1

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 | — | — | — | Not Occupied | — | — |
| (2) 2 | (2) 0.35 | (2) BU / GN | (2) 4248 | (2) Cargo Lamp Indicator Control | (2) I | (2) — |
| 3 - 4 | — | — | — | Not Occupied | — | — |
| (5) 5 | (5) 0.35 | (5) BU / GY | (5) 754 | (5) Blower Motor Speed Control | (5) I | (5) — |
| (6) 6 | (6) 0.35 | (6) WH / YE | (6) 4634 | (6) HVAC Remote Enable Signal | (6) I | (6) — |
| (7) 7 | (7) 0.35 | (7) WH / GY | (7) 7297 | (7) Minor Endgate High Relay Control | (7) I | (7) — |
| 8 - 10 | — | — | — | Not Occupied | — | — |
| (11) 11 | (11) 0.35 | (11) GY / GN | (11) 4636 | (11) HVAC System Enable Signal | (11) I | (11) — |
| (12) 12 | (12) 0.35 | (12) GY | (12) 728 | (12) Security Indicator Control | (12) I | (12) — |
| (13) 13 | (13) 0.35 | (13) YE | (13) 6812 | (13) Out of Park Signal | (13) I | (13) — |
| (14) 14 | (14) 0.35 | (14) BN / BU | (14) 4892 | (14) Auxiliary Battery Relay Control | (14) I | (14) — |
| (15) 15 | (15) 0.35 | (15) GY | (15) 590 | (15) Driver Solar Sensor Signal | (15) I | (15) — |
| (16) 16 | (16) 0.35 | (16) GY | (16) 6137 | (16) Air Conditioning Evaporator Temperature Sensor Signal | (16) I | (16) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (17) 17 | (17) 0.35 | (17) WH / BU | (17) 278 | (17) Ambient Light Sensor Signal | (17) I | (17) — |
| (18) 18 | (18) 0.35 | (18) BU / WH | (18) 734 | (18) Inside Air Temperature Sensor Signal | (18) I | (18) — |
| (19) 19 | (19) 0.35 | (19) GY | (19) 158 | (19) Cargo Lamp Switch Signal | (19) I | (19) — |
| (20) 20 | (20) 0.35 | (20) GN / VT | (20) 2852 | (20) Body Control Module LIN Bus 6 | (20) I | (20) — |
| 21 - 22 | — | — | — | Not Occupied | — | — |
| (23) 23 | (23) 1 | (23) RD / GY | (23) 2140 | (23) Battery Positive Voltage | (23) II | (23) — |
| 24 | — | — | — | Not Occupied | — | — |
| (25) 25 | (25) 1 | (25) GN / YE | (25) 6840 | (25) Auxiliary Device 2 Switched Voltage | (25) II | (25) — |

**K9 Body Control Module X2**




5204222

**Connector Part Information**
- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 160028-0015
- Service Connector: 13534980
- Description: 32-Way F 0.5 NANO, 1.2 MCON, stAK50h Series( PK with GY Inner Connector)

## Terminal Part Information

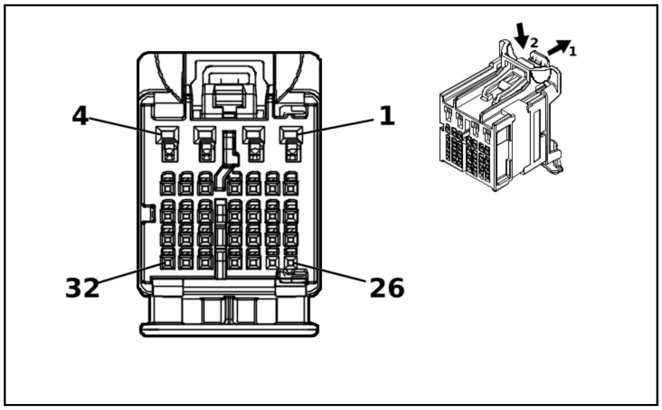
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 84729890 | J-35616-12 (BU) | J-38125-215A |

## K9 Body Control Module X2

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 - 4 | — | — | — | Not Occupied | — | — |
| (5) 5 | (5) 0.35 | (5) BU / GN | (5) 5723 | (5) Ignition Mode Switch Mode Voltage | (5) I | (5) — |
| 6 - 8 | — | — | — | Not Occupied | — | — |
| (9) 9 | (9) 0.35 | (9) GN / BU | (9) 3738 | (9) Tap Up/Tap Down Switch Signal 2 | (9) I | (9) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (10) 10 | (10) 0.35 | (10) WH / BN | (10) 2203 | (10) Enhanced Driver Mode 2 Switch Signal | (10) I | (10) — |
| (11) 11 | (11) 0.35 | (11) GY | (11) 1198 | (11) Endgate Release Switch Analog Signal Interior | (11) I | (11) — |
| (12) 12 | (12) 0.35 | (12) YE / BU | (12) 1714 | (12) Windshield Wiper Switch Low Signal | (12) I | (12) — |
| (13) 13 | (13) 0.35 | (13) GY / GN | (13) 5737 | (13) Distance Sensing Cruise Control Gap Up/ Down Switch Signal | (13) I | (13) — |
| (14) 14 | (14) 0.35 | (14) BN / GN | (14) 1884 | (14) Cruise Control Set/Coast/Resume/ Accelerate Switch Signal | (14) I | (14) — |
| 15 | — | — | — | Not Occupied | — | — |
| (16) 16 | (16) 0.35 | (16) BN / BK | (16) 5720 | (16) Ignition Mode Switch Accessory LED Signal | (16) I | (16) — |
| 17 | — | — | — | Not Occupied | — | — |
| (18) 18 | (18) 0.35 | (18) YE / BU | (18) 2912 | (18) Driver Mode 2 Indicator Control | (18) I | (18) — |
| (19) 19 | (19) 0.35 | (19) WH / VT | (19) 103 | (19) Headlamp Switch On Signal | (19) I | (19) — |
| (20) 20 | (20) 0.35 | (20) GN / GY | (20) 13 | (20) Headlamp Switch Park Lamp Signal | (20) I | (20) — |
| (21) 21 | (21) 0.35 | (21) GN / BN | (21) 306 | (21) Headlamp Switch Off Signal | (21) I | (21) — |
| (22) 22 | (22) 0.35 | (22) GY | (22) 4989 | (22) Driver Mode 2 Switch Signal | (22) I | (22) — |
| (23) 23 | (23) 0.35 | (23) VT / BU | (23) 2916 | (23) Right Turn Signal Switch Signal | (23) I | (23) — |
| 24 | — | — | — | Not Occupied | — | — |
| (25) 25 | (25) 0.35 | (25) BK / GY | (25) 6009 | (25) Windshield Wiper Switch Low Reference | (25) I | (25) — |
| (26) 26 | (26) 0.35 | (26) WH / BK | (26) 94 | (26) Windshield Washer Switch Signal | (26) I | (26) — |
| (27) 27 | (27) 0.35 | (27) YE / BN | (27) 307 | (27) Headlamp Switch Flash Signal | (27) I | (27) — |
| (28) 28 | (28) 0.35 | (28) GN / WH | (28) 3287 | (28) Horn Switch Signal | (28) I | (28) — |
| (29) 29 | (29) 0.35 | (29) WH / GN | (29) 2915 | (29) Left Turn Signal Switch Signal | (29) I | (29) — |
| (30) 30 | (30) 0.35 | (30) BK / YE | (30) 407 | (30) Sensor Low Reference | (30) I | (30) — |
| (31) 31 | (31) 0.35 | (31) GN / WH | (31) 111 | (31) Hazard Warning Switch Signal | (31) I | (31) — |
| (32) 32 | (32) 0.35 | (32) WH | (32) 524 | (32) High Beam Select Switch High Beam Signal | (32) I | (32) — |

**K9 Body Control Module X3**




5203925

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 160028-0012
- Service Connector: 13534977
- Description: 32-Way F 0.5 NANO, 1.2 MCON, stAK50h Series( BU with GY Inner Connector)

## Terminal Part Information

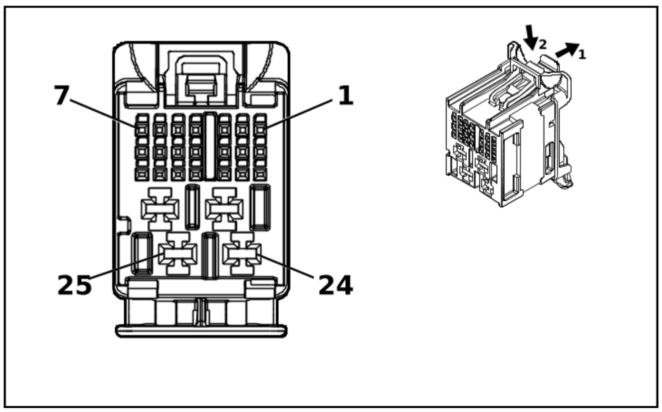
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 84729890 | J-35616-12 (BU) | J-38125-215A |

## K9 Body Control Module X3

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 - 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 0.35 | (3) GN / VT | (3) 4786 | (3) Dome/Reading Lamp Enable Signal | (3) I | (3) — |
| 4 - 6 | — | — | — | Not Occupied | — | — |
| (7) 7 | (7) 0.35 | (7) WH / BN | (7) 7555 | (7) Headlamp Switch Signal | (7) I | (7) — |
| 8 - 9 | — | — | — | Not Occupied | — | — |
| (10) 10 | (10) 0.35 | (10) GN / BK | (10) 2858 | (10) Body Control Module LIN Bus 12 | (10) I | (10) — |
| 11 | — | — | — | Not Occupied | — | — |
| (12) 12 | (12) 0.35 | (12) YE / WH | (12) 816 | (12) Brake Transmission Shift Interlock Solenoid Actuator Control | (12) I | (12) — |
| (13) 13 | (13) 0.35 | (13) WH | (13) 3152 | (13) Lane Departure Warning Indicator Control | (13) I | (13) — |
| (14) 14 | (14) 0.35 | (14) GN / BN | (14) 5852 | (14) Rear Parking Assist Disable LED Signal | (14) I | (14) — |
| 15 | — | — | — | Not Occupied | — | — |
| (16) 16 | (16) 0.35 | (16) GN / BU | (16) 761 | (16) Blower Speed Feedback Signal | (16) I | (16) — |
| (17) 17 | (17) 0.35 | (17) WH / VT | (17) 5905 | (17) Key Capture/Column Lock Shift Position Signal | (17) I | (17) — |
| (18) 18 | (18) 0.35 | (18) YE | (18) 7556 | (18) Headlamp Switch Reference | (18) I | (18) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (19) 19 | (19) 0.35 | (19) BU / BK | (19) 5719 | (19) Ignition Mode Switch Start LED Signal | (19) I | (19) — |
| 20 | — | — | — | Not Occupied | — | — |
| (21) 21 | (21) 0.35 | (21) BN | (21) 7291 | (21) Major Endgate Release Switch Signal Interior | (21) I | (21) — |
| 22 - 23 | — | — | — | Not Occupied | — | — |
| (24) 24 | (24) 0.35 | (24) WH / BU | (24) 3691 | (24) Trailer Brake Apply Signal | (24) I | (24) — |
| (25) 25 | (25) 0.35 | (25) BU / GY | (25) 4990 | (25) Driver Mode 1 Switch Signal | (25) I | (25) — |
| (26) 26 | (26) 0.35 | (26) GY / BN | (26) 3904 | (26) Auto High Beam Assist Switch Signal | (26) I | (26) — |
| (27) 27 | (27) 0.35 | (27) GY / WH | (27) 3153 | (27) Lane Departure Warning Disable Switch Signal | (27) I | (27) — |
| 28 - 29 | — | — | — | Not Occupied | — | — |
| (30) 30 | (30) 0.35 | (30) BU / YE | (30) 6844 | (30) ABS/Traction Control Hill Descent Control Switch Signal | (30) I | (30) — |
| (31) 31 | (31) 0.35 | (31) GY / GN | (31) 2555 | (31) Rear Parking Assist Disable Signal | (31) I | (31) — |
| 32 | — | — | — | Not Occupied | — | — |

**K9 Body Control Module X4**




5203893

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 160027-0018
- Service Connector: 13534970
- Description: 25-Way F 0.5 MQS, 2.8 MCP Series( GY)

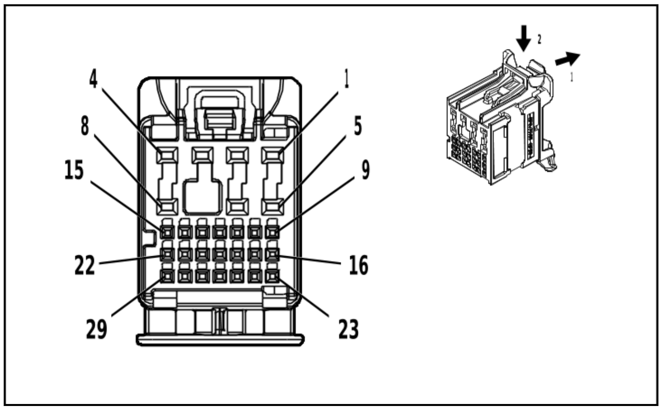
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 19370262 | EL-35616-58 (BK) | EL-38125-58 |
| II | 87814662 | J-35616-35 (VT) | J-38125-557 |

## K9 Body Control Module X4

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) BN / BK | (1) 3552 | (1) Interior Passive Entry Antenna 1 High Signal | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) WH | (2) 3553 | (2) Interior Passive Entry Antenna 1 Low Signal | (2) I | (2) — |
| (3) 3 | (3) 0.35 | (3) BK / VT | (3) 1449 | (3) Steering Wheel Resistor Ladder Low Reference | (3) I | (3) — |
| (4) 4 | (4) 0.35 | (4) WH / GN | (4) 7728 | (4) Major Endgate High Relay Control | (4) I | (4) — |
| (5) 5 | (5) 0.35 | (5) GN / VT | (5) 5199 | (5) Run/Crank Relay Coil Control | (5) I | (5) — |
| 6 | — | — | — | Not Occupied | — | — |
| (7) 7 | (7) 0.35 | (7) BN / BK | (7) 4996 | (7) Immobilizer Antenna Signal [+] | (7) I | (7) — |
| 8 - 9 | — | — | — | Not Occupied | — | — |
| (10) 10 | (10) 0.35 | (10) GY / GN | (10) 4083 | (10) Retained Accessory Power Relay 2 Coil Control | (10) I | (10) — |
| (11) 11 | (11) 0.35 | (11) BU / YE | (11) 7176 | (11) All Windows Open Switch Signal | (11) I | (11) — |
| (12) 12 | (12) 0.35 | (12) BU / VT | (12) 7729 | (12) Major Endgate Low Relay Control | (12) I | (12) — |
| 13 | — | — | — | Not Occupied | — | — |
| (14) 14 | (14) 0.35 | (14) WH / GY | (14) 4997 | (14) Immobilizer Antenna Low Signal | (14) I | (14) — |
| (15) 15 | (15) 0.35 | (15) BU / VT | (15) 1788 | (15) Traction Control Switch Signal 1 | (15) I | (15) — |
| (16) 16 | (16) 0.35 | (16) GN / WH | (16) 4115 | (16) Body Control Module LIN Bus 5 | (16) I | (16) — |
| 17 - 18 | — | — | — | Not Occupied | — | — |
| (19) 19 | (19) 0.35 | (19) BU / YE | (19) 4979 | (19) AUTOSAR CAN Bus [+] 2 Serial Data | (19) I | (19) — |
| (20) 20 | (20) 0.35 | (20) WH | (20) 4978 | (20) AUTOSAR CAN Bus [-] 2 Serial Data | (20) I | (20) — |
| (21) 21 | (21) 0.35 | (21) WH | (21) 6816 | (21) Indicator Dimming Control | (21) I | (21) — |
| (22) 22 | (22) 0.5 | (22) RD / WH | (22) 2740 | (22) Battery Positive Voltage | (22) II | (22) — |
| (23) 23 | (23) 2 | (23) RD / BU | (23) 2540 | (23) Battery Positive Voltage | (23) II | (23) — |
| (24) 24 | (24) 1 | (24) BK | (24) 1050 | (24) Ground | (24) II | (24) — |
| (25) 25 | (25) 1 | (25) BK | (25) 1050 | (25) Ground | (25) II | (25) — |

## K9 Body Control Module X5




4584346

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 160014-0012
- Service Connector: 13534972
- Description: 29-Way F 0.5 NANO, 1.2 MCON Series( GN)

### Terminal Part Information

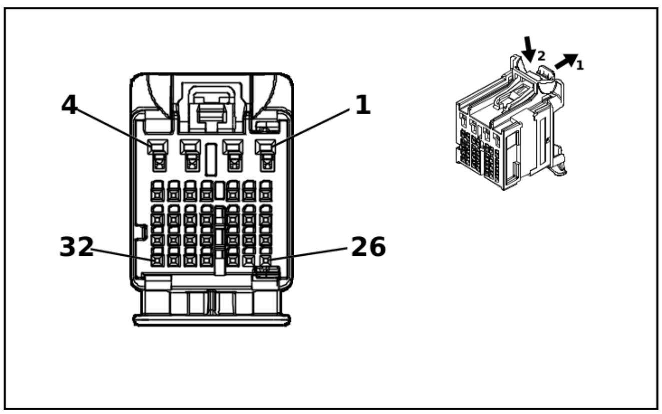
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 84729890 | J-35616-12 (BU) | J-38125-215A |

### K9 Body Control Module X5

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 | — | — | — | Not Occupied | — | — |
| (2) 2 | (2) 0.5 | (2) BU / BN | (2) 7573 | (2) Air Conditioning Compressor Solenoid Valve Control | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BU / YE | (3) 7574 | (3) Air Conditioning Compressor Solenoid Valve Control | (3) I | (3) — |
| (4) 4 | (4) 0.75 | (4) WH | (4) 2679 | (4) Lock Actuators Unlock Control 1 | (4) I | (4) — |
| 5 | — | — | — | Not Occupied | — | — |
| (6) 6 | (6) 0.5 | (6) YE | (6) 6817 | (6) LED Backlight Dimming Control 1 | (6) I | (6) — |
| 7 | — | — | — | Not Occupied | — | — |
| (8) 8 | (8) 0.75 | (8) GY | (8) 2681 | (8) Left Front Door Lock Actuator Lock Control | (8) I | (8) — |
| 9 - 10 | — | — | — | Not Occupied | — | — |
| (11) 11 | (11) 0.35 | (11) BN / WH | (11) 28 | (11) Horn Relay Control | (11) I | (11) — |
| (12) 12 | (12) 0.35 | (12) WH | (12) 4978 | (12) AUTOSAR CAN Bus [-] 2 Serial Data | (12) I | (12) — |
| (13) 13 | (13) 0.35 | (13) BU / YE | (13) 4979 | (13) AUTOSAR CAN Bus [+] 2 Serial Data | (13) I | (13) — |
| 14 - 15 | — | — | — | Not Occupied | — | — |
| (16) 16 | (16) 0.35 | (16) VT | (16) 4301 | (16) Passive Entry Left Antenna Signal High | (16) I | (16) — |
| (17) 17 | (17) 0.35 | (17) GN / YE | (17) 2855 | (17) Body Control Module LIN Bus 9 | (17) I | (17) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (18) 18 | (18) 0.35 | (18) VT / GY | (18) 126 | (18) Left Front Door Open Switch Signal | (18) I | (18) — |
| (19) 19 | (19) 0.35 | (19) GN / YE | (19) 6134 | (19) Body Control Module LIN Bus 3 | (19) I | (19) — |
| 20 | — | — | — | Not Occupied | — | — |
| (21) 21 | (21) 0.35 | (21) WH / BU | (21) 6311 | (21) Cruise/ETC/TCC Brake Signal | (21) I | (21) — |
| (22) 22 | (22) 0.35 | (22) BN / VT | (22) 193 | (22) Rear Defogger Relay Control | (22) I | (22) — |
| (23) 23 | (23) 0.35 | (23) VT / GY | (23) 4302 | (23) Passive Entry Left Antenna Signal Low | (23) I | (23) — |
| (24) 24 | (24) 0.35 | (24) WH | (24) 5359 | (24) Brake Apply Sensor Control | (24) I | (24) — |
| (25) 25 | (25) 0.35 | (25) BU / YE | (25) 5361 | (25) Brake Apply Sensor Signal | (25) I | (25) — |
| (26) 26 | (26) 0.35 | (26) BK / BN | (26) 5360 | (26) Brake Apply Sensor Low Reference | (26) I | (26) — |
| (27) 27 | (27) 0.35 | (27) YE | (27) 1144 | (27) Endgate Release Switch Discrete Signal Exterior | (27) I | (27) — |
| 28 - 29 | — | — | — | Not Occupied | — | — |

**K9 Body Control Module X6**




5202291

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 160028-0017
- Service Connector: 13534981
- Description: 32-Way F 0.5 MQS, 1.2 OCS Series( BN with GY Inner Connector)

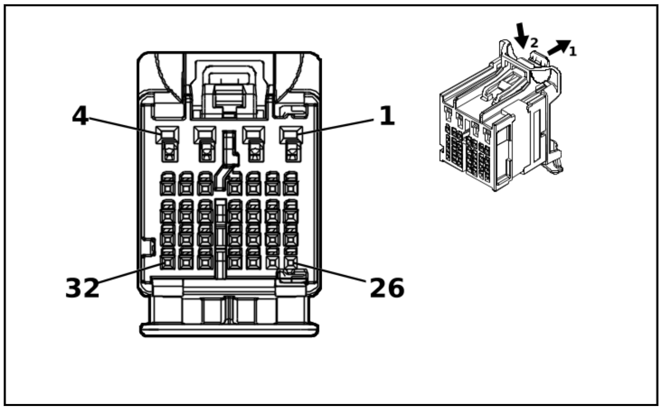
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 84729890 | J-35616-12 (BU) | J-38125-215A |

## K9 Body Control Module X6

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 | — | — | — | Not Occupied | — | — |
| (2) 2 | (2) 0.75 | (2) VT / WH | (2) 1094 | (2) Right Rear Door Lock Actuator Lock Control | (2) I | (2) — |
| (3) 3 | (3) 0.75 | (3) GY / BK | (3) 2680 | (3) Lock Actuators Unlock Control 2 | (3) I | (3) — |
| 4 - 6 | — | — | — | Not Occupied | — | — |
| (7) 7 | (7) 0.35 | (7) BN / GN | (7) 3568 | (7) Rear Closure Passive Entry Antenna High Signal | (7) I | (7) — |
| (8) 8 | (8) 0.35 | (8) GN / GY | (8) 3569 | (8) Rear Closure Passive Entry Antenna Low Signal | (8) I | (8) — |
| 9 - 10 | — | — | — | Not Occupied | — | — |
| (11) 11 | (11) 0.35 | (11) GN / BU | (11) 6133 | (11) Body Control Module LIN Bus 2 | (11) I | (11) — |
| (12) 12 | (12) 0.35 | (12) GY | (12) 7292 | (12) Major Endgate Release Switch Signal Exterior | (12) I | (12) — |
| 13 | — | — | — | Not Occupied | — | — |
| (14) 14 | (14) 0.35 | (14) VT | (14) 801 | (14) Retained Accessory Power Control | (14) I | (14) — |
| 15 - 18 | — | — | — | Not Occupied | — | — |
| (19) 19 | (19) 0.35 | (19) YE | (19) 7294 | (19) Minor Endgate Release Switch Discrete Signal Exterior | (19) I | (19) — |
| 20 | — | — | — | Not Occupied | — | — |
| (21) 21 | (21) 0.35 | (21) YE / BU | (21) 7295 | (21) Left Minor Endgate Ajar Signal | (21) I | (21) — |
| (22) 22 | (22) 0.35 | (22) BN / GN | (22) 4064 | (22) Hood Status B Signal | (22) I | (22) — |
| 23 - 27 | — | — | — | Not Occupied | — | — |
| (28) 28 | (28) 0.35 | (28) BU | (28) 2675 | (28) Left Front Exterior Door Handle Switch Unlock Signal | (28) I | (28) — |
| 29 - 32 | — | — | — | Not Occupied | — | — |

### K9 Body Control Module X7




5202294

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 160028-0014
- Service Connector: 13534979
- Description: 32-Way F 0.5 MQS, 1.2 OCS Series( PU with GY Inner Connector)

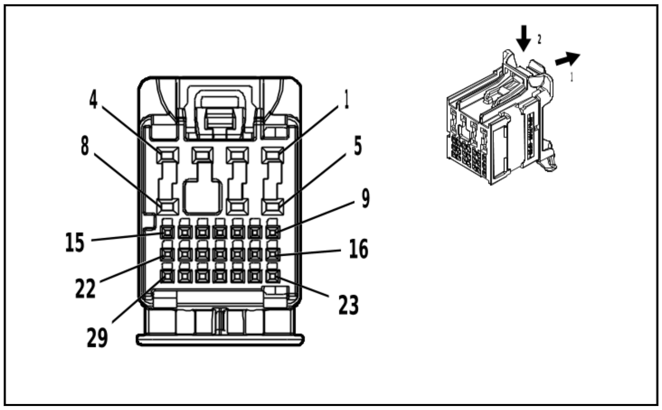
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 84729890 | J-35616-12 (BU) | J-38125-215A |

## K9 Body Control Module X7

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 - 8 | — | — | — | Not Occupied | — | — |
| (9) 9 | (9) 0.35 | (9) YE / WH | (9) 900 | (9) — | (9) I | (9) — |
| 10 - 18 | — | — | — | Not Occupied | — | — |
| (19) 19 | (19) 0.35 | (19) GN / VT | (19) 2857 | (19) Body Control Module LIN Bus 11 | (19) I | (19) — |
| (20) 20 | (20) 0.35 | (20) YE / BK | (20) 901 | (20) — | (20) I | (20) — |
| 21 | — | — | — | Not Occupied | — | — |
| (22) 22 | (22) 0.35 | (22) YE / BU | (22) 902 | (22) — | (22) I | (22) — |
| 23 - 32 | — | — | — | Not Occupied | — | — |

**K9 Body Control Module X8**




4578560

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 160014-0011
- Service Connector: 13534971
- Description: 29-Way F 0.5 NANO, 1.2 MCON, stAK50h Series( DK-GY with GY Inner Connector)

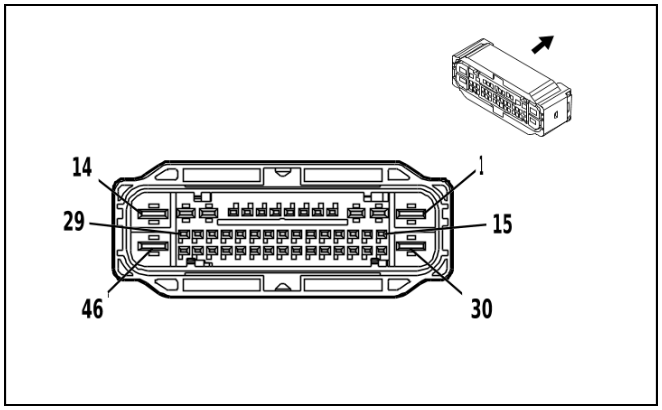
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 84729890 | J-35616-12 (BU) | J-38125-215A |

## K9 Body Control Module X8

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 - 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 0.75 | (3) BU / YE | (3) 1091 | (3) Left Rear Door Lock Actuator Lock Control | (3) I | (3) — |
| (4) 4 | (4) 0.75 | (4) YE / GN | (4) 2682 | (4) Right Front Door Lock Actuator Lock Control | (4) I | (4) — |
| 5 - 8 | — | — | — | Not Occupied | — | — |
| (9) 9 | (9) 0.35 | (9) GN / BK | (9) 4304 | (9) Passive Entry Right Antenna Signal Low | (9) I | (9) — |
| (10) 10 | (10) 0.35 | (10) GN / YE | (10) 4303 | (10) Passive Entry Right Antenna Signal High | (10) I | (10) — |
| 11 - 16 | — | — | — | Not Occupied | — | — |
| (17) 17 | (17) 0.35 | (17) GN / YE | (17) 2862 | (17) Body Control Module LIN Bus 16 | (17) I | (17) — |
| (18) 18 | (18) 0.35 | (18) GN / WH | (18) 2854 | (18) Body Control Module LIN Bus 8 | (18) I | (18) — |
| 19 - 27 | — | — | — | Not Occupied | — | — |
| (28) 28 | (28) 0.35 | (28) GY / VT | (28) 2676 | (28) Right Front Door Exterior Switch Unlock Signal | (28) I | (28) — |
| (29) 29 | (29) 0.35 | (29) GN / GY | (29) 6135 | (29) Body Control Module LIN Bus 4 | (29) I | (29) — |

### K17 Electronic Brake Control Module




4162046

**Connector Part Information**
- Harness Type: Body Wiring Harness
- OEM Connector: 35670689
- Service Connector: 85090369
- Description: 46-Way F 1.2 OCS, 2.8, 6.3 CTS Series, Sealed( GY)

## Terminal Part Information

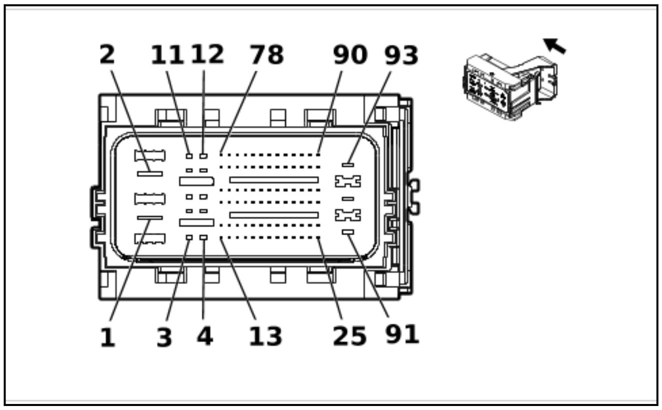
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 13575368 | J-35616-35 (VT) | J-38125-556 |
| II | 19370818 | J-35616-12 (BU) | J-38125-553 |
| III | 84634921 | J-35616-42 (RD) | J-38125-212 |

## K17 Electronic Brake Control Module

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 6 | (1) RD / WH | (1) 1642 | (1) Battery Positive Voltage | (1) III | (1) — |
| (2) 2 | (2) 2.5 | (2) WH | (2) 2001 | (2) Left Park Brake Motor Apply Control | (2) I | (2) — |
| (3) 3 | (3) 2.5 | (3) GY / BK | (3) 4369 | (3) Left Park Brake Motor Low Reference | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) GY / WH | (4) 7064 | (4) Left Front Wheel Speed Sensor Control | (4) II | (4) — |
| (5) 5 | (5) 0.5 | (5) GY | (5) 830 | (5) Left Front Wheel Speed Sensor Signal | (5) II | (5) — |
| 6 | — | — | — | Not Occupied | — | — |
| (7) 7 | (7) 0.5 | (7) BU / YE | (7) 4979 | (7) AUTOSAR CAN Bus [+] 2 Serial Data | (7) II | (7) — |
| (8) 8 | (8) 0.5 | (8) WH | (8) 4978 | (8) AUTOSAR CAN Bus [-] 2 Serial Data | (8) II | (8) — |
| (9) 9 | (9) 0.5 | (9) VT / WH | (9) 239 | (9) Run/Crank Ignition 1 Voltage | (9) II | (9) — |
| (10) 10 | (10) 0.5 | (10) GY / BN | (10) 7065 | (10) Right Front Wheel Speed Sensor Control | (10) II | (10) — |
| (11) 11 | (11) 0.5 | (11) YE | (11) 872 | (11) Right Front Wheel Speed Sensor Signal | (11) II | (11) — |
| (12) 12 | (12) 2.5 | (12) GN / VT | (12) 1988 | (12) Right Park Brake Motor Apply Control | (12) I | (12) — |
| (13) 13 | (13) 2.5 | (13) GY | (13) 4368 | (13) Right Park Brake Motor Low Reference | (13) I | (13) — |
| (14) 14 | (14) 4 | (14) BK | (14) 150 | (14) Ground | (14) III | (14) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (15) 15 | (15) 0.5 | (15) GY / BK | (15) 7127 | (15) Left Rear Wheel Speed Sensor Control | (15) II | (15) — |
| (16) 16 | (16) 0.5 | (16) BU | (16) 884 | (16) Left Rear Wheel Speed Sensor Signal | (16) II | (16) — |
| 17 - 18 | — | — | — | Not Occupied | — | — |
| (19) 19 | (19) 0.5 | (19) BU / YE | (19) 4979 | (19) AUTOSAR CAN Bus [+] 2 Serial Data | (19) II | (19) — |
| (20) 20 | (20) 0.5 | (20) WH | (20) 4978 | (20) AUTOSAR CAN Bus [-] 2 Serial Data | (20) II | (20) — |
| 21 - 22 | — | — | — | Not Occupied | — | — |
| (23) 23 | (23) 0.5 | (23) GN / YE | (23) 2731 | (23) Brake System Control Module LIN Bus 1 | (23) II | (23) — |
| 24 - 25 | — | — | — | Not Occupied | — | — |
| (26) 26 | (26) 0.5 | (26) WH | (26) 4986 | (26) AUTOSAR CAN Bus [-] 1 Serial Data | (26) II | (26) — |
| (27) 27 | (27) 0.5 | (27) GN / GY | (27) 333 | (27) Brake Fluid Level Signal | (27) II | (27) — |
| (28) 28 | (28) 0.5 | (28) GY / YE | (28) 7128 | (28) Right Rear Wheel Speed Sensor Control | (28) II | (28) — |
| (29) 29 | (29) 0.5 | (29) VT | (29) 882 | (29) Right Rear Wheel Speed Sensor Signal | (29) II | (29) — |
| (30) 30 | (30) 6 | (30) RD / WH | (30) 1040 | (30) Battery Positive Voltage | (30) III | (30) — |
| 31 - 32 | — | — | — | Not Occupied | — | — |
| (33) 33 | (33) 0.35 | (33) YE | (33) 10280 | (33) Private Steering Angle CAN Bus [+] Serial Data | (33) II | (33) — |
| (34) 34 | (34) 0.35 | (34) BU / WH | (34) 10279 | (34) Private Steering Angle CAN Bus [-] Serial Data | (34) II | (34) — |
| (35) 35 | (35) 0.5 | (35) GN / BU | (35) 2733 | (35) Brake System Control Module LIN Bus 2 | (35) II | (35) — |
| (36) 36 | (36) 0.35 | (36) GN / GY | (36) 817 | (36) Vehicle Speed Signal | (36) II | (36) — |
| 37 - 38 | — | — | — | Not Occupied | — | — |
| (39) 39 | (39) 0.5 | (39) BN / BU | (39) 1602 | (39) Front Brake Pad Wear Sensor Signal | (39) II | (39) — |
| (40) 40 | (40) 0.5 | (40) GN / YE | (40) 1616 | (40) Rear Brake Pad Wear Sensor Signal | (40) II | (40) — |
| 41 | — | — | — | Not Occupied | — | — |
| (42) 42 | (42) 0.5 | (42) BU | (42) 4987 | (42) AUTOSAR CAN Bus [+] 1 Serial Data | (42) II | (42) — |
| (43) 43 | (43) 0.35 | (43) GN / BN | (43) 2087 | (43) Multi-axis Acceleration Sensor Supply Voltage | (43) II | (43) — |
| (44) 44 | (44) 0.5 | (44) WH / BK | (44) 2223 | (44) Trailer Brake Apply Signal | (44) II | (44) — |
| (45) 45 | (45) 0.5 | (45) YE / BK | (45) 2224 | (45) Trailer Brake Enable Signal | (45) II | (45) — |
| (46) 46 | (46) 4 | (46) BK | (46) 250 | (46) Ground | (46) III | (46) — |

## K20 Engine Control Module X1 (L5P)




6173672

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 35659436
- Service Connector: 85079961
- Description: 93-Way F 0.5, 1.2, 2.8, 6.3 MX GENV Series, Sealed( BK with BU Terminal Position Assurance)

### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 19355735 | J-35616-4A (PU) | J-38125-217 |
| II | 85079962 | EL-35616-58 (BK) | EL-38125-58 |
| III | 85079963 | J-35616-16 (L-GN) | EL-38125-58 |
| IV | 85079964 | J-35616-42 (RD) | J-38125-217 |

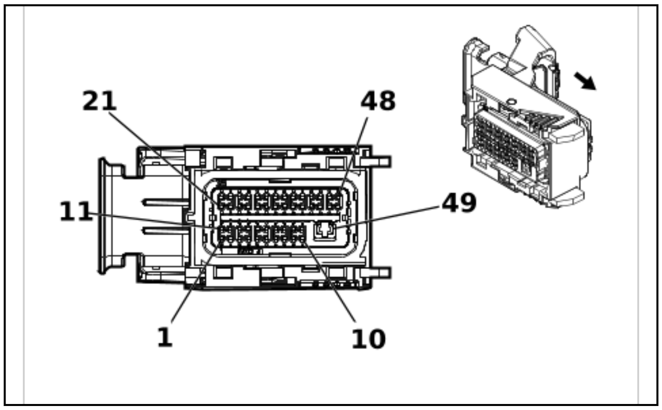
### K20 Engine Control Module X1 (L5P)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 4 | (1) BK / WH | (1) 251 | (1) Signal Ground | (1) IV | (1) — |
| (2) 2 | (2) 4 | (2) VT / BU | (2) 5290 | (2) Powertrain Main Relay Fused Supply Voltage 1 | (2) IV | (2) — |
| (3) 3 | (3) 0.75 | (3) RD / BN | (3) 440 | (3) Battery Positive Voltage | (3) III | (3) — |
| (4) 4 | (4) 0.75 | (4) VT / GN | (4) 439 | (4) Run/Crank Ignition 1 Voltage | (4) III | (4) — |
| (5) 5 | (5) 0.5 | (5) BU / GN | (5) 11437 | (5) Secondary Fuel Pump Disable Signal | (5) III | (5) — |
| (6) 6 | (6) 0.5 | (6) GN / GY | (6) 465 | (6) Fuel Pump Primary Relay Control | (6) III | (6) — |
| (7) 7 | (7) 0.5 | (7) VT / BN | (7) 2927 | (7) Exhaust Aftertreatment Fuel Injector Low Control | (7) III | (7) — |
| (8) 8 | (8) 0.5 | (8) YE | (8) 5991 | (8) Powertrain Relay Coil Control | (8) III | (8) — |
| (9) 9 | (9) 0.5 | (9) BN / BU | (9) 2926 | (9) Exhaust Aftertreatment Fuel Injector High Control | (9) III | (9) — |
| (10) 10 | (10) 0.5 | (10) BN / WH | (10) 3100 | (10) Diesel Exhaust Fluid Dosing Valve Low Control | (10) III | (10) — |
| (11) 11 | (11) 0.5 | (11) GN / BU | (11) 3889 | (11) Powertrain Sensor Bus Relay Control | (11) III | (11) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (12) 12 | (12) 0.5 | (12) BN | (12) 3099 | (12) Diesel Exhaust Fluid Dosing Valve High Control | (12) III | (12) — |
| (13) 13 | (13) 0.5<br>(13) 0.5 | (13) BN / YE<br>(13) BK | (13) 11438<br>(13) 162 | (13) Power Take Off Wakeup Signal<br>(13) Folding Top Motor Up Control | (13) II<br>(13) II | (13) —<br>(13) — |
| (14) 14 | (14) 0.5 | (14) WH / BK | (14) 2366 | (14) Cooling Fan Speed Control Signal | (14) II | (14) — |
| (15) 15 | (15) 0.5 | (15) BU | (15) 3017 | (15) Fuel Heater Relay 1 Control | (15) II | (15) — |
| (16) 16 | (16) 0.5 | (16) WH / GY | (16) 459 | (16) Air Conditioning Compressor Clutch Relay Control | (16) II | (16) — |
| 17 | — | — | — | Not Occupied | — | — |
| (18) 18 | (18) 0.5 | (18) YE / WH | (18) 1161 | (18) Accelerator Pedal Position Signal 1 | (18) II | (18) — |
| (19) 19 | (19) 0.5 | (19) WH / RD | (19) 1164 | (19) Accelerator Pedal Position 5V Reference 1 | (19) II | (19) — |
| (20) 20 | (20) 0.5 | (20) BN / RD | (20) 1274 | (20) Accelerator Pedal Position 5V Reference 2 | (20) II | (20) — |
| (21) 21 | (21) 0.5 | (21) GN / WH | (21) 1162 | (21) Accelerator Pedal Position Signal 2 | (21) II | (21) — |
| 22 | — | — | — | Not Occupied | — | — |
| (23) 23 | (23) 0.5 | (23) BU / GY | (23) 4054 | (23) Private Serial Data Powertrain CAN Bus [-] Serial Data | (23) II | (23) — |
| (24) 24 | (24) 0.5 | (24) WH | (24) 4976 | (24) AUTOSAR CAN Bus [-] 3 Serial Data | (24) II | (24) — |
| (25) 25 | (25) 0.5 | (25) WH | (25) 4978 | (25) AUTOSAR CAN Bus [-] 2 Serial Data | (25) II | (25) — |
| 26 - 27 | — | — | — | Not Occupied | — | — |
| (28) 28 | (28) 0.5 | (28) GN / BN | (28) 507 | (28) Wait To Start Indicator Control | (28) II | (28) — |
| 29 - 30 | — | — | — | Not Occupied | — | — |
| (31) 31 | (31) 0.5 | (31) BK / BU | (31) 1271 | (31) Accelerator Pedal Position Low Reference 1 | (31) II | (31) — |
| 32 | — | — | — | Not Occupied | — | — |
| (33) 33 | (33) 0.5 | (33) BK / GY | (33) 626 | (33) Engine Control Vehicle Sensors Low Reference 1 | (33) II | (33) — |
| (34) 34 | (34) 0.5 | (34) BK / VT | (34) 1272 | (34) Accelerator Pedal Position Low Reference 2 | (34) II | (34) — |
| 35 | — | — | — | Not Occupied | — | — |
| (36) 36 | (36) 0.5 | (36) WH | (36) 4055 | (36) Private Serial Data Powertrain CAN Bus [+] Serial Data | (36) II | (36) — |
| (37) 37 | (37) 0.5 | (37) BU / BK | (37) 4977 | (37) AUTOSAR CAN Bus [+] 3 Serial Data | (37) II | (37) — |
| (38) 38 | (38) 0.5 | (38) BU / YE | (38) 4979 | (38) AUTOSAR CAN Bus [+] 2 Serial Data | (38) II | (38) — |
| (39) 39 | (39) 0.5 | (39) BN | (39) 25 | (39) Charge Indicator Control | (39) II | (39) — |
| 40 | — | — | — | Not Occupied | — | — |
| (41) 41 | (41) 0.5 | (41) BU / VT | (41) 2364 | (41) Cooling Fan Speed Signal | (41) II | (41) — |
| 42 - 43 | — | — | — | Not Occupied | — | — |
| (44) 44 | (44) 0.5 | (44) BU / GY | (44) 636 | (44) Ambient Air Temperature Sensor Signal | (44) II | (44) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (45) 45 | (45) 0.5 | (45) WH / GN | (45) 5380 | (45) Brake Position Sensor Signal | (45) II | (45) — |
| (46) 46 | (46) 0.5 | (46) YE | (46) 4063 | (46) Hood Status A Signal | (46) II | (46) — |
| (47) 47 | (47) 0.5 | (47) GN | (47) 380 | (47) Air Conditioning Refrigerant Pressure Sensor Signal | (47) II | (47) — |
| 48 - 51 | — | — | — | Not Occupied | — | — |
| (52) 52 | (52) 0.5 | (52) YE / BK | (52) 625 | (52) Starter Enable Relay Control | (52) II | (52) — |
| 53 | — | — | — | Not Occupied | — | — |
| (54) 54 | (54) 0.5 | (54) GN / YE | (54) 3337 | (54) Transmission Internal Mode Switch Mode Control Y | (54) II | (54) — |
| (55) 55 | (55) 0.5 | (55) GY | (55) 23 | (55) Generator Field Duty Cycle Signal | (55) II | (55) — |
| (56) 56 | (56) 0.5 | (56) BU | (56) 492 | (56) Mass Air Flow Sensor Signal | (56) II | (56) — |
| 57 - 61 | — | — | — | Not Occupied | — | — |
| (62) 62 | (62) 0.5 | (62) GN / VT | (62) 4621 | (62) Engine Control Module LIN Bus 1 | (62) II | (62) — |
| (63) 63 | (63) 0.5 | (63) GN / WH | (63) 4622 | (63) Engine Control Module LIN Bus 2 | (63) II | (63) — |
| 64 - 66 | — | — | — | Not Occupied | — | — |
| (67) 67 | (67) 0.5<br>(67) 0.5 | (67) BK<br>(67) WH / GN | (67) 163<br>(67) 6142 | (67) Folding Top Motor Down Control<br>(67) Power Take-Off Engine Shutdown Signal | (67) II<br>(67) II | (67) —<br>(67) — |
| 68 - 72 | — | — | — | Not Occupied | — | — |
| (73) 73 | (73) 0.5 | (73) BU | (73) 10290 | (73) Exhaust Gas Temperature Sensor SENT 2 Signal | (73) II | (73) — |
| (74) 74 | (74) 0.5 | (74) YE | (74) 10291 | (74) Exhaust Gas Temperature Sensor SENT 3 Signal | (74) II | (74) — |
| 75 - 76 | — | — | — | Not Occupied | — | — |
| (77) 77 | (77) 0.5 | (77) WH / BN | (77) 2363 | (77) Exhaust Pressure Sensor SENT 1 Signal | (77) II | (77) — |
| (78) 78 | (78) 0.5 | (78) WH / RD | (78) 480 | (78) Engine Control Vehicle Sensors 5 Volt Reference 1 | (78) II | (78) — |
| (79) 79 | (79) 0.5 | (79) YE / RD | (79) 10595 | (79) Engine Control Vehicle Sensors 5 Volt Reference 2 | (79) II | (79) — |
| 80 - 91 | — | — | — | Not Occupied | — | — |
| (92) 92 | (92) 2.5 | (92) VT / BU | (92) 5294 | (92) Powertrain Main Relay Fused Supply Voltage 5 | (92) I | (92) — |
| (93) 93 | (93) 2.5 | (93) VT / BU | (93) 5290 | (93) Powertrain Main Relay Fused Supply Voltage 1 | (93) I | (93) — |

### K20 Engine Control Module X1 (L8T)




5663663

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 216744-0003
- Service Connector: 85669159
- Description: 49-Way F 0.64, 2.8 Series, Sealed( BK with BU Terminal Position Assurance)

## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 13587518 | J-35616-35 (VT) | J-38125-11A |
| II | 19351723 | J-35616-64B (L-BU) | J-38125-213 |

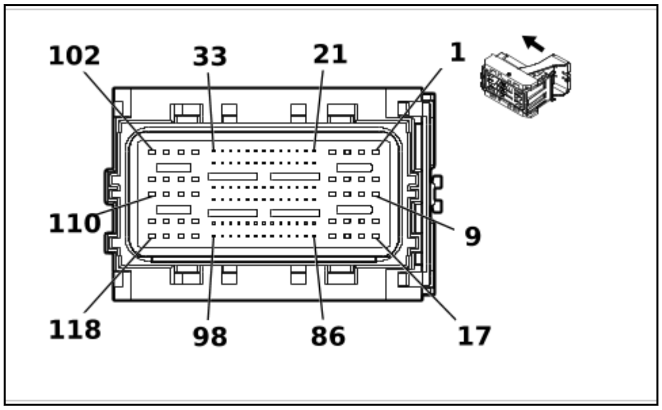
## K20 Engine Control Module X1 (L8T)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BU | (1) 492 | (1) Mass Air Flow Sensor Signal | (1) II | (1) — |
| 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 0.5 | (3) BU / GY | (3) 4054 | (3) Private Serial Data Powertrain CAN Bus [-] Serial Data | (3) II | (3) — |
| 4 | — | — | — | Not Occupied | — | — |
| (5) 5 | (5) 0.5 | (5) WH | (5) 4976 | (5) AUTOSAR CAN Bus [-] 3 Serial Data | (5) II | (5) — |
| 6 | — | — | — | Not Occupied | — | — |
| (7) 7 | (7) 0.5 | (7) WH | (7) 4978 | (7) AUTOSAR CAN Bus [-] 2 Serial Data | (7) II | (7) — |
| 8 | — | — | — | Not Occupied | — | — |
| (9) 9 | (9) 0.5 | (9) YE | (9) 5991 | (9) Powertrain Relay Coil Control | (9) II | (9) — |
| 10 | — | — | — | Not Occupied | — | — |
| (11) 11 | (11) 0.5 | (11) YE | (11) 4063 | (11) Hood Status A Signal | (11) II | (11) — |
| (12) 12 | (12) 0.5 | (12) BU / GY | (12) 636 | (12) Ambient Air Temperature Sensor Signal | (12) II | (12) — |
| (13) 13 | (13) 0.5 | (13) WH | (13) 4055 | (13) Private Serial Data Powertrain CAN Bus [+] Serial Data | (13) II | (13) — |
| (14) 14 | (14) 0.5 | (14) WH / GN | (14) 5380 | (14) Brake Position Sensor Signal | (14) II | (14) — |
| (15) 15 | (15) 0.5 | (15) BU / BK | (15) 4977 | (15) AUTOSAR CAN Bus [+] 3 Serial Data | (15) II | (15) — |
| 16 | — | — | — | Not Occupied | — | — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (17) 17 | (17) 0.5 | (17) BU / YE | (17) 4979 | (17) AUTOSAR CAN Bus [+] 2 Serial Data | (17) II | (17) — |
| (18) 18 | (18) 0.5 | (18) WH / GY | (18) 459 | (18) Air Conditioning Compressor Clutch Relay Control | (18) II | (18) — |
| 19 - 20 | — | — | — | Not Occupied | — | — |
| (21) 21 | (21) 0.5 | (21) GN / BU | (21) 428 | (21) EVAP Canister Purge Solenoid Control | (21) II | (21) — |
| (22) 22 | (22) 0.5 | (22) BU / GN | (22) 1143 7 | (22) Secondary Fuel Pump Disable Signal | (22) II | (22) — |
| 23 | — | — | — | Not Occupied | — | — |
| (24) 24 | (24) 0.5 | (24) BK / BU | (24) 1271 | (24) Accelerator Pedal Position Low Reference 1 | (24) II | (24) — |
| 25 - 26 | — | — | — | Not Occupied | — | — |
| (27) 27 | (27) 0.5 | (27) GN / YE | (27) 3337 | (27) Transmission Internal Mode Switch Mode Control Y | (27) II | (27) — |
| (28) 28 | (28) 0.5 | (28) BN / GN | (28) 1174 | (28) Oil Level Switch Signal | (28) II | (28) — |
| 29 | — | — | — | Not Occupied | — | — |
| (30) 30 | (30) 0.5 | (30) BK / VT | (30) 1272 | (30) Accelerator Pedal Position Low Reference 2 | (30) II | (30) — |
| 31 | — | — | — | Not Occupied | — | — |
| (32) 32 | (32) 0.7 5 | (32) VT / BU | (32) 5291 | (32) Powertrain Main Relay Fused Supply Volt-age 2 | (32) II | (32) — |
| 33 | — | — | — | Not Occupied | — | — |
| (34) 34 | (34) 0.5 | (34) RD / BN | (34) 440 | (34) Battery Positive Voltage | (34) II | (34) — |
| 35 | — | — | — | Not Occupied | — | — |
| (36) 36 | (36) 0.5 | (36) YE / BK | (36) 625 | (36) Starter Enable Relay Control | (36) II | (36) — |
| (37) 37 | (37) 0.5 | (37) GN / GY | (37) 465 | (37) Fuel Pump Primary Relay Control | (37) II | (37) — |
| (38) 38 | (38) 0.5 | (38) WH / RD | (38) 1164 | (38) Accelerator Pedal Position 5V Reference 1 | (38) II | (38) — |
| (39) 39 | (39) 0.5 | (39) YE / WH | (39) 1161 | (39) Accelerator Pedal Position Signal 1 | (39) II | (39) — |
| (40) 40 | (40) 0.5 | (40) YE / BN | (40) 331 | (40) Oil Pressure Sensor Signal | (40) II | (40) — |
| (41) 41 | (41) 0.5 | (41) GN | (41) 380 | (41) Air Conditioning Refrigerant Pressure Sensor Signal | (41) II | (41) — |
| (42) 42 | (42) 0.5 | (42) YE / GY | (42) 1102 9 | (42) Canister Vapor Pressure Sensor Signal | (42) II | (42) — |
| 43 | — | — | — | Not Occupied | — | — |
| (44) 44 | (44) 0.5 | (44) GN / WH | (44) 1162 | (44) Accelerator Pedal Position Signal 2 | (44) II | (44) — |
| (45) 45 | (45) 0.5 | (45) BN / RD | (45) 1274 | (45) Accelerator Pedal Position 5V Reference 2 | (45) II | (45) — |
| 46 | — | — | — | Not Occupied | — | — |
| (47) 47 | (47) 0.5 | (47) VT / GN | (47) 439 | (47) Run/Crank Ignition 1 Voltage | (47) II | (47) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (48) 48 | (48) 0.75 | (48) VT / BU | (48) 5290 | (48) Powertrain Main Relay Fused Supply Voltage 1 | (48) II | (48) — |
| (49) 49 | (49) 2.5 | (49) VT / BU | (49) 5290 | (49) Powertrain Main Relay Fused Supply Voltage 1 | (49) I | (49) — |

**K20 Engine Control Module X2 (L5P)**




6166536

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 13552796
- Service Connector: 85079959
- Description: 118-Way F 0.5, 1.2 MXGENV Series, Sealed( BK with BK Terminal Position Assurance)

## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 85079962 | EL-35616-58 (BK) | EL-38125-58 |
| II | 85079963 | J-35616-16 (L-GN) | EL-38125-58 |

## K20 Engine Control Module X2 (L5P)

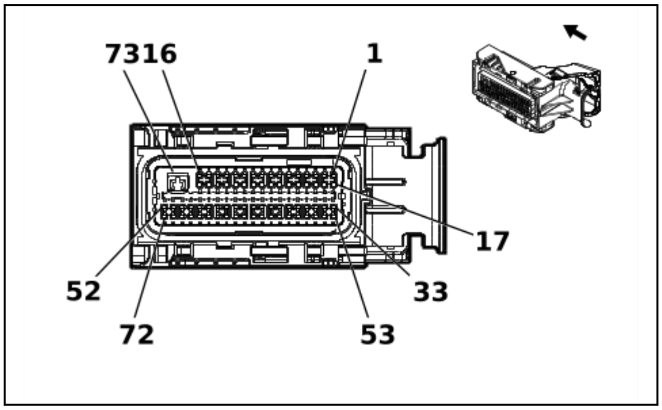
| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) BN / WH | (1) 4901 | (1) Direct Fuel Injector High Voltage Supply Cylinder 1 | (1) II | (1) — |
| (2) 2 | (2) 0.75 | (2) BU / WH | (2) 4904 | (2) Direct Fuel Injector High Voltage Supply Cylinder 4 | (2) II | (2) — |
| (3) 3 | (3) 0.75 | (3) BU / GY | (3) 4902 | (3) Direct Fuel Injector High Voltage Supply Cylinder 2 | (3) II | (3) — |
| (4) 4 | (4) 0.75 | (4) GN / WH | (4) 4905 | (4) Direct Fuel Injector High Voltage Supply Cylinder 5 | (4) II | (4) — |
| (5) 5 | (5) 0.5 | (5) YE | (5) 581 | (5) Throttle Actuator Open Control | (5) II | (5) — |
| (6) 6 | (6) 0.5 | (6) WH / VT | (6) 5764 | (6) Exhaust Gas Recirculation Valve High Control | (6) II | (6) — |
| (7) 7 | (7) 0.5 | (7) VT / BK | (7) 5746 | (7) Exhaust Gas Recirculation Valve Low Control | (7) II | (7) — |
| (8) 8 | (8) 0.5 | (8) BK / BU | (8) 10597 | (8) Engine Control Sensors Low Reference 3 | (8) II | (8) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (9) 9 | (9) 0.5 | (9) BN / WH | (9) 582 | (9) Throttle Actuator Close Control | (9) II | (9) — |
| (10) 10 | (10) 0.5 | (10) BN / VT | (10) 3656 | (10) EGR Cooler Bypass Valve Close Control | (10) II | (10) — |
| (11) 11 | (11) 0.5 | (11) YE / GN | (11) 3655 | (11) EGR Cooler Bypass Valve Open Control | (11) II | (11) — |
| 12 | — | — | — | Not Occupied | — | — |
| (13) 13 | (13) 0.5 | (13) BU / WH | (13) 2530 | (13) Fuel Rail Pressure Solenoid Valve Control | (13) II | (13) — |
| 14 - 16 | — | — | — | Not Occupied | — | — |
| (17) 17 | (17) 0.5 | (17) YE | (17) 2928 | (17) Fuel Metering Solenoid Valve High Control | (17) II | (17) — |
| 18 - 20 | — | — | — | Not Occupied | — | — |
| (21) 21 | (21) 0.5 | (21) GN | (21) 1028 9 | (21) Exhaust Gas Temperature Sensor SENT 1 Signal | (21) I | (21) — |
| (22) 22 | (22) 0.5 | (22) BU / WH | (22) 3630 | (22) Throttle Position Sensor SENT 1 Signal | (22) I | (22) — |
| 23 - 25 | — | — | — | Not Occupied | — | — |
| (26) 26 | (26) 0.5 | (26) GN / WH | (26) 432 | (26) Manifold Absolute Pressure Sensor Signal | (26) I | (26) — |
| (27) 27 | (27) 0.5 | (27) YE / BN | (27) 331 | (27) Oil Pressure Sensor Signal | (27) I | (27) — |
| (28) 28 | (28) 0.5 | (28) WH / BU | (28) 7329 | (28) Pre-Throttle Air Temperature Signal | (28) I | (28) — |
| (29) 29 | (29) 0.5 | (29) BU | (29) 410 | (29) Engine Coolant Temperature Sensor Signal | (29) I | (29) — |
| (30) 30 | (30) 0.5 | (30) BN | (30) 3681 | (30) Charge Air Cooler Outlet Temperature Sensor Signal | (30) I | (30) — |
| (31) 31 | (31) 0.5 | (31) GN | (31) 3683 | (31) Charge Air Cooler Inlet Temperature Sensor Signal | (31) I | (31) — |
| 32 - 38 | — | — | — | Not Occupied | — | — |
| (39) 39 | (39) 0.5 | (39) BU / WH | (39) 2918 | (39) Fuel Rail Pressure Sensor Signal | (39) I | (39) — |
| (40) 40 | (40) 0.5 | (40) BN / WH | (40) 5763 | (40) Exhaust Gas Recirculation Position Signal | (40) I | (40) — |
| (41) 41 | (41) 0.5 | (41) GN / GY | (41) 3654 | (41) EGR Cooler Bypass Valve Position Sensor Signal | (41) I | (41) — |
| 42 - 46 | — | — | — | Not Occupied | — | — |
| (47) 47 | (47) 0.5 | (47) YE / GY | (47) 3926 | (47) Crankcase Differential Pressure Sensor Signal | (47) I | (47) — |
| 48 - 59 | — | — | — | Not Occupied | — | — |
| (60) 60 | (60) 0.5 | (60) BN / GN | (60) 1174 | (60) Oil Level Switch Signal | (60) I | (60) — |
| 61 - 63 | — | — | — | Not Occupied | — | — |
| (64) 64 | (64) 0.5 | (64) BK / GN | (64) 2919 | (64) Fuel Rail Pressure Sensor Low Reference | (64) I | (64) — |
| 65 - 76 | — | — | — | Not Occupied | — | — |
| (77) 77 | (77) 0.5 | (77) BN / YE | (77) 2161 | (77) Fuel Rail Pressure Sensor 2 Signal | (77) I | (77) — |
| (78) 78 | (78) 0.5 | (78) BK / YE | (78) 6275 | (78) Exhaust Gas Recirculation Temperature Sensor 2 Low Reference | (78) I | (78) — |
| 79 - 82 | — | — | — | Not Occupied | — | — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (83) 83 | (83) 0.5 | (83) BK / GY | (83) 5296 | (83) Exhaust Camshaft Position Sensor Low Reference 1 | (83) I | (83) — |
| (84) 84 | (84) 0.5 | (84) GN | (84) 6271 | (84) Crankshaft Position Sensor Signal | (84) I | (84) — |
| (85) 85 | (85) 0.5 | (85) BK / VT | (85) 6272 | (85) Crankshaft Position Sensor Low Reference | (85) I | (85) — |
| 86 - 89 | — | — | — | Not Occupied | — | — |
| (90) 90 | (90) 0.5 | (90) BN / RD | (90) 2917 | (90) Fuel Rail Pressure Sensor 5V Reference | (90) I | (90) — |
| (91) 91 | (91) 0.5 | (91) YE / GN | (91) 3236 | (91) Exhaust Gas Recirculation Temperature Sensor 2 Signal | (91) I | (91) — |
| 92 - 95 | — | — | — | Not Occupied | — | — |
| (96) 96 | (96) 0.5 | (96) VT / BU | (96) 6270 | (96) Crankshaft Position Sensor Voltage | (96) I | (96) — |
| (97) 97 | (97) 0.5 | (97) VT / BK | (97) 5273 | (97) Exhaust Camshaft Position Sensor 1 | (97) I | (97) — |
| (98) 98 | (98) 0.5 | (98) GY / YE | (98) 5297 | (98) Exhaust Camshaft Position Sensor 1 Voltage Reference | (98) I | (98) — |
| (99) 99 | (99) 0.75 | (99) WH / YE | (99) 4907 | (99) Direct Fuel Injector High Voltage Supply Cylinder 7 | (99) II | (99) — |
| (100) 100 | (100) 0.75 | (100) VT / GY | (100) 4906 | (100) Direct Fuel Injector High Voltage Supply Cylinder 6 | (100) II | (100) — |
| (101) 101 | (101) 0.75 | (101) GY / BU | (101) 4908 | (101) Direct Fuel Injector High Voltage Supply Cylinder 8 | (101) II | (101) — |
| (102) 102 | (102) 0.75 | (102) GN / GY | (102) 4903 | (102) Direct Fuel Injector High Voltage Supply Cylinder 3 | (102) II | (102) — |
| (103) 103 | (103) 0.75 | (103) BN | (103) 4801 | (103) Direct Fuel Injector High Voltage Control Cylinder 1 | (103) II | (103) — |
| (104) 104 | (104) 0.75 | (104) GY / BU | (104) 4804 | (104) Direct Fuel Injector High Voltage Control Cylinder 4 | (104) II | (104) — |
| (105) 105 | (105) 0.75 | (105) BU | (105) 4802 | (105) Direct Fuel Injector High Voltage Control Cylinder 2 | (105) II | (105) — |
| (106) 106 | (106) 0.75 | (106) WH / GN | (106) 4805 | (106) Direct Fuel Injector High Voltage Control Cylinder 5 | (106) II | (106) — |
| (107) 107 | (107) 0.75 | (107) YE / GY | (107) 4807 | (107) Direct Fuel Injector High Voltage Control Cylinder 7 | (107) II | (107) — |
| (108) 108 | (108) 0.75 | (108) VT / GN | (108) 4806 | (108) Direct Fuel Injector High Voltage Control Cylinder 6 | (108) II | (108) — |
| (109) 109 | (109) 0.75 | (109) GY | (109) 4808 | (109) Direct Fuel Injector High Voltage Control Cylinder 8 | (109) II | (109) — |
| (110) 110 | (110) 0.75 | (110) GN | (110) 4803 | (110) Direct Fuel Injector High Voltage Control Cylinder 3 | (110) II | (110) — |
| (111) 111 | (111) 0.5 | (111) BU / RD | (111) 460 | (111) Engine Control Sensors 5 Volt Reference 1 | (111) II | (111) — |
| (112) 112 | (112) 0.5 | (112) BK / YE | (112) 548 | (112) Engine Control Sensors Low Reference 1 | (112) II | (112) — |
| 113 - 114 | — | — | — | Not Occupied | — | — |
| (115) 115 | (115) 0.5 | (115) GY / RD | (115) 10667 | (115) Engine Control Sensors 5 Volt Reference | (115) II | (115) — |
| (116) 116 | (116) 0.5 | (116) BK / GN | (116) 580 | (116) Engine Control Sensors Low Reference 2 | (116) II | (116) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (117) 117 | (117) 0.5 | (117) BK / YE | (117) 2834 | (117) Fuel Rail Pressure Solenoid Valve Low Control | (117) II | (117) — |
| (118) 118 | (118) 0.5 | (118) BN / BK | (118) 2929 | (118) Fuel Metering Solenoid Valve Low Control | (118) II | (118) — |

**K20 Engine Control Module X2 (L8T)**




1673472

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 216739-0001
- Service Connector: 85761019
- Description: 73-Way F 0.64, 2.8 MX123 Series, Sealed( BK with BK Terminal Position Assurance)

## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 13587518 | J-35616-35 (VT) | J-38125-11A |
| II | 19354746 | J-35616-64B (L-BU) | J-38125-213 |

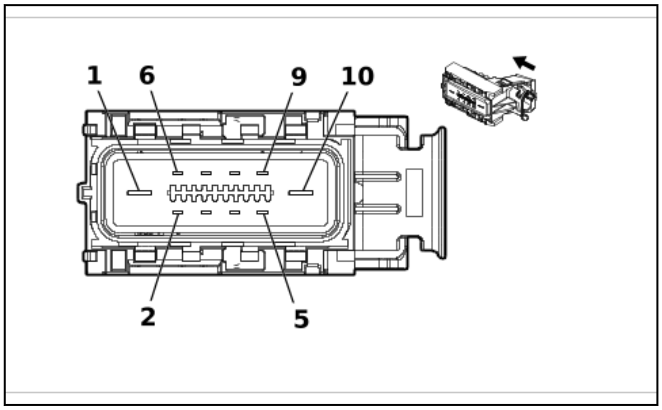
## K20 Engine Control Module X2 (L8T)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) GN / YE | (1) 3212 | (1) HO2S Heater Low Control Bank 2 Sensor 1 | (1) II | (1) — |
| 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 0.5 | (3) BK / YE | (3) 548 | (3) Engine Control Sensors Low Reference 1 | (3) II | (3) — |
| 4 - 6 | — | — | — | Not Occupied | — | — |
| (7) 7 | (7) 0.5 | (7) GN / WH | (7) 4622 | (7) Engine Control Module LIN Bus 2 | (7) II | (7) — |
| (8) 8 | (8) 0.5 | (8) GN / VT | (8) 4621 | (8) Engine Control Module LIN Bus 1 | (8) II | (8) — |
| 9 | — | — | — | Not Occupied | — | — |
| (10) 10 | (10) 0.5 | (10) VT / GY | (10) 3110 | (10) HO2S High Signal Bank 1 Sensor 1 | (10) II | (10) — |
| (11) 11 | (11) 0.5 | (11) WH / BK | (11) 3111 | (11) HO2S Low Signal Bank 1 Sensor 1 | (11) II | (11) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (12) 12 | (12) 0.5 | (12) YE / BU | (12) 2124 | (12) Ignition Control 4 | (12) II | (12) — |
| (13) 13 | (13) 0.5 | (13) BN / BU | (13) 2126 | (13) Ignition Control 6 | (13) II | (13) — |
| 14 - 16 | — | — | — | Not Occupied | — | — |
| (17) 17 | (17) 0.5 | (17) GY / WH | (17) 3113 | (17) HO2S Heater Low Control Bank 1 Sensor 1 | (17) II | (17) — |
| 18 - 25 | — | — | — | Not Occupied | — | — |
| (26) 26 | (26) 0.5 | (26) VT / WH | (26) 3210 | (26) HO2S High Signal Bank 2 Sensor 1 | (26) II | (26) — |
| (27) 27 | (27) 0.5 | (27) YE / WH | (27) 3211 | (27) HO2S Low Signal Bank 2 Sensor 1 | (27) II | (27) — |
| (28) 28 | (28) 0.5 | (28) GN / BU | (28) 2123 | (28) Ignition Control 3 | (28) II | (28) — |
| (29) 29 | (29) 0.5 | (29) BU / GY | (29) 2125 | (29) Ignition Control 5 | (29) II | (29) — |
| (30) 30 | (30) 0.5 | (30) BK / GY | (30) 2130 | (30) Ignition Control Low Reference Bank 2 | (30) II | (30) — |
| 31 - 32 | — | — | — | Not Occupied | — | — |
| (33) 33 | (33) 0.5 | (33) WH / BN | (33) 3223 | (33) HO2S Heater Low Control Bank 2 Sensor 2 | (33) II | (33) — |
| 34 | — | — | — | Not Occupied | — | — |
| (35) 35 | (35) 0.5 | (35) BU | (35) 179 | (35) Engine Oil Pump Control | (35) II | (35) — |
| 36 | — | — | — | Not Occupied | — | — |
| (37) 37 | (37) 0.5 | (37) VT / BU | (37) 5294 | (37) Powertrain Main Relay Fused Supply Voltage 5 | (37) II | (37) — |
| 38 | — | — | — | Not Occupied | — | — |
| (39) 39 | (39) 0.5 | (39) WH / RD | (39) 480 | (39) Engine Control Vehicle Sensors 5 Volt Reference 1 | (39) II | (39) — |
| 40 - 45 | — | — | — | Not Occupied | — | — |
| (46) 46 | (46) 0.5 | (46) YE / BU | (46) 3221 | (46) HO2S Low Signal Bank 2 Sensor 2 | (46) II | (46) — |
| (47) 47 | (47) 0.5 | (47) VT / GN | (47) 3220 | (47) HO2S High Signal Bank 2 Sensor 2 | (47) II | (47) — |
| 48 - 49 | — | — | — | Not Occupied | — | — |
| (50) 50 | (50) 0.5 | (50) BK / GY | (50) 2303 | (50) Knock Sensor Low Reference 2 | (50) II | (50) — |
| (51) 51 | (51) 0.5 | (51) BK / YE | (51) 1716 | (51) Knock Sensor Low Reference 1 | (51) II | (51) — |
| (52) 52 | (52) 0.5 | (52) BN / WH | (52) 582 | (52) Throttle Actuator Close Control | (52) II | (52) — |
| (53) 53 | (53) 0.5 | (53) GY / WH | (53) 3122 | (53) HO2S Heater Low Control Bank 1 Sensor 2 | (53) II | (53) — |
| 54 - 65 | — | — | — | Not Occupied | — | — |
| (66) 66 | (66) 0.5 | (66) WH / YE | (66) 3121 | (66) HO2S Low Signal Bank 1 Sensor 2 | (66) II | (66) — |
| (67) 67 | (67) 0.5 | (67) BN | (67) 3120 | (67) HO2S High Signal Bank 1 Sensor 2 | (67) II | (67) — |
| 68 - 69 | — | — | — | Not Occupied | — | — |
| (70) 70 | (70) 0.5 | (70) WH / GY | (70) 1876 | (70) Knock Sensor 2 Signal | (70) II | (70) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (71) 71 | (71) 0.5 | (71) VT / GY | (71) 496 | (71) Knock Sensor 1 Signal | (71) II | (71) — |
| (72) 72 | (72) 0.5 | (72) YE | (72) 581 | (72) Throttle Actuator Open Control | (72) II | (72) — |
| (73) 73 | (73) 2.5 | (73) BK / WH | (73) 251 | (73) Signal Ground | (73) I | (73) — |

**K20 Engine Control Module X3 (L5P)**




6168487

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 203259-0106
- Service Connector: 85761015
- Description: 10-Way F 2.8, 6.3 APEX Series, Sealed( BK with GY Terminal Position Assurance)

## Terminal Part Information

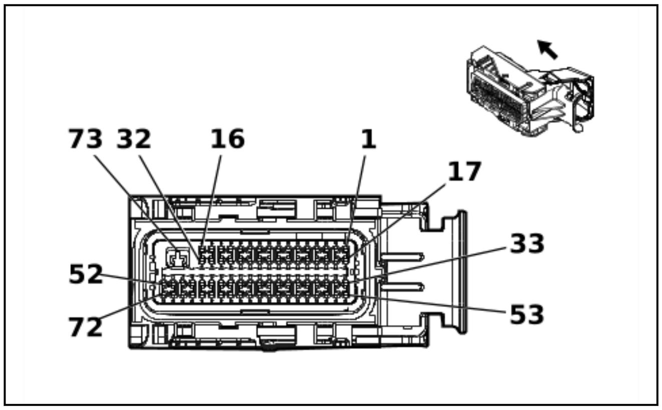
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 19355735 | J-35616-4A (PU) | J-38125-217 |
| II | 85079964 | J-35616-42 (RD) | J-38125-217 |

## K20 Engine Control Module X3 (L5P)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 6 | (1) BN / BU | (1) 104 | (1) Glow Plug Control | (1) II | (1) — |
| (2) 2 | (2) 2.5 | (2) GY / BU | (2) 1581 | (2) Glow Plug 1 Control | (2) I | (2) — |
| (3) 3 | (3) 2.5 | (3) WH / BK | (3) 1587 | (3) Glow Plug 7 Control | (3) I | (3) — |
| (4) 4 | (4) 2.5 | (4) GY / YE | (4) 1584 | (4) Glow Plug 4 Control | (4) I | (4) — |
| (5) 5 | (5) 2.5 | (5) GY / VT | (5) 1586 | (5) Glow Plug 6 Control | (5) I | (5) — |
| (6) 6 | (6) 2.5 | (6) GY / BN | (6) 1582 | (6) Glow Plug 2 Control | (6) I | (6) — |
| (7) 7 | (7) 2.5 | (7) WH / BU | (7) 1588 | (7) Glow Plug 8 Control | (7) I | (7) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (8) 8 | (8) 2.5 | (8) GY / WH | (8) 1585 | (8) Glow Plug 5 Control | (8) I | (8) — |
| (9) 9 | (9) 2.5 | (9) GY / GN | (9) 1583 | (9) Glow Plug 3 Control | (9) I | (9) — |
| (10) 10 | (10) 6 | (10) BN / BU | (10) 104 | (10) Glow Plug Control | (10) II | (10) — |

### K20 Engine Control Module X3 (L8T)




1650395

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 216739-0002
- Service Connector: 85761016
- Description: 73-Way F 0.64, 2.8 MX123 Series, Sealed( BK with GY Terminal Position Assurance)

## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 13587518 | J-35616-35 (VT) | J-38125-11A |
| II | 19354746 | J-35616-64B (L-BU) | J-38125-213 |

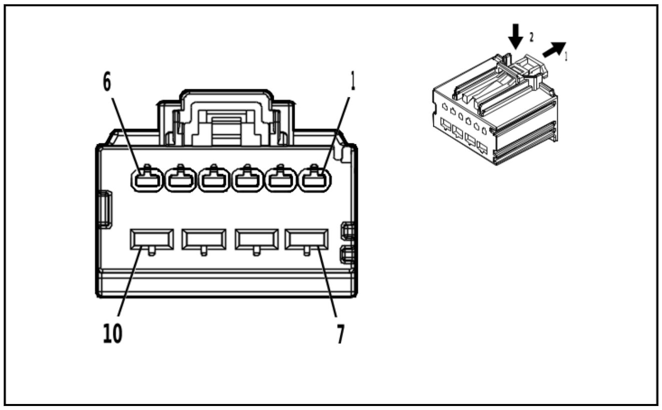
## K20 Engine Control Module X3 (L8T)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 - 4 | — | — | — | Not Occupied | — | — |
| (5) 5 | (5) 0.5 | (5) VT / BN | (5) 5284 | (5) Intake Camshaft Position Actuator Solenoid Valve 1 | (5) II | (5) — |
| (6) 6 | (6) 0.5 | (6) VT / GN | (6) 4320 | (6) Powertrain Sensor Bus Enable | (6) II | (6) — |
| 7 | — | — | — | Not Occupied | — | — |
| (8) 8 | (8) 0.5 | (8) YE / VT | (8) 5275 | (8) Intake Camshaft Position Sensor 1 | (8) II | (8) — |
| (9) 9 | (9) 0.5 | (9) GY / BU | (9) 5300 | (9) Intake Camshaft Position Sensor 1 Voltage Reference | (9) II | (9) — |
| (10) 10 | (10) 0.5 | (10) GN | (10) 6271 | (10) Crankshaft Position Sensor Signal | (10) II | (10) — |
| 11 | — | — | — | Not Occupied | — | — |
| (12) 12 | (12) 0.5 | (12) BU / WH | (12) 2122 | (12) Ignition Control 2 | (12) II | (12) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (13) 13 | (13) 0.5 | (13) VT / WH | (13) 2128 | (13) Ignition Control 8 | (13) II | (13) — |
| (14) 14 | (14) 0.5 | (14) BN | (14) 25 | (14) Charge Indicator Control | (14) II | (14) — |
| 15 | — | — | — | Not Occupied | — | — |
| (16) 16 | (16) 0.75 | (16) YE | (16) 7301 | (16) High Pressure Fuel Pump High Control | (16) II | (16) — |
| 17 | — | — | — | Not Occupied | — | — |
| (18) 18 | (18) 0.5 | (18) WH / RD | (18) 11031 | (18) Fuel Tank Isolation Valve Supply Voltage | (18) II | (18) — |
| 19 - 20 | — | — | — | Not Occupied | — | — |
| (21) 21 | (21) 0.5 | (21) BK / BN | (21) 6753 | (21) Camshaft Position Actuator Solenoid Valve 1 Low Reference | (21) II | (21) — |
| 22 - 23 | — | — | — | Not Occupied | — | — |
| (24) 24 | (24) 0.5 | (24) BK / GN | (24) 5301 | (24) Intake Camshaft Position Sensor Low Reference 1 | (24) II | (24) — |
| (25) 25 | (25) 0.5 | (25) VT / BU | (25) 6270 | (25) Crankshaft Position Sensor Voltage | (25) II | (25) — |
| (26) 26 | (26) 0.5 | (26) BK / VT | (26) 6272 | (26) Crankshaft Position Sensor Low Reference | (26) II | (26) — |
| 27 | — | — | — | Not Occupied | — | — |
| (28) 28 | (28) 0.5 | (28) GN / GY | (28) 2127 | (28) Ignition Control 7 | (28) II | (28) — |
| (29) 29 | (29) 0.5 | (29) BU / VT | (29) 2121 | (29) Ignition Control 1 | (29) II | (29) — |
| (30) 30 | (30) 0.5 | (30) BK / BU | (30) 2129 | (30) Ignition Control Low Reference Bank 1 | (30) II | (30) — |
| 31 | — | — | — | Not Occupied | — | — |
| (32) 32 | (32) 0.75 | (32) VT / BK | (32) 7300 | (32) High Pressure Fuel Pump Low Control | (32) II | (32) — |
| 33 - 35 | — | — | — | Not Occupied | — | — |
| (36) 36 | (36) 0.5 | (36) BK / BN | (36) 2752 | (36) Throttle Position Sensor Low Reference | (36) II | (36) — |
| (37) 37 | (37) 0.5 | (37) BK / GN | (37) 469 | (37) Manifold Absolute Pressure Sensor Low Reference | (37) II | (37) — |
| 38 - 39 | — | — | — | Not Occupied | — | — |
| (40) 40 | (40) 0.5 | (40) BN / BU | (40) 357 | (40) Oil Temperature Sensor Signal | (40) II | (40) — |
| 41 - 42 | — | — | — | Not Occupied | — | — |
| (43) 43 | (43) 0.5 | (43) BK / GY | (43) 626 | (43) Engine Control Vehicle Sensors Low Reference 1 | (43) II | (43) — |
| (44) 44 | (44) 0.75 | (44) VT / BU | (44) 5292 | (44) Powertrain Main Relay Fused Supply Voltage 3 | (44) II | (44) — |
| (45) 45 | (45) 0.75 | (45) GN | (45) 4803 | (45) Direct Fuel Injector High Voltage Control Cylinder 3 | (45) II | (45) — |
| (46) 46 | (46) 0.75 | (46) GY / BU | (46) 4804 | (46) Direct Fuel Injector High Voltage Control Cylinder 4 | (46) II | (46) — |
| (47) 47 | (47) 0.75 | (47) WH / GN | (47) 4805 | (47) Direct Fuel Injector High Voltage Control Cylinder 5 | (47) II | (47) — |
| (48) 48 | (48) 0.75 | (48) VT / GN | (48) 4806 | (48) Direct Fuel Injector High Voltage Control Cylinder 6 | (48) II | (48) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (49) 49 | (49) 0.75 | (49) BU | (49) 4802 | (49) Direct Fuel Injector High Voltage Control Cylinder 2 | (49) II | (49) — |
| (50) 50 | (50) 0.75 | (50) YE / GY | (50) 4807 | (50) Direct Fuel Injector High Voltage Control Cylinder 7 | (50) II | (50) — |
| (51) 51 | (51) 0.75 | (51) GY | (51) 4808 | (51) Direct Fuel Injector High Voltage Control Cylinder 8 | (51) II | (51) — |
| (52) 52 | (52) 0.75 | (52) BN | (52) 4801 | (52) Direct Fuel Injector High Voltage Control Cylinder 1 | (52) II | (52) — |
| 53 - 54 | — | — | — | Not Occupied | — | — |
| (55) 55 | (55) 0.5 | (55) BN / RD | (55) 2701 | (55) Throttle Position Sensor 5V Reference | (55) II | (55) — |
| (56) 56 | (56) 0.5 | (56) BU / WH | (56) 3630 | (56) Throttle Position Sensor SENT 1 Signal | (56) II | (56) — |
| (57) 57 | (57) 0.5 | (57) GY / RD | (57) 2704 | (57) Manifold Absolute Pressure Sensor 5V Reference | (57) II | (57) — |
| (58) 58 | (58) 0.5 | (58) GN / WH | (58) 432 | (58) Manifold Absolute Pressure Sensor Signal | (58) II | (58) — |
| 59 - 60 | — | — | — | Not Occupied | — | — |
| (61) 61 | (61) 0.5 | (61) BU | (61) 410 | (61) Engine Coolant Temperature Sensor Signal | (61) II | (61) — |
| 62 | — | — | — | Not Occupied | — | — |
| (63) 63 | (63) 0.5 | (63) BU / WH | (63) 10786 | (63) Fuel Rail Pressure Sensor SENT 1 Signal | (63) II | (63) — |
| (64) 64 | (64) 0.5 | (64) GY | (64) 23 | (64) Generator Field Duty Cycle Signal | (64) II | (64) — |
| (65) 65 | (65) 0.75 | (65) GN / GY | (65) 4903 | (65) Direct Fuel Injector High Voltage Supply Cylinder 3 | (65) II | (65) — |
| (66) 66 | (66) 0.75 | (66) BU / WH | (66) 4904 | (66) Direct Fuel Injector High Voltage Supply Cylinder 4 | (66) II | (66) — |
| (67) 67 | (67) 0.75 | (67) GN / WH | (67) 4905 | (67) Direct Fuel Injector High Voltage Supply Cylinder 5 | (67) II | (67) — |
| (68) 68 | (68) 0.75 | (68) VT / GY | (68) 4906 | (68) Direct Fuel Injector High Voltage Supply Cylinder 6 | (68) II | (68) — |
| (69) 69 | (69) 0.75 | (69) BU / GY | (69) 4902 | (69) Direct Fuel Injector High Voltage Supply Cylinder 2 | (69) II | (69) — |
| (70) 70 | (70) 0.75 | (70) WH / YE | (70) 4907 | (70) Direct Fuel Injector High Voltage Supply Cylinder 7 | (70) II | (70) — |
| (71) 71 | (71) 0.75 | (71) GY / WH | (71) 4908 | (71) Direct Fuel Injector High Voltage Supply Cylinder 8 | (71) II | (71) — |
| (72) 72 | (72) 0.75 | (72) BN / WH | (72) 4901 | (72) Direct Fuel Injector High Voltage Supply Cylinder 1 | (72) II | (72) — |
| (73) 73 | (73) 2.5 | (73) BK / WH | (73) 251 | (73) Signal Ground | (73) I | (73) — |

## K29FV Front Seat Heater Vent Control Module X1 (KA1 & KQV)




5035058

**Connector Part Information**

- Harness Type: Front Seat Wiring Harness - Passenger
- OEM Connector: 31372-1600
- Service Connector: Service by Harness - See Part Catalog
- Description: 10-Way F 1.5, 2.8 MX Series( BK)

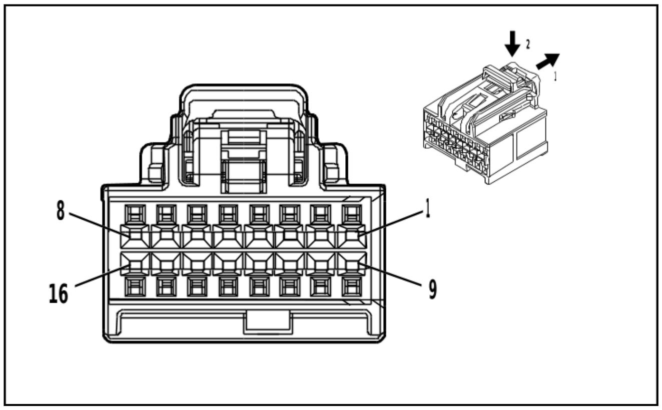
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-2A (GY) | No Tool Required |
| II | Not required | J-35616-4A (PU) | No Tool Required |

### K29FV Front Seat Heater Vent Control Module X1 (KA1 & KQV)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) WH / BN | (1) 2481 | (1) Passenger Seat Back Heating Element Control | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) BN / BU | (2) 2479 | (2) Passenger Seat Heating Element Control | (2) I | (2) — |
| (3) 3 | (3) 0.75 | (3) GY / BK | (3) 2480 | (3) Passenger Seat Heating Element Low Reference | (3) I | (3) — |
| (4) 4 | (4) 0.75 | (4) BN / BK | (4) 2078 | (4) Driver Seat Heating Element Low Reference | (4) I | (4) — |
| (5) 5 | (5) 0.75 | (5) BN | (5) 2432 | (5) Driver Seat Back Heating Element Control | (5) I | (5) — |
| (6) 6 | (6) 0.75 | (6) BN / VT | (6) 2077 | (6) Driver Seat Heating Element Control | (6) I | (6) — |
| (7) 7 | (7) 0.75 | (7) RD / GN | (7) 6140 | (7) Battery Positive Voltage | (7) II | (7) — |
| (8) 8 | (8) 0.75 | (8) BK | (8) 1350 | (8) Ground | (8) II | (8) — |
| 9 | — | — | — | Not Occupied | — | — |
| (10) 10 | (10) 0.75 | (10) RD / BN | (10) 6640 | (10) Battery Positive Voltage | (10) II | (10) — |

### K29FV Front Seat Heater Vent Control Module X2 (KA1 & KQV)




4873243

**Connector Part Information**

- Harness Type: Front Seat Wiring Harness - Passenger
- OEM Connector: 35016343
- Service Connector: Service by Harness - See Part Catalog
- Description: 16-Way F 0.64 OCS Series( BK)

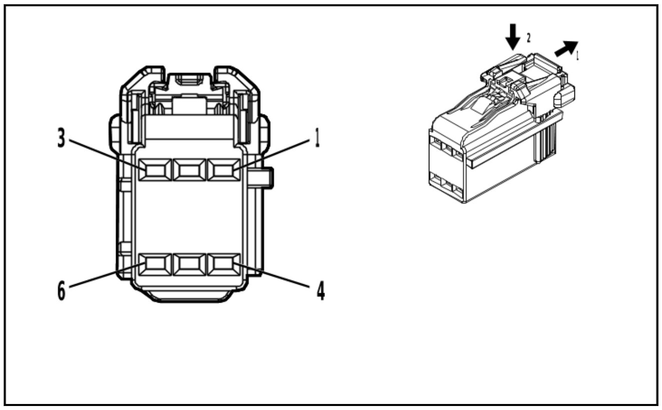
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## K29FV Front Seat Heater Vent Control Module X2 (KA1 & KQV)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BK / YE | (1) 2080 | (1) Driver Heated Seat Thermistor Low Reference | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK / GY | (2) 2435 | (2) Passenger Heated Seat Thermistor Low Reference | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BU | (3) 2425 | (3) Driver Seat Back Heating Temperature Sensor Signal | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) WH / BU | (4) 2436 | (4) Passenger Seat Back Heating Temperature Sensor Signal | (4) I | (4) — |
| (5) 5 | (5) 0.5 | (5) WH / GY | (5) 2434 | (5) Passenger Seat Heating Temperature Sensor Signal | (5) I | (5) — |
| (6) 6 | (6) 0.5 | (6) YE / GY | (6) 2079 | (6) Driver Seat Heating Temperature Sensor Signal | (6) I | (6) — |
| 7 | — | — | — | Not Occupied | — | — |
| (8) 8 | (8) 0.5 | (8) GN / VT | (8) 2857 | (8) Body Control Module LIN Bus 11 | (8) I | (8) — |
| (9) 9 | (9) 0.5 | (9) GN / VT | (9) 5906 | (9) Driver Seat Blower Motor Control 1 | (9) I | (9) — |
| (10) 10 | (10) 0.5 | (10) VT / WH | (10) 5908 | (10) Passenger Seat Blower Motor Control 1 | (10) I | (10) — |
| 11 | — | — | — | Not Occupied | — | — |
| (12) 12 | (12) 0.5 | (12) BK / GN | (12) 2482 | (12) Passenger Heated Back Thermistor Low Reference | (12) I | (12) — |
| 13 - 16 | — | — | — | Not Occupied | — | — |

## K32 Heated Steering Wheel Module X1 (KI3)




4862126

**Connector Part Information**

- Harness Type: Steering Wheel Horn Switch Wiring Harness
- OEM Connector: 6098-8996
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 1.2 Series( BK)

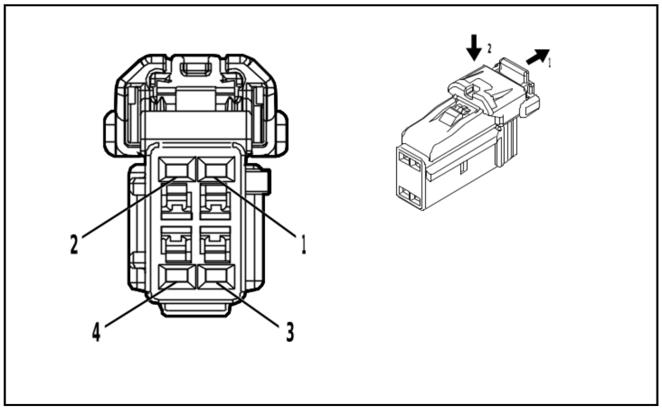
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

### K32 Heated Steering Wheel Module X1 (KI3)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) GN | (1) 5883 | (1) Steering Wheel Heating Switch Signal | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) GY / OG | (2) 5884 | (2) Steering Wheel Heating Switch LED Control | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) RD / GN | (3) 10040 | (3) Battery Positive Voltage | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) BK | (4) 6050 | (4) Steering Wheel Ground | (4) I | (4) — |
| (5) 5 | (5) 0.35 | (5) BK / WH | (5) 6051 | (5) Steering Wheel Ground | (5) I | (5) — |
| (6) 6 | (6) 0.35 | (6) GN / BK | (6) 2858 | (6) Body Control Module LIN Bus 12 | (6) I | (6) — |

### K32 Heated Steering Wheel Module X2 (KI3-UKL)




4872683

**Connector Part Information**

- Harness Type: Steering Wheel Heater
- OEM Connector: 13533335
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 1.2 Series( BK)

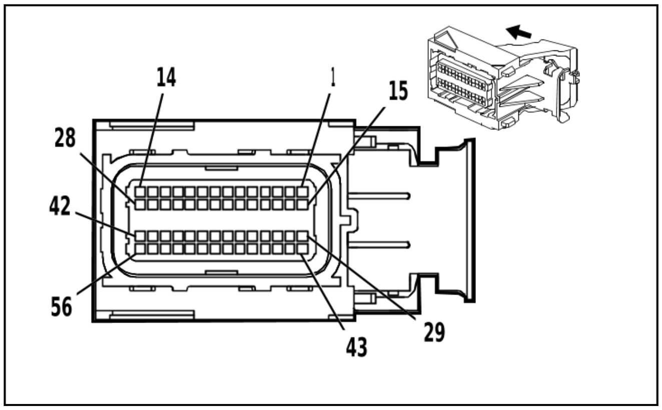
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## K32 Heated Steering Wheel Module X2 (KI3-UKL)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) — | (1) WH / YE | (1) 5888 | (1) Steering Wheel Heating High Control | (1) I | (1) — |
| (2) 2 | (2) — | (2) GY / YE | (2) 5887 | (2) Steering Wheel Heating Low Control | (2) I | (2) — |
| (3) 3 | (3) — | (3) VT / BU | (3) 5886 | (3) Steering Wheel Heating Temperature Sensor Signal | (3) I | (3) — |
| (4) 4 | (4) — | (4) YE / RD | (4) 5885 | (4) Steering Wheel Heating Voltage Reference | (4) I | (4) — |

## K36 Restraints Control Module X1




1590948

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 12728284
- Service Connector: 85090371
- Description: 56-Way F 0.64 MX123 Series, Sealed( BK with BU Terminal Position Assurance)

### Terminal Part Information

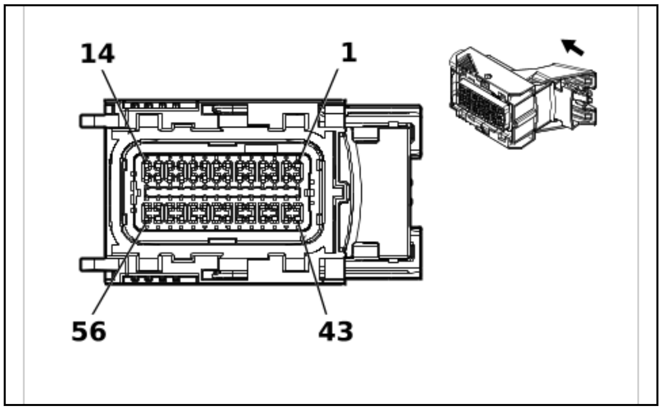
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 19354746 | J-35616-64B (L-BU) | J-38125-213 |

### K36 Restraints Control Module X1

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 - 6 | — | — | — | Not Occupied | — | — |
| (7) 7 | (7) 0.5 | (7) BK / OG | (7) 5045 | (7) Left Front Impact Discriminating Sensor Low Reference | (7) I | (7) — |
| (8) 8 | (8) 0.5 | (8) OG / YE | (8) 354 | (8) Left Front Impact Discriminating Sensor Signal | (8) I | (8) — |
| (9) 9 | (9) 0.5 | (9) OG / GN | (9) 1409 | (9) Right Front Impact Discriminating Sensor Signal | (9) I | (9) — |
| (10) 10 | (10) 0.5 | (10) BK / OG | (10) 5600 | (10) Right Front Impact Discriminating Sensor Low Reference | (10) I | (10) — |
| (11) 11 | (11) 0.5 | (11) WH / OG | (11) 3476 | (11) Passenger Seat Belt Retractor Pretensioner Low Control | (11) I | (11) — |
| (12) 12 | (12) 0.5 | (12) OG / GN | (12) 3475 | (12) Passenger Seat Belt Retractor Pretensioner High Control | (12) I | (12) — |
| (13) 13 | (13) 0.35 | (13) YE / OG | (13) 3025 | (13) Passenger Instrument Panel Air Bag Stage 1 High Control | (13) I | (13) — |
| (14) 14 | (14) 0.35 | (14) OG / WH | (14) 3024 | (14) Passenger Instrument Panel Air Bag Stage 1 Low Control | (14) I | (14) — |
| 15 - 24 | — | — | — | Not Occupied | — | — |
| (25) 25 | (25) 0.5 | (25) VT / OG | (25) 3478 | (25) Driver Seat Belt Retractor Pretensioner Low Control | (25) I | (25) — |
| (26) 26 | (26) 0.5 | (26) OG / WH | (26) 3477 | (26) Driver Seat Belt Retractor Pretensioner High Control | (26) I | (26) — |
| (27) 27 | (27) 0.35 | (27) OG / VT | (27) 3021 | (27) Steering Wheel Air Bag Stage 1 High Control | (27) I | (27) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (28) 28 | (28) 0.35 | (28) BN / OG | (28) 3020 | (28) Steering Wheel Air Bag Stage 1 Low Control | (28) I | (28) — |
| (29) 29 | (29) 0.5 | (29) BU | (29) 4987 | (29) AUTOSAR CAN Bus [+] 1 Serial Data | (29) I | (29) — |
| (30) 30 | (30) 0.5 | (30) WH | (30) 4986 | (30) AUTOSAR CAN Bus [-] 1 Serial Data | (30) I | (30) — |
| 31 | — | — | — | Not Occupied | — | — |
| (32) 32 | (32) 0.5 | (32) OG / BN | (32) 3479 | (32) Passenger Seat Belt Anchor Pretensioner High Control | (32) I | (32) — |
| (33) 33 | (33) 0.5 | (33) GY / OG | (33) 3480 | (33) Passenger Seat Belt Anchor Pretensioner Low Control | (33) I | (33) — |
| 34 - 37 | — | — | — | Not Occupied | — | — |
| (38) 38 | (38) 0.35 | (38) OG / VT | (38) 3026 | (38) Passenger Instrument Panel Air Bag Stage 2 Low Control | (38) I | (38) — |
| (39) 39 | (39) 0.35 | (39) GY / OG | (39) 3027 | (39) Passenger Instrument Panel Air Bag Stage 2 High Control | (39) I | (39) — |
| 40 - 41 | — | — | — | Not Occupied | — | — |
| (42) 42 | (42) 0.5 | (42) BK / WH | (42) 1251 | (42) Signal Ground | (42) I | (42) — |
| (43) 43 | (43) 0.5 | (43) BU | (43) 4987 | (43) AUTOSAR CAN Bus [+] 1 Serial Data | (43) I | (43) — |
| (44) 44 | (44) 0.5 | (44) WH | (44) 4986 | (44) AUTOSAR CAN Bus [-] 1 Serial Data | (44) I | (44) — |
| 45 | — | — | — | Not Occupied | — | — |
| (46) 46 | (46) 0.5 | (46) VT / OG | (46) 3482 | (46) Driver Seat Belt Anchor Pretensioner Low Control | (46) I | (46) — |
| (47) 47 | (47) 0.5 | (47) OG / YE | (47) 3481 | (47) Driver Seat Belt Anchor Pretensioner High Control | (47) I | (47) — |
| 48 - 49 | — | — | — | Not Occupied | — | — |
| (50) 50 | (50) 0.35 | (50) BN / WH | (50) 3895 | (50) Roof Rail Air Bag Disable Switch Low Reference | (50) I | (50) — |
| (51) 51 | (51) 0.35 | (51) BU / WH | (51) 3119 | (51) Roof Rail Air Bag Disable Switch Signal | (51) I | (51) — |
| 52 | — | — | — | Not Occupied | — | — |
| (53) 53 | (53) 0.35 | (53) WH / OG | (53) 3022 | (53) Steering Wheel Air Bag Stage 2 Low Control | (53) I | (53) — |
| (54) 54 | (54) 0.35 | (54) OG / GN | (54) 3023 | (54) Steering Wheel Air Bag Stage 2 High Control | (54) I | (54) — |
| (55) 55 | (55) 0.35 | (55) VT / WH | (55) 239 | (55) Run/Crank Ignition 1 Voltage | (55) I | (55) — |
| (56) 56 | (56) 0.5 | (56) RD / GN | (56) 4440 | (56) Battery Positive Voltage | (56) I | (56) — |

## K36 Restraints Control Module X2




5377124

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 12728285
- Service Connector: 85004498
- Description: 56-Way F 0.64 MX123 Series, Sealed( BK)

### Terminal Part Information

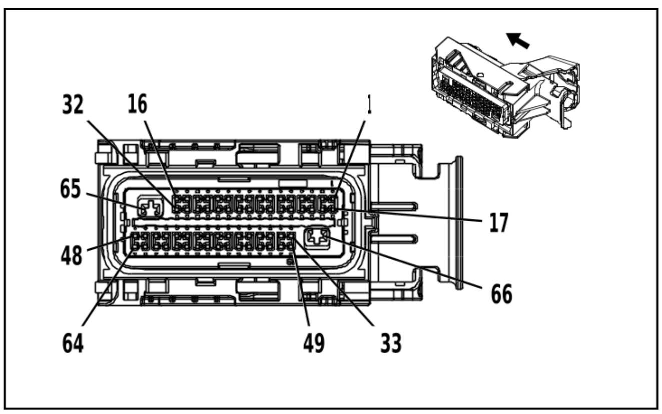
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 19354746 | J-35616-64B (L-BU) | J-38125-213 |

### K36 Restraints Control Module X2

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 - 9 | — | — | — | Not Occupied | — | — |
| (10) 10 | (10) 0.5 | (10) BU / OG | (10) 5163 | (10) Rear Center Seat Belt Switch Signal | (10) I | (10) — |
| (11) 11 | (11) 0.5 | (11) YE / OG | (11) 5161 | (11) Left Rear Seat Belt Switch Signal | (11) I | (11) — |
| (12) 12 | (12) 0.35 | (12) OG / BN | (12) 238 | (12) Driver Seat Belt Switch Signal | (12) I | (12) — |
| (13) 13 | (13) 0.5 | (13) BK / OG | (13) 6627 | (13) Right Rear Side Impact Sensor Low Reference | (13) I | (13) — |
| (14) 14 | (14) 0.5 | (14) OG / WH | (14) 6626 | (14) Right Rear Side Impact Sensor Signal | (14) I | (14) — |
| 15 - 22 | — | — | — | Not Occupied | — | — |
| (23) 23 | (23) 0.5 | (23) BK / OG | (23) 1363 | (23) Driver Seat Belt Switch Low Reference | (23) I | (23) — |
| (24) 24 | (24) 0.5 | (24) BN / OG | (24) 5162 | (24) Right Rear Seat Belt Switch Signal | (24) I | (24) — |
| (25) 25 | (25) 0.35 | (25) OG / VT | (25) 1362 | (25) Passenger Seat Belt Switch Signal | (25) I | (25) — |
| 26 | — | — | — | Not Occupied | — | — |
| (27) 27 | (27) 0.5 | (27) BK / OG | (27) 6628 | (27) Left Front Side Impact Sensor Low Reference | (27) I | (27) — |
| (28) 28 | (28) 0.5 | (28) OG / GN | (28) 2132 | (28) Left Front Side Impact Sensor Signal | (28) I | (28) — |
| 29 - 36 | — | — | — | Not Occupied | — | — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (37) 37 | (37) 0.5 | (37) OG / GY | (37) 5021 | (37) Right Front Roof Rail Air Bag High Control | (37) I | (37) — |
| (38) 38 | (38) 0.5 | (38) WH / OG | (38) 5022 | (38) Right Front Roof Rail Air Bag Low Control | (38) I | (38) — |
| (39) 39 | (39) 0.5 | (39) BU / OG | (39) 4957 | (39) Passenger Seat Back Air Bag Low Control | (39) I | (39) — |
| (40) 40 | (40) 0.5 | (40) OG / GY | (40) 4956 | (40) Passenger Seat Back Air Bag High Control | (40) I | (40) — |
| (41) 41 | (41) 0.5 | (41) BK / OG | (41) 6629 | (41) Right Front Side Impact Sensor Low Reference | (41) I | (41) — |
| (42) 42 | (42) 0.5 | (42) BN / OG | (42) 2134 | (42) Right Front Side Impact Sensor Signal | (42) I | (42) — |
| 43 - 50 | — | — | — | Not Occupied | — | — |
| (51) 51 | (51) 0.5 | (51) OG / GN | (51) 5019 | (51) Left Front Roof Rail Air Bag High Control | (51) I | (51) — |
| (52) 52 | (52) 0.5 | (52) VT / OG | (52) 5020 | (52) Left Front Roof Rail Air Bag Low Control | (52) I | (52) — |
| (53) 53 | (53) 0.5 | (53) BK / OG | (53) 4963 | (53) Driver Seat Back Air Bag Low Control | (53) I | (53) — |
| (54) 54 | (54) 0.5 | (54) OG / BU | (54) 4962 | (54) Driver Seat Back Air Bag High Control | (54) I | (54) — |
| (55) 55 | (55) 0.5 | (55) BK / OG | (55) 6623 | (55) Left Rear Side Impact Sensor Low Reference | (55) I | (55) — |
| (56) 56 | (56) 0.5 | (56) OG / BU | (56) 6622 | (56) Left Rear Side Impact Sensor Signal | (56) I | (56) — |

**K38 Chassis Control Module**




3621452

**Connector Part Information**

- Harness Type: Chassis Wiring Harness
- OEM Connector: 12707495
- Service Connector: 85761018
- Description: 66-Way F 0.64, 2.8 MX123 Series, Sealed( BK with BK Terminal Position Assurance)

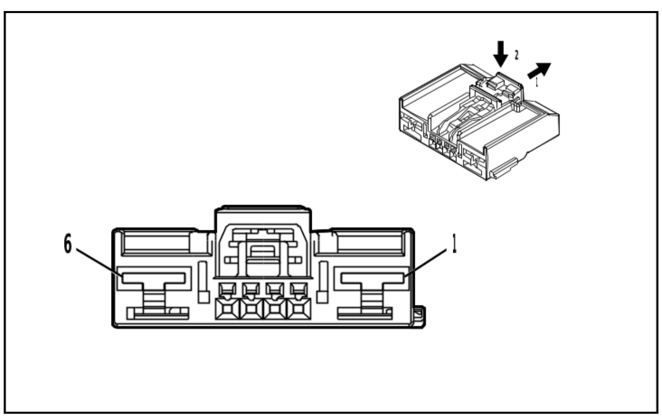
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 13587518 | J-35616-35 (VT) | J-38125-11A |
| II | 19351723 | J-35616-64B (L-BU) | J-38125-213 |

## K38 Chassis Control Module

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 - 5 | — | — | — | Not Occupied | — | — |
| (6) 6 | (6) 0.5 | (6) VT / WH | (6) 639 | (6) Run/Crank Ignition 1 Voltage | (6) II | (6) — |
| 7 - 12 | — | — | — | Not Occupied | — | — |
| (13) 13 | (13) 0.5 | (13) YE / GN | (13) 7122 | (13) Axle Differential Lock Switch Signal | (13) II | (13) — |
| 14 - 33 | — | — | — | Not Occupied | — | — |
| (34) 34 | (34) 0.5 | (34) BU / YE | (34) 4979 | (34) AUTOSAR CAN Bus [+] 2 Serial Data | (34) II | (34) — |
| (35) 35 | (35) 0.5 | (35) BU / YE | (35) 4979 | (35) AUTOSAR CAN Bus [+] 2 Serial Data | (35) II | (35) — |
| (36) 36 | (36) 0.5 | (36) WH | (36) 4978 | (36) AUTOSAR CAN Bus [-] 2 Serial Data | (36) II | (36) — |
| (37) 37 | (37) 0.5 | (37) WH | (37) 4978 | (37) AUTOSAR CAN Bus [-] 2 Serial Data | (37) II | (37) — |
| (38) 38 | (38) 0.5 | (38) YE | (38) 7115 | (38) Rear Axle Differential Lock Indicator Control | (38) II | (38) — |
| 39 - 43 | — | — | — | Not Occupied | — | — |
| (44) 44 | (44) 0.75 | (44) GY / BK | (44) 7253 | (44) Rear Differential Lock Actuator Low Control | (44) II | (44) — |
| 45 - 49 | — | — | — | Not Occupied | — | — |
| (50) 50 | (50) 0.75 | (50) VT / BN | (50) 7258 | (50) Rear Differential Lock Actuator Control | (50) II | (50) — |
| 51 - 64 | — | — | — | Not Occupied | — | — |
| (65) 65 | (65) 1.5 | (65) BK | (65) 1850 | (65) Ground | (65) I | (65) — |
| (66) 66 | (66) 1.5 | (66) RD / BN | (66) 5940 | (66) Battery Positive Voltage | (66) I | (66) — |

### K40D Driver Seat Adjuster Memory Module X1




4650258

**Connector Part Information**

- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 7289-7139-30
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 0.64, 6.3 Series( BK)

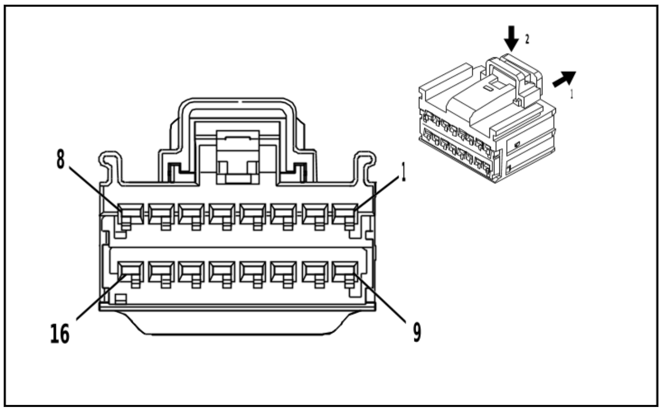
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-42 (RD) | No Tool Required |
| II | Not required | J-35616-64B (L-BU) | No Tool Required |

## K40D Driver Seat Adjuster Memory Module X1

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 2.5 | (1) BK | (1) 1550 | (1) Ground | (1) I | (1) — |
| 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 0.5 | (3) RD / BN | (3) 2240 | (3) Battery Positive Voltage | (3) II | (3) — |
| 4 - 5 | — | — | — | Not Occupied | — | — |
| (6) 6 | (6) 2.5 | (6) RD / YE | (6) 5040 | (6) Battery Positive Voltage | (6) I | (6) — |

### K40D Driver Seat Adjuster Memory Module X2




4332214

**Connector Part Information**

- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 15512506
- Service Connector: Service by Harness - See Part Catalog
- Description: 16-Way F 1.5 OCS Series( BK)

## Terminal Part Information

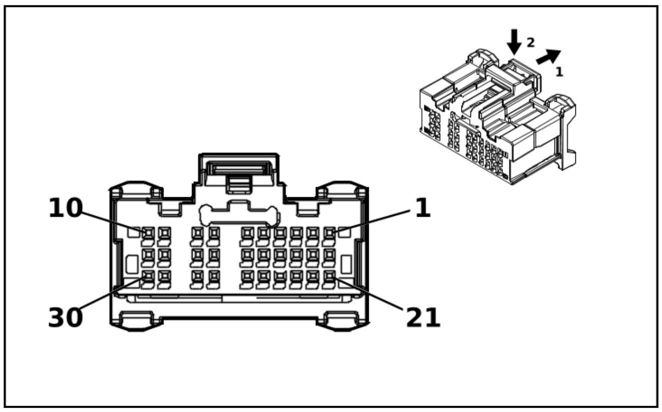
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-14 (GN) | No Tool Required |

## K40D Driver Seat Adjuster Memory Module X2

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 1.5 | (1) YE / BU | (1) 285 | (1) Driver Seat Horizontal Motor Forward Control | (1) I | (1) — |
| 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 1.5 | (3) GN / YE | (3) 276 | (3) Driver Seat Recline Motor Forward Control | (3) I | (3) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 4 - 5 | — | — | — | Not Occupied | — | — |
| (6) 6 | (6) 1.5 | (6) BU / VT | (6) 287 | (6) Driver Seat Front Vertical Motor Down Control | (6) I | (6) — |
| (7) 7 | (7) 1.5 | (7) YE | (7) 282 | (7) Driver Seat Rear Vertical Motor Up Control | (7) I | (7) — |
| 8 | — | — | — | Not Occupied | — | — |
| (9) 9 | (9) 1.5 | (9) BU / YE | (9) 277 | (9) Driver Seat Recline Motor Rearward Control | (9) I | (9) — |
| 10 | — | — | — | Not Occupied | — | — |
| (11) 11 | (11) 1.5 | (11) GY / GN | (11) 284 | (11) Driver Seat Horizontal Motor Rearward Control | (11) I | (11) — |
| 12 | — | — | — | Not Occupied | — | — |
| (13) 13 | (13) 1.5 | (13) GY / BU | (13) 283 | (13) Driver Seat Rear Vertical Motor Down Control | (13) I | (13) — |
| 14 - 15 | — | — | — | Not Occupied | — | — |
| (16) 16 | (16) 1.5 | (16) GN / BN | (16) 286 | (16) Driver Seat Front Vertical Motor Up Control | (16) I | (16) — |

**K40D Driver Seat Adjuster Memory Module X3**




5202284

**Connector Part Information**
- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 2309644-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 30-Way F 0.5 MQS Series( BK)

## Terminal Part Information

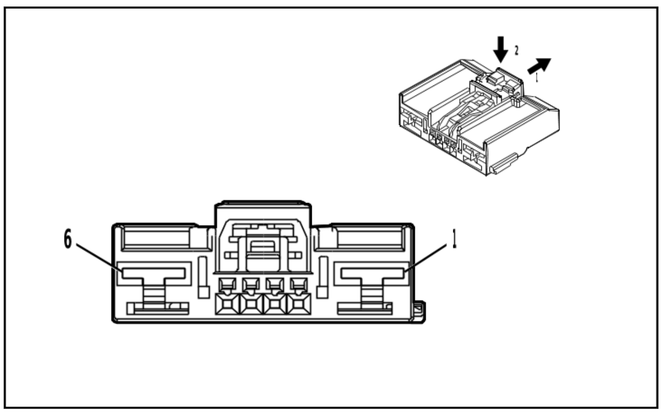
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | EL-35616-58 (BK) | No Tool Required |

## K40D Driver Seat Adjuster Memory Module X3

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 | — | — | — | Not Occupied | — | — |
| (2) 2 | (2) 0.35 | (2) BU / GN | (2) 614 | (2) Seat Memory Switch Set Signal | (2) I | (2) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 3 - 4 | — | — | — | Not Occupied | — | — |
| (5) 5 | (5) 0.35 | (5) BN | (5) 3038 | (5) Driver Seat Right Rear Haptic Movement Motor Control | (5) I | (5) — |
| (6) 6 | (6) 0.35 | (6) YE / BN | (6) 3037 | (6) Driver Seat Left Rear Haptic Movement Motor Control | (6) I | (6) — |
| 7 | — | — | — | Not Occupied | — | — |
| (8) 8 | (8) 0.35 | (8) GN / WH | (8) 7530 | (8) Driver Seat Adjuster Memory Module LIN Bus 1 | (8) I | (8) — |
| (9) 9 | (9) 0.35 | (9) WH | (9) 4100 | (9) AUTOSAR CAN Bus [-] 4 Serial Data | (9) I | (9) — |
| (10) 10 | (10) 0.35 | (10) BU / VT | (10) 4101 | (10) AUTOSAR CAN Bus [+] 4 Serial Data | (10) I | (10) — |
| 11 - 15 | — | — | — | Not Occupied | — | — |
| (16) 16 | (16) 0.35 | (16) WH | (16) 615 | (16) Seat Memory Switch Signal 1 | (16) I | (16) — |
| 17 | — | — | — | Not Occupied | — | — |
| (18) 18 | (18) 0.35 | (18) GN / GY | (18) 3758 | (18) Driver Seat Adjuster Memory Module LIN Bus 2 | (18) I | (18) — |
| (19) 19 | (19) 0.35 | (19) WH | (19) 4100 | (19) AUTOSAR CAN Bus [-] 4 Serial Data | (19) I | (19) — |
| (20) 20 | (20) 0.35 | (20) BU / VT | (20) 4101 | (20) AUTOSAR CAN Bus [+] 4 Serial Data | (20) I | (20) — |
| 21 - 30 | — | — | — | Not Occupied | — | — |

### K40P Passenger Seat Adjuster Memory Module X1 (A7K)




4650258

**Connector Part Information**

- Harness Type: Front Seat Wiring Harness - Passenger
- OEM Connector: 7289-7139-30
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 0.64, 6.3 Series( BK)

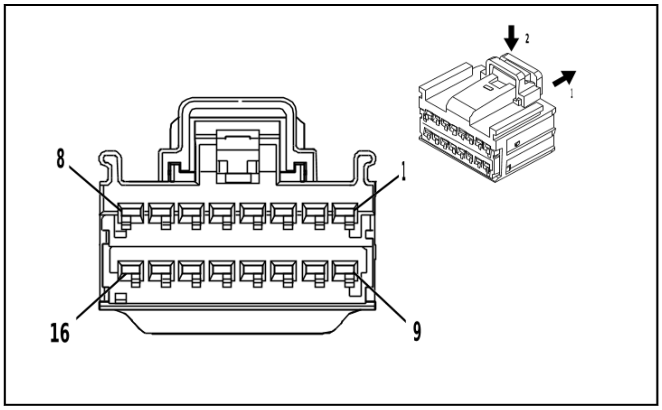
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-42 (RD) | No Tool Required |
| II | Not required | J-35616-64B (L-BU) | No Tool Required |

## K40P Passenger Seat Adjuster Memory Module X1 (A7K)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 2.5 | (1) BK | (1) 1350 | (1) Ground | (1) I | (1) — |
| 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 0.5 | (3) RD / BN | (3) 2240 | (3) Battery Positive Voltage | (3) II | (3) — |
| 4 - 5 | — | — | — | Not Occupied | — | — |
| (6) 6 | (6) 2.5 | (6) RD / YE | (6) 7440 | (6) Battery Positive Voltage | (6) I | (6) — |

### K40P Passenger Seat Adjuster Memory Module X2 (AVU)




4332214

**Connector Part Information**

- Harness Type: Front Seat Wiring Harness - Passenger
- OEM Connector: 15512506
- Service Connector: Service by Harness - See Part Catalog
- Description: 16-Way F 1.5 OCS Series( BK)

## Terminal Part Information

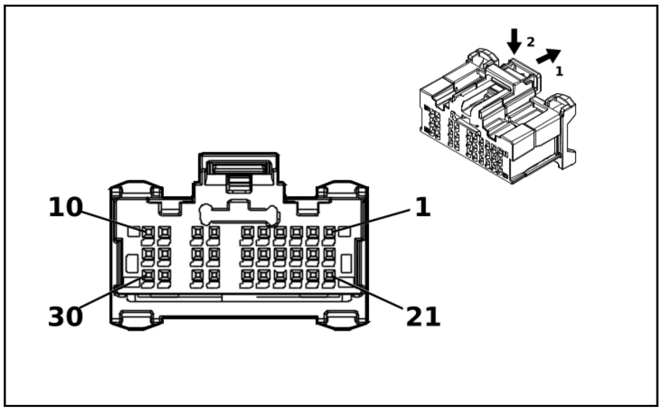
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-14 (GN) | No Tool Required |

## K40P Passenger Seat Adjuster Memory Module X2 (AVU)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 1.5 | (1) YE / WH | (1) 296 | (1) Passenger Seat Horizontal Motor Forward Control | (1) I | (1) — |
| 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 1.5 | (3) GN | (3) 76 | (3) Passenger Seat Recline Motor Forward Control | (3) I | (3) — |
| 4 - 5 | — | — | — | Not Occupied | — | — |
| (6) 6 | (6) 1.5 | (6) GN / BU | (6) 298 | (6) Passenger Seat Front Vertical Motor Down Control | (6) I | (6) — |
| (7) 7 | (7) 1.5 | (7) GN / WH | (7) 288 | (7) Passenger Seat Rear Vertical Motor Up Control | (7) I | (7) — |
| 8 | — | — | — | Not Occupied | — | — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (9) 9 | (9) 1.5 | (9) BU / BN | (9) 77 | (9) Passenger Seat Recline Motor Rearward Control | (9) I | (9) — |
| 10 | — | — | — | Not Occupied | — | — |
| (11) 11 | (11) 1.5 | (11) YE / BU | (11) 290 | (11) Passenger Seat Horizontal Motor Rearward Control | (11) I | (11) — |
| 12 | — | — | — | Not Occupied | — | — |
| (13) 13 | (13) 1.5 | (13) BU / WH | (13) 289 | (13) Passenger Seat Rear Vertical Motor Down Control | (13) I | (13) — |
| 14 - 15 | — | — | — | Not Occupied | — | — |
| (16) 16 | (16) 1.5 | (16) GN / VT | (16) 297 | (16) Passenger Seat Front Vertical Motor Up Control | (16) I | (16) — |

### K40P Passenger Seat Adjuster Memory Module X3 (AVU & AHH / AKE)




5202284

**Connector Part Information**

- Harness Type: Front Seat Wiring Harness - Passenger
- OEM Connector: 2309644-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 30-Way F 0.5 MQS Series( BK)

## Terminal Part Information

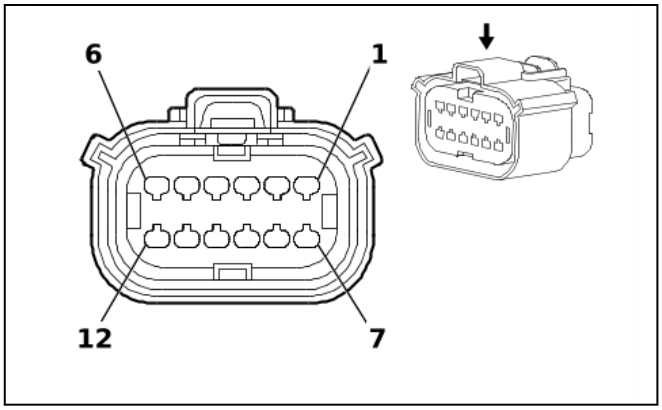
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | EL-35616-58 (BK) | No Tool Required |

## K40P Passenger Seat Adjuster Memory Module X3 (AVU & AHH / AKE)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 - 8 | — | — | — | Not Occupied | — | — |
| (9) 9 | (9) 0.35 | (9) WH | (9) 4100 | (9) AUTOSAR CAN Bus [-] 4 Serial Data | (9) I | (9) — |
| (10) 10 | (10) 0.35 | (10) BU / VT | (10) 4101 | (10) AUTOSAR CAN Bus [+] 4 Serial Data | (10) I | (10) — |
| 11 - 17 | — | — | — | Not Occupied | — | — |
| (18) 18 | (18) 0.35 | (18) GN / YE | (18) 4116 | (18) Passenger Seat Adjuster Memory Module LIN Bus 2 | (18) I | (18) — |
| (19) 19 | (19) 0.35 | (19) WH | (19) 4100 | (19) AUTOSAR CAN Bus [-] 4 Serial Data | (19) I | (19) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (20) 20 | (20) 0.35 | (20) BU / VT | (20) 4101 | (20) AUTOSAR CAN Bus [+] 4 Serial Data | (20) I | (20) — |
| 21 | — | — | — | Not Occupied | — | — |
| (22) 22 | (22) 0.35 | (22) BN / VT | (22) 2452 | (22) Seat Memory Module Configuration 2 | (22) I | (22) — |
| (23) 23 | (23) 0.35 | (23) BN / VT | (23) 2452 | (23) Seat Memory Module Configuration 2 | (23) I | (23) — |
| 24 - 30 | — | — | — | Not Occupied | — | — |

### K43 Power Steering Control Module X1




1825165

**Connector Part Information**

- Harness Type: Chassis Wiring Harness
- OEM Connector: 33472-1216
- Service Connector: 19352907
- Description: 12-Way F 1.5 MX Series, Sealed( BK)

## Terminal Part Information

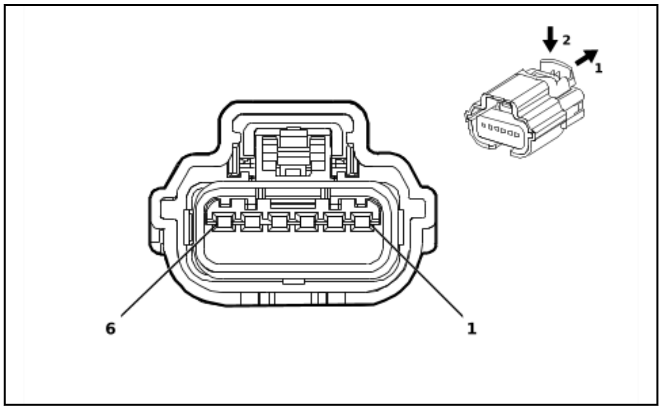
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 85528055 | J-35616-2A (GY) | J-38125-217 |

## K43 Power Steering Control Module X1

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BU | (1) 4987 | (1) AUTOSAR CAN Bus [+] 1 Serial Data | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) WH | (2) 4986 | (2) AUTOSAR CAN Bus [-] 1 Serial Data | (2) I | (2) — |
| 3 - 4 | — | — | — | Not Occupied | — | — |
| (5) 5 | (5) 0.5 | (5) RD / WH | (5) 5740 | (5) Battery Positive Voltage | (5) I | (5) — |
| 6 | — | — | — | Not Occupied | — | — |
| (7) 7 | (7) 0.5 | (7) BU | (7) 4987 | (7) AUTOSAR CAN Bus [+] 1 Serial Data | (7) I | (7) — |
| (8) 8 | (8) 0.5 | (8) WH | (8) 4986 | (8) AUTOSAR CAN Bus [-] 1 Serial Data | (8) I | (8) — |
| 9 - 10 | — | — | — | Not Occupied | — | — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (11) 11 | (11) 1 | (11) BK / WH | (11) 1151 | (11) Signal Ground | (11) I | (11) — |
| 12 | — | — | — | Not Occupied | — | — |

**K43 Power Steering Control Module X2 (NV8)**




5157678

**Connector Part Information**

- Harness Type: Power Steering Control Module Wiring Harness
- OEM Connector: 31404-7132
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 64 Series, Sealed( BK)

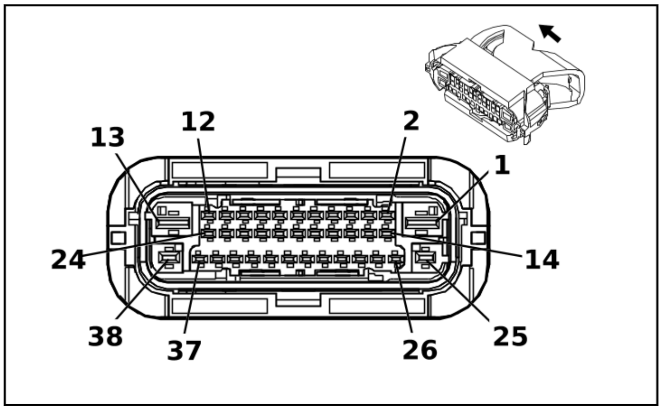
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## K43 Power Steering Control Module X2 (NV8)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) — | (1) — | (1) — | (1) — | (1) I | (1) — |
| (2) 2 | (2) — | (2) — | (2) — | (2) — | (2) I | (2) — |
| (3) 3 | (3) — | (3) — | (3) — | (3) — | (3) I | (3) — |
| (4) 4 | (4) — | (4) — | (4) — | (4) — | (4) I | (4) — |
| (5) 5 | (5) — | (5) — | (5) — | (5) — | (5) I | (5) — |
| (6) 6 | (6) — | (6) — | (6) — | (6) — | (6) I | (6) — |

### K44 Power Takeoff Control Module X1




5199902

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 35503406
- Service Connector: 85761012
- Description: 38-Way F 1.5, 2.8, 4.8 MCP Series, Sealed( BK with BK Inner Connector)

## Terminal Part Information

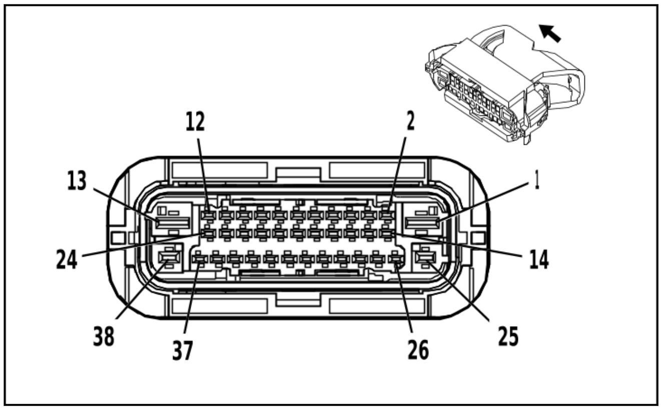
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 19368624 | J-35616-35 (VT) | J-38125-556 |
| II | 19369235 | J-35616-14 (GN) | EL-38125-560A |
| III | 85158596 | J-35616-40 (BU) | J-38125-556 |

## K44 Power Takeoff Control Module X1

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) RD / BU | (1) 4540 | (1) Battery Positive Voltage | (1) III | (1) — |
| 2 - 12 | — | — | — | Not Occupied | — | — |
| (13) 13 | (13) 1.5 | (13) BK / WH | (13) 251 | (13) Signal Ground | (13) III | (13) — |
| (14) 14 | (14) 0.5 | (14) VT / GN | (14) 4320 | (14) Powertrain Sensor Bus Enable | (14) II | (14) — |
| (15) 15 | (15) 0.5 | (15) GN / WH | (15) 488 | (15) Power Take-Off Control Switch Signal | (15) II | (15) — |
| 16 - 17 | — | — | — | Not Occupied | — | — |
| (18) 18 | (18) 0.5 | (18) BN / GN | (18) 4311 | (18) Power Take-Off Enable Cabin Switch Normally Closed Signal | (18) II | (18) — |
| 19 - 21 | — | — | — | Not Occupied | — | — |
| (22) 22 | (22) 0.5 | (22) BN / YE | (22) 1143 8 | (22) Power Take Off Wakeup Signal | (22) II | (22) — |
| 23 - 24 | — | — | — | Not Occupied | — | — |
| (25) 25 | (25) 0.5 | (25) GY / GN | (25) 6239 | (25) Transmission Power Take-Off Engage/ Disengage Signal Power | (25) I | (25) — |
| (26) 26 | (26) 0.5 | (26) WH | (26) 4055 | (26) Private Serial Data Powertrain CAN Bus [+] Serial Data | (26) II | (26) — |
| (27) 27 | (27) 0.5 | (27) WH | (27) 4055 | (27) Private Serial Data Powertrain CAN Bus [+] Serial Data | (27) II | (27) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (28) 28 | (28) 0.5 | (28) BU / GY | (28) 4054 | (28) Private Serial Data Powertrain CAN Bus [-] Serial Data | (28) II | (28) — |
| (29) 29 | (29) 0.5 | (29) BU / GY | (29) 4054 | (29) Private Serial Data Powertrain CAN Bus [-] Serial Data | (29) II | (29) — |
| 30 - 38 | — | — | — | Not Occupied | — | — |

### K44 Power Takeoff Control Module X2




5141918

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 35497871
- Service Connector: 86825459
- Description: 38-Way F 1.5, 2.8, 4.8 MCP Series, Sealed( BK with BN Inner Connector)

## Terminal Part Information

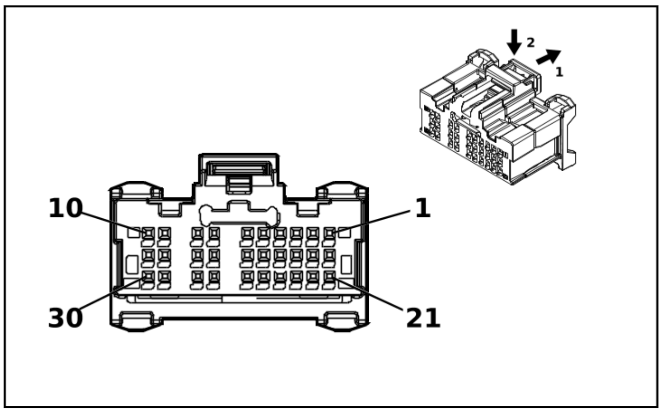
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 19369235 | J-35616-14 (GN) | EL-38125-560A |
| II | 85158596 | J-35616-40 (BU) | J-38125-556 |

## K44 Power Takeoff Control Module X2

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 - 7 | — | — | — | Not Occupied | — | — |
| (8) 8 | (8) 0.5 | (8) WH / BK | (8) 8238 | (8) Power Take Off Upfitter Interlock Switch Signal 2 | (8) I | (8) — |
| (9) 9 | (9) 0.5 | (9) GN / WH | (9) 8236 | (9) Power Take Off Solenoid Control Low | (9) I | (9) — |
| (10) 10 | (10) 0.5 | (10) GN / WH | (10) 8236 | (10) Power Take Off Solenoid Control Low | (10) I | (10) — |
| 11 - 12 | — | — | — | Not Occupied | — | — |
| (13) 13 | (13) 0.5 | (13) BU / WH | (13) 8235 | (13) Power Take Off Solenoid Control High | (13) II | (13) — |
| 14 - 16 | — | — | — | Not Occupied | — | — |
| (17) 17 | (17) 0.5 | (17) WH | (17) 8232 | (17) Power Take Off Pressure Sensor 5 Volt Reference | (17) I | (17) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (18) 18 | (18) 0.5 | (18) YE | (18) 8233 | (18) Power Take Off Pressure Sensor Low Reference | (18) I | (18) — |
| (19) 19 | (19) 0.5 | (19) BN / WH | (19) 8234 | (19) Power Take Off Pressure Sensor Signal | (19) I | (19) — |
| 20 - 27 | — | — | — | Not Occupied | — | — |
| (28) 28 | (28) 0.5 | (28) WH / GN | (28) 6142 | (28) Power Take-Off Engine Shutdown Signal | (28) I | (28) — |
| 29 - 34 | — | — | — | Not Occupied | — | — |
| (35) 35 | (35) 0.5 | (35) VT / GN | (35) 4308 | (35) Power Take-Off Remote Throttle Signal | (35) I | (35) — |
| (36) 36 | (36) 0.5 | (36) BU / BN | (36) 4408 | (36) Power Take-Off Enable Signal | (36) I | (36) — |
| 37 - 38 | — | — | — | Not Occupied | — | — |

### K56 Serial Data Gateway Module X1




5202284

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 2309644-1
- Service Connector: 84766507
- Description: 30-Way F 0.5 MQS Series( BK)

## Terminal Part Information

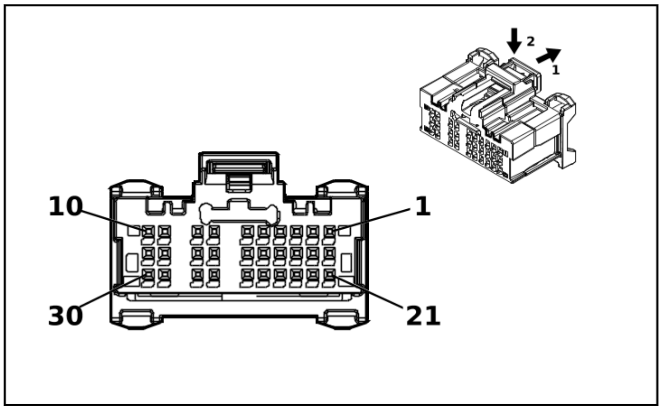
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 19370262 | EL-35616-58 (BK) | EL-38125-58 |

## K56 Serial Data Gateway Module X1

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) RD / VT | (1) 3340 | (1) Battery Positive Voltage | (1) I | (1) — |
| 2 - 3 | — | — | — | Not Occupied | — | — |
| (4) 4 | (4) 0.35 | (4) BK / WH | (4) 851 | (4) Signal Ground | (4) I | (4) — |
| (5) 5 | (5) 0.35 | (5) BU | (5) 4987 | (5) AUTOSAR CAN Bus [+] 1 Serial Data | (5) I | (5) — |
| (6) 6 | (6) 0.35 | (6) WH | (6) 4986 | (6) AUTOSAR CAN Bus [-] 1 Serial Data | (6) I | (6) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (7) 7 | (7) 0.35 | (7) WH | (7) 4100 | (7) AUTOSAR CAN Bus [-] 4 Serial Data | (7) I | (7) — |
| (8) 8 | (8) 0.35 | (8) BU / VT | (8) 4101 | (8) AUTOSAR CAN Bus [+] 4 Serial Data | (8) I | (8) — |
| (9) 9 | (9) 0.35 | (9) WH | (9) 4976 | (9) AUTOSAR CAN Bus [-] 3 Serial Data | (9) I | (9) — |
| (10) 10 | (10) 0.35 | (10) BU / BK | (10) 4977 | (10) AUTOSAR CAN Bus [+] 3 Serial Data | (10) I | (10) — |
| 11 - 14 | — | — | — | Not Occupied | — | — |
| (15) 15 | (15) 0.35 | (15) BU | (15) 4987 | (15) AUTOSAR CAN Bus [+] 1 Serial Data | (15) I | (15) — |
| (16) 16 | (16) 0.35 | (16) WH | (16) 4986 | (16) AUTOSAR CAN Bus [-] 1 Serial Data | (16) I | (16) — |
| (17) 17 | (17) 0.35 | (17) WH | (17) 4978 | (17) AUTOSAR CAN Bus [-] 2 Serial Data | (17) I | (17) — |
| (18) 18 | (18) 0.35 | (18) BU / YE | (18) 4979 | (18) AUTOSAR CAN Bus [+] 2 Serial Data | (18) I | (18) — |
| (19) 19 | (19) 0.35 | (19) BU / YE | (19) 4984 | (19) AUTOSAR CAN Bus [-] 5 Serial Data | (19) I | (19) — |
| (20) 20 | (20) 0.35 | (20) BU / WH | (20) 4985 | (20) AUTOSAR CAN Bus [+] 5 Serial Data | (20) I | (20) — |
| 21 - 24 | — | — | — | Not Occupied | — | — |
| (25) 25 | (25) 0.35 | (25) BU | (25) 4987 | (25) AUTOSAR CAN Bus [+] 1 Serial Data | (25) I | (25) — |
| (26) 26 | (26) 0.35 | (26) WH | (26) 4986 | (26) AUTOSAR CAN Bus [-] 1 Serial Data | (26) I | (26) — |
| (27) 27 | (27) 0.35 | (27) WH | (27) 4978 | (27) AUTOSAR CAN Bus [-] 2 Serial Data | (27) I | (27) — |
| (28) 28 | (28) 0.35 | (28) BU / YE | (28) 4979 | (28) AUTOSAR CAN Bus [+] 2 Serial Data | (28) I | (28) — |
| (29) 29 | (29) 0.35 | (29) BU / YE | (29) 4984 | (29) AUTOSAR CAN Bus [-] 5 Serial Data | (29) I | (29) — |
| (30) 30 | (30) 0.35 | (30) BU / WH | (30) 4985 | (30) AUTOSAR CAN Bus [+] 5 Serial Data | (30) I | (30) — |

### K56 Serial Data Gateway Module X2




5203942

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 2309644-2
- Service Connector: 84766509
- Description: 30-Way F 0.5 MQS Series( BK with L-GY Front Housing)

## Terminal Part Information

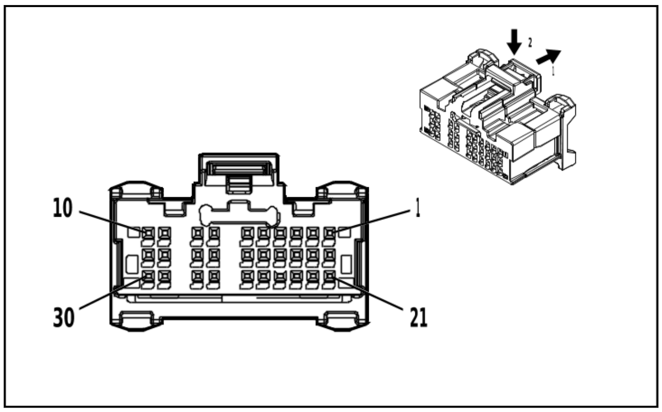
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 19370262 | EL-35616-58 (BK) | EL-38125-58 |
| II | Service by Cable | EL-35616-58 (BK) | EL-38125-58 |

## K56 Serial Data Gateway Module X2

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 - 4 | — | — | — | Not Occupied | — | — |
| (5) 5 | (5) 0.35 | (5) BK / GY | (5) 3559 | (5) Passive Start Switch 2 Low Reference | (5) I | (5) — |
| 6 | — | — | — | Not Occupied | — | — |
| (7) 7 | (7) 0.35 | (7) GN / VT | (7) 5199 | (7) Run/Crank Relay Coil Control | (7) I | (7) — |
| 8 | — | — | — | Not Occupied | — | — |
| (9) 9 | (9) 0.35 | (9) BU | (9) 4973 | (9) Ethernet Bus 1R [+] | (9) II | (9) — |
| (10) 10 | (10) 0.35 | (10) YE | (10) 4972 | (10) Ethernet Bus 1R [-] | (10) II | (10) — |
| 11 - 12 | — | — | — | Not Occupied | — | — |
| (13) 13 | (13) 0.35 | (13) BU / BN | (13) 4983 | (13) AUTOSAR CAN Bus [+] 7 Serial Data | (13) I | (13) — |
| (14) 14 | (14) 0.35 | (14) WH | (14) 4982 | (14) AUTOSAR CAN Bus [-] 7 Serial Data | (14) I | (14) — |
| (15) 15 | (15) 0.35 | (15) GN / BK | (15) 3558 | (15) Passive Start Switch Signal 2 | (15) I | (15) — |
| (16) 16 | (16) 0.35 | (16) WH | (16) 4980 | (16) AUTOSAR CAN Bus [-] 6 Serial Data | (16) I | (16) — |
| (17) 17 | (17) 0.35 | (17) GN | (17) 2578 | (17) Private Serial Data Presentation CAN Bus [+] 1 Serial Data | (17) I | (17) — |
| (18) 18 | (18) 0.35 | (18) BN | (18) 2577 | (18) Private Serial Data Presentation CAN Bus [-] 1 Serial Data | (18) I | (18) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (19) 19 | (19) 0.35 | (19) WH | (19) 7207 | (19) Ethernet Bus 1 Enable Signal | (19) I | (19) — |
| 20 - 22 | — | — | — | Not Occupied | — | — |
| (23) 23 | (23) 0.35 | (23) BU / WH | (23) 4985 | (23) AUTOSAR CAN Bus [+] 5 Serial Data | (23) I | (23) — |
| (24) 24 | (24) 0.35 | (24) BU / YE | (24) 4984 | (24) AUTOSAR CAN Bus [-] 5 Serial Data | (24) I | (24) — |
| 25 | — | — | — | Not Occupied | — | — |
| (26) 26 | (26) 0.35 | (26) YE | (26) 4981 | (26) AUTOSAR CAN Bus [+] 6 Serial Data | (26) I | (26) — |
| (27) 27 | (27) 0.35 | (27) VT | (27) 2580 | (27) Private Serial Data Presentation CAN Bus [+] 2 Serial Data | (27) I | (27) — |
| (28) 28 | (28) 0.35 | (28) GY | (28) 2579 | (28) Private Serial Data Presentation CAN Bus [-] 2 Serial Data | (28) I | (28) — |
| (29) 29 | (29) 0.35 | (29) BU | (29) 4975 | (29) Ethernet Bus 1T [+] | (29) II | (29) — |
| (30) 30 | (30) 0.35 | (30) GN | (30) 4974 | (30) Ethernet Bus 1T [-] | (30) II | (30) — |

### K56 Serial Data Gateway Module X3




4900333

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 2309644-3
- Service Connector: 13519319
- Description: 30-Way F 0.5 MQS Series( BK with D-GY Front Housing)

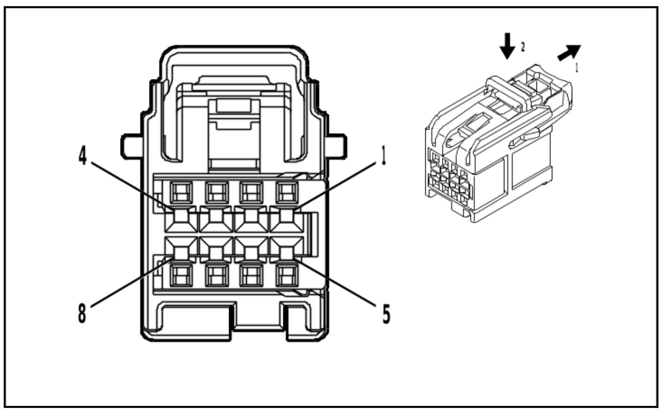
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Service by Cable | EL-35616-58 (BK) | EL-38125-58 |

## K56 Serial Data Gateway Module X3

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 - 6 | — | — | — | Not Occupied | — | — |
| (7) 7 | (7) 0.35<br>(7) 0.35 | (7) YE<br>(7) BN | (7) 4758<br>(7) 7211 | (7) Ethernet Bus 2 [+]<br>(7) Ethernet Bus 4 [+] | (7) I<br>(7) I | (7) IOK<br>(7) IOR |
| (8) 8 | (8) 0.35<br>(8) 0.35 | (8) BU<br>(8) GY | (8) 4757<br>(8) 7210 | (8) Ethernet Bus 2 [-]<br>(8) Ethernet Bus 4 [-] | (8) I<br>(8) I | (8) IOK<br>(8) IOR |
| (9) 9 | (9) 0.35 | (9) YE | (9) 4758 | (9) Ethernet Bus 2 [+] | (9) I | (9) — |
| (10) 10 | (10) 0.35 | (10) BU | (10) 4757 | (10) Ethernet Bus 2 [-] | (10) I | (10) — |
| 11 - 26 | — | — | — | Not Occupied | — | — |
| (27) 27 | (27) 0.35 | (27) GN | (27) 7217 | (27) Ethernet Bus 7 [+] | (27) I | (27) — |
| (28) 28 | (28) 0.35 | (28) WH | (28) 7216 | (28) Ethernet Bus 7 [-] | (28) I | (28) — |
| 29 - 30 | — | — | — | Not Occupied | — | — |

### K56U Special Purpose Vehicle Control Module




4935776

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 15526972
- Service Connector: 19370429
- Description: 8-Way F 0.64 OCS Series( BK)

## Terminal Part Information

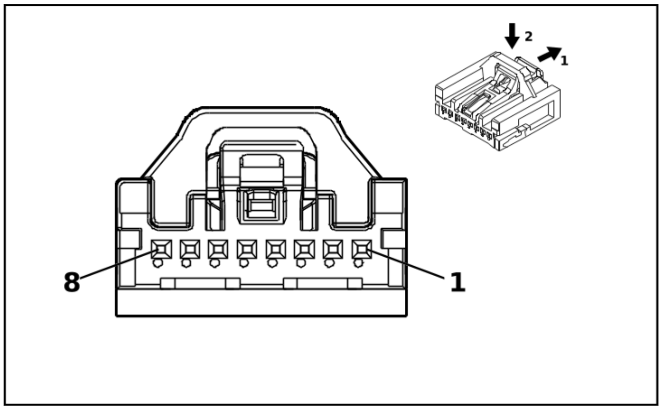
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## K56U Special Purpose Vehicle Control Module

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) RD / VT | (1) 4640 | (1) Battery Positive Voltage | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BU | (2) 4987 | (2) AUTOSAR CAN Bus [+] 1 Serial Data | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) WH | (3) 4986 | (3) AUTOSAR CAN Bus [-] 1 Serial Data | (3) I | (3) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (4) 4 | (4) 0.75 | (4) BK | (4) 1050 | (4) Ground | (4) I | (4) — |
| 5 - 8 | — | — | — | Not Occupied | — | — |

**K60 Column Lock Module**




5200269

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 35068228
- Service Connector: 84769201
- Description: 8-Way F Mini 50 Series( BK)

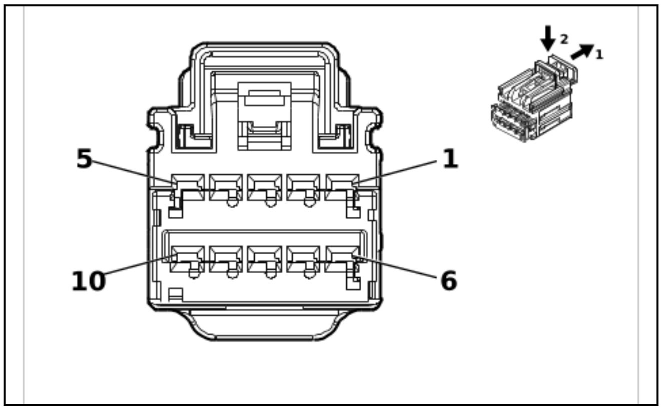
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | EL-35616-58 (BK) | No Tool Required |

## K60 Column Lock Module

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) RD / VT | (1) 3340 | (1) Battery Positive Voltage | (1) I | (1) — |
| 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 0.35 | (3) BK | (3) 1050 | (3) Ground | (3) I | (3) — |
| (4) 4 | (4) 0.35 | (4) BU | (4) 4987 | (4) AUTOSAR CAN Bus [+] 1 Serial Data | (4) I | (4) — |
| (5) 5 | (5) 0.35 | (5) BU | (5) 4987 | (5) AUTOSAR CAN Bus [+] 1 Serial Data | (5) I | (5) — |
| (6) 6 | (6) 0.35 | (6) WH | (6) 4986 | (6) AUTOSAR CAN Bus [-] 1 Serial Data | (6) I | (6) — |
| (7) 7 | (7) 0.35 | (7) WH | (7) 4986 | (7) AUTOSAR CAN Bus [-] 1 Serial Data | (7) I | (7) — |
| (8) 8 | (8) 0.35 | (8) BU / VT | (8) 807 | (8) Ignition Off/Accessory Ignition Voltage | (8) I | (8) — |

## K61 Sunroof Control Module




6153939

**Connector Part Information**

- Harness Type: Sunroof Wiring Harness
- OEM Connector: 15512475
- Service Connector: Service by Harness - See Part Catalog
- Description: 10-Way F 1.5 OCS Series( BK)

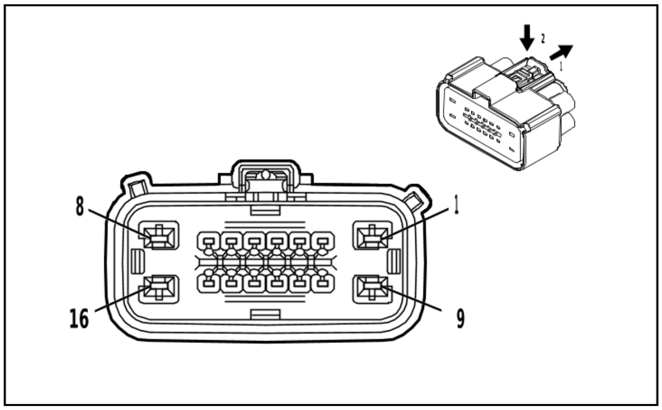
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-2A (GY) | No Tool Required |

### K61 Sunroof Control Module

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 - 5 | — | — | — | Not Occupied | — | — |
| (6) 6 | (6) 0.35 | (6) GN / BN | (6) 2854 | (6) Body Control Module LIN Bus 8 | (6) I | (6) — |
| 7 | — | — | — | Not Occupied | — | — |
| (8) 8 | (8) 1.5 | (8) RD / GY | (8) 4540 | (8) Battery Positive Voltage | (8) I | (8) — |
| 9 | — | — | — | Not Occupied | — | — |
| (10) 10 | (10) 1.5 | (10) BK | (10) 1050 | (10) Ground | (10) I | (10) — |

## K67 Trailer Brake Control Module




4624589

**Connector Part Information**

- Harness Type: Chassis Wiring Harness
- OEM Connector: 34985-4016
- Service Connector: 13599889
- Description: 16-Way F 1.5, 2.8 MX Series, Sealed( GY)

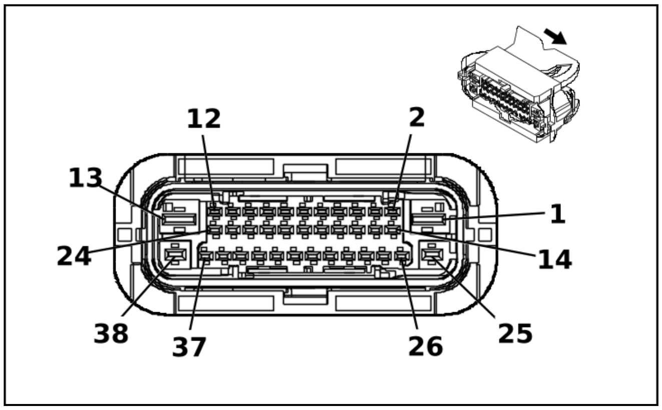
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 13576377 | J-35616-35 (VT) | J-38125-12A |
| II | 85528055 | J-35616-2A (GY) | J-38125-217 |

### K67 Trailer Brake Control Module

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 2.5 | (1) RD / BN | (1) 3640 | (1) Battery Positive Voltage | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) WH / BK | (2) 2223 | (2) Trailer Brake Apply Signal | (2) II | (2) — |
| 3 - 4 | — | — | — | Not Occupied | — | — |
| (5) 5 | (5) 0.5 | (5) YE / BK | (5) 2224 | (5) Trailer Brake Enable Signal | (5) II | (5) — |
| 6 - 7 | — | — | — | Not Occupied | — | — |
| (8) 8 | (8) 2.5 | (8) BU | (8) 47 | (8) Trailer Auxiliary Control | (8) I | (8) — |
| (9) 9 | (9) 2.5 | (9) BK | (9) 1850 | (9) Ground | (9) I | (9) — |
| 10 - 11 | — | — | — | Not Occupied | — | — |
| (12) 12 | (12) 0.5 | (12) GN / BU | (12) 2733 | (12) Brake System Control Module LIN Bus 2 | (12) II | (12) — |
| 13 - 16 | — | — | — | Not Occupied | — | — |

### K68 Trailer Lamp Control Module




5199340

**Connector Part Information**

- Harness Type: Chassis Wiring Harness
- OEM Connector: 35810688
- Service Connector: 86825458
- Description: 38-Way F 1.5, 2.8, 4.8 MCP Series, Sealed( BK with BN Inner Connector)

## Terminal Part Information

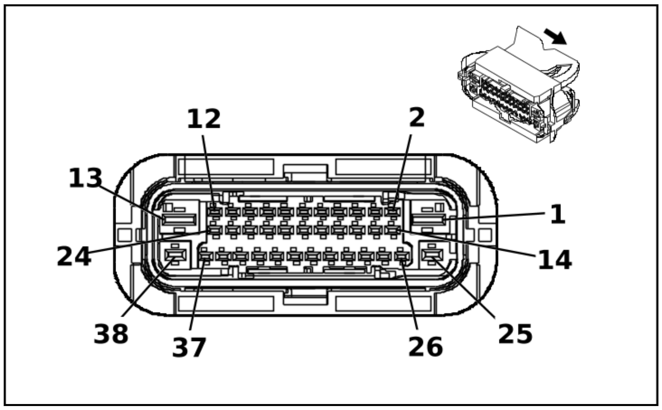
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 19368624 | J-35616-35 (VT) | J-38125-556 |
| II | 19369235 | J-35616-14 (GN) | EL-38125-560A |
| III | 85158596 | J-35616-40 (BU) | J-38125-556 |

## K68 Trailer Lamp Control Module

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 2.5 | (1) RD / VT | (1) 5640 | (1) Battery Positive Voltage | (1) III | (1) — |
| (2) 2 | (2) 1 | (2) YE | (2) 1618 | (2) Left Rear Trailer Stop/Turn Lamp Control | (2) II | (2) — |
| (3) 3 | (3) 1 | (3) GN | (3) 1619 | (3) Right Rear Trailer Stop/Turn Lamp Control | (3) II | (3) — |
| 4 - 6 | — | — | — | Not Occupied | — | — |
| (7) 7 | (7) 1 | (7) GY | (7) 1624 | (7) Trailer Backup Lamp Control | (7) II | (7) — |
| 8 - 9 | — | — | — | Not Occupied | — | — |
| (10) 10 | (10) 0.5 | (10) VT / BK | (10) 739 | (10) Run/Crank Ignition 1 Voltage | (10) II | (10) — |
| (11) 11 | (11) 0.5 | (11) BN / YE | (11) 820 | (11) Center High Mounted Stop Lamp Supply Voltage | (11) II | (11) — |
| 12 | — | — | — | Not Occupied | — | — |
| (13) 13 | (13) 2.5 | (13) BK | (13) 1750 | (13) Ground | (13) III | (13) — |
| 14 - 24 | — | — | — | Not Occupied | — | — |
| (25) 25 | (25) 1 | (25) BN | (25) 2109 | (25) Trailer Park Lamp Control | (25) I | (25) — |
| 26 | — | — | — | Not Occupied | — | — |
| (27) 27 | (27) 0.5 | (27) BU / VT | (27) 4101 | (27) AUTOSAR CAN Bus [+] 4 Serial Data | (27) II | (27) — |
| (28) 28 | (28) 0.5 | (28) WH | (28) 4100 | (28) AUTOSAR CAN Bus [-] 4 Serial Data | (28) II | (28) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (29) 29 | (29) 0.5 | (29) BU / VT | (29) 4101 | (29) AUTOSAR CAN Bus [+] 4 Serial Data | (29) II | (29) — |
| (30) 30 | (30) 0.5 | (30) WH | (30) 4100 | (30) AUTOSAR CAN Bus [-] 4 Serial Data | (30) II | (30) — |
| 31 - 37 | — | — | — | Not Occupied | — | — |
| (38) 38 | (38) 2.5 | (38) RD / YE | (38) 5840 | (38) Battery Positive Voltage | (38) I | (38) — |

**K69 Transfer Case Control Module (L5P)**




5199340

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 35740703
- Service Connector: 86825458
- Description: 38-Way F 1.5, 2.8, 4.8 MCP Series, Sealed( BK with BN Inner Connector)

## Terminal Part Information

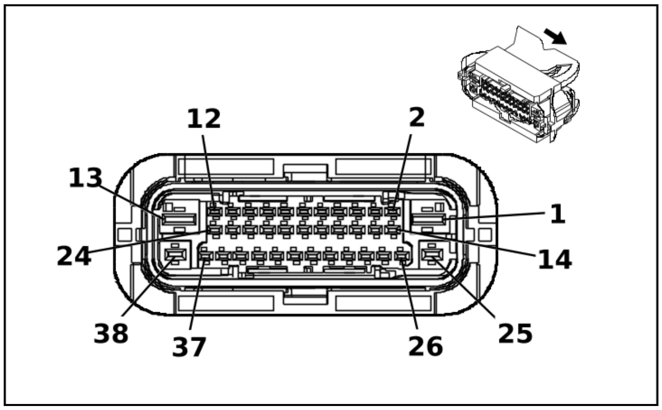
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 19368624 | J-35616-35 (VT) | J-38125-556 |
| II | 19369235 | J-35616-14 (GN) | EL-38125-560A |
| III | 85158596 | J-35616-40 (BU) | J-38125-556 |

## K69 Transfer Case Control Module (L5P)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 3 | (1) GN / RD | (1) 6042 | (1) Cruise Control Switch 5V Reference | (1) III | (1) — |
| 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 0.5 | (3) BU / YE | (3) 4979 | (3) AUTOSAR CAN Bus [+] 2 Serial Data | (3) II | (3) — |
| (4) 4 | (4) 0.5 | (4) WH | (4) 4978 | (4) AUTOSAR CAN Bus [-] 2 Serial Data | (4) II | (4) — |
| (5) 5 | (5) 0.5 | (5) WH / GN | (5) 7479 | (5) Rotary Position Sensor Signal | (5) II | (5) — |
| 6 | — | — | — | Not Occupied | — | — |
| (7) 7 | (7) 0.5 | (7) YE | (7) 7474 | (7) Incremental Encoder Direction Signal | (7) II | (7) — |
| 8 | — | — | — | Not Occupied | — | — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (9) 9 | (9) 0.5 | (9) YE / WH | (9) 1695 | (9) 4WD Locked Range Indicator Control | (9) II | (9) — |
| 10 | — | — | — | Not Occupied | — | — |
| (11) 11 | (11) 0.5 | (11) VT / GY | (11) 8017 | (11) Secondary Axle Motor Relay Control | (11) II | (11) — |
| (12) 12 | (12) 0.5 | (12) GY / BK | (12) 1570 | (12) Front Axle Actuator Control | (12) II | (12) — |
| (13) 13 | (13) 4 | (13) YE / VT | (13) 1553 | (13) Transfer Case Motor Counter Clockwise Control | (13) III | (13) — |
| 14 | — | — | — | Not Occupied | — | — |
| (15) 15 | (15) 0.5 | (15) BU / YE | (15) 4979 | (15) AUTOSAR CAN Bus [+] 2 Serial Data | (15) II | (15) — |
| (16) 16 | (16) 0.5 | (16) WH | (16) 4978 | (16) AUTOSAR CAN Bus [-] 2 Serial Data | (16) II | (16) — |
| 17 | — | — | — | Not Occupied | — | — |
| (18) 18 | (18) 0.5 | (18) VT / GN | (18) 439 | (18) Run/Crank Ignition 1 Voltage | (18) II | (18) — |
| (19) 19 | (19) 0.5 | (19) BU / GY | (19) 7473 | (19) Incremental Encoder Impulse Signal | (19) II | (19) — |
| (20) 20 | (20) 0.5 | (20) WH / RD | (20) 7477 | (20) Gear Position Sensor 5V Reference | (20) II | (20) — |
| 21 - 23 | — | — | — | Not Occupied | — | — |
| (24) 24 | (24) 0.5 | (24) GN | (24) 8015 | (24) Transfer Case Motor Low Reference | (24) II | (24) — |
| (25) 25 | (25) 2.5 | (25) BK | (25) 450 | (25) Ground | (25) I | (25) — |
| 26 | — | — | — | Not Occupied | — | — |
| (27) 27 | (27) 0.5 | (27) GN | (27) 8014 | (27) Transfer Case Lock Solenoid Low Reference | (27) II | (27) — |
| 28 - 29 | — | — | — | Not Occupied | — | — |
| (30) 30 | (30) 0.5 | (30) YE / BK | (30) 7478 | (30) Gear Position Sensor Low Reference | (30) II | (30) — |
| (31) 31 | (31) 0.5 | (31) WH / GN | (31) 7475 | (31) Incremental Encoder Sensor Voltage Reference | (31) II | (31) — |
| 32 | — | — | — | Not Occupied | — | — |
| (33) 33 | (33) 0.75 | (33) BU | (33) 8013 | (33) Transfer Case Lock Solenoid Control 2 | (33) II | (33) — |
| (34) 34 | (34) 0.75 | (34) YE / BN | (34) 1569 | (34) Transfer Case Lock Solenoid Valve Control | (34) II | (34) — |
| 35 | — | — | — | Not Occupied | — | — |
| (36) 36 | (36) 0.5 | (36) VT | (36) 7476 | (36) Incremental Encoder Sensor Low Reference | (36) II | (36) — |
| 37 | — | — | — | Not Occupied | — | — |
| (38) 38 | (38) 2.5 | (38) YE / GY | (38) 1552 | (38) Transfer Case Motor Clockwise Control | (38) I | (38) — |

### K69 Transfer Case Control Module (L8T)




5199340

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 35497867
- Service Connector: 86825458
- Description: 38-Way F 1.5, 2.8, 4.8 MCP Series, Sealed( BK with BN Inner Connector)

## Terminal Part Information

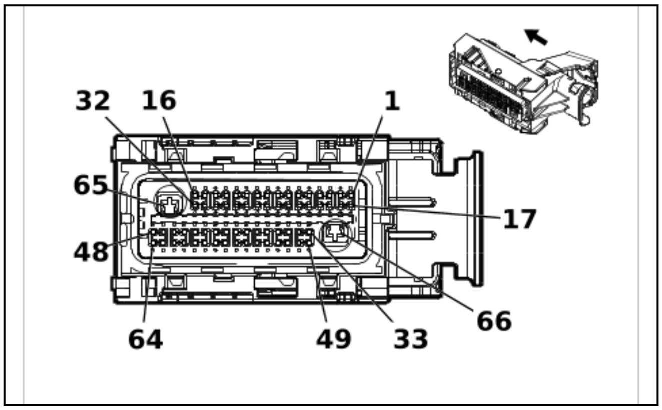
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 19368624 | J-35616-35 (VT) | J-38125-556 |
| II | 19369235 | J-35616-14 (GN) | EL-38125-560A |
| III | 85158596 | J-35616-40 (BU) | J-38125-556 |

## K69 Transfer Case Control Module (L8T)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 3 | (1) GN / RD | (1) 6042 | (1) Cruise Control Switch 5V Reference | (1) III | (1) — |
| 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 0.5 | (3) BU / YE | (3) 4979 | (3) AUTOSAR CAN Bus [+] 2 Serial Data | (3) II | (3) — |
| (4) 4 | (4) 0.5 | (4) WH | (4) 4978 | (4) AUTOSAR CAN Bus [-] 2 Serial Data | (4) II | (4) — |
| (5) 5 | (5) 0.5 | (5) WH / GN | (5) 7479 | (5) Rotary Position Sensor Signal | (5) II | (5) — |
| 6 | — | — | — | Not Occupied | — | — |
| (7) 7 | (7) 0.5 | (7) YE | (7) 7474 | (7) Incremental Encoder Direction Signal | (7) II | (7) — |
| 8 | — | — | — | Not Occupied | — | — |
| (9) 9 | (9) 0.5 | (9) YE / WH | (9) 1695 | (9) 4WD Locked Range Indicator Control | (9) II | (9) — |
| 10 | — | — | — | Not Occupied | — | — |
| (11) 11 | (11) 0.5 | (11) VT / GY | (11) 8017 | (11) Secondary Axle Motor Relay Control | (11) II | (11) — |
| (12) 12 | (12) 0.5 | (12) GY / BK | (12) 1570 | (12) Front Axle Actuator Control | (12) II | (12) — |
| (13) 13 | (13) 4 | (13) YE / VT | (13) 1553 | (13) Transfer Case Motor Counter Clockwise Control | (13) III | (13) — |
| 14 | — | — | — | Not Occupied | — | — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (15) 15 | (15) 0.5 | (15) BU / YE | (15) 4979 | (15) AUTOSAR CAN Bus [+] 2 Serial Data | (15) II | (15) — |
| (16) 16 | (16) 0.5 | (16) WH | (16) 4978 | (16) AUTOSAR CAN Bus [-] 2 Serial Data | (16) II | (16) — |
| 17 | — | — | — | Not Occupied | — | — |
| (18) 18 | (18) 0.5 | (18) VT / GN | (18) 439 | (18) Run/Crank Ignition 1 Voltage | (18) II | (18) — |
| (19) 19 | (19) 0.5 | (19) BU / GY | (19) 7473 | (19) Incremental Encoder Impulse Signal | (19) II | (19) — |
| (20) 20 | (20) 0.5 | (20) WH / RD | (20) 7477 | (20) Gear Position Sensor 5V Reference | (20) II | (20) — |
| 21 - 23 | — | — | — | Not Occupied | — | — |
| (24) 24 | (24) 0.5 | (24) GN | (24) 8015 | (24) Transfer Case Motor Low Reference | (24) II | (24) — |
| (25) 25 | (25) 2.5 | (25) BK | (25) 450 | (25) Ground | (25) I | (25) — |
| 26 | — | — | — | Not Occupied | — | — |
| (27) 27 | (27) 0.5 | (27) GN | (27) 8014 | (27) Transfer Case Lock Solenoid Low Reference | (27) II | (27) — |
| 28 - 29 | — | — | — | Not Occupied | — | — |
| (30) 30 | (30) 0.5 | (30) YE / BK | (30) 7478 | (30) Gear Position Sensor Low Reference | (30) II | (30) — |
| (31) 31 | (31) 0.5 | (31) WH / GN | (31) 7475 | (31) Incremental Encoder Sensor Voltage Reference | (31) II | (31) — |
| 32 | — | — | — | Not Occupied | — | — |
| (33) 33 | (33) 0.75 | (33) BU | (33) 8013 | (33) Transfer Case Lock Solenoid Control 2 | (33) II | (33) — |
| (34) 34 | (34) 0.75 | (34) YE / BN | (34) 1569 | (34) Transfer Case Lock Solenoid Valve Control | (34) II | (34) — |
| 35 | — | — | — | Not Occupied | — | — |
| (36) 36 | (36) 0.5 | (36) VT | (36) 7476 | (36) Incremental Encoder Sensor Low Reference | (36) II | (36) — |
| 37 | — | — | — | Not Occupied | — | — |
| (38) 38 | (38) 2.5 | (38) YE / GY | (38) 1552 | (38) Transfer Case Motor Clockwise Control | (38) I | (38) — |

### K71 Transmission Control Module




6758198

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 216741-0001
- Service Connector: 85761018
- Description: 66-Way F 0.64, 2.8 MX123 Series, Sealed( BK with BU Terminal Position Assurance)

## Terminal Part Information

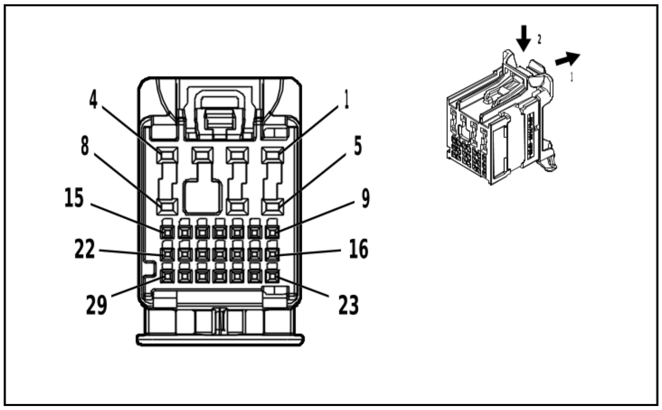
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 13587518 | J-35616-35 (VT) | J-38125-11A |
| II | 19351723 | J-35616-64B (L-BU) | J-38125-213 |

## K71 Transmission Control Module

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) VT / WH | (1) 422 | (1) Torque Converter Clutch Solenoid Valve Control | (1) II | (1) — |
| (2) 2 | (2) 0.5 | (2) GY / GN | (2) 6403 | (2) Clutch Solenoid Valve D Control | (2) II | (2) — |
| (3) 3 | (3) 0.5 | (3) WH / BU | (3) 4507 | (3) Transmission Clutch H Control | (3) II | (3) — |
| (4) 4 | (4) 0.5 | (4) WH | (4) 4508 | (4) Transmission Clutch G Control | (4) II | (4) — |
| 5 - 6 | — | — | — | Not Occupied | — | — |
| (7) 7 | (7) 0.5 | (7) YE / GN | (7) 4170 | (7) Transmission Output Shaft Speed Sensor Circuit 9V Reference | (7) II | (7) — |
| (8) 8 | (8) 0.5 | (8) YE / BU | (8) 4171 | (8) Transmission Input Shaft Speed Sensor Circuit 9V Reference | (8) II | (8) — |
| 9 - 11 | — | — | — | Not Occupied | — | — |
| (12) 12 | (12) 0.5 | (12) GN / YE | (12) 6353 | (12) Input Speed Signal | (12) II | (12) — |
| (13) 13 | (13) 0.5 | (13) GN / VT | (13) 4510 | (13) Transmission Intermediate Speed Signal | (13) II | (13) — |
| (14) 14 | (14) 0.5 | (14) GY / BU | (14) 6358 | (14) Output Speed Signal | (14) II | (14) — |
| (15) 15 | (15) 0.5 | (15) BN / WH | (15) 6254 | (15) Transmission Input Speed Sensor Signal | (15) II | (15) — |
| 16 | — | — | — | Not Occupied | — | — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (17) 17 | (17) 0.5 | (17) GN / WH | (17) 1530 | (17) Transmission Line Pressure Control Solenoid Valve Control | (17) II | (17) — |
| (18) 18 | (18) 0.5 | (18) YE / BN | (18) 6404 | (18) Clutch Solenoid Valve E Control | (18) II | (18) — |
| (19) 19 | (19) 0.5 | (19) GY | (19) 6402 | (19) Clutch Solenoid Valve C Control | (19) II | (19) — |
| (20) 20 | (20) 0.5 | (20) VT | (20) 4509 | (20) Transmission Clutch F Control | (20) II | (20) — |
| 21 | — | — | — | Not Occupied | — | — |
| (22) 22 | (22) 0.5 | (22) GN / BK | (22) 7819 | (22) Default Disable Solenoid Control | (22) II | (22) — |
| 23 - 27 | — | — | — | Not Occupied | — | — |
| (28) 28 | (28) 0.5 | (28) BK / BN | (28) 586 | (28) Transmission Fluid Temperature Sensor Low Reference | (28) II | (28) — |
| 29 - 32 | — | — | — | Not Occupied | — | — |
| (33) 33 | (33) 0.5 | (33) GN / GY | (33) 6387 | (33) Transmission High Side Driver 1 Control | (33) II | (33) — |
| 34 | — | — | — | Not Occupied | — | — |
| (35) 35 | (35) 0.5 | (35) VT / GN | (35) 439 | (35) Run/Crank Ignition 1 Voltage | (35) II | (35) — |
| 36 | — | — | — | Not Occupied | — | — |
| (37) 37 | (37) 0.5 | (37) BU / YE | (37) 4979 | (37) AUTOSAR CAN Bus [+] 2 Serial Data | (37) II | (37) — |
| (38) 38 | (38) 0.5 | (38) WH | (38) 4978 | (38) AUTOSAR CAN Bus [-] 2 Serial Data | (38) II | (38) — |
| 39 - 48 | — | — | — | Not Occupied | — | — |
| (49) 49 | (49) 0.5 | (49) GY / BN | (49) 6388 | (49) Transmission High Side Driver 2 Control | (49) II | (49) — |
| 50 - 52 | — | — | — | Not Occupied | — | — |
| (53) 53 | (53) 0.5 | (53) BU / YE | (53) 4979 | (53) AUTOSAR CAN Bus [+] 2 Serial Data | (53) II | (53) — |
| (54) 54 | (54) 0.5 | (54) WH | (54) 4978 | (54) AUTOSAR CAN Bus [-] 2 Serial Data | (54) II | (54) — |
| 55 - 62 | — | — | — | Not Occupied | — | — |
| (63) 63 | (63) 0.5 | (63) BN / WH | (63) 585 | (63) Transmission Fluid Temperature Sensor Signal | (63) II | (63) — |
| (64) 64 | (64) 0.5 | (64) BU / WH | (64) 3338 | (64) Transmission Internal Mode Switch Mode Control X | (64) II | (64) — |
| (65) 65 | (65) 1.5 | (65) BK / WH | (65) 251 | (65) Signal Ground | (65) I | (65) — |
| (66) 66 | (66) 1.5 | (66) RD / GN | (66) 1840 | (66) Battery Positive Voltage | (66) I | (66) — |

### K73 Telematic Control Module X1




4496253

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 160014-0014
- Service Connector: 13534974
- Description: 29-Way F 0.5 NANO, 1.2 MCON, stAK50h Series( BK with GY Inner Connector)

## Terminal Part Information

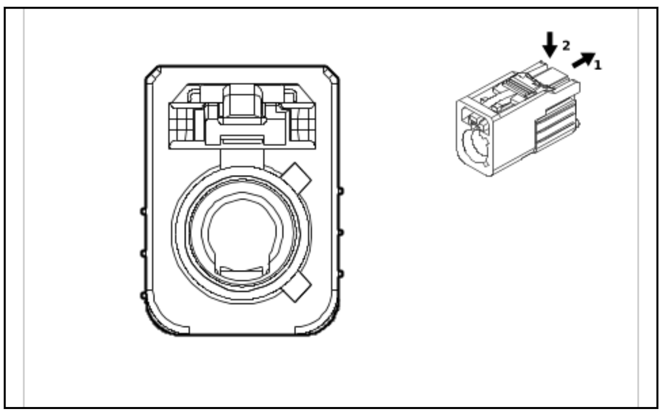
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 84729890 | J-35616-12 (BU) | J-38125-215A |
| II | Service by Cable | EL-35616-58 (BK) | EL-38125-58 |

## K73 Telematic Control Module X1

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) RD / YE | (1) 3040 | (1) Battery Positive Voltage | (1) I | (1) — |
| 2 - 3 | — | — | — | Not Occupied | — | — |
| (4) 4 | (4) 0.75 | (4) BK / WH | (4) 1051 | (4) Signal Ground | (4) I | (4) — |
| 5 | — | — | — | Not Occupied | — | — |
| (6) 6 | (6) 0.35 | (6) GN / BK | (6) 2515 | (6) Telematics Switch Supply Voltage | (6) I | (6) — |
| 7 - 8 | — | — | — | Not Occupied | — | — |
| (9) 9 | (9) 0.35 | (9) BU / YE | (9) 4984 | (9) AUTOSAR CAN Bus [-] 5 Serial Data | (9) I | (9) — |
| (10) 10 | (10) 0.35 | (10) BU / WH | (10) 4985 | (10) AUTOSAR CAN Bus [+] 5 Serial Data | (10) I | (10) — |
| (11) 11 | (11) 0.35 | (11) GN / WH | (11) 2514 | (11) Telematics Switch Signal | (11) I | (11) — |
| 12 | — | — | — | Not Occupied | — | — |
| (13) 13 | (13) 0.35 | (13) BARE | (13) 1792 | (13) Low Reference | (13) I | (13) — |
| (14) 14 | (14) 0.35 | (14) BK / GY | (14) 5152 | (14) Voice Recognition Audio [-] Control | (14) I | (14) — |
| (15) 15 | (15) 0.35 | (15) GY / YE | (15) 5149 | (15) Voice Recognition Audio Signal | (15) I | (15) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (16) 16 | (16) 0.35 | (16) BU / YE | (16) 4984 | (16) AUTOSAR CAN Bus [-] 5 Serial Data | (16) I | (16) — |
| (17) 17 | (17) 0.35 | (17) BU / WH | (17) 4985 | (17) AUTOSAR CAN Bus [+] 5 Serial Data | (17) I | (17) — |
| 18 | — | — | — | Not Occupied | — | — |
| (19) 19 | (19) 0.35 | (19) YE / VT | (19) 2516 | (19) Telematics Switch Green LED Indicator Control | (19) I | (19) — |
| 20 | — | — | — | Not Occupied | — | — |
| (21) 21 | (21) 0.35 | (21) BK / BN | (21) 654 | (21) Cellular Telephone Microphone Low Reference | (21) I | (21) — |
| (22) 22 | (22) 0.35 | (22) BU | (22) 655 | (22) Cellular Telephone Microphone Signal | (22) I | (22) — |
| 23 - 25 | — | — | — | Not Occupied | — | — |
| (26) 26 | (26) 0.35 | (26) BN / WH | (26) 2517 | (26) Telematics Switch Red LED Indicator Control | (26) I | (26) — |
| 27 | — | — | — | Not Occupied | — | — |
| (28) 28 | (28) 0.35 | (28) BN | (28) 7211 | (28) Ethernet Bus 4 [+] | (28) II | (28) — |
| (29) 29 | (29) 0.35 | (29) GY | (29) 7210 | (29) Ethernet Bus 4 [-] | (29) II | (29) — |

### K73 Telematic Control Module X2




5630760

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness COAX
- OEM Connector: 33340312
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type( VT)

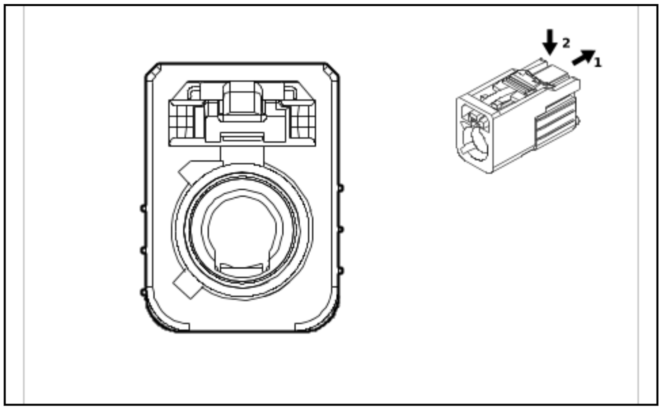
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## K73 Telematic Control Module X2

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| — | — | Coax Cable | — | (Cell only) Coaxial Antenna Cell Phone Signal | I | — |

### K73 Telematic Control Module X3




5630785

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness COAX
- OEM Connector: 33340314
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type( BN)

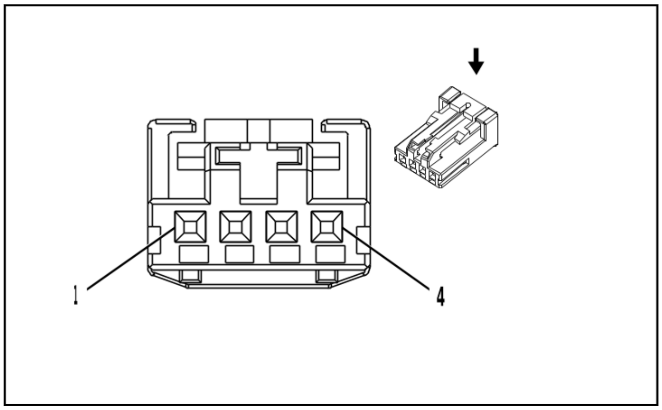
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## K73 Telematic Control Module X3

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| — | — | Coax Cable | — | (GPS/Cell) Coaxial Antenna Cell/GPS combined Signal | I | — |

### K77 Remote Function Actuator Module




2717162

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 1-936119-1
- Service Connector: 19332889
- Description: 4-Way F 0.64 Micro-Quadlock Series( BK)

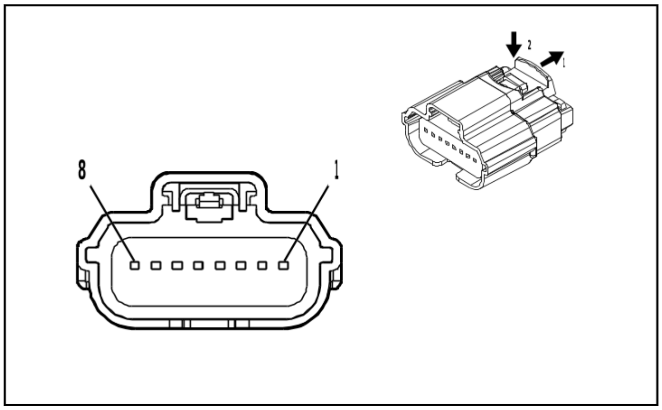
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## K77 Remote Function Actuator Module

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) RD / VT | (1) 2640 | (1) Battery Positive Voltage | (1) I | (1) — |
| (2) 2 | (2) 0.5<br>(2) 0.35 | (2) GN / YE<br>(2) GN / YE | (2) 2862<br>(2) 2862 | (2) Body Control Module LIN Bus 16<br>(2) Body Control Module LIN Bus 16 | (2) I<br>(2) I | (2) UET<br>(2) - UET |
| 3 | — | — | — | Not Occupied | — | — |
| (4) 4 | (4) 0.75 | (4) BK / WH | (4) 1451 | (4) Signal Ground | (4) I | (4) — |

### K85P Restraints Occupant Classification System Module - Passenger




4708234

**Connector Part Information**

- Harness Type: Front Seat Wiring Harness - Passenger
- OEM Connector: 31404-9110
- Service Connector: Service by Harness - See Part Catalog
- Description: 8-Way F 64 Series, Sealed( BK)

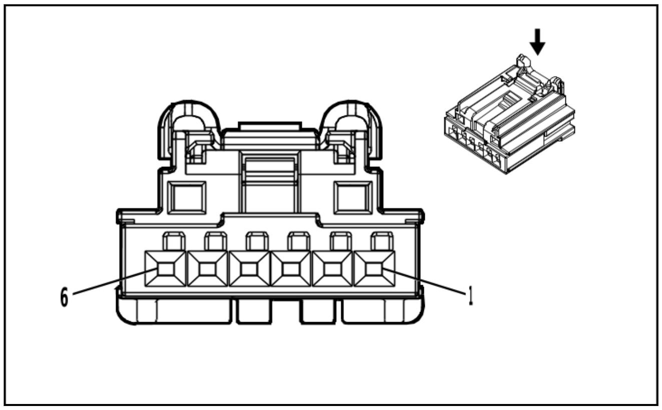
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## K85P Restraints Occupant Classification System Module - Passenger

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) RD / GN | (1) 4440 | (1) Battery Positive Voltage | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BU | (2) 4987 | (2) AUTOSAR CAN Bus [+] 1 Serial Data | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BU | (3) 4987 | (3) AUTOSAR CAN Bus [+] 1 Serial Data | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) WH | (4) 4986 | (4) AUTOSAR CAN Bus [-] 1 Serial Data | (4) I | (4) — |
| (5) 5 | (5) 0.5 | (5) WH | (5) 4986 | (5) AUTOSAR CAN Bus [-] 1 Serial Data | (5) I | (5) — |
| (6) 6 | (6) 0.5 | (6) BK / WH | (6) 1251 | (6) Signal Ground | (6) I | (6) — |
| (7) 7 | (7) 0.5<br>(7) 0.5 | (7) OG / BN<br>(7) OG / BN | (7) 3747<br>(7) 3947 | (7) Camshaft Exhaust Lobe Axial Position Signal 2<br>(7) Passenger Automatic Locking Retractor Switch Signal | (7) I<br>(7) I | (7) —<br>(7) — |
| (8) 8 | (8) 0.5<br>(8) 0.5 | (8) GY / OG<br>(8) GY / OG | (8) 3746<br>(8) 3946 | (8) Camshaft Exhaust Lobe Axial Position Signal 1<br>(8) Passenger Automatic Locking Retractor Switch Low Reference | (8) I<br>(8) I | (8) —<br>(8) — |

### K104D Front Seat Bladder Control Module - Driver (AVK - AF6)




5020940

**Connector Part Information**

- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 2035363-6
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 0.64 Generation Y Series( BK)

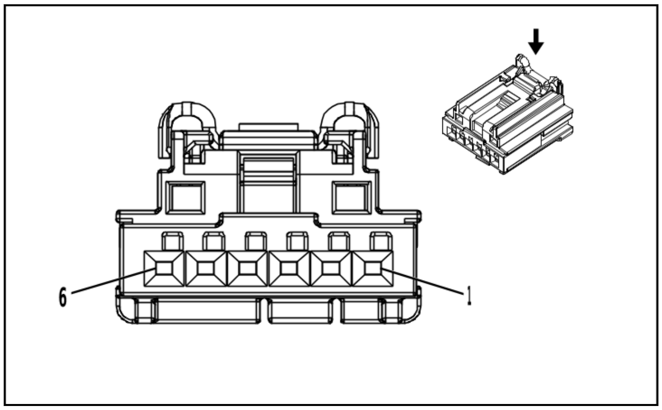
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## K104D Front Seat Bladder Control Module - Driver (AVK - AF6)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) RD / BN | (1) 2240 | (1) Battery Positive Voltage | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) GN / GY | (2) 3758 | (2) Driver Seat Adjuster Memory Module LIN Bus 2 | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) WH / BU | (3) 4891 | (3) Driver Seat Lumbar/Bolster Pump Control | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) BK | (4) 1550 | (4) Ground | (4) I | (4) — |
| (5) 5 | (5) 0.5 | (5) BN / BK | (5) 2305 | (5) Driver Seat Bolster Pump Low Reference | (5) I | (5) — |
| 6 | — | — | — | Not Occupied | — | — |

### K104DP Front Seat Bladder Control Module - Driver Primary (AF6)




3960313

**Connector Part Information**
- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 2035363-4
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 0.64 Generation Y Series( BK)

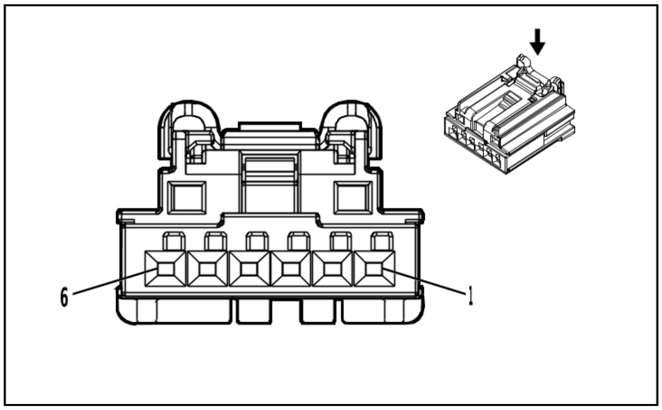
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## K104DP Front Seat Bladder Control Module - Driver Primary (AF6)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) RD / BN | (1) 2240 | (1) Battery Positive Voltage | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) GN / GY | (2) 3758 | (2) Driver Seat Adjuster Memory Module LIN Bus 2 | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) WH / BU | (3) 4891 | (3) Driver Seat Lumbar/Bolster Pump Control | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) BK | (4) 1550 | (4) Ground | (4) I | (4) — |
| (5) 5 | (5) 0.5 | (5) BN / BK | (5) 2305 | (5) Driver Seat Bolster Pump Low Reference | (5) I | (5) — |
| (6) 6 | (6) 0.5 | (6) GN / BK | (6) 2637 | (6) Front Seat Bolster Memory Module - Driver LIN Bus 1 | (6) I | (6) — |

## K104DS Front Seat Bladder Control Module - Driver Secondary (AF6)




5020940

**Connector Part Information**

- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 2035363-6
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 0.64 Generation Y Series( BK)

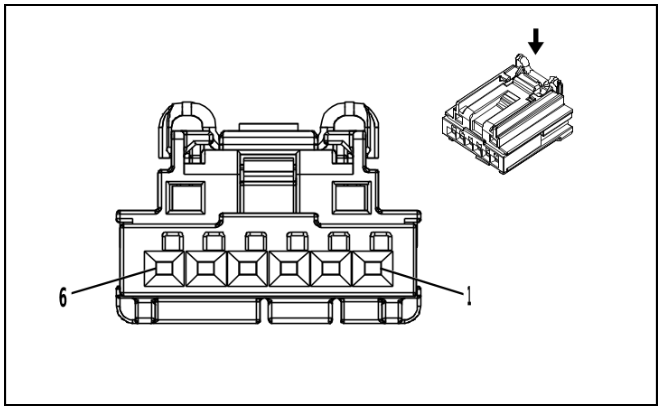
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

### K104DS Front Seat Bladder Control Module - Driver Secondary (AF6)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) RD / BN | (1) 2240 | (1) Battery Positive Voltage | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) GN / BK | (2) 2637 | (2) Front Seat Bolster Memory Module - Driver LIN Bus 1 | (2) I | (2) — |
| 3 | — | — | — | Not Occupied | — | — |
| (4) 4 | (4) 0.5 | (4) BK | (4) 1550 | (4) Ground | (4) I | (4) — |
| 5 - 6 | — | — | — | Not Occupied | — | — |

## K104P Front Seat Bladder Control Module - Passenger (AVU - AKE / AHH)




3960313

**Connector Part Information**

- Harness Type: Front Seat Wiring Harness - Passenger
- OEM Connector: 2035363-4
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 0.64 Generation Y Series( BK)

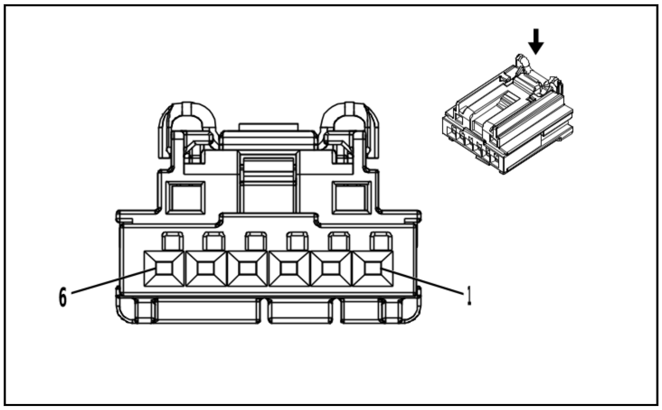
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

### K104P Front Seat Bladder Control Module - Passenger (AVU - AKE / AHH)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) RD / BN | (1) 2240 | (1) Battery Positive Voltage | (1) I | (1) — |
| 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 0.5 | (3) GY / WH | (3) 4890 | (3) Passenger Seat Lumbar/Bolster Pump Control | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) BK | (4) 1350 | (4) Ground | (4) I | (4) — |
| (5) 5 | (5) 0.5 | (5) BK / BU | (5) 2194 | (5) Passenger Seat Position Switch Low Reference | (5) I | (5) — |
| (6) 6 | (6) 0.5 | (6) YE / GN | (6) 1068 | (6) Passenger Seat Lumbar Support Switch Analog Signal | (6) I | (6) — |

### K104PP Front Seat Bladder Control Module - Passenger Primary (AVU & AKE / AHH)




3960313

**Connector Part Information**

- Harness Type: Front Seat Wiring Harness - Passenger
- OEM Connector: 2035363-4
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 0.64 Generation Y Series( BK)

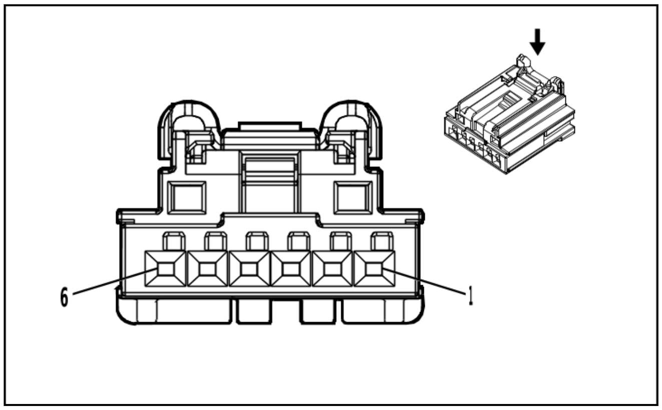
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## K104PP Front Seat Bladder Control Module - Passenger Primary (AVU & AKE / AHH)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) RD / BN | (1) 2240 | (1) Battery Positive Voltage | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) GN / YE | (2) 4116 | (2) Passenger Seat Adjuster Memory Module LIN Bus 2 | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) GY / WH | (3) 4890 | (3) Passenger Seat Lumbar/Bolster Pump Control | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) BK | (4) 1350 | (4) Ground | (4) I | (4) — |
| (5) 5 | (5) 0.5 | (5) GY / BK | (5) 2306 | (5) Passenger Seat Bolster Pump Low Reference | (5) I | (5) — |
| (6) 6 | (6) 0.5 | (6) GN / BU | (6) 2638 | (6) Front Seat Bolster Memory Module - Passenger LIN Bus 1 | (6) I | (6) — |

### K104PS Front Seat Bladder Control Module - Passenger Secondary (AVU & AKE)




5020940

**Connector Part Information**

- Harness Type: Front Seat Wiring Harness - Passenger
- OEM Connector: 2035363-6
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 0.64 Generation Y Series( BK)

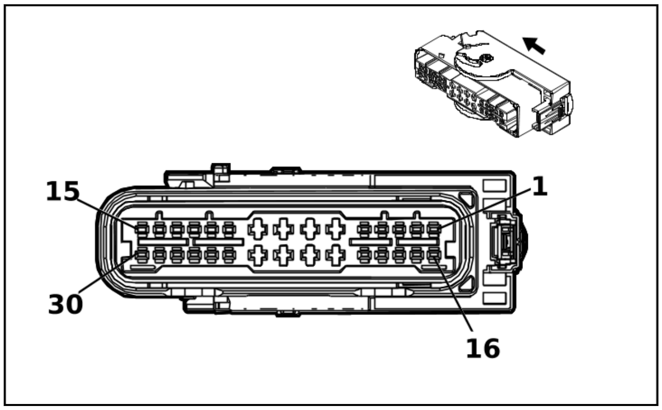
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## K104PS Front Seat Bladder Control Module - Passenger Secondary (AVU & AKE)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) RD / BN | (1) 2240 | (1) Battery Positive Voltage | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) GN / BU | (2) 2638 | (2) Front Seat Bolster Memory Module - Passenger LIN Bus 1 | (2) I | (2) — |
| 3 | — | — | — | Not Occupied | — | — |
| (4) 4 | (4) 0.5 | (4) BK | (4) 1350 | (4) Ground | (4) I | (4) — |
| 5 - 6 | — | — | — | Not Occupied | — | — |

## K111 Fuel Pump Power Control Module (L5P - N2N)




3240109

**Connector Part Information**
- Harness Type: Chassis Wiring Harness
- OEM Connector: 5-2109446-7
- Service Connector: 86545828
- Description: 30-Way F 1.5, 2.8 MCP Series, Sealed( BK)

### Terminal Part Information

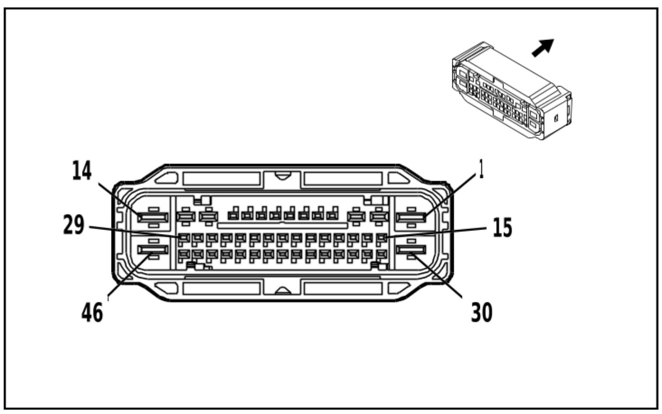
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 19329958 | J-35616-2A (GY) | J-38125-217 |
| II | 19371214 | J-35616-35 (VT) | J-38125-556 |

### K111 Fuel Pump Power Control Module (L5P - N2N)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 | — | — | — | Not Occupied | — | — |
| (2) 2 | (2) 0.5 | (2) BU / YE | (2) 6861 | (2) Water In Fuel Sensor Signal | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BK / BU | (3) 6863 | (3) Water In Fuel Sensor Low Reference | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) BN / GY | (4) 7072 | (4) Fuel Temperature Sensor 1 Signal | (4) I | (4) — |
| 5 - 6 | — | — | — | Not Occupied | — | — |
| (7) 7 | (7) 2.5 | (7) RD / VT | (7) 1940 | (7) Battery Positive Voltage | (7) II | (7) — |
| (8) 8 | (8) 2.5 | (8) GY | (8) 120 | (8) Fuel Pump Control | (8) II | (8) — |
| (9) 9 | (9) 2.5 | (9) YE / GY | (9) 4137 | (9) Fuel Pump Supply Voltage Phase 2 | (9) II | (9) — |
| 10 - 11 | — | — | — | Not Occupied | — | — |
| (12) 12 | (12) 0.5 | (12) BN / RD | (12) 7445 | (12) Fuel Line Pressure Sensor 5V Reference | (12) I | (12) — |
| (13) 13 | (13) 0.5 | (13) BU / GN | (13) 1936 | (13) Primary Fuel Level Sensor Signal | (13) I | (13) — |
| 14 | — | — | — | Not Occupied | — | — |
| (15) 15 | (15) 0.5 | (15) BU / GY | (15) 4054 | (15) Private Serial Data Powertrain CAN Bus [-] Serial Data | (15) I | (15) — |
| (16) 16 | (16) 1 | (16) VT / GN | (16) 4320 | (16) Powertrain Sensor Bus Enable | (16) I | (16) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 17 | — | — | — | Not Occupied | — | — |
| (18) 18 | (18) 0.5 | (18) GN / GY | (18) 465 | (18) Fuel Pump Primary Relay Control | (18) I | (18) — |
| (19) 19 | (19) 0.5 | (19) BN / WH | (19) 7073 | (19) Fuel Temperature Sensor 1 Low Reference | (19) I | (19) — |
| 20 - 21 | — | — | — | Not Occupied | — | — |
| (22) 22 | (22) 2.5 | (22) BK / WH | (22) 1951 | (22) Signal Ground | (22) II | (22) — |
| (23) 23 | (23) 0.5 | (23) WH | (23) 7444 | (23) Fuel Pump Assembly Shield Ground | (23) II | (23) — |
| (24) 24 | (24) 2.5 | (24) WH / BN | (24) 4138 | (24) Fuel Pump Supply Voltage Phase 3 | (24) II | (24) — |
| 25 | — | — | — | Not Occupied | — | — |
| (26) 26 | (26) 0.5 | (26) BU / WH | (26) 7446 | (26) Fuel Pressure Sensor Signal | (26) I | (26) — |
| (27) 27 | (27) 0.5 | (27) BK / YE | (27) 7447 | (27) Fuel Pressure Sensor Low Reference | (27) I | (27) — |
| (28) 28 | (28) 0.5 | (28) BK / GN | (28) 6281 | (28) Fuel Level Sensor Low Reference | (28) I | (28) — |
| 29 | — | — | — | Not Occupied | — | — |
| (30) 30 | (30) 0.5 | (30) WH | (30) 4055 | (30) Private Serial Data Powertrain CAN Bus [+] Serial Data | (30) I | (30) — |

**K111 Fuel Pump Power Control Module (L5P & N2N)**




4162046

**Connector Part Information**

- Harness Type: Fuel Pump Power Control Module Harness
- OEM Connector: 35492372
- Service Connector: Service by Harness - See Part Catalog
- Description: 46-Way F 1.2 OCS, 2.8, 6.3 CTS Series, Sealed( GY)

## Terminal Part Information

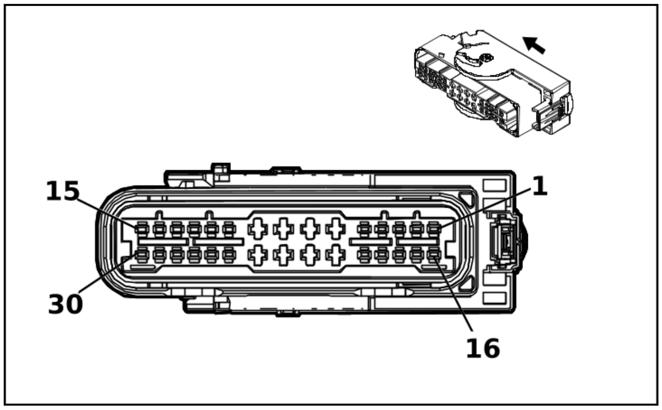
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |
| II | Not required | J-35616-35 (VT) | No Tool Required |
| III | Not required | J-35616-40 (BU) | No Tool Required |

## K111 Fuel Pump Power Control Module (L5P & N2N)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 2.5 | (1) WH / BN | (1) 4138 | (1) Fuel Pump Supply Voltage Phase 3 | (1) III | (1) — |
| (2) 2 | (2) 2.5 | (2) GY | (2) 120 | (2) Fuel Pump Control | (2) II | (2) — |
| (3) 3 | (3) 0.5 | (3) VT / WH | (3) 639 | (3) Run/Crank Ignition 1 Voltage | (3) II | (3) — |
| 4 - 5 | — | — | — | Not Occupied | — | — |
| (6) 6 | (6) 0.75 | (6) BU / GN | (6) 11437 | (6) Secondary Fuel Pump Disable Signal | (6) I | (6) — |
| (7) 7 | (7) 0.5 | (7) WH | (7) 4055 | (7) Private Serial Data Powertrain CAN Bus [+] Serial Data | (7) I | (7) — |
| (8) 8 | (8) 0.5 | (8) BU / GY | (8) 4054 | (8) Private Serial Data Powertrain CAN Bus [-] Serial Data | (8) I | (8) — |
| 9 | — | — | — | Not Occupied | — | — |
| (10) 10 | (10) 0.75 | (10) VT / GN | (10) 4320 | (10) Powertrain Sensor Bus Enable | (10) I | (10) — |
| (11) 11 | (11) 0.5 | (11) GN / GY | (11) 465 | (11) Fuel Pump Primary Relay Control | (11) I | (11) — |
| 12 | — | — | — | Not Occupied | — | — |
| (13) 13 | (13) 1 | (13) BU / GN | (13) 2120 | (13) Secondary Fuel Pump Control | (13) II | (13) — |
| (14) 14 | (14) 2.5 | (14) BK / WH | (14) 1951 | (14) Signal Ground | (14) III | (14) — |
| (15) 15 | (15) 0.75 | (15) WH | (15) 7444 | (15) Fuel Pump Assembly Shield Ground | (15) I | (15) — |
| (16) 16 | (16) 0.5 | (16) BU / YE | (16) 6861 | (16) Water In Fuel Sensor Signal | (16) I | (16) — |
| 17 - 18 | — | — | — | Not Occupied | — | — |
| (19) 19 | (19) 0.5 | (19) BN / RD | (19) 7445 | (19) Fuel Line Pressure Sensor 5V Reference | (19) I | (19) — |
| (20) 20 | (20) 0.75 | (20) BU / WH | (20) 7446 | (20) Fuel Pressure Sensor Signal | (20) I | (20) — |
| (21) 21 | (21) 0.5 | (21) BK / GN | (21) 6281 | (21) Fuel Level Sensor Low Reference | (21) I | (21) — |
| (22) 22 | (22) 0.5 | (22) BK / BU | (22) 6282 | (22) Fuel Level Sensor 2 Low Reference | (22) I | (22) — |
| (23) 23 | (23) 0.5 | (23) BK / BU | (23) 6863 | (23) Water In Fuel Sensor Low Reference | (23) I | (23) — |
| (24) 24 | (24) 0.5 | (24) BN / WH | (24) 7073 | (24) Fuel Temperature Sensor 1 Low Reference | (24) I | (24) — |
| 25 - 29 | — | — | — | Not Occupied | — | — |
| (30) 30 | (30) 2.5 | (30) YE / GY | (30) 4137 | (30) Fuel Pump Supply Voltage Phase 2 | (30) III | (30) — |
| 31 - 34 | — | — | — | Not Occupied | — | — |
| (35) 35 | (35) 0.5 | (35) BK / YE | (35) 7447 | (35) Fuel Pressure Sensor Low Reference | (35) I | (35) — |
| (36) 36 | (36) 0.5 | (36) BN / GY | (36) 7072 | (36) Fuel Temperature Sensor 1 Signal | (36) I | (36) — |
| (37) 37 | (37) 0.75 | (37) BU / GN | (37) 1936 | (37) Primary Fuel Level Sensor Signal | (37) I | (37) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (38) 38 | (38) 0.5 | (38) BU / WH | (38) 1937 | (38) Secondary Fuel Level Sensor Signal | (38) I | (38) — |
| 39 - 43 | — | — | — | Not Occupied | — | — |
| (44) 44 | (44) 0.75 | (44) BK / GN | (44) 1580 | (44) Fuel Pump Low Reference | (44) I | (44) — |
| 45 | — | — | — | Not Occupied | — | — |
| (46) 46 | (46) 2.5 | (46) RD / VT | (46) 1940 | (46) Battery Positive Voltage | (46) III | (46) — |

### K111 Fuel Pump Power Control Module (L8T - FHS)




3240109

**Connector Part Information**
- Harness Type: Chassis Wiring Harness
- OEM Connector: 5-2109446-7
- Service Connector: 86545828
- Description: 30-Way F 1.5, 2.8 MCP Series, Sealed( BK)

## Terminal Part Information

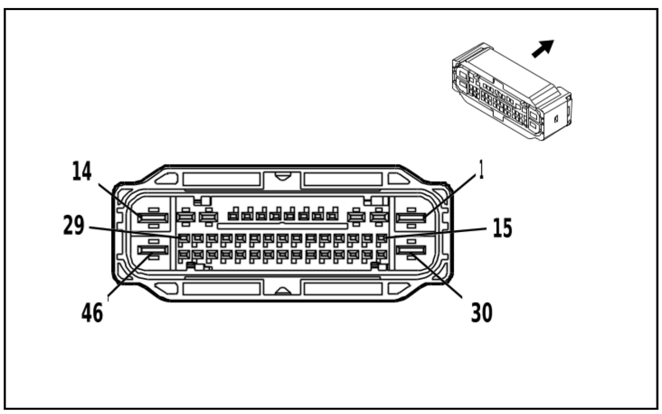
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 19329958 | J-35616-2A (GY) | J-38125-217 |
| II | 19371214 | J-35616-35 (VT) | J-38125-556 |

## K111 Fuel Pump Power Control Module (L8T - FHS)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 - 6 | — | — | — | Not Occupied | — | — |
| (7) 7 | (7) 2.5 | (7) RD / VT | (7) 1940 | (7) Battery Positive Voltage | (7) II | (7) — |
| (8) 8 | (8) 2.5 | (8) GY | (8) 120 | (8) Fuel Pump Control | (8) II | (8) — |
| (9) 9 | (9) 2.5 | (9) YE / GY | (9) 4137 | (9) Fuel Pump Supply Voltage Phase 2 | (9) II | (9) — |
| (10) 10 | (10) 0.5 | (10) YE / RD | (10) 2709 | (10) Fuel Tank Pressure Sensor 5V Reference | (10) I | (10) — |
| (11) 11 | (11) 0.5 | (11) BU / GN | (11) 890 | (11) Fuel Tank Pressure Sensor Signal | (11) I | (11) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (12) 12 | (12) 0.5 | (12) BN / RD | (12) 7445 | (12) Fuel Line Pressure Sensor 5V Reference | (12) I | (12) — |
| (13) 13 | (13) 0.5 | (13) BU / GN | (13) 1936 | (13) Primary Fuel Level Sensor Signal | (13) I | (13) — |
| 14 | — | — | — | Not Occupied | — | — |
| (15) 15 | (15) 0.5 | (15) BU / GY | (15) 4054 | (15) Private Serial Data Powertrain CAN Bus [-] Serial Data | (15) I | (15) — |
| (16) 16 | (16) 0.5 | (16) VT / GN | (16) 4320 | (16) Powertrain Sensor Bus Enable | (16) I | (16) — |
| 17 | — | — | — | Not Occupied | — | — |
| (18) 18 | (18) 0.5 | (18) GN / GY | (18) 465 | (18) Fuel Pump Primary Relay Control | (18) I | (18) — |
| 19 - 20 | — | — | — | Not Occupied | — | — |
| (21) 21 | (21) 0.5 | (21) WH | (21) 1310 | (21) EVAP Vent Solenoid Valve Control | (21) II | (21) — |
| (22) 22 | (22) 2.5 | (22) BK / WH | (22) 1951 | (22) Signal Ground | (22) II | (22) — |
| (23) 23 | (23) 0.5 | (23) WH | (23) 7444 | (23) Fuel Pump Assembly Shield Ground | (23) II | (23) — |
| (24) 24 | (24) 2.5 | (24) WH / BN | (24) 4138 | (24) Fuel Pump Supply Voltage Phase 3 | (24) II | (24) — |
| (25) 25 | (25) 0.5 | (25) BK / BN | (25) 6284 | (25) Fuel Tank Pressure Sensor Low Reference | (25) I | (25) — |
| (26) 26 | (26) 0.5 | (26) BU / WH | (26) 7446 | (26) Fuel Pressure Sensor Signal | (26) I | (26) — |
| (27) 27 | (27) 0.5 | (27) BK / YE | (27) 7447 | (27) Fuel Pressure Sensor Low Reference | (27) I | (27) — |
| (28) 28 | (28) 0.5 | (28) BK / GN | (28) 6281 | (28) Fuel Level Sensor Low Reference | (28) I | (28) — |
| 29 | — | — | — | Not Occupied | — | — |
| (30) 30 | (30) 0.5 | (30) WH | (30) 4055 | (30) Private Serial Data Powertrain CAN Bus [+] Serial Data | (30) I | (30) — |

### K111 Fuel Pump Power Control Module (L8T & FHS)




4162046

**Connector Part Information**

- Harness Type: Chassis Wiring Harness
- OEM Connector: 13557960
- Service Connector: 85090369
- Description: 46-Way F 1.2 OCS, 2.8, 6.3 CTS Series, Sealed( GY)

## Terminal Part Information

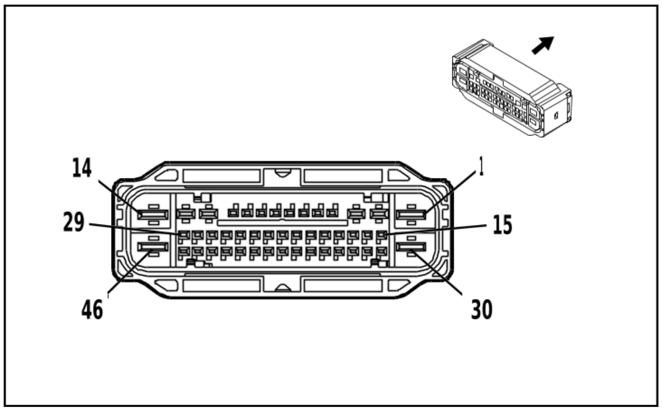
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 13575368 | J-35616-35 (VT) | J-38125-556 |
| II | 19370818 | J-35616-12 (BU) | J-38125-553 |
| III | 84634921 | J-35616-42 (RD) | J-38125-212 |

## K111 Fuel Pump Power Control Module (L8T & FHS)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 2.5 | (1) WH / BN | (1) 4138 | (1) Fuel Pump Supply Voltage Phase 3 | (1) III | (1) — |
| (2) 2 | (2) 2.5 | (2) GY | (2) 120 | (2) Fuel Pump Control | (2) I | (2) — |
| 3 - 4 | — | — | — | Not Occupied | — | — |
| (5) 5 | (5) 0.5 | (5) BK / GY | (5) 3802 | (5) Fuel Composition Sensor Low Reference | (5) II | (5) — |
| 6 | — | — | — | Not Occupied | — | — |
| (7) 7 | (7) 0.5 | (7) WH | (7) 4055 | (7) Private Serial Data Powertrain CAN Bus [+] Serial Data | (7) II | (7) — |
| (8) 8 | (8) 0.5 | (8) BU / GY | (8) 4054 | (8) Private Serial Data Powertrain CAN Bus [-] Serial Data | (8) II | (8) — |
| 9 | — | — | — | Not Occupied | — | — |
| (10) 10 | (10) 0.5 | (10) VT / GN | (10) 4320 | (10) Powertrain Sensor Bus Enable | (10) II | (10) — |
| (11) 11 | (11) 0.5 | (11) GN / GY | (11) 465 | (11) Fuel Pump Primary Relay Control | (11) II | (11) — |
| 12 - 13 | — | — | — | Not Occupied | — | — |
| (14) 14 | (14) 2.5 | (14) BK / WH | (14) 1951 | (14) Signal Ground | (14) III | (14) — |
| (15) 15 | (15) 0.5 | (15) WH | (15) 7444 | (15) Fuel Pump Assembly Shield Ground | (15) II | (15) — |
| (16) 16 | (16) 0.5 | (16) VT / BN | (16) 3803 | (16) Fuel Composition Sensor Signal | (16) II | (16) — |
| 17 - 18 | — | — | — | Not Occupied | — | — |
| (19) 19 | (19) 0.5 | (19) BN / RD | (19) 7445 | (19) Fuel Line Pressure Sensor 5V Reference | (19) II | (19) — |
| (20) 20 | (20) 0.5 | (20) BU / WH | (20) 7446 | (20) Fuel Pressure Sensor Signal | (20) II | (20) — |
| (21) 21 | (21) 0.5 | (21) BK / GN | (21) 6281 | (21) Fuel Level Sensor Low Reference | (21) II | (21) — |
| 22 | — | — | — | Not Occupied | — | — |
| (23) 23 | (23) 0.5 | (23) BK / BN | (23) 6284 | (23) Fuel Tank Pressure Sensor Low Reference | (23) II | (23) — |
| 24 - 29 | — | — | — | Not Occupied | — | — |
| (30) 30 | (30) 2.5 | (30) YE / GY | (30) 4137 | (30) Fuel Pump Supply Voltage Phase 2 | (30) III | (30) — |
| 31 - 34 | — | — | — | Not Occupied | — | — |
| (35) 35 | (35) 0.5 | (35) BK / YE | (35) 7447 | (35) Fuel Pressure Sensor Low Reference | (35) II | (35) — |
| 36 | — | — | — | Not Occupied | — | — |
| (37) 37 | (37) 0.5 | (37) BU / GN | (37) 1936 | (37) Primary Fuel Level Sensor Signal | (37) II | (37) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 38 | — | — | — | Not Occupied | — | — |
| (39) 39 | (39) 0.5 | (39) YE / RD | (39) 2709 | (39) Fuel Tank Pressure Sensor 5V Reference | (39) II | (39) — |
| (40) 40 | (40) 0.5 | (40) BU / GN | (40) 890 | (40) Fuel Tank Pressure Sensor Signal | (40) II | (40) — |
| 41 - 42 | — | — | — | Not Occupied | — | — |
| (43) 43 | (43) 0.5 | (43) WH | (43) 1310 | (43) EVAP Vent Solenoid Valve Control | (43) II | (43) — |
| 44 - 45 | — | — | — | Not Occupied | — | — |
| (46) 46 | (46) 2.5 | (46) RD / VT | (46) 1940 | (46) Battery Positive Voltage | (46) III | (46) — |

**K111 Fuel Pump Power Control Module (L8T & N2N)**




4162046

**Connector Part Information**

- Harness Type: Chassis Wiring Harness
- OEM Connector: 35492372
- Service Connector: 85090369
- Description: 46-Way F 1.2 OCS, 2.8, 6.3 CTS Series, Sealed( GY)

## Terminal Part Information

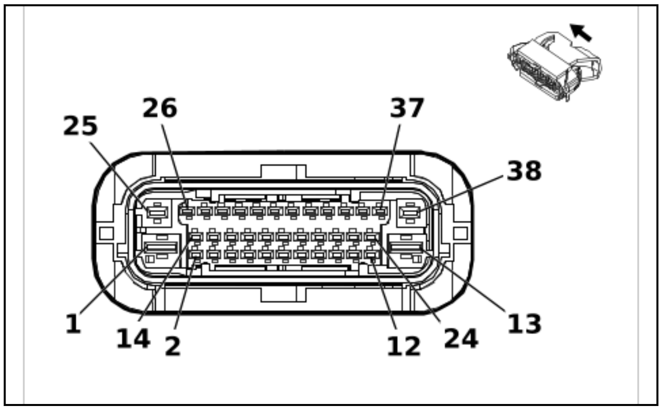
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 13575368 | J-35616-35 (VT) | J-38125-556 |
| II | 19370818 | J-35616-12 (BU) | J-38125-553 |
| III | 84634921 | J-35616-42 (RD) | J-38125-212 |

## K111 Fuel Pump Power Control Module (L8T & N2N)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 2.5 | (1) WH / BN | (1) 4138 | (1) Fuel Pump Supply Voltage Phase 3 | (1) III | (1) — |
| (2) 2 | (2) 2.5 | (2) GY | (2) 120 | (2) Fuel Pump Control | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) VT / WH | (3) 639 | (3) Run/Crank Ignition 1 Voltage | (3) I | (3) — |
| 4 - 5 | — | — | — | Not Occupied | — | — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (6) 6 | (6) 0.5 | (6) BU / GN | (6) 11437 | (6) Secondary Fuel Pump Disable Signal | (6) II | (6) — |
| (7) 7 | (7) 0.5 | (7) WH | (7) 4055 | (7) Private Serial Data Powertrain CAN Bus [+] Serial Data | (7) II | (7) — |
| (8) 8 | (8) 0.5 | (8) BU / GY | (8) 4054 | (8) Private Serial Data Powertrain CAN Bus [-] Serial Data | (8) II | (8) — |
| 9 | — | — | — | Not Occupied | — | — |
| (10) 10 | (10) 0.5 | (10) VT / GN | (10) 4320 | (10) Powertrain Sensor Bus Enable | (10) II | (10) — |
| (11) 11 | (11) 0.5 | (11) GN / GY | (11) 465 | (11) Fuel Pump Primary Relay Control | (11) II | (11) — |
| (12) 12 | (12) 1 | (12) BK / GN | (12) 1580 | (12) Fuel Pump Low Reference | (12) I | (12) — |
| (13) 13 | (13) 1 | (13) BU / GN | (13) 2120 | (13) Secondary Fuel Pump Control | (13) I | (13) — |
| (14) 14 | (14) 2.5 | (14) BK / WH | (14) 1951 | (14) Signal Ground | (14) III | (14) — |
| (15) 15 | (15) 0.5 | (15) WH | (15) 7444 | (15) Fuel Pump Assembly Shield Ground | (15) II | (15) — |
| 16 - 18 | — | — | — | Not Occupied | — | — |
| (19) 19 | (19) 0.5 | (19) BN / RD | (19) 7445 | (19) Fuel Line Pressure Sensor 5V Reference | (19) II | (19) — |
| (20) 20 | (20) 0.5 | (20) BU / WH | (20) 7446 | (20) Fuel Pressure Sensor Signal | (20) II | (20) — |
| (21) 21 | (21) 0.5 | (21) BK / GN | (21) 6281 | (21) Fuel Level Sensor Low Reference | (21) II | (21) — |
| (22) 22 | (22) 0.5 | (22) BK / BU | (22) 6282 | (22) Fuel Level Sensor 2 Low Reference | (22) II | (22) — |
| (23) 23 | (23) 0.5 | (23) BK / BN | (23) 6284 | (23) Fuel Tank Pressure Sensor Low Reference | (23) II | (23) — |
| 24 - 29 | — | — | — | Not Occupied | — | — |
| (30) 30 | (30) 2.5 | (30) YE / GY | (30) 4137 | (30) Fuel Pump Supply Voltage Phase 2 | (30) III | (30) — |
| 31 - 34 | — | — | — | Not Occupied | — | — |
| (35) 35 | (35) 0.5 | (35) BK / YE | (35) 7447 | (35) Fuel Pressure Sensor Low Reference | (35) II | (35) — |
| 36 | — | — | — | Not Occupied | — | — |
| (37) 37 | (37) 0.5 | (37) BU / GN | (37) 1936 | (37) Primary Fuel Level Sensor Signal | (37) II | (37) — |
| (38) 38 | (38) 0.5 | (38) BU / WH | (38) 1937 | (38) Secondary Fuel Level Sensor Signal | (38) II | (38) — |
| (39) 39 | (39) 0.5 | (39) YE / RD | (39) 2709 | (39) Fuel Tank Pressure Sensor 5V Reference | (39) II | (39) — |
| (40) 40 | (40) 0.5 | (40) BU / GN | (40) 890 | (40) Fuel Tank Pressure Sensor Signal | (40) II | (40) — |
| 41 - 42 | — | — | — | Not Occupied | — | — |
| (43) 43 | (43) 0.5 | (43) WH | (43) 1310 | (43) EVAP Vent Solenoid Valve Control | (43) II | (43) — |
| 44 - 45 | — | — | — | Not Occupied | — | — |
| (46) 46 | (46) 2.5 | (46) RD / VT | (46) 1940 | (46) Battery Positive Voltage | (46) III | (46) — |

### K115 Reductant Control Module




3240111

**Connector Part Information**

- Harness Type: Emission Reduction Fluid Tank Reservoir Wire Harness
- OEM Connector: 35202510
- Service Connector: Service by Harness - See Part Catalog
- Description: 38-Way F 1.5 CTS, 2.8 MCP, 4.8 MCP Series, Sealed( BK with BK Inner Connector)

## Terminal Part Information

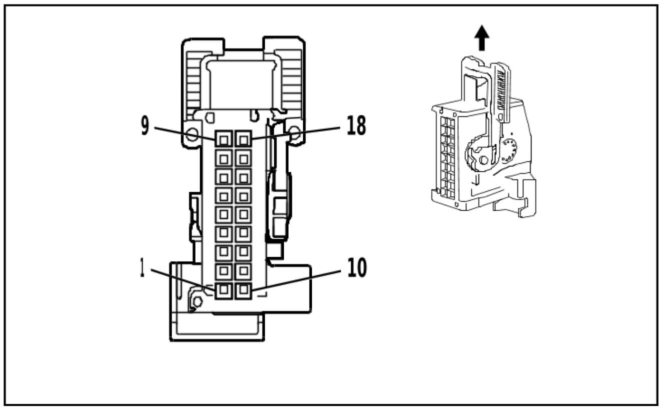
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-14 (GN) | No Tool Required |
| II | Not required | J-35616-40 (BU) | No Tool Required |
| III | Not required | No Tool Required | No Tool Required |

## K115 Reductant Control Module

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 3 | (1) RD / WH | (1) 2040 | (1) Battery Positive Voltage | (1) II | (1) — |
| (2) 2 | (2) 1 | (2) BN | (2) 3676 | (2) Diesel Exhaust Fluid Heating Tank 2 Heater Control | (2) I | (2) — |
| 3 | — | — | — | Not Occupied | — | — |
| (4) 4 | (4) 1 | (4) YE | (4) 3677 | (4) Diesel Exhaust Fluid Reservoir Heater Control | (4) I | (4) — |
| 5 | — | — | — | Not Occupied | — | — |
| (6) 6 | (6) 0.5 | (6) BK | (6) 3244 | (6) Diesel Exhaust Fluid Tank Temperature Sensor Signal | (6) I | (6) — |
| (7) 7 | (7) 0.5 | (7) BK | (7) 7286 | (7) Diesel Exhaust Fluid Sensor Voltage Reference 2 | (7) I | (7) — |
| (8) 8 | (8) 0.5 | (8) BN | (8) 7284 | (8) Diesel Exhaust Fluid Liquid Quality Temperature Signal | (8) I | (8) — |
| (9) 9 | (9) 0.5 | (9) BK | (9) 7284 | (9) Diesel Exhaust Fluid Liquid Quality Temperature Signal | (9) I | (9) — |
| 10 | — | — | — | Not Occupied | — | — |
| (11) 11 | (11) 1 | (11) YE | (11) 3876 | (11) Diesel Exhaust Fluid Smart Pump Supply Voltage Phase 3 | (11) I | (11) — |
| 12 | — | — | — | Not Occupied | — | — |
| (13) 13 | (13) 3 | (13) BK | (13) 1650 | (13) Ground | (13) II | (13) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (14) 14 | (14) 1 | (14) BN | (14) 2936 | (14) Diesel Exhaust Fluid Heating Tank 2 Heater Control Low | (14) I | (14) — |
| 15 | — | — | — | Not Occupied | — | — |
| (16) 16 | (16) 1 | (16) BU | (16) 4318 | (16) Diesel Exhaust Fluid Tank Heater Low Control | (16) I | (16) — |
| 17 | — | — | — | Not Occupied | — | — |
| (18) 18 | (18) 0.5 | (18) BN | (18) 3245 | (18) Diesel Exhaust Fluid Tank Temperature Sensor Low Reference | (18) I | (18) — |
| (19) 19 | (19) 0.5 | (19) BN | (19) 3106 | (19) Diesel Exhaust Fluid Pressure Sensor 5 Volt Reference | (19) I | (19) — |
| (20) 20 | (20) 0.5 | (20) BU | (20) 3108 | (20) Diesel Exhaust Fluid Pressure Sensor Signal | (20) I | (20) — |
| (21) 21 | (21) 0.5 | (21) BU | (21) 3107 | (21) Diesel Exhaust Fluid Pressure Sensor Low Reference | (21) I | (21) — |
| 22 - 23 | — | — | — | Not Occupied | — | — |
| (24) 24 | (24) 1 | (24) BN | (24) 3875 | (24) Diesel Exhaust Fluid Smart Pump Supply Voltage Phase 2 | (24) I | (24) — |
| 25 | — | — | — | Not Occupied | — | — |
| (26) 26 | (26) 1 | (26) WH | (26) 3199 | (26) Diesel Exhaust Fluid Pressure Line Heater Control | (26) I | (26) — |
| 27 | — | — | — | Not Occupied | — | — |
| (28) 28 | (28) 1 | (28) BN | (28) 4319 | (28) Diesel Exhaust Fluid Line Heater Low Control | (28) I | (28) — |
| 29 | — | — | — | Not Occupied | — | — |
| (30) 30 | (30) 0.5 | (30) VT / WH | (30) 639 | (30) Run/Crank Ignition 1 Voltage | (30) I | (30) — |
| (31) 31 | (31) 0.5 | (31) BU / BK | (31) 4977 | (31) AUTOSAR CAN Bus [+] 3 Serial Data | (31) I | (31) — |
| (32) 32 | (32) 0.5 | (32) BU / BK | (32) 4977 | (32) AUTOSAR CAN Bus [+] 3 Serial Data | (32) I | (32) — |
| (33) 33 | (33) 0.5 | (33) WH | (33) 4976 | (33) AUTOSAR CAN Bus [-] 3 Serial Data | (33) I | (33) — |
| (34) 34 | (34) 0.5 | (34) WH | (34) 4976 | (34) AUTOSAR CAN Bus [-] 3 Serial Data | (34) I | (34) — |
| 35 | — | — | — | Not Occupied | — | — |
| (36) 36 | (36) 1 | (36) BU | (36) 2937 | (36) Diesel Exhaust Fluid Pump Motor Stator Low Reference | (36) I | (36) — |
| (37) 37 | (37) 1 | (37) WH | (37) 3103 | (37) Diesel Exhaust Fluid Smart Pump Control | (37) I | (37) — |
| (38) 38 | (38) 2 | (38) RD / GN | (38) 2440 | (38) Battery Positive Voltage | (38) III | (38) — |

### K157 Video Processing Module X1




1567082

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 10820547
- Service Connector: 84976200
- Description: 18-Way F Micro-Quadlock Series( BK)

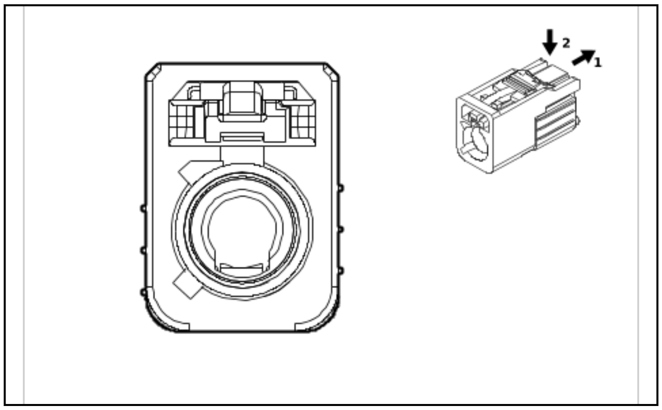
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 19300632 | J-35616-64B (L-BU) | J-38125-215A |

## K157 Video Processing Module X1

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 - 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 0.75 | (3) BK / WH | (3) 1451 | (3) Signal Ground | (3) I | (3) — |
| 4 - 9 | — | — | — | Not Occupied | — | — |
| (10) 10 | (10) 0.5 | (10) RD / VT | (10) 1640 | (10) Battery Positive Voltage | (10) I | (10) — |
| 11 - 12 | — | — | — | Not Occupied | — | — |
| (13) 13 | (13) 0.5 | (13) WH | (13) 4986 | (13) AUTOSAR CAN Bus [-] 1 Serial Data | (13) I | (13) — |
| (14) 14 | (14) 0.5 | (14) WH | (14) 4986 | (14) AUTOSAR CAN Bus [-] 1 Serial Data | (14) I | (14) — |
| (15) 15 | (15) 0.5 | (15) BU | (15) 4987 | (15) AUTOSAR CAN Bus [+] 1 Serial Data | (15) I | (15) — |
| (16) 16 | (16) 0.5 | (16) BU | (16) 4987 | (16) AUTOSAR CAN Bus [+] 1 Serial Data | (16) I | (16) — |
| 17 - 18 | — | — | — | Not Occupied | — | — |

### K157 Video Processing Module X3




5630785

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 33340314
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type( BN)

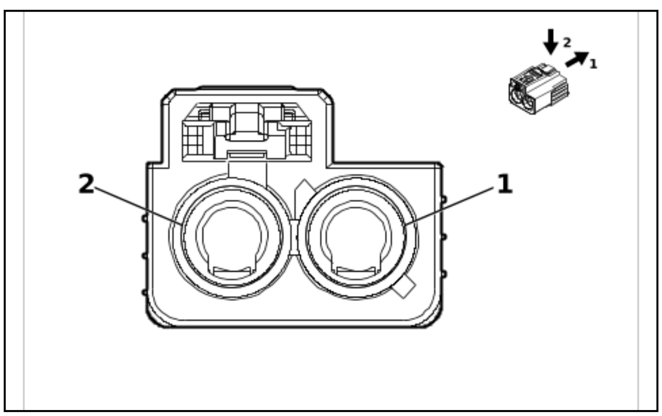
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## K157 Video Processing Module X3

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| BN | — | Coax Cable | 4723 | Video Processing Module LVDS (Low Voltage Differential Signaling) Coaxial Signal | I | — |

### K157 Video Processing Module X4




5810836

**Connector Part Information**

- Harness Type: Body Wiring Harness COAX
- OEM Connector: 33340386
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 2-Way F Coax Type( BG)

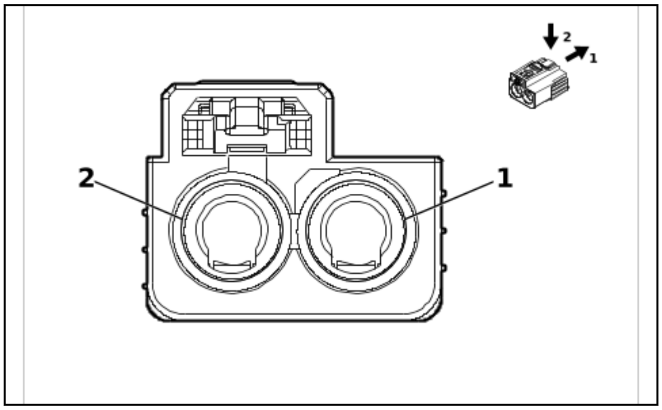
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## K157 Video Processing Module X4

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| — | — | Coax Cable | — | Cargo Bed Rear Vision Camera Coaxial Video Signal | I | — |

### K157 Video Processing Module X5




5810827

**Connector Part Information**

- Harness Type: Body Wiring Harness COAX
- OEM Connector: 33340382
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 2-Way F Coax Type( GN)

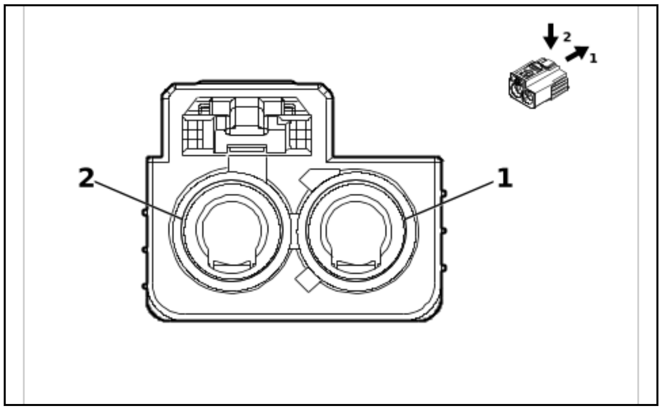
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## K157 Video Processing Module X5

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| — | — | Coax Cable | — | Trailer Rear Vision Camera Coaxial Video Signal | I | — |

### K157 Video Processing Module X6




5810832

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 33340383
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 2-Way F Coax Type( BN)

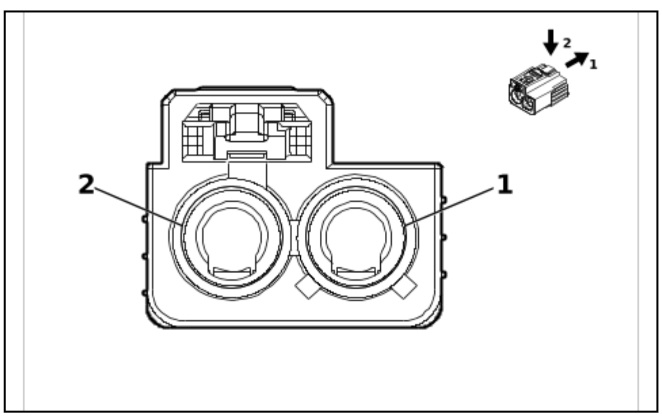
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## K157 Video Processing Module X6

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) — | (1) WH | (1) 4724 | (1) Right Sideview Camera LVDS (Low Voltage Differential Signaling) Coaxial Signal | (1) I | (1) — |
| (2) 2 | (2) — | (2) WH | (2) 4725 | (2) Left Sideview Camera LVDS (Low Voltage Differential Signaling) Coaxial Signal | (2) I | (2) — |

### K157 Video Processing Module X7




5810835

**Connector Part Information**

- Harness Type: Body Wiring Harness COAX
- OEM Connector: 33340387
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 2-Way F Coax Type( CU)

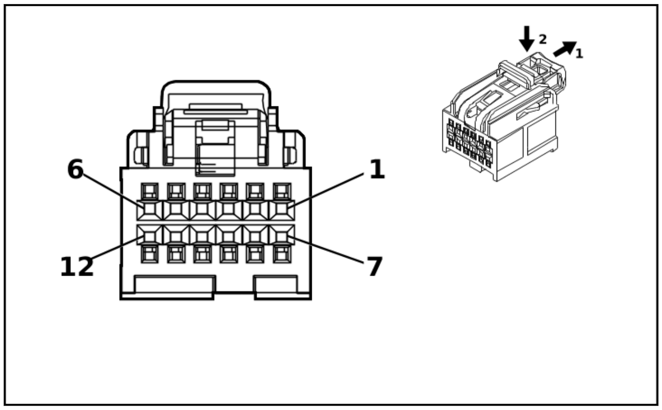
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## K157 Video Processing Module X7

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| — | — | Coax Cable | — | Video Processing Module Coaxial Video Signal | I | — |

### K182 Parking Assist Control Module X1




4975223

**Connector Part Information**
- Harness Type: Body Wiring Harness
- OEM Connector: 35016616
- Service Connector: 13519750
- Description: 12-Way F 0.64 OCS Series( BK)

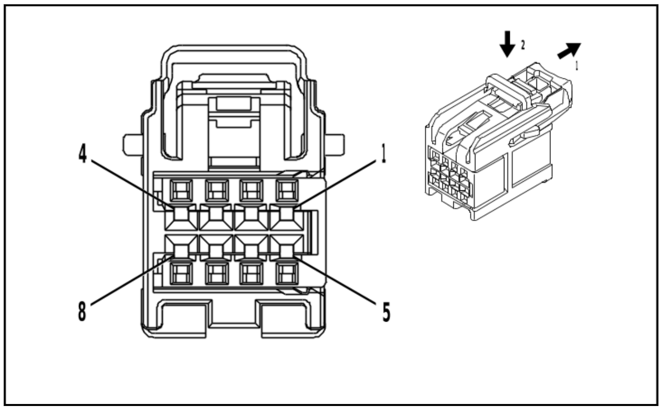
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 19354230 | J-35616-64B (L-BU) | J-38125-215A |

## K182 Parking Assist Control Module X1

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) RD / WH | (1) 4740 | (1) Battery Positive Voltage | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) WH | (2) 4986 | (2) AUTOSAR CAN Bus [-] 1 Serial Data | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BU | (3) 4987 | (3) AUTOSAR CAN Bus [+] 1 Serial Data | (3) I | (3) — |
| 4 - 5 | — | — | — | Not Occupied | — | — |
| (6) 6 | (6) 0.5 | (6) BK / WH | (6) 1551 | (6) Signal Ground | (6) I | (6) — |
| 7 | — | — | — | Not Occupied | — | — |
| (8) 8 | (8) 0.5 | (8) WH | (8) 4986 | (8) AUTOSAR CAN Bus [-] 1 Serial Data | (8) I | (8) — |
| (9) 9 | (9) 0.5 | (9) BU | (9) 4987 | (9) AUTOSAR CAN Bus [+] 1 Serial Data | (9) I | (9) — |
| 10 - 12 | — | — | — | Not Occupied | — | — |

### K182 Parking Assist Control Module X2




4232228

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 15526973
- Service Connector: 19353873
- Description: 8-Way F 0.64 OCS Series( GY)

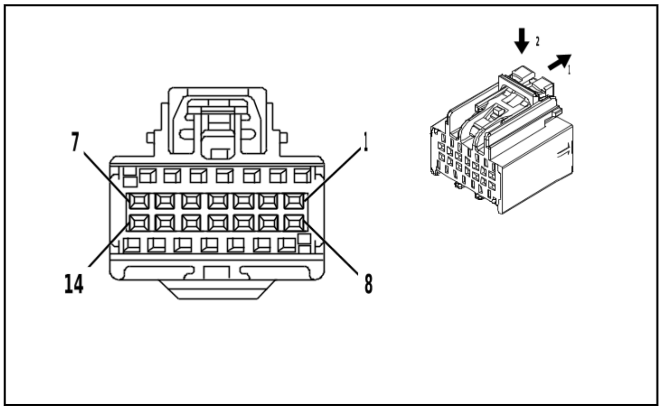
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## K182 Parking Assist Control Module X2

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 | — | — | — | Not Occupied | — | — |
| (2) 2 | (2) 0.5 | (2) YE / WH | (2) 2377 | (2) Right Rear Middle Parking Assist Sensor Signal | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) YE | (3) 2375 | (3) Left Rear Outer Parking Assist Sensor Signal | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) BN / WH | (4) 2374 | (4) Object Sensor Voltage Reference | (4) I | (4) — |
| (5) 5 | (5) 0.5 | (5) YE / VT | (5) 2378 | (5) Right Rear Outer Parking Assist Sensor Signal | (5) I | (5) — |
| (6) 6 | (6) 0.5 | (6) YE / BU | (6) 2376 | (6) Left Rear Middle Parking Assist Sensor Signal | (6) I | (6) — |
| 7 | — | — | — | Not Occupied | — | — |
| (8) 8 | (8) 0.5 | (8) BK / GY | (8) 2379 | (8) Object Sensor Low Reference | (8) I | (8) — |

## K182 Parking Assist Control Module X3




4547098

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 7289-2897-90
- Service Connector: 19354933
- Description: 14-Way F 0.64 Kaizen Series( BU)

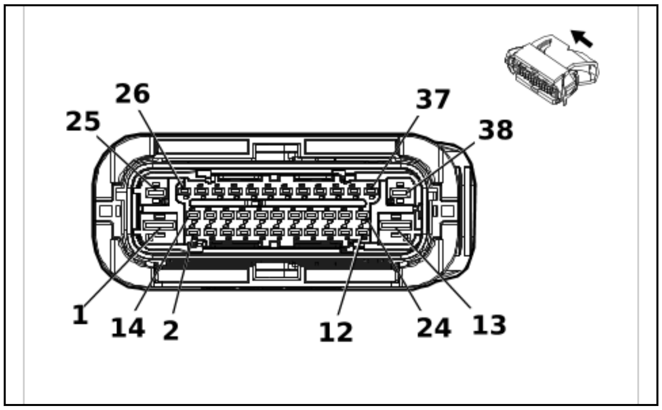
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 19303553 | J-35616-64B (L-BU) | J-38125-215A |

### K182 Parking Assist Control Module X3

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 - 4 | — | — | — | Not Occupied | — | — |
| (5) 5 | (5) 0.5 | (5) YE / GY | (5) 5216 | (5) Left Front Middle Parking Assist Sensor | (5) I | (5) — |
| (6) 6 | (6) 0.5 | (6) WH / GY | (6) 5217 | (6) Right Front Outer Parking Assist Sensor | (6) I | (6) — |
| (7) 7 | (7) 0.5 | (7) BN | (7) 6581 | (7) Front Parking Assist Display Control | (7) I | (7) — |
| 8 - 10 | — | — | — | Not Occupied | — | — |
| (11) 11 | (11) 0.5 | (11) VT / WH | (11) 5215 | (11) Left Front Outer Parking Assist Sensor | (11) I | (11) — |
| (12) 12 | (12) 0.5 | (12) VT / GY | (12) 5218 | (12) Right Front Middle Parking Assist Sensor | (12) I | (12) — |
| 13 | — | — | — | Not Occupied | — | — |
| (14) 14 | (14) 0.5 | (14) BK / BU | (14) 5214 | (14) Front Parking Assist Sensor Low Reference | (14) I | (14) — |

**K194 Rear Gate Module**




3240112

**Connector Part Information**

- Harness Type: Endgate Wiring Harness
- OEM Connector: 35503407
- Service Connector: Service by Harness - See Part Catalog
- Description: 38-Way F 1.5 CTS, 2.8 MCP, 4.8 MCP Series, Sealed( BK with BU Inner Connector)

## Terminal Part Information

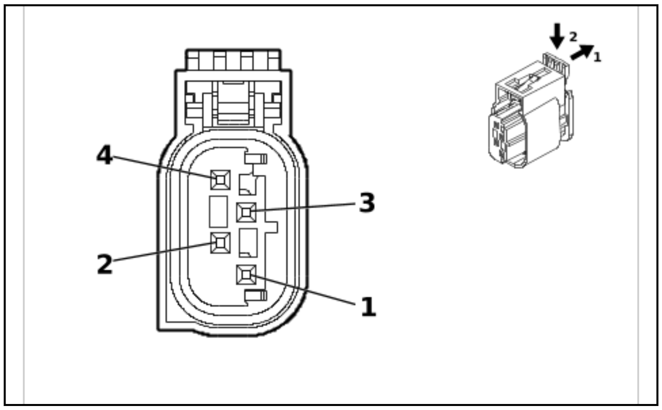
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-14 (GN) | No Tool Required |
| II | Not required | J-35616-35 (VT) | No Tool Required |
| III | Not required | J-35616-40 (BU) | No Tool Required |

## K194 Rear Gate Module

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 2.5 | (1) BK | (1) 1850 | (1) Ground | (1) III | (1) — |
| (2) 2 | (2) 0.5 | (2) WH | (2) 4100 | (2) AUTOSAR CAN Bus [-] 4 Serial Data | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) WH | (3) 4100 | (3) AUTOSAR CAN Bus [-] 4 Serial Data | (3) I | (3) — |
| 4 | — | — | — | Not Occupied | — | — |
| (5) 5 | (5) 0.5 | (5) YE / BK | (5) 8085 | (5) Rear Closure Latch Primary Status | (5) I | (5) — |
| (6) 6 | (6) 0.5 | (6) BN / GY | (6) 10281 | (6) Rear Closure Latch Secondary Status Signal | (6) I | (6) — |
| (7) 7 | (7) 0.5 | (7) WH / GN | (7) 8084 | (7) Rear Closure Latch Neutral Status | (7) I | (7) — |
| (8) 8 | (8) 0.5 | (8) GY / VT | (8) 4678 | (8) Rear Closure Latch Unlatch Status | (8) I | (8) — |
| 9 - 12 | — | — | — | Not Occupied | — | — |
| (13) 13 | (13) 2.5 | (13) RD / VT | (13) 4442 | (13) Primary Fused Battery Positive Voltage | (13) III | (13) — |
| (14) 14 | (14) 0.5 | (14) BU / VT | (14) 4101 | (14) AUTOSAR CAN Bus [+] 4 Serial Data | (14) I | (14) — |
| (15) 15 | (15) 0.5 | (15) BU / VT | (15) 4101 | (15) AUTOSAR CAN Bus [+] 4 Serial Data | (15) I | (15) — |
| (16) 16 | (16) 0.5 | (16) BN | (16) 7736 | (16) Rear Closure Latch 2 Unlatch Status Signal | (16) I | (16) — |
| 17 | — | — | — | Not Occupied | — | — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (18) 18 | (18) 0.5 | (18) BN / RD | (18) 4683 | (18) Rear Closure Position Sensor Voltage Reference | (18) I | (18) — |
| (19) 19 | (19) 0.5 | (19) BK / GN | (19) 4687 | (19) Rear Closure Position Sensor Low Reference | (19) I | (19) — |
| (20) 20 | (20) 0.5 | (20) BU / VT | (20) 4101 | (20) AUTOSAR CAN Bus [+] 4 Serial Data | (20) I | (20) — |
| (21) 21 | (21) 0.5 | (21) BN / YE | (21) 4686 | (21) Rear Closure Position Sensor Signal 2 | (21) I | (21) — |
| (22) 22 | (22) 0.5 | (22) BU / WH | (22) 4685 | (22) Rear Closure Position Sensor Signal 1 | (22) I | (22) — |
| (23) 23 | (23) 0.5 | (23) GN / BU | (23) 1028 3 | (23) Rear Closure Latch 2 Primary Status Signal | (23) I | (23) — |
| (24) 24 | (24) 0.5 | (24) VT / WH | (24) 1028 4 | (24) Rear Closure Latch 2 Secondary Status Signal | (24) I | (24) — |
| (25) 25 | (25) 1 | (25) BN / WH | (25) 4690 | (25) Rear Closure Open/Close Motor Close Control | (25) II | (25) — |
| (26) 26 | (26) 0.5 | (26) BU / BN | (26) 1028 2 | (26) Rear Closure Latch 2 Neutral Status Signal | (26) I | (26) — |
| (27) 27 | (27) 0.5 | (27) GY / BK | (27) 1575 | (27) Rear Closure Sensor Low Reference 2 | (27) I | (27) — |
| (28) 28 | (28) 0.5 | (28) BK / VT | (28) 4656 | (28) Rear Closure Object Sensor Low Reference | (28) I | (28) — |
| 29 | — | — | — | Not Occupied | — | — |
| (30) 30 | (30) 1 | (30) BU | (30) 1509 | (30) Rear Closure Cinch Latch Motor 2 Release Control | (30) I | (30) — |
| (31) 31 | (31) 1 | (31) GN | (31) 1499 | (31) Rear Closure Cinch Latch Motor 2 Cinch Control | (31) I | (31) — |
| (32) 32 | (32) 0.5 | (32) WH | (32) 4100 | (32) AUTOSAR CAN Bus [-] 4 Serial Data | (32) I | (32) — |
| (33) 33 | (33) 1 | (33) BU / GY | (33) 4682 | (33) Rear Closure Cinch Latch Motor Release Control | (33) I | (33) — |
| (34) 34 | (34) 1 | (34) BN | (34) 4681 | (34) Rear Closure Cinch Latch Motor Cinch Control | (34) I | (34) — |
| (35) 35 | (35) 0.5 | (35) GN | (35) 1577 | (35) Rear Closure Clutch Control | (35) I | (35) — |
| (36) 36 | (36) 0.5 | (36) BU / BK | (36) 1590 | (36) Rear Closure Clutch Low Return | (36) I | (36) — |
| 37 | — | — | — | Not Occupied | — | — |
| (38) 38 | (38) 1 | (38) WH | (38) 4689 | (38) Rear Closure Open/Close Motor Open Control | (38) II | (38) — |

### K214 Trailer Tire Pressure Indicator Module




5215490

**Connector Part Information**

- Harness Type: Chassis Wiring Harness
- OEM Connector: 13655424
- Service Connector: 86825461
- Description: 4-Way F 0.64 MTS Series, Sealed( BK)

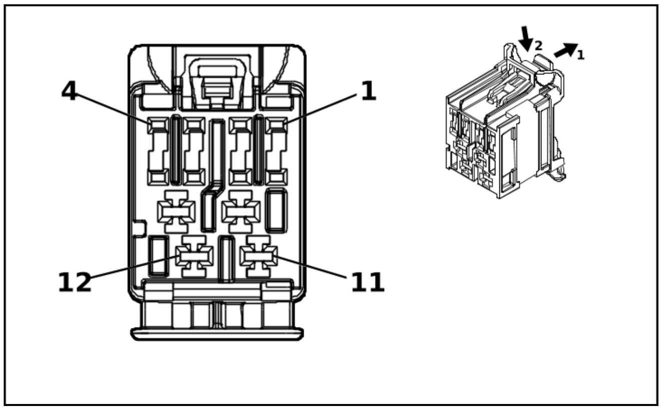
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## K214 Trailer Tire Pressure Indicator Module

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) RD / GN | (1) 6940 | (1) Battery Positive Voltage | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK | (2) 1850 | (2) Ground | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) GN / YE | (3) 2862 | (3) Body Control Module LIN Bus 16 | (3) I | (3) — |
| 4 | — | — | — | Not Occupied | — | — |

### K219 Lighting Control Module X1




5203784

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 160026-0003
- Service Connector: 13509990
- Description: 12-Way F 1.2, 2.8 stAK50h Series( L-PU)

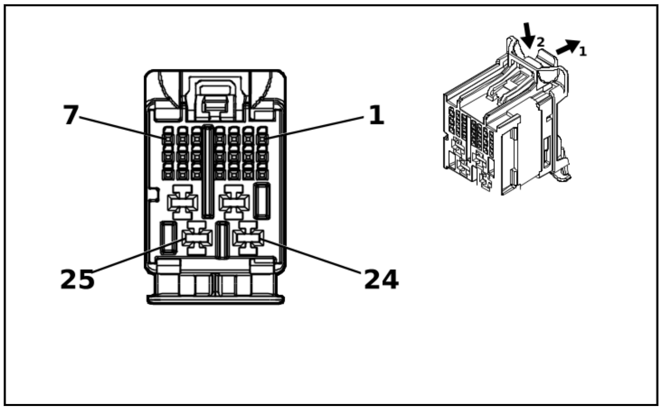
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 84729890 | J-35616-12 (BU) | J-38125-215A |
| II | 87814662 | J-35616-35 (VT) | J-38125-557 |

## K219 Lighting Control Module X1

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) WH / YE | (1) 1254 | (1) Left Front Park Lamp Control | (1) I | (1) — |
| 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 0.5 | (3) GN / WH | (3) 24 | (3) Backup Lamp Control | (3) I | (3) — |
| 4 | — | — | — | Not Occupied | — | — |
| (5) 5 | (5) 0.5 | (5) BU / WH | (5) 1314 | (5) Left Front Turn Signal Lamp Control | (5) I | (5) — |
| (6) 6 | (6) 0.5 | (6) BN / GY | (6) 5061 | (6) Left Front Fog Lamp Control | (6) I | (6) — |
| (7) 7 | (7) 0.5 | (7) GN / YE | (7) 6846 | (7) Rear License Plate Lamp Control | (7) I | (7) — |
| (8) 8 | (8) 0.35 | (8) GY / BU | (8) 7538 | (8) Left Front DRL Control | (8) I | (8) — |
| (9) 9 | (9) 0.5 | (9) RD / VT | (9) 7140 | (9) Battery Positive Voltage | (9) II | (9) — |
| (10) 10 | (10) 0.5 | (10) YE | (10) 712 | (10) Left Headlamp Low Beam Control | (10) II | (10) — |
| 11 | — | — | — | Not Occupied | — | — |
| (12) 12 | (12) 0.5 | (12) WH | (12) 711 | (12) Left Headlamp High Beam Control | (12) II | (12) — |

## K219 Lighting Control Module X2




5203807

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 160027-0012
- Service Connector: 13534966
- Description: 25-Way F 0.5 MQS, 2.8 MCP Series( GY with GY Inner Connector)

### Terminal Part Information

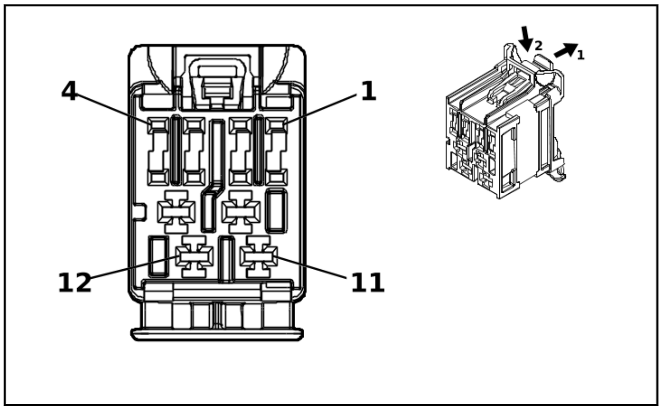
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 19370262 | EL-35616-58 (BK) | EL-38125-58 |
| II | 87814662 | J-35616-35 (VT) | J-38125-557 |

### K219 Lighting Control Module X2

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 | — | — | — | Not Occupied | — | — |
| (2) 2 | (2) 0.35 | (2) WH / YE | (2) 7541 | (2) Right Rear Stop Lamp Control | (2) I | (2) — |
| (3) 3 | (3) 0.35 | (3) BN / GY | (3) 2268 | (3) Windshield Washer Relay Control | (3) I | (3) — |
| (4) 4 | (4) 0.35 | (4) BU / BN | (4) 38 | (4) Backup Lamp Relay Control | (4) I | (4) — |
| 5 - 9 | — | — | — | Not Occupied | — | — |
| (10) 10 | (10) 0.35 | (10) BN / GN | (10) 196 | (10) Windshield Wiper Motor Park Switch Signal | (10) I | (10) — |
| (11) 11 | (11) 0.35 | (11) VT / BK | (11) 6568 | (11) Front Turn Signal Lamp Feedback Signal | (11) I | (11) — |
| (12) 12 | (12) 0.35 | (12) GY | (12) 91 | (12) Windshield Wiper Motor Relay Coil Control | (12) I | (12) — |
| (13) 13 | (13) 0.35 | (13) BU / YE | (13) 68 | (13) Low Coolant Level Indicator Control | (13) I | (13) — |
| (14) 14 | (14) 0.35 | (14) VT | (14) 185 | (14) Low Washer Fluid Indicator Control | (14) I | (14) — |
| 15 - 18 | — | — | — | Not Occupied | — | — |
| (19) 19 | (19) 0.35 | (19) WH / BN | (19) 7055 | (19) Auxiliary Park Lamp Relay Control | (19) I | (19) — |
| (20) 20 | (20) 0.35 | (20) WH / YE | (20) 7545 | (20) Right Front Turn Signal Lamp Feedback Signal | (20) I | (20) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (21) 21 | (21) 0.35 | (21) WH / VT | (21) 860 | (21) Windshield Wiper Switch High Signal | (21) I | (21) — |
| (22) 22 | (22) 0.5 | (22) RD / GN | (22) 7740 | (22) Battery Positive Voltage | (22) II | (22) — |
| (23) 23 | (23) 0.5 | (23) RD / BU | (23) 840 | (23) Battery Positive Voltage | (23) II | (23) — |
| 24 - 25 | — | — | — | Not Occupied | — | — |

**K219 Lighting Control Module X3**




5203797

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 160026-0002
- Service Connector: 13509989
- Description: 12-Way F 1.2, 2.8 stAK50h Series( GN)

## Terminal Part Information

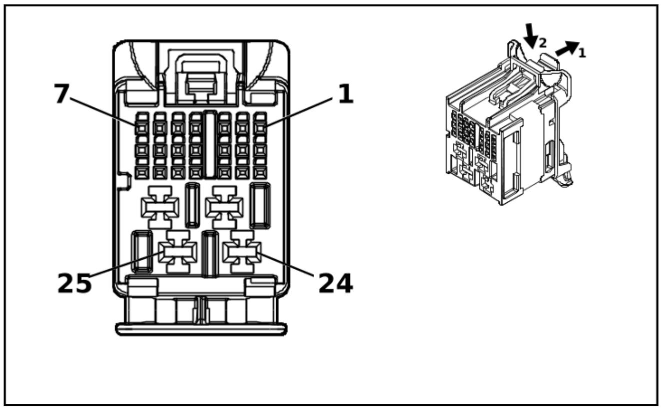
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 84729890 | J-35616-12 (BU) | J-38125-215A |
| II | 87814662 | J-35616-35 (VT) | J-38125-557 |

## K219 Lighting Control Module X3

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) BU / BN | (1) 7539 | (1) Right Front DRL Control | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) GY / YE | (2) 7542 | (2) Left Rear Stop Lamp Control | (2) I | (2) — |
| 3 | — | — | — | Not Occupied | — | — |
| (4) 4 | (4) 0.5 | (4) BU / GN | (4) 1253 | (4) Right Front Park Lamp Control | (4) I | (4) — |
| 5 | — | — | — | Not Occupied | — | — |
| (6) 6 | (6) 0.75 | (6) BU / VT | (6) 1335 | (6) Right Rear Turn Signal Lamp Control 2 | (6) I | (6) — |
| (7) 7 | (7) 0.35 | (7) BU / YE | (7) 7761 | (7) Backup Illumination Lamp Control | (7) I | (7) — |
| 8 | — | — | — | Not Occupied | — | — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (9) 9 | (9) 1.5 | (9) RD / BU | (9) 540 | (9) Battery Positive Voltage | (9) II | (9) — |
| (10) 10 | (10) 1.5 | (10) RD / BN | (10) 1440 | (10) Battery Positive Voltage | (10) II | (10) — |
| (11) 11 | (11) 0.5 | (11) WH | (11) 311 | (11) Right Headlamp High Beam Control | (11) II | (11) — |
| (12) 12 | (12) 0.5 | (12) YE | (12) 312 | (12) Right Headlamp Low Beam Control | (12) II | (12) — |

**K219 Lighting Control Module X4**




5203416

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 160027-0015
- Service Connector: 13534969
- Description: 25-Way F 0.5 MQS, 2.8 MCP Series( PU with GY Inner Connector)

## Terminal Part Information

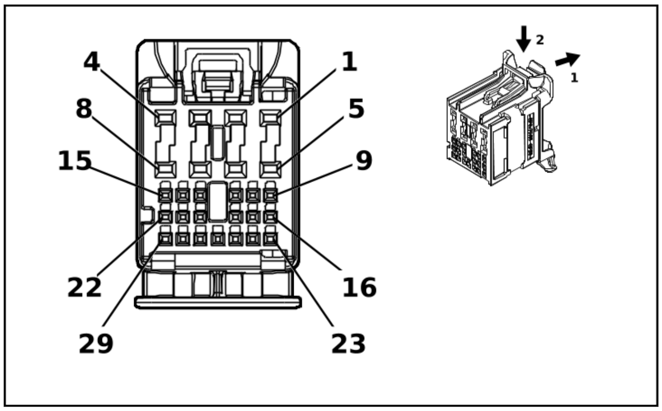
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 19370262 | EL-35616-58 (BK) | EL-38125-58 |
| II | 87814662 | J-35616-35 (VT) | J-38125-557 |

## K219 Lighting Control Module X4

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 - 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 0.35 | (3) BU / YE | (3) 4979 | (3) AUTOSAR CAN Bus [+] 2 Serial Data | (3) I | (3) — |
| (4) 4 | (4) 0.35 | (4) WH | (4) 4978 | (4) AUTOSAR CAN Bus [-] 2 Serial Data | (4) I | (4) — |
| (5) 5 | (5) 0.35 | (5) BU / YE | (5) 4979 | (5) AUTOSAR CAN Bus [+] 2 Serial Data | (5) I | (5) — |
| (6) 6 | (6) 0.35 | (6) WH | (6) 4978 | (6) AUTOSAR CAN Bus [-] 2 Serial Data | (6) I | (6) — |
| (7) 7 | (7) 0.35 | (7) WH / BU | (7) 6311 | (7) Cruise/ETC/TCC Brake Signal | (7) I | (7) — |
| 8 - 9 | — | — | — | Not Occupied | — | — |
| (10) 10 | (10) 0.35 | (10) WH | (10) 4978 | (10) AUTOSAR CAN Bus [-] 2 Serial Data | (10) I | (10) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (11) 11 | (11) 0.35 | (11) BU / YE | (11) 4979 | (11) AUTOSAR CAN Bus [+] 2 Serial Data | (11) I | (11) — |
| 12 - 21 | — | — | — | Not Occupied | — | — |
| (22) 22 | (22) 1 | (22) RD / BN | (22) 1140 | (22) Battery Positive Voltage | (22) II | (22) — |
| (23) 23 | (23) 1.5 | (23) BK / WH | (23) 1551 | (23) Signal Ground | (23) II | (23) — |
| (24) 24 | (24) 0.5 | (24) RD / GN | (24) 1540 | (24) Battery Positive Voltage | (24) II | (24) — |
| (25) 25 | (25) 1 | (25) BK / WH | (25) 1451 | (25) Signal Ground | (25) II | (25) — |

## K219 Lighting Control Module X5




5203373

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 160029-0013
- Service Connector: 13534975
- Description: 29-Way F 0.5 NANO, 1.2 MCON, stAK50h Series( BU with GY Inner Connector)

## Terminal Part Information

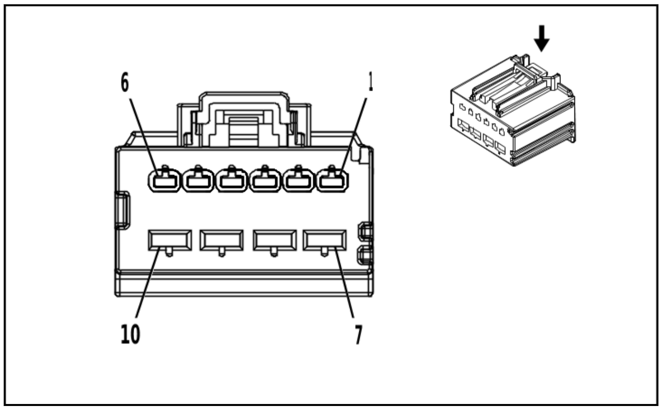
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 84729890 | J-35616-12 (BU) | J-38125-215A |

## K219 Lighting Control Module X5

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) WH / GN | (1) 5966 | (1) Approach Lamp Control | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) BN / GY | (2) 6995 | (2) Right Rear Park Lamp Control | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) GY / BU | (3) 7762 | (3) Cargo Lamp Control | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) WH / VT | (4) 1430 | (4) Exterior Courtesy Lamp Control | (4) I | (4) — |
| (5) 5 | (5) 0.5 | (5) YE / GN | (5) 2024 | (5) Animation Lighting Control | (5) I | (5) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (6) 6 | (6) 0.75 | (6) BN / BU | (6) 6993 | (6) Left Rear Park Lamp Control | (6) I | (6) — |
| (7) 7 | (7) 0.5 | (7) GN / VT | (7) 1315 | (7) Right Front Turn Signal Lamp Control | (7) I | (7) — |
| (8) 8 | (8) 0.75 | (8) BU / WH | (8) 1334 | (8) Left Rear Turn Signal Lamp Control 2 | (8) I | (8) — |
| (9) 9 | (9) 0.35 | (9) GN / GY | (9) 2115 | (9) Right Turn Signal Lamp Control 2 | (9) I | (9) — |
| (10) 10 | (10) 0.3 5 | (10) WH / GY | (10) 2114 | (10) Left Turn Signal Lamp Control 2 | (10) I | (10) — |
| (11) 11 | (11) 0.3 5 | (11) GY | (11) 1715 | (11) Windshield Wiper Switch High Signal | (11) I | (11) — |
| (13) 13 | (13) 0.3 5 | (13) GN / BN | (13) 319 | (13) Right Rear Trailer Stop/Turn Lamp Control | (13) I | (13) — |
| 14 | — | — | — | Not Occupied | — | — |
| (15) 15 | (15) 0.3 5 | (15) WH / GY | (15) 2935 | (15) Task Lamp Switch Signal | (15) I | (15) — |
| (16) 16 | (16) 0.3 5 | (16) YE / WH | (16) 2934 | (16) Task Lamp Control Right | (16) I | (16) — |
| 17 | — | — | — | Not Occupied | — | — |
| (18) 18 | (18) 0.3 5 | (18) VT / WH | (18) 239 | (18) Run/Crank Ignition 1 Voltage | (18) I | (18) — |
| 20 - 22 | — | — | — | Not Occupied | — | — |
| (23) 23 | (23) 0.3 5 | (23) WH / VT | (23) 6567 | (23) Rear Turn Signal Lamp Feedback Signal | (23) I | (23) — |
| (24) 24 | (24) 0.3 5 | (24) WH / BK | (24) 7544 | (24) Right Rear Turn Signal Lamp Feedback Signal | (24) I | (24) — |
| (25) 25 | (25) 0.3 5 | (25) BN / YE | (25) 820 | (25) Center High Mounted Stop Lamp Sup- ply Voltage | (25) I | (25) — |
| 26 - 27 | — | — | — | Not Occupied | — | — |
| (28) 28 | (28) 0.3 5 | (28) YE / GY | (28) 2933 | (28) Task Lamp Control Left | (28) I | (28) — |
| (29) 29 | (29) 0.3 5 | (29) YE / BU | (29) 318 | (29) Left Rear Trailer Stop/Turn Lamp Control | (29) I | (29) — |

### K234 Rear Seat Heater Vent Control Module X1 (KA6)




3791446

**Connector Part Information**

- Harness Type: Rear Seat Heater Control Wiring Harness
- OEM Connector: 31372-1000
- Service Connector: Service by Harness - See Part Catalog
- Description: 10-Way F 1.5, 2.8 MX Series( BK)

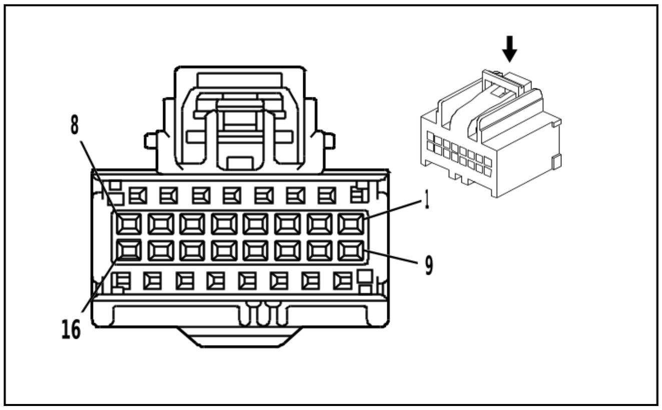
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-2A (GY) | No Tool Required |
| II | Not required | J-35616-4A (PU) | No Tool Required |

## K234 Rear Seat Heater Vent Control Module X1 (KA6)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 | — | — | — | Not Occupied | — | — |
| (2) 2 | (2) 0.75 | (2) GN / BN | (2) 2296 | (2) Right Rear Seat Cushion Heating Element Control | (2) I | (2) — |
| (3) 3 | (3) 0.75 | (3) GN / BK | (3) 2297 | (3) Right Rear Seat Cushion Heating Element Low Reference | (3) I | (3) — |
| (4) 4 | (4) 0.75 | (4) BN / BK | (4) 2295 | (4) Left Rear Seat Cushion Heating Element Low Reference | (4) I | (4) — |
| 5 | — | — | — | Not Occupied | — | — |
| (6) 6 | (6) 0.75 | (6) GY | (6) 2294 | (6) Left Rear Seat Cushion Heating Element Control | (6) I | (6) — |
| (7) 7 | (7) 0.75 | (7) RD / WH | (7) 5740 | (7) Battery Positive Voltage | (7) II | (7) — |
| (8) 8 | (8) 1 | (8) BK | (8) 1550 | (8) Ground | (8) II | (8) — |
| 9 | — | — | — | Not Occupied | — | — |
| (10) 10 | (10) 0.75 | (10) RD / BU | (10) 6740 | (10) Battery Positive Voltage | (10) II | (10) — |

**K234 Rear Seat Heater Vent Control Module X2 (KA6)**




1653409

**Connector Part Information**

- Harness Type: Rear Seat Heater Control Wiring Harness
- OEM Connector: 7283-9076-30
- Service Connector: Service by Harness - See Part Catalog
- Description: 16-Way F 0.64 Kaizen Series( BK)

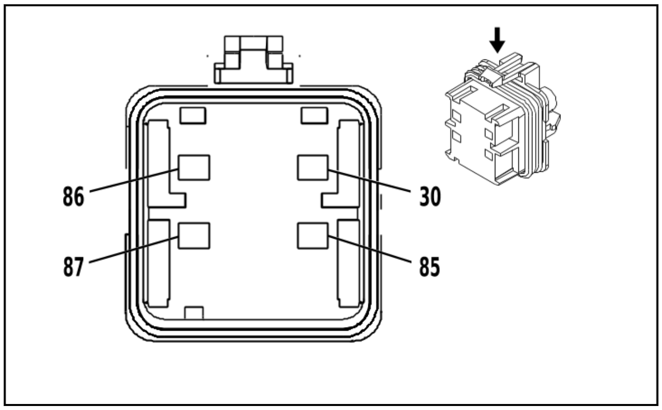
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## K234 Rear Seat Heater Vent Control Module X2 (KA6)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) BU / WH | (1) 7048 | (1) Left Rear Cushion Thermistor Feedback Signal | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) WH / BK | (2) 7054 | (2) Right Rear Cushion Thermistor Feedback Signal | (2) I | (2) — |
| 3 - 4 | — | — | — | Not Occupied | — | — |
| (5) 5 | (5) 0.75 | (5) YE / WH | (5) 7053 | (5) Right Rear Seat Cushion Temperature Sensor Signal | (5) I | (5) — |
| (6) 6 | (6) 0.75 | (6) WH / BU | (6) 7047 | (6) Left Rear Seat Cushion Temperature Sensor Signal | (6) I | (6) — |
| (7) 7 | (7) 0.5 | (7) BK | (7) 1550 | (7) Ground | (7) I | (7) — |
| (8) 8 | (8) 0.5 | (8) GN / VT | (8) 2857 | (8) Body Control Module LIN Bus 11 | (8) I | (8) — |
| 9 - 16 | — | — | — | Not Occupied | — | — |

## KR81A Auxiliary Battery Relay 1




535912

**Connector Part Information**

- Harness Type: Battery Positive Cable
- OEM Connector: 12129716
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 280 Metri-Pack Flexlock Series, Sealed( GY)

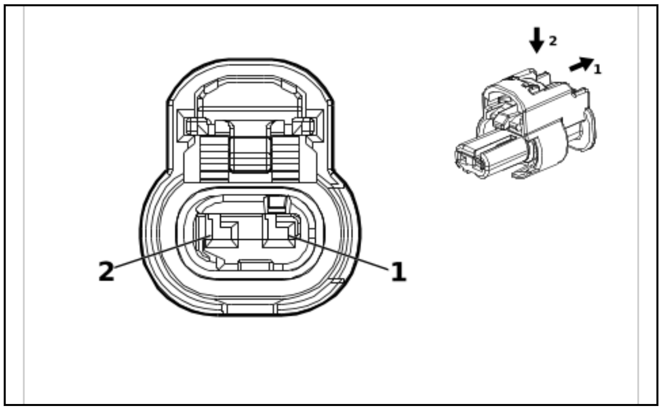
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-35 (VT) | No Tool Required |

### KR81A Auxiliary Battery Relay 1

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (30) 30 | (30) 0.5 | (30) RD / YE | (30) 4540 | (30) Battery Positive Voltage | (30) I | (30) K4Z |
| (85) 85 | (85) 0.5<br>(85) 1 | (85) BK<br>(85) BK | (85) 450<br>(85) 450 | (85) Ground<br>(85) Ground | (85) I<br>(85) I | (85) K4Z<br>(85) K4Z |
| (86) 86 | (86) 0.5 | (86) VT / BN | (86) 300 | (86) Run Ignition 3 Voltage | (86) I | (86) K4Z |
| (87) 87 | (87) 0.5 | (87) RD / BU | (87) 4540 | (87) Battery Positive Voltage | (87) I | (87) K4Z |

### KR81B Auxiliary Battery Relay 2




4649903

**Connector Part Information**

- Harness Type: Battery Positive Cable
- OEM Connector: 13512365
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series, Sealed( BK)

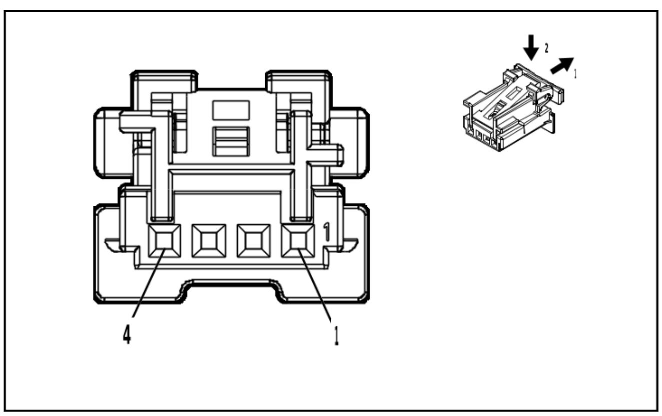
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |

## KR81B Auxiliary Battery Relay 2

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) RD / BU | (1) 4540 | (1) Battery Positive Voltage | (1) I | (1) K4Z |
| (2) 2 | (2) 0.5<br>(2) 1 | (2) BK<br>(2) BK | (2) 450<br>(2) 450 | (2) Ground<br>(2) Ground | (2) I<br>(2) I | (2) K4Z<br>(2) K4Z |

### M4P Programmable Air Inlet Valve Actuator




4997407

**Connector Part Information**

- Harness Type: Heater Wiring Harness
- OEM Connector: 2294218-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 0.64 Micro-Quadlock Series( BK)

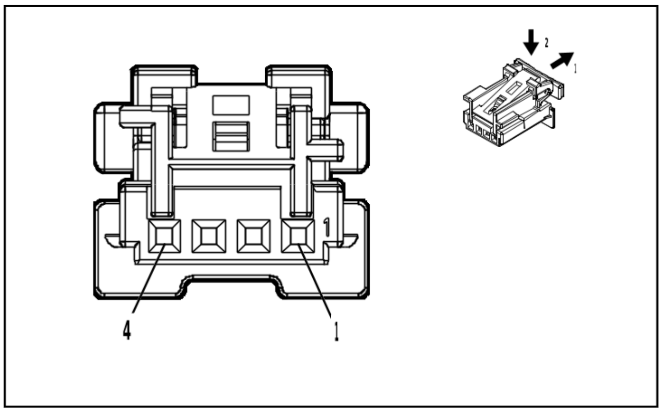
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## M4P Programmable Air Inlet Valve Actuator

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) BK | (1) 1050 | (1) Ground | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) BU | (2) 2852 | (2) Body Control Module LIN Bus 6 | (2) I | (2) — |
| (3) 3 | (3) 0.35 | (3) BK | (3) 1050 | (3) Ground | (3) I | (3) — |
| (4) 4 | (4) 0.35 | (4) RD | (4) 4634 | (4) HVAC Remote Enable Signal | (4) I | (4) — |

### M6PL Programmable Temperature Valve Actuator - Left




4997407

**Connector Part Information**

- Harness Type: Heater Wiring Harness
- OEM Connector: 2294218-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 0.64 Micro-Quadlock Series( BK)

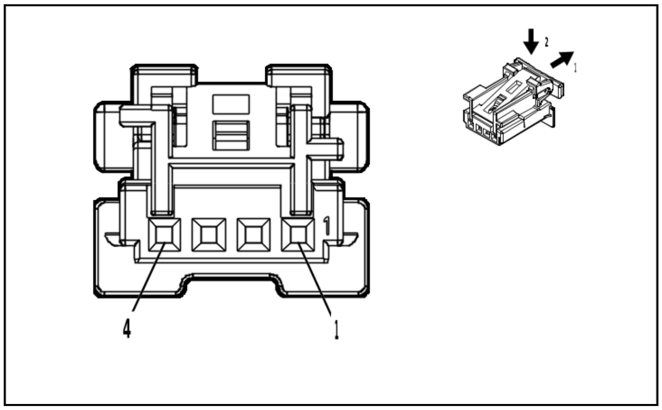
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## M6PL Programmable Temperature Valve Actuator - Left

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) BK | (1) 1050 | (1) Ground | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) BU | (2) 2852 | (2) Body Control Module LIN Bus 6 | (2) I | (2) — |
| (3) 3 | (3) 0.35 | (3) BK | (3) 1050 | (3) Ground | (3) I | (3) — |
| (4) 4 | (4) 0.35 | (4) RD | (4) 4634 | (4) HVAC Remote Enable Signal | (4) I | (4) — |

### M6PR Programmable Temperature Valve Actuator - Right




4997407

**Connector Part Information**

- Harness Type: Heater Wiring Harness
- OEM Connector: 2294218-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 0.64 Micro-Quadlock Series( BK)

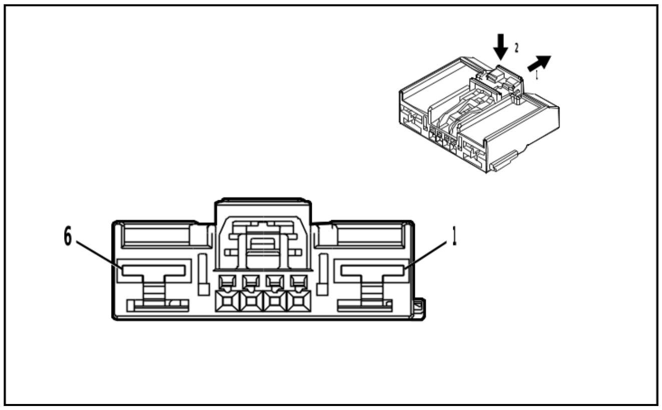
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## M6PR Programmable Temperature Valve Actuator - Right

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) BK | (1) 1050 | (1) Ground | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) BU | (2) 2852 | (2) Body Control Module LIN Bus 6 | (2) I | (2) — |
| 3 | — | — | — | Not Occupied | — | — |
| (4) 4 | (4) 0.35 | (4) RD | (4) 4634 | (4) HVAC Remote Enable Signal | (4) I | (4) — |

### M8 Blower Motor




4650258

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 7289-7139-30
- Service Connector: 19356432
- Description: 6-Way F 0.64, 6.3 Series( BK)

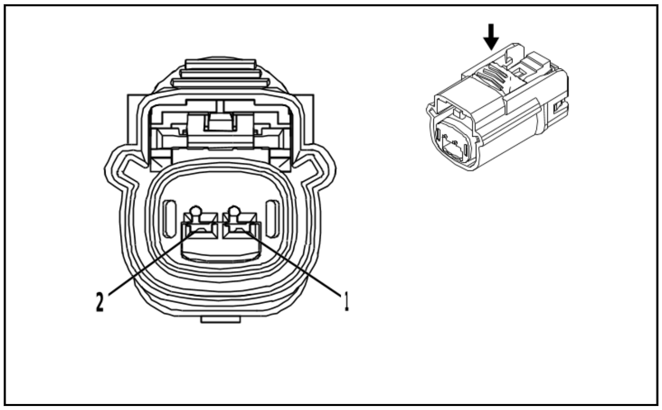
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-42 (RD) | No Tool Required |
| II | Not required | J-35616-64B (L-BU) | No Tool Required |

## M8 Blower Motor

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 4 | (1) RD / GY | (1) 1740 | (1) Battery Positive Voltage | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) BU / GY | (2) 754 | (2) Blower Motor Speed Control | (2) II | (2) — |
| (3) 3 | (3) 0.35 | (3) GN / BU | (3) 761 | (3) Blower Speed Feedback Signal | (3) II | (3) — |
| 4 - 5 | — | — | — | Not Occupied | — | — |
| (6) 6 | (6) 4 | (6) BK | (6) 1050 | (6) Ground | (6) I | (6) — |

### M14A Pickup Box Endgate Lock Actuator




4332222

**Connector Part Information**

- Harness Type: Endgate Wiring Harness
- OEM Connector: 15514573
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.5 OCS Series, Sealed( BK)

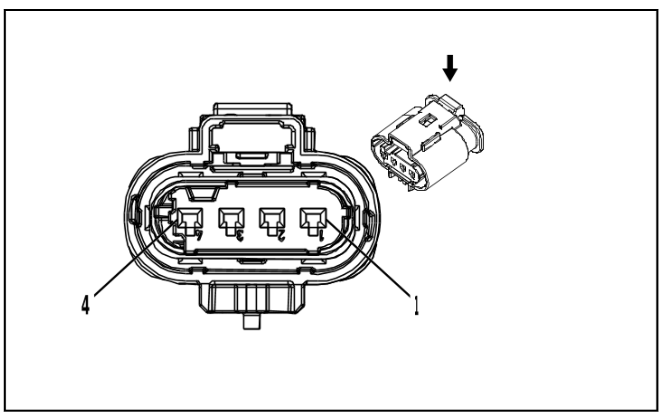
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-2A (GY) | No Tool Required |

## M14A Pickup Box Endgate Lock Actuator

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 1 | (1) GN | (1) 1299 | (1) Major Endgate Motor Control | (1) I | (1) — |
| (2) 2 | (2) 1 | (2) YE / BK | (2) 7730 | (2) Major Endgate Motor Low Reference | (2) I | (2) — |

### M26 Front Drive Axle Actuator




2717079

**Connector Part Information**

- Harness Type: Transfer Case Selector Shift Control Switch Wiring Harness Extension Harness
- OEM Connector: 10520915
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 1.2 Multilock Series, Sealed( BK)

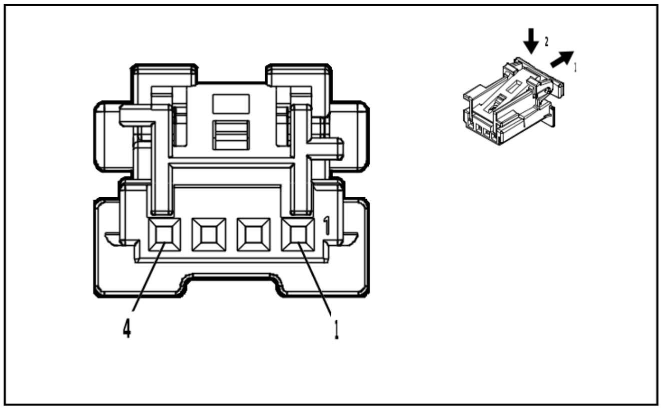
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## M26 Front Drive Axle Actuator

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) GN | (1) 8016 | (1) Secondary Axle Motor Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) GY / BK | (2) 1570 | (2) Front Axle Actuator Control | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) YE / WH | (3) 1695 | (3) 4WD Locked Range Indicator Control | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) BK | (4) 450 | (4) Ground | (4) I | (4) — |

### M37P Programmable Mode Valve Actuator




4997407

**Connector Part Information**
- Harness Type: Heater Wiring Harness
- OEM Connector: 2294218-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 0.64 Micro-Quadlock Series( BK)

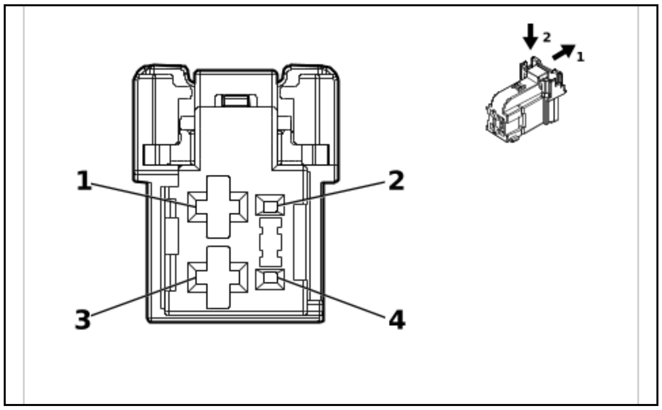
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## M37P Programmable Mode Valve Actuator

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) BK | (1) 1050 | (1) Ground | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) BU | (2) 2852 | (2) Body Control Module LIN Bus 6 | (2) I | (2) — |
| 3 | — | — | — | Not Occupied | — | — |
| (4) 4 | (4) 0.35 | (4) RD | (4) 4634 | (4) HVAC Remote Enable Signal | (4) I | (4) — |

### M50D Front Seat Tilt Adjuster Actuator - Driver (A2X)




5410027

**Connector Part Information**

- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 2316171-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 0.64, 2.8 Series( BK)

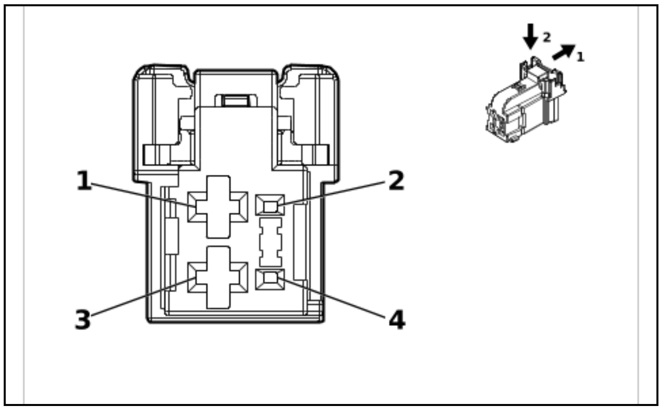
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-35 (VT) | No Tool Required |

## M50D Front Seat Tilt Adjuster Actuator - Driver (A2X)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 1.5 | (1) BU / VT | (1) 287 | (1) Driver Seat Front Vertical Motor Down Control | (1) I | (1) — |
| 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 1.5 | (3) GN / BN | (3) 286 | (3) Driver Seat Front Vertical Motor Up Control | (3) I | (3) — |
| 4 | — | — | — | Not Occupied | — | — |

## M50P Front Seat Tilt Adjuster Actuator - Passenger




5410027

**Connector Part Information**

- Harness Type: Front Seat Wiring Harness - Passenger
- OEM Connector: 2316171-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 0.64, 2.8 Series( BK)

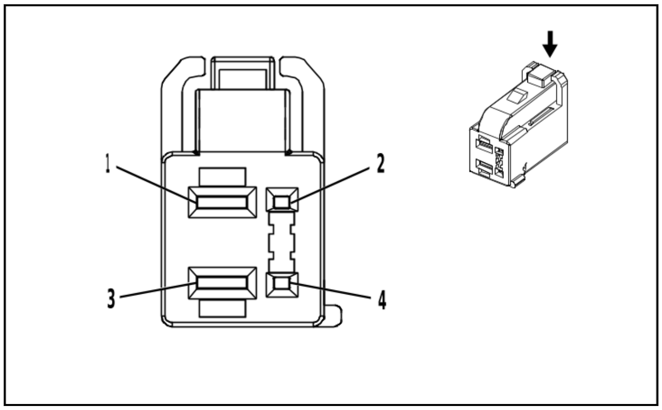
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-35 (VT) | No Tool Required |

### M50P Front Seat Tilt Adjuster Actuator - Passenger

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 1.5 | (1) GN / VT | (1) 297 | (1) Passenger Seat Front Vertical Motor Up Control | (1) I | (1) — |
| 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 1.5 | (3) GN / BU | (3) 298 | (3) Passenger Seat Front Vertical Motor Down Control | (3) I | (3) — |
| 4 | — | — | — | Not Occupied | — | — |

## M51D Front Seat Adjuster Actuator - Driver




3683652

**Connector Part Information**

- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 13583828
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 0.64, 2.8 Series( BK)

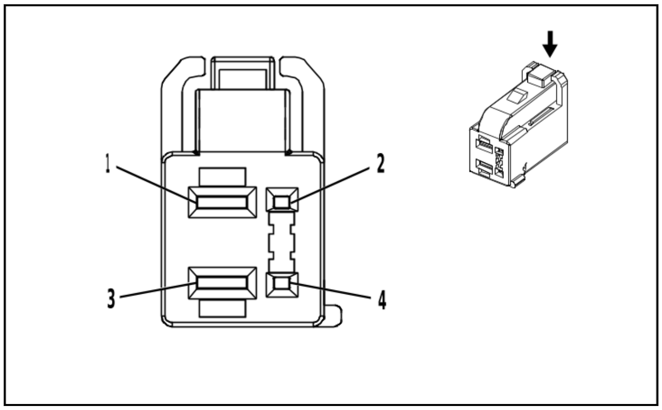
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-4A (PU) | No Tool Required |

### M51D Front Seat Adjuster Actuator - Driver

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 1.5 | (1) GY / GN | (1) 284 | (1) Driver Seat Horizontal Motor Rearward Control | (1) I | (1) — |
| 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 1.5 | (3) YE / BU | (3) 285 | (3) Driver Seat Horizontal Motor Forward Control | (3) I | (3) — |
| 4 | — | — | — | Not Occupied | — | — |

## M51P Front Seat Adjuster Actuator - Passenger




3683652

**Connector Part Information**

- Harness Type: Front Seat Wiring Harness - Passenger
- OEM Connector: 13583828
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 0.64, 2.8 Series( BK)

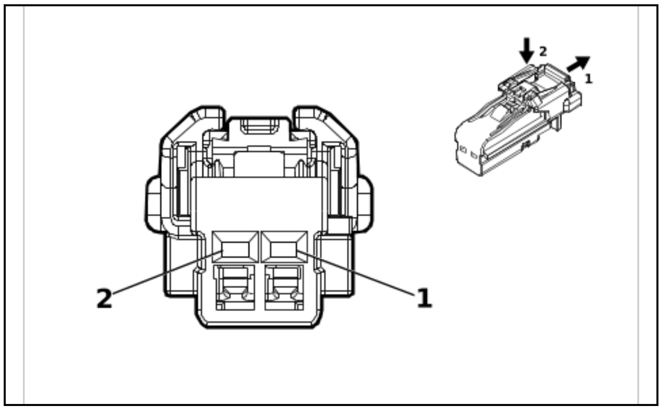
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-4A (PU) | No Tool Required |

### M51P Front Seat Adjuster Actuator - Passenger

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 1.5 | (1) YE / BU | (1) 290 | (1) Passenger Seat Horizontal Motor Rearward Control | (1) I | (1) — |
| 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 1.5 | (3) YE / WH | (3) 296 | (3) Passenger Seat Horizontal Motor Forward Control | (3) I | (3) — |
| 4 | — | — | — | Not Occupied | — | — |

### M53D Front Seat Back Lumbar Motor - Driver (A45)




4115691

**Connector Part Information**
- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 6098-8988
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series( BK)

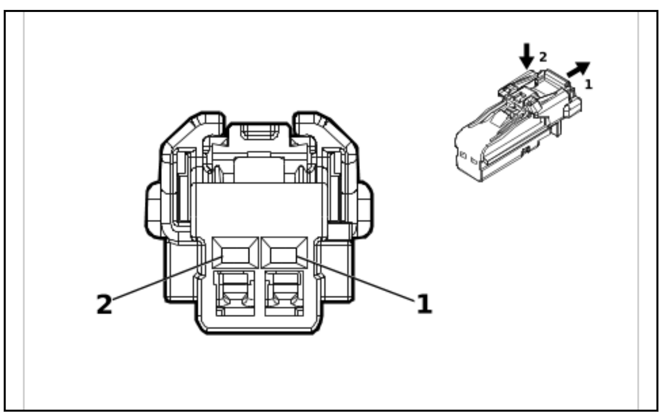
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## M53D Front Seat Back Lumbar Motor - Driver (A45)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) BU | (1) 611 | (1) Driver Seat Lumbar Support Motor Forward Control | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) VT | (2) 610 | (2) Driver Seat Lumbar Support Motor Backward Control | (2) I | (2) — |

### M53P Front Seat Back Lumbar Motor - Passenger




4115691

**Connector Part Information**
- Harness Type: Front Seat Wiring Harness - Passenger
- OEM Connector: 6098-8988
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series( BK)

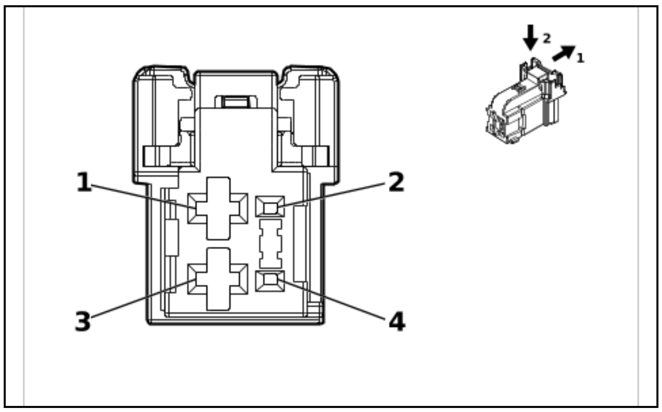
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## M53P Front Seat Back Lumbar Motor - Passenger

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) BU | (1) 211 | (1) Passenger Seat Lumbar Support Motor Forward Control | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) VT | (2) 210 | (2) Passenger Seat Lumbar Support Motor Backward Control | (2) I | (2) — |

### M55D Front Seat Vertical Adjuster Actuator - Driver




5410027

**Connector Part Information**

- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 2316171-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 0.64, 2.8 Series( BK)

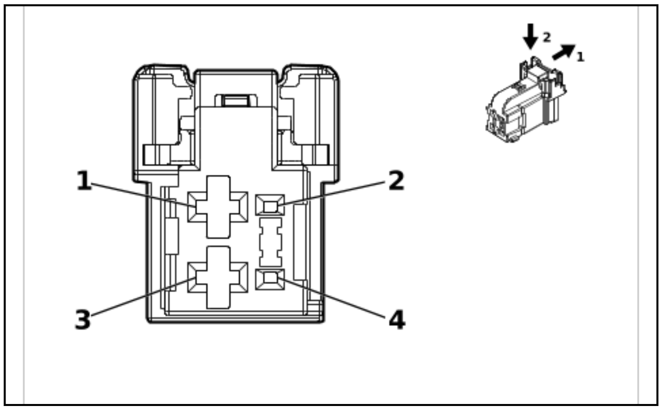
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-35 (VT) | No Tool Required |

## M55D Front Seat Vertical Adjuster Actuator - Driver

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 1.5 | (1) GY / BU | (1) 283 | (1) Driver Seat Rear Vertical Motor Down Control | (1) I | (1) — |
| 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 1.5 | (3) YE | (3) 282 | (3) Driver Seat Rear Vertical Motor Up Control | (3) I | (3) — |
| 4 | — | — | — | Not Occupied | — | — |

### M55P Front Seat Vertical Adjuster Actuator - Passenger




5410027

**Connector Part Information**

- Harness Type: Front Seat Wiring Harness - Passenger
- OEM Connector: 2316171-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 0.64, 2.8 Series( BK)

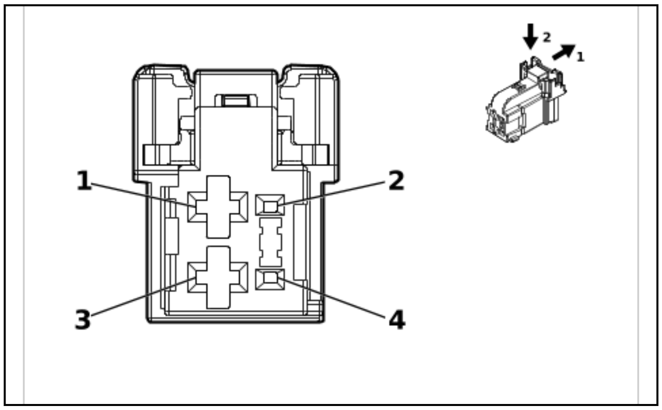
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-35 (VT) | No Tool Required |

## M55P Front Seat Vertical Adjuster Actuator - Passenger

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 1.5 | (1) BU / WH | (1) 289 | (1) Passenger Seat Rear Vertical Motor Down Control | (1) I | (1) — |
| 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 1.5 | (3) GN / WH | (3) 288 | (3) Passenger Seat Rear Vertical Motor Up Control | (3) I | (3) — |
| 4 | — | — | — | Not Occupied | — | — |

### M56D Front Seat Recliner Actuator - Driver




5410027

**Connector Part Information**

- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 2316171-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 0.64, 2.8 Series( BK)

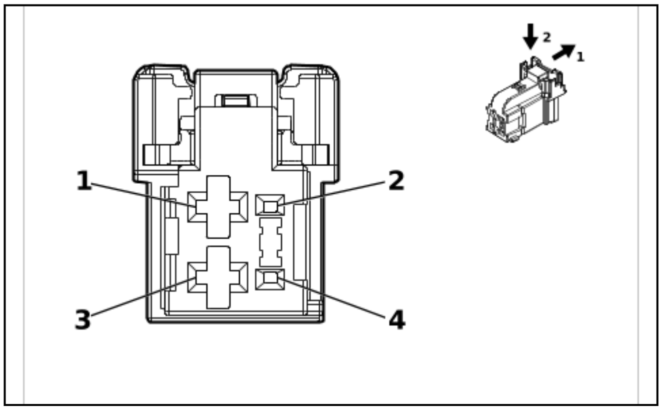
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-35 (VT) | No Tool Required |

## M56D Front Seat Recliner Actuator - Driver

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 1.5 | (1) GN / YE | (1) 276 | (1) Driver Seat Recline Motor Forward Control | (1) I | (1) — |
| 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 1.5 | (3) BU / YE | (3) 277 | (3) Driver Seat Recline Motor Rearward Control | (3) I | (3) — |
| 4 | — | — | — | Not Occupied | — | — |

## M56P Front Seat Recliner Actuator - Passenger (AKE)




5410027

**Connector Part Information**

- Harness Type: Front Seat Wiring Harness - Passenger
- OEM Connector: 2316171-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 0.64, 2.8 Series( BK)

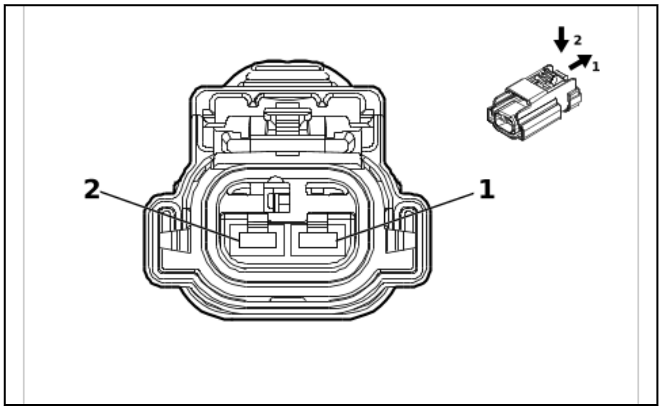
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-35 (VT) | No Tool Required |

### M56P Front Seat Recliner Actuator - Passenger (AKE)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 1.5 | (1) GN | (1) 76 | (1) Passenger Seat Recline Motor Forward Control | (1) I | (1) — |
| 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 1.5 | (3) BU / BN | (3) 77 | (3) Passenger Seat Recline Motor Rearward Control | (3) I | (3) — |
| 4 | — | — | — | Not Occupied | — | — |

### M63 Rear Sliding Window Motor (A48)




5795169

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 35286783
- Service Connector: 19301518
- Description: 2-Way F 2.8 APEX Series, Sealed( BK)

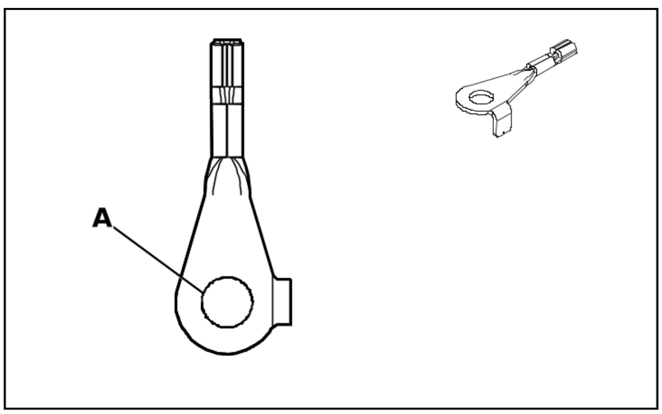
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-35 (VT) | No Tool Required |

## M63 Rear Sliding Window Motor (A48)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 2 | (1) YE | (1) 7454 | (1) Window Motor Rear Auxiliary Close Control | (1) I | (1) — |
| (2) 2 | (2) 2 | (2) VT / YE | (2) 7453 | (2) Window Motor Rear Auxiliary Open Control | (2) I | (2) — |

### M64 Starter X1 (L5P)




5200091

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 35181369
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way Ring Terminal

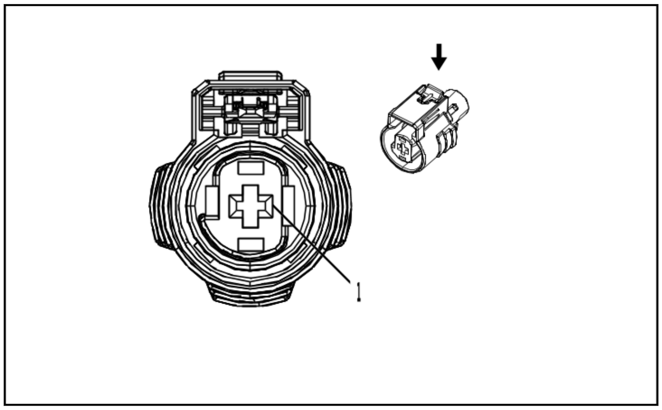
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## M64 Starter X1 (L5P)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| A | 2.5 | YE | 6 | Starter Solenoid Crank Ignition Voltage | I | — |

### M64 Starter X1 (L8T)




2717134

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 2098198-5
- Service Connector: 19300471
- Description: 1-Way F 2.8 MCP Series, Sealed( BK)

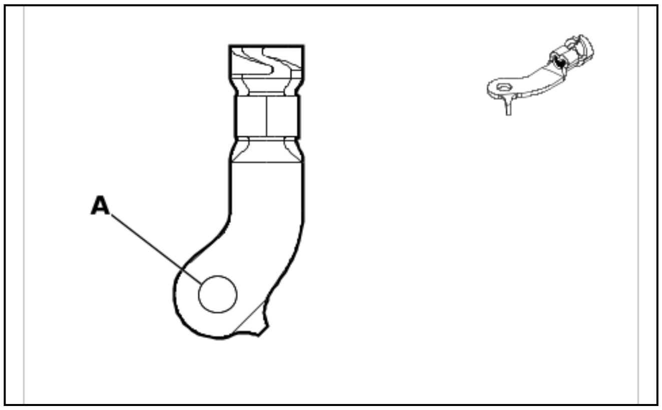
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-4A (PU) | No Tool Required |

## M64 Starter X1 (L8T)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 2.5 | (1) YE | (1) 6 | (1) Starter Solenoid Crank Ignition Voltage | (1) I | (1) — |

### M64 Starter X2 (L5P)




6444130

**Connector Part Information**

- Harness Type: Starter Solenoid Cable
- OEM Connector: 84335258
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way Ring Terminal

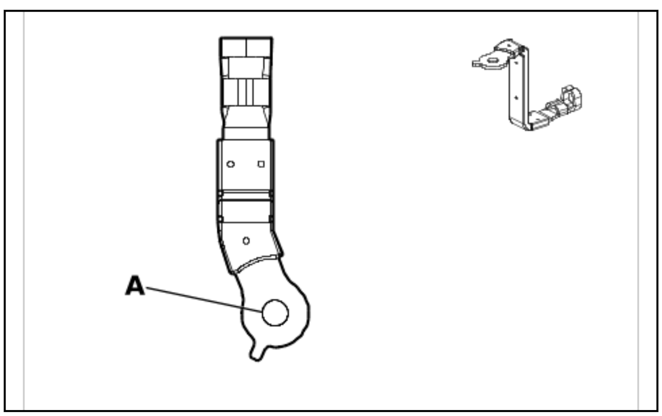
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## M64 Starter X2 (L5P)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| A | 35 | RD / YE | 2 | Battery Positive Voltage | I | L5P |

### M64 Starter X2 (L8T)




6056268

**Connector Part Information**

- Harness Type: Starter Solenoid Cable
- OEM Connector: 85580052
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way Ring Terminal

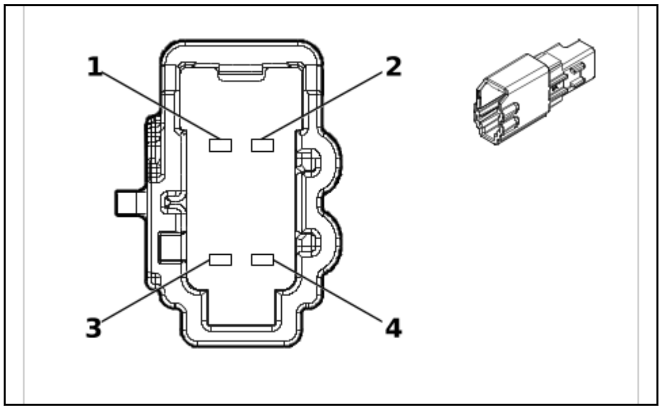
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## M64 Starter X2 (L8T)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| A | 35 | RD / YE | 2 | Battery Positive Voltage | I | L8T |

### M73A Front Seat Back Ventilation Blower - Driver (KA1 & KQV)




5423974

**Connector Part Information**

- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 6098-9049
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way M 1.2 MCON Series( GY)

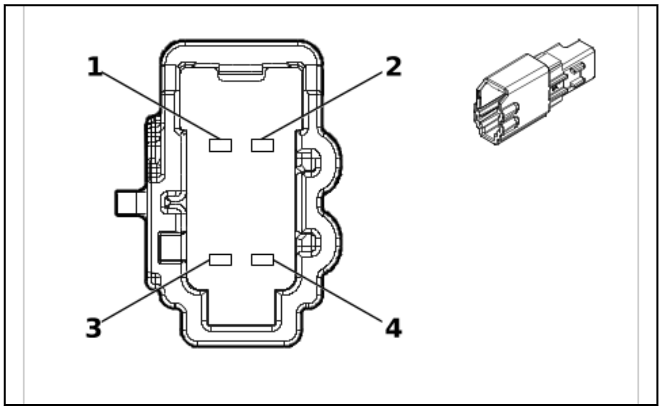
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-13 (BU) | No Tool Required |
| II | Not required | J-35616-17 (L-GN) | No Tool Required |

## M73A Front Seat Back Ventilation Blower - Driver (KA1 & KQV)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) VT / WH | (1) 1139 | (1) Run/Crank Ignition 1 Voltage | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) GN / VT | (2) 5906 | (2) Driver Seat Blower Motor Control 1 | (2) II | (2) — |
| (3) 3 | (3) 0.75 | (3) BK | (3) 1550 | (3) Ground | (3) I | (3) — |
| 4 | — | — | — | Not Occupied | — | — |

### M73B Front Seat Back Ventilation Blower - Passenger (KA1 & KQV)




5423974

**Connector Part Information**

- Harness Type: Front Seat Wiring Harness - Passenger
- OEM Connector: 6098-9049
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way M 1.2 MCON Series( GY)

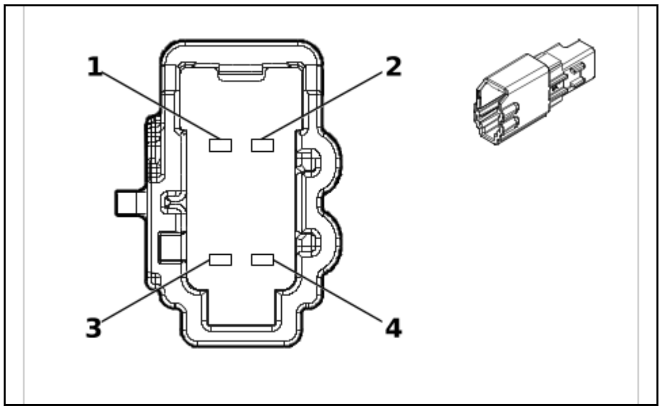
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-13 (BU) | No Tool Required |
| II | Not required | J-35616-17 (L-GN) | No Tool Required |

## M73B Front Seat Back Ventilation Blower - Passenger (KA1 & KQV)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) VT / WH | (1) 1139 | (1) Run/Crank Ignition 1 Voltage | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) VT / WH | (2) 5908 | (2) Passenger Seat Blower Motor Control 1 | (2) II | (2) — |
| (3) 3 | (3) 0.75 | (3) BK | (3) 1350 | (3) Ground | (3) I | (3) — |
| 4 | — | — | — | Not Occupied | — | — |

### M73D Front Seat Cushion Ventilation Blower - Driver (KA1 & KQV)




5423974

**Connector Part Information**

- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 6098-9049
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way M 1.2 MCON Series( GY)

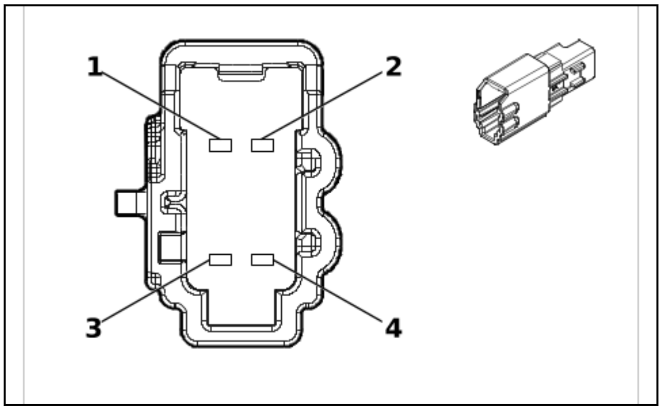
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-13 (BU) | No Tool Required |
| II | Not required | J-35616-17 (L-GN) | No Tool Required |

## M73D Front Seat Cushion Ventilation Blower - Driver (KA1 & KQV)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) VT / WH | (1) 1139 | (1) Run/Crank Ignition 1 Voltage | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) GN / VT | (2) 5906 | (2) Driver Seat Blower Motor Control 1 | (2) II | (2) — |
| (3) 3 | (3) 0.75 | (3) BK | (3) 1550 | (3) Ground | (3) I | (3) — |
| 4 | — | — | — | Not Occupied | — | — |

### M73P Front Seat Cushion Ventilation Blower - Passenger (KA1 & KQV)




5423974

**Connector Part Information**

- Harness Type: Front Seat Wiring Harness - Passenger
- OEM Connector: 6098-9049
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way M 1.2 MCON Series( GY)

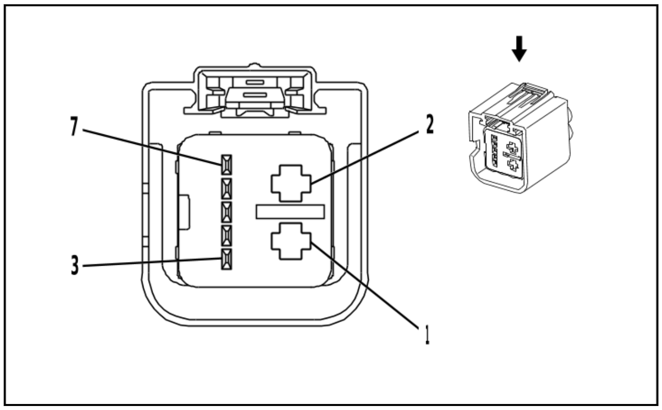
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-13 (BU) | No Tool Required |
| II | Not required | J-35616-17 (L-GN) | No Tool Required |

## M73P Front Seat Cushion Ventilation Blower - Passenger (KA1 & KQV)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) VT / WH | (1) 1139 | (1) Run/Crank Ignition 1 Voltage | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) VT / WH | (2) 5908 | (2) Passenger Seat Blower Motor Control 1 | (2) II | (2) — |
| (3) 3 | (3) 0.75 | (3) BK | (3) 1350 | (3) Ground | (3) I | (3) — |
| 4 | — | — | — | Not Occupied | — | — |

**M74D Front Side Door Window Regulator Motor - Driver**




2282932

**Connector Part Information**

- Harness Type: Front Side Door Door Wiring Harness - Left
- OEM Connector: 1-1732115-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 7-Way F 0.64, 2.8 Kaizen Timer Series, Sealed( GY)

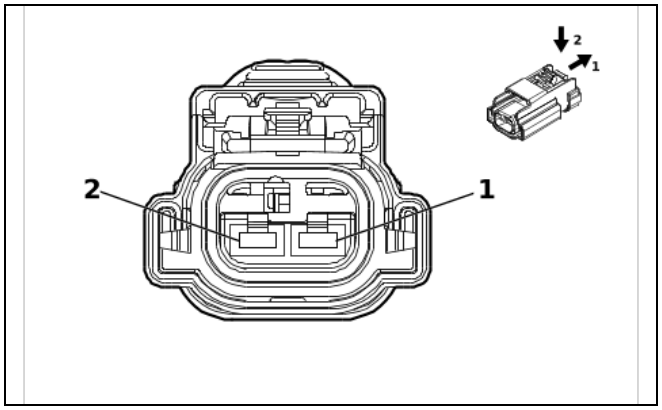
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-4A (PU) | No Tool Required |
| II | Not required | J-35616-64B (L-BU) | No Tool Required |

## M74D Front Side Door Window Regulator Motor - Driver

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 2.5 | (1) BK | (1) 1550 | (1) Ground | (1) I | (1) — |
| (2) 2 | (2) 2.5 | (2) RD / GY | (2) 3540 | (2) Battery Positive Voltage | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) GY / GN | (3) 2763 | (3) Window Switch Left Front Up Signal | (3) II | (3) — |
| (4) 4 | (4) 0.5 | (4) GN / YE | (4) 6134 | (4) Body Control Module LIN Bus 3 | (4) II | (4) — |
| (5) 5 | (5) 0.5 | (5) GN | (5) 2766 | (5) Power Window Switch Left Front Express Signal | (5) II | (5) — |
| (6) 6 | (6) 0.5 | (6) GY | (6) 745 | (6) Left Front Door Ajar Switch Signal | (6) II | (6) — |
| (7) 7 | (7) 0.5 | (7) WH / BN | (7) 2764 | (7) Window Switch Left Front Down Signal | (7) II | (7) — |

### M74LR Rear Side Door Window Regulator Motor - Left




5795169

**Connector Part Information**

- Harness Type: Rear Side Door Door Wiring Harness - Left
- OEM Connector: 35286783
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 2.8 APEX Series, Sealed( BK)

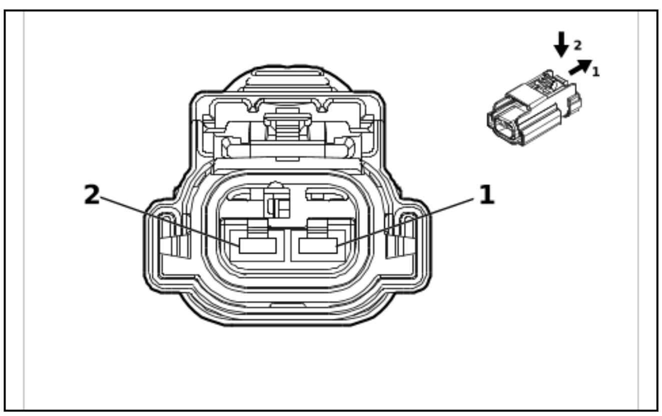
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-35 (VT) | No Tool Required |

## M74LR Rear Side Door Window Regulator Motor - Left

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 2 | (1) BU / VT | (1) 668 | (1) Left Rear Window Motor Up Control | (1) I | (1) — |
| (2) 2 | (2) 2 | (2) YE / BU | (2) 669 | (2) Left Rear Window Motor Down Control | (2) I | (2) — |

### M74P Front Side Door Window Regulator Motor - Passenger (AED)




5795169

**Connector Part Information**

- Harness Type: Front Side Door Door Wiring Harness - Right
- OEM Connector: 35286783
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 2.8 APEX Series, Sealed( BK)

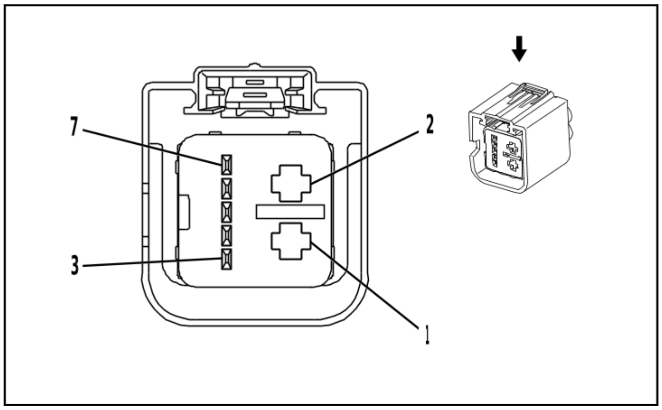
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-35 (VT) | No Tool Required |

## M74P Front Side Door Window Regulator Motor - Passenger (AED)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 2 | (1) GN / GY | (1) 666 | (1) Right Front Window Motor Up Control | (1) I | (1) — |
| (2) 2 | (2) 2 | (2) YE / BU | (2) 667 | (2) Right Front Window Motor Down Control | (2) I | (2) — |

### M74P Front Side Door Window Regulator Motor - Passenger (AEF)




2282932

**Connector Part Information**

- Harness Type: Front Side Door Door Wiring Harness - Right
- OEM Connector: 1-1732115-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 7-Way F 0.64, 2.8 Kaizen Timer Series, Sealed( GY)

## Terminal Part Information

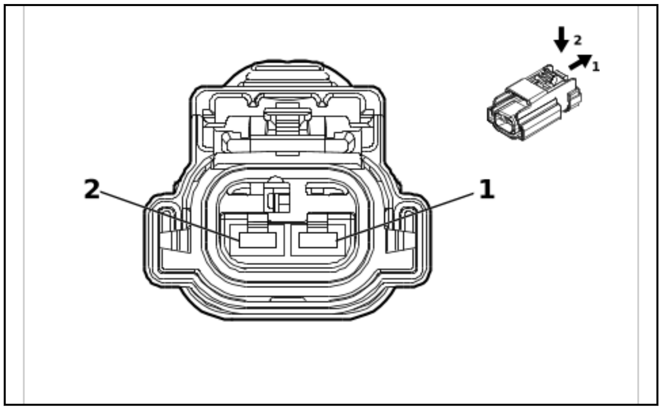
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-4A (PU) | No Tool Required |
| II | Not required | J-35616-64B (L-BU) | No Tool Required |

## M74P Front Side Door Window Regulator Motor - Passenger (AEF)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 2.5 | (1) BK | (1) 1350 | (1) Ground | (1) I | (1) — |
| (2) 2 | (2) 2.5 | (2) RD / BN | (2) 4240 | (2) Battery Positive Voltage | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) GN | (3) 1184 | (3) Window Switch Right Front Up Signal | (3) II | (3) — |
| (4) 4 | (4) 0.5 | (4) GN / YE | (4) 6134 | (4) Body Control Module LIN Bus 3 | (4) II | (4) — |
| (5) 5 | (5) 0.5 | (5) VT / GY | (5) 2765 | (5) Window Switch Right Front Express Signal | (5) II | (5) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (6) 6 | (6) 0.5 | (6) GY | (6) 746 | (6) Right Front Door Ajar Switch Signal | (6) II | (6) — |
| (7) 7 | (7) 0.5 | (7) BN | (7) 5295 | (7) Window Switch Right Front Down Signal | (7) II | (7) — |

### M74RR Rear Side Door Window Regulator Motor - Right




5795169

**Connector Part Information**

- Harness Type: Rear Side Door Door Wiring Harness - Right
- OEM Connector: 35286783
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 2.8 APEX Series, Sealed( BK)

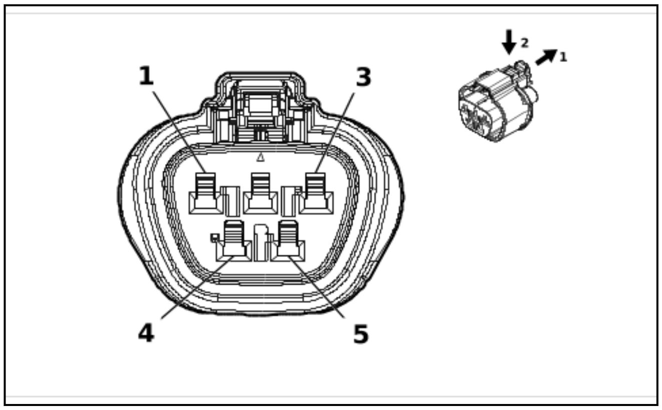
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-35 (VT) | No Tool Required |

## M74RR Rear Side Door Window Regulator Motor - Right

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 2 | (1) BU / GY | (1) 670 | (1) Right Rear Window Motor Up Control | (1) I | (1) — |
| (2) 2 | (2) 2 | (2) GN / BK | (2) 671 | (2) Right Rear Window Motor Down Control | (2) I | (2) — |

### M75 Windshield Wiper Motor




6171401

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 6189-8622
- Service Connector: 85761017
- Description: 5-Way F 2.3 Sumitomo Series, Sealed( BK)

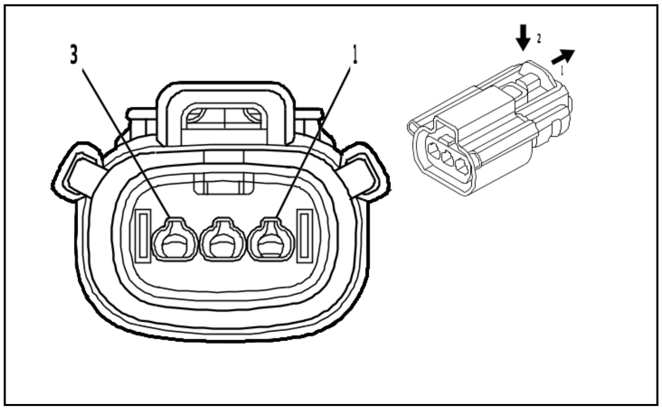
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-18 (BK) | No Tool Required |

## M75 Windshield Wiper Motor

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 2 | (1) YE / BN | (1) 95 | (1) Windshield Wiper Motor Low Speed Control | (1) I | (1) — |
| 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 0.35 | (3) BN / GN | (3) 196 | (3) Windshield Wiper Motor Park Switch Signal | (3) I | (3) — |
| (4) 4 | (4) 2 | (4) WH | (4) 92 | (4) Windshield Wiper Motor High Speed Control | (4) I | (4) — |
| (5) 5 | (5) 2 | (5) BK | (5) 150 | (5) Ground | (5) I | (5) — |

### M96A Active Grille Air Shutter Actuator 1




5095610

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 33471-3306
- Service Connector: 84719651
- Description: 3-Way F 1.5 Series, Sealed( BK)

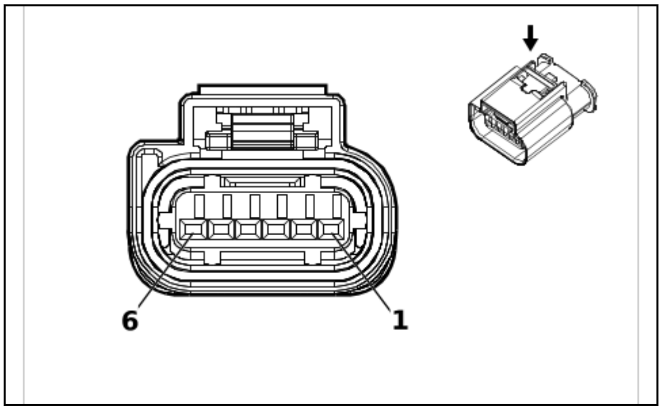
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-14 (GN) | No Tool Required |
| II | Not required | J-35616-2A (GY) | No Tool Required |

## M96A Active Grille Air Shutter Actuator 1

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) VT / BU | (1) 5705 | (1) Powertrain Main Relay Control | (1) II | (1) — |
| (2) 2 | (2) 0.5 | (2) GN / VT | (2) 4621 | (2) Engine Control Module LIN Bus 1 | (2) II | (2) — |
| (3) 3 | (3) 1.5 | (3) BK | (3) 450 | (3) Ground | (3) I | (3) — |

### M103 Turbocharger Vane Position Actuator




5483505

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 13507084
- Service Connector: 84981395
- Description: 6-Way F 1.2 MCON Series, Sealed( BK)

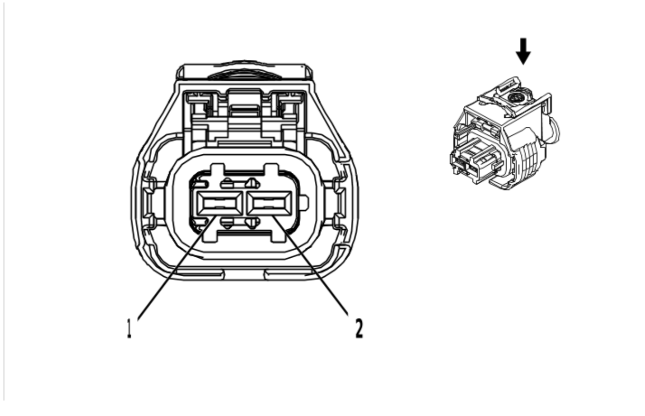
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |

## M103 Turbocharger Vane Position Actuator

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) VT / GN | (1) 4320 | (1) Powertrain Sensor Bus Enable | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK / WH | (2) 6151 | (2) Engine Control Module Ground | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) WH | (3) 4055 | (3) Private Serial Data Powertrain CAN Bus [+] Serial Data | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) WH | (4) 4055 | (4) Private Serial Data Powertrain CAN Bus [+] Serial Data | (4) I | (4) — |
| (5) 5 | (5) 0.5 | (5) BU / GY | (5) 4054 | (5) Private Serial Data Powertrain CAN Bus [-] Serial Data | (5) I | (5) — |
| (6) 6 | (6) 0.5 | (6) BU / GY | (6) 4054 | (6) Private Serial Data Powertrain CAN Bus [-] Serial Data | (6) I | (6) — |

### M104L Parking Brake Actuator - Left




**Connector Part Information**

- Harness Type: Chassis Rear Wiring Harness Extension Harness
- OEM Connector: 1 928 405 714
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 2.8 Series, Sealed( BK)

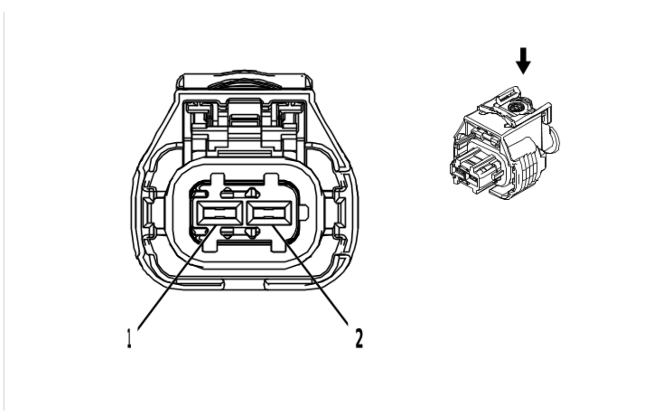
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-35 (VT) | No Tool Required |

## M104L Parking Brake Actuator - Left

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 2.5 | (1) GY / BK | (1) 4369 | (1) Left Park Brake Motor Low Reference | (1) I | (1) — |
| (2) 2 | (2) 2.5 | (2) WH | (2) 2001 | (2) Left Park Brake Motor Apply Control | (2) I | (2) — |

### M104R Parking Brake Actuator - Right




**Connector Part Information**

- Harness Type: Chassis Rear Wiring Harness Extension Harness
- OEM Connector: 1 928 405 714
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 2.8 Series, Sealed( BK)

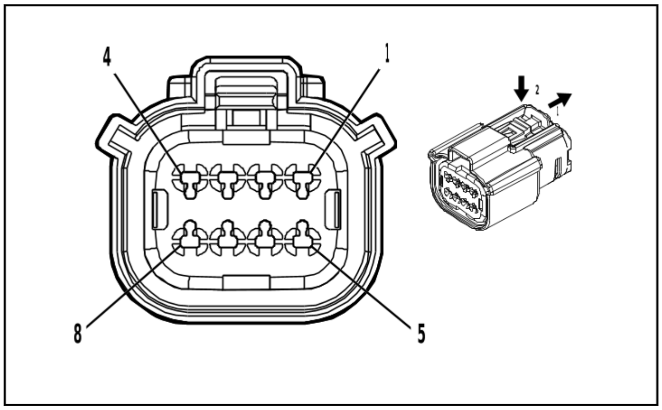
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-35 (VT) | No Tool Required |

## M104R Parking Brake Actuator - Right

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 2.5 | (1) GY | (1) 4368 | (1) Right Park Brake Motor Low Reference | (1) I | (1) — |
| (2) 2 | (2) 2.5 | (2) GN / VT | (2) 1988 | (2) Right Park Brake Motor Apply Control | (2) I | (2) — |

### M125 Pickup Box Endgate Power Assist Actuator




4846407

**Connector Part Information**

- Harness Type: Endgate Wiring Harness
- OEM Connector: 33472-4806
- Service Connector: Service by Harness - See Part Catalog
- Description: 8-Way F 1.5 MX Series, Sealed( BK)

## Terminal Part Information

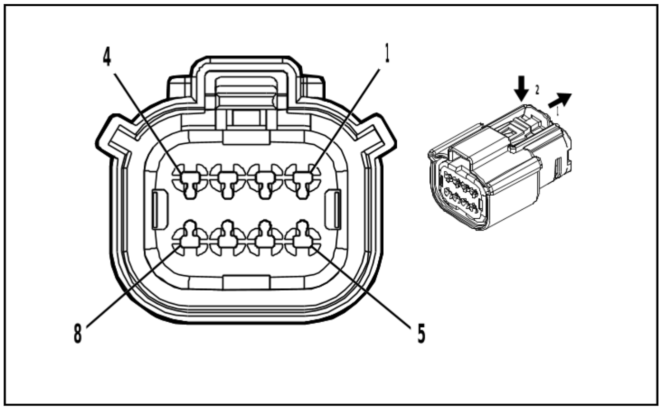
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-2A (GY) | No Tool Required |

## M125 Pickup Box Endgate Power Assist Actuator

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 1 | (1) BN / WH | (1) 4690 | (1) Rear Closure Open/Close Motor Close Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) GN | (2) 1577 | (2) Rear Closure Clutch Control | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BU / BK | (3) 1590 | (3) Rear Closure Clutch Low Return | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) BN / RD | (4) 4683 | (4) Rear Closure Position Sensor Voltage Reference | (4) I | (4) — |
| (5) 5 | (5) 1 | (5) WH | (5) 4689 | (5) Rear Closure Open/Close Motor Open Control | (5) I | (5) — |
| (6) 6 | (6) 0.5 | (6) BN / YE | (6) 4686 | (6) Rear Closure Position Sensor Signal 2 | (6) I | (6) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (7) 7 | (7) 0.5 | (7) BK / GN | (7) 4687 | (7) Rear Closure Position Sensor Low Reference | (7) I | (7) — |
| (8) 8 | (8) 0.5 | (8) BU / WH | (8) 4685 | (8) Rear Closure Position Sensor Signal 1 | (8) I | (8) — |

**M151L Pickup Box Endgate Cinch Latch Actuator - Left**




4846407

**Connector Part Information**

- Harness Type: Endgate Wiring Harness
- OEM Connector: 33472-4806
- Service Connector: Service by Harness - See Part Catalog
- Description: 8-Way F 1.5 MX Series, Sealed( BK)

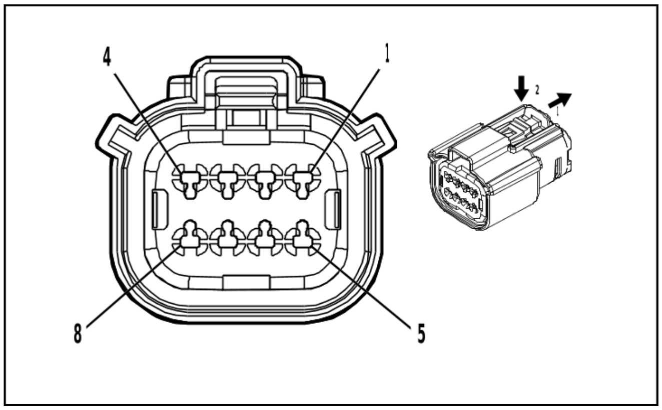
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-2A (GY) | No Tool Required |

## M151L Pickup Box Endgate Cinch Latch Actuator - Left

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 | — | — | — | Not Occupied | — | — |
| (2) 2 | (2) 0.5 | (2) BN / GY | (2) 10281 | (2) Rear Closure Latch Secondary Status Signal | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) GY / VT | (3) 4678 | (3) Rear Closure Latch Unlatch Status | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) BK / VT | (4) 4656 | (4) Rear Closure Object Sensor Low Reference | (4) I | (4) — |
| (5) 5 | (5) 1 | (5) BN | (5) 4681 | (5) Rear Closure Cinch Latch Motor Cinch Control | (5) I | (5) — |
| (6) 6 | (6) 1 | (6) BU / GY | (6) 4682 | (6) Rear Closure Cinch Latch Motor Release Control | (6) I | (6) — |
| (7) 7 | (7) 0.5 | (7) WH / GN | (7) 8084 | (7) Rear Closure Latch Neutral Status | (7) I | (7) — |
| (8) 8 | (8) 0.5 | (8) YE / BK | (8) 8085 | (8) Rear Closure Latch Primary Status | (8) I | (8) — |

## M151R Pickup Box Endgate Cinch Latch Actuator - Right




4846407

**Connector Part Information**

- Harness Type: Endgate Wiring Harness
- OEM Connector: 33472-4806
- Service Connector: Service by Harness - See Part Catalog
- Description: 8-Way F 1.5 MX Series, Sealed( BK)

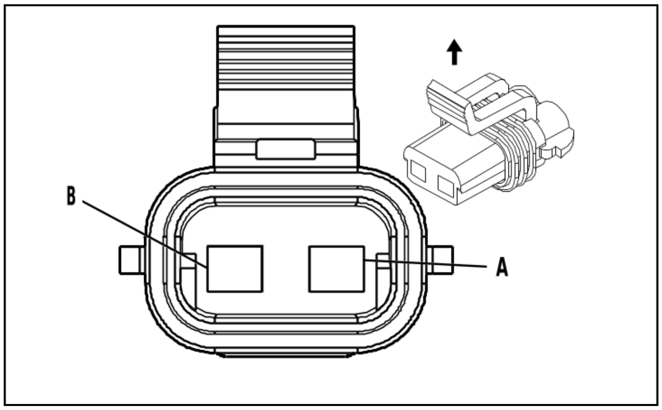
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-2A (GY) | No Tool Required |

### M151R Pickup Box Endgate Cinch Latch Actuator - Right

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) GY / BK | (1) 1575 | (1) Rear Closure Sensor Low Reference 2 | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BN | (2) 7736 | (2) Rear Closure Latch 2 Unlatch Status Signal | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) VT / WH | (3) 10284 | (3) Rear Closure Latch 2 Secondary Status Signal | (3) I | (3) — |
| 4 | — | — | — | Not Occupied | — | — |
| (5) 5 | (5) 0.5 | (5) GN / BU | (5) 10283 | (5) Rear Closure Latch 2 Primary Status Signal | (5) I | (5) — |
| (6) 6 | (6) 0.5 | (6) BU / BN | (6) 10282 | (6) Rear Closure Latch 2 Neutral Status Signal | (6) I | (6) — |
| (7) 7 | (7) 1 | (7) GN | (7) 1499 | (7) Rear Closure Cinch Latch Motor 2 Cinch Control | (7) I | (7) — |
| (8) 8 | (8) 1 | (8) BU | (8) 1509 | (8) Rear Closure Cinch Latch Motor 2 Release Control | (8) I | (8) — |

### P3 Backup Alarm




68721

**Connector Part Information**

- Harness Type: Backup Alarm Wiring Harness
- OEM Connector: 15300027
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 280 Metri-Pack Series, Sealed( BK)

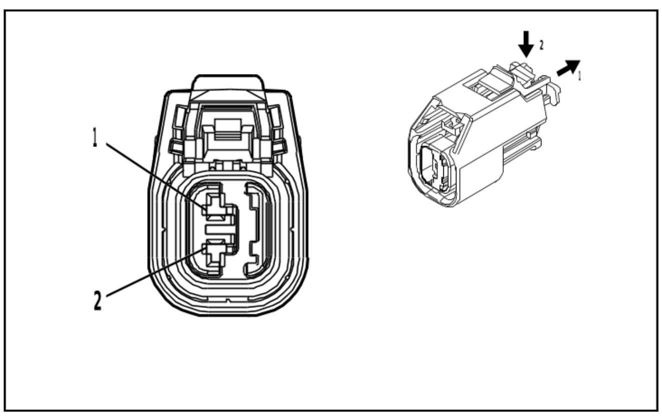
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-4A (PU) | No Tool Required |

## P3 Backup Alarm

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| A | 1 | GY | 1624 | Trailer Backup Lamp Control | I | — |
| B | 1 | WH | 22 | Trailer Ground | I | — |

### P13 Horn




4889830

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 33164011
- Service Connector: 86802964
- Description: 2-Way F 1.5 OCS Series, Sealed( BK)

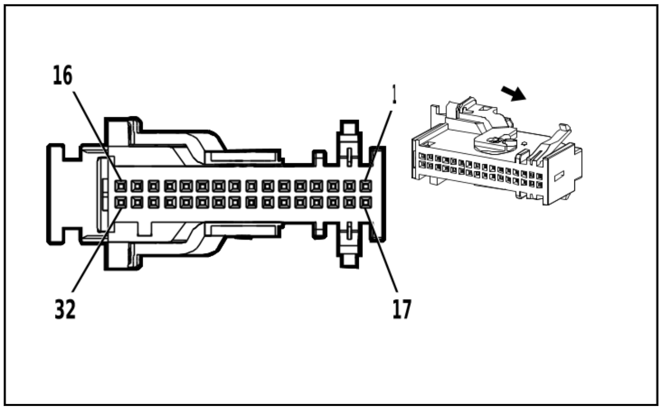
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-2A (GY) | No Tool Required |

## P13 Horn

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) BK | (1) 650 | (1) Ground | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) BN / GY | (2) 29 | (2) Horn Control | (2) I | (2) — |

### P16 Instrument Panel Cluster Control Module X1




4806665

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 13594078
- Service Connector: 13511333
- Description: 32-Way F 0.64 Micro-Quadlock Series( BK)

## Terminal Part Information

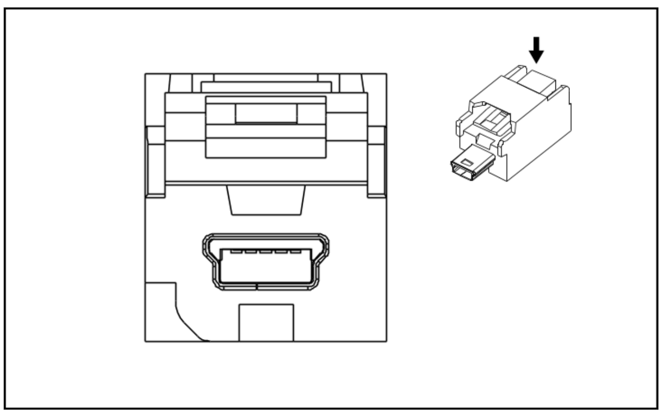
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 19300632 | J-35616-64B (L-BU) | J-38125-215A |
| II | Service by Cable | J-35616-64B (L-BU) | J-38125-215A |

## P16 Instrument Panel Cluster Control Module X1

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) WH | (1) 7216 | (1) Ethernet Bus 7 [-] | (1) II | (1) — |
| 2 - 6 | — | — | — | Not Occupied | — | — |
| (7) 7 | (7) 0.5 | (7) RD / WH | (7) 1340 | (7) Battery Positive Voltage | (7) I | (7) — |
| (8) 8 | (8) 0.35 | (8) VT / BK | (8) 339 | (8) Run/Crank Ignition 1 Voltage | (8) I | (8) — |
| 9 - 10 | — | — | — | Not Occupied | — | — |
| (11) 11 | (11) 0.35 | (11) GY / BK | (11) 4787 | (11) Day Night LED Control | (11) I | (11) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (12) 12 | (12) 0.35 | (12) GY / YE | (12) 3885 | (12) Forward Collision Alert LED Control | (12) I | (12) — |
| (13) 13 | (13) 0.35 | (13) BU / WH | (13) 4985 | (13) AUTOSAR CAN Bus [+] 5 Serial Data | (13) I | (13) — |
| (14) 14 | (14) 0.35 | (14) BU / YE | (14) 4984 | (14) AUTOSAR CAN Bus [-] 5 Serial Data | (14) I | (14) — |
| 15 - 16 | — | — | — | Not Occupied | — | — |
| (17) 17 | (17) 0.35 | (17) GN | (17) 7217 | (17) Ethernet Bus 7 [+] | (17) II | (17) — |
| 18 | — | — | — | Not Occupied | — | — |
| (19) 19 | (19) 0.5 | (19) BK / WH | (19) 851 | (19) Signal Ground | (19) I | (19) — |
| (20) 20 | (20) 0.5 | (20) GN / BK | (20) 3894 | (20) Instrument Panel Cluster Control Module LIN Bus 1 | (20) I | (20) — |
| 21 - 28 | — | — | — | Not Occupied | — | — |
| (29) 29 | (29) 0.35 | (29) BU / WH | (29) 4985 | (29) AUTOSAR CAN Bus [+] 5 Serial Data | (29) I | (29) — |
| (30) 30 | (30) 0.35 | (30) BU / YE | (30) 4984 | (30) AUTOSAR CAN Bus [-] 5 Serial Data | (30) I | (30) — |
| 31 | — | — | — | Not Occupied | — | — |
| (32) 32 | (32) 0.35 | (32) GN / BN | (32) 507 | (32) Wait To Start Indicator Control | (32) I | (32) — |

### P16 Instrument Panel Cluster Control Module X2



3214018

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 13893437
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 5-Way M 2.0 Mini-B USB Type( GY)

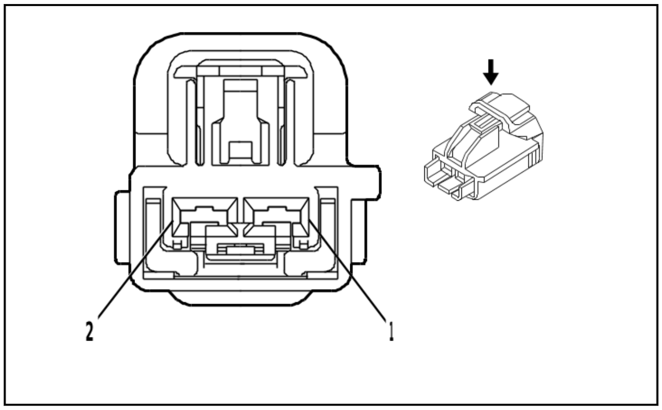
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## P16 Instrument Panel Cluster Control Module X2

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| — | — | USB | — | USB Serial Data | I | — |

### P19AFC Front Floor Speaker - Console (UQA / UQS)




1803142

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 7283-6445-40
- Service Connector: 19367562
- Description: 2-Way F Kaizen Series( L-GY)

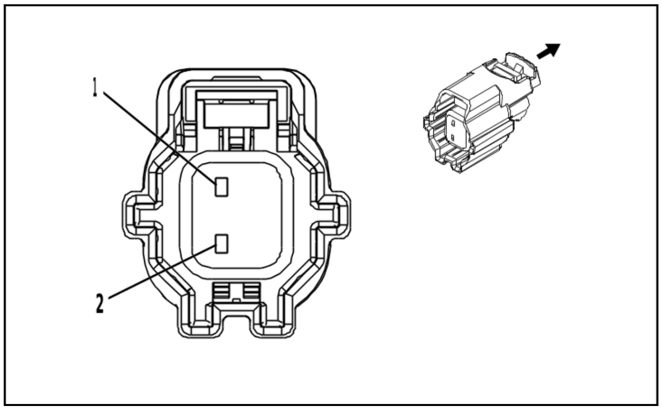
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-4A (PU) | No Tool Required |

## P19AFC Front Floor Speaker - Console (UQA / UQS)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 2.5 | (1) GN / BK | (1) 1794 | (1) Left/Rear Subwoofer [-] Control | (1) I | (1) — |
| (2) 2 | (2) 2.5 | (2) BU / GY | (2) 346 | (2) Left/Rear Subwoofer [+] Control | (2) I | (2) — |

### P19AG Radio Front Side Door Speaker - Left




4223204

**Connector Part Information**
- Harness Type: Front Side Door Door Wiring Harness - Left
- OEM Connector: 34062-0044
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.5 MX Series, Sealed( BK)

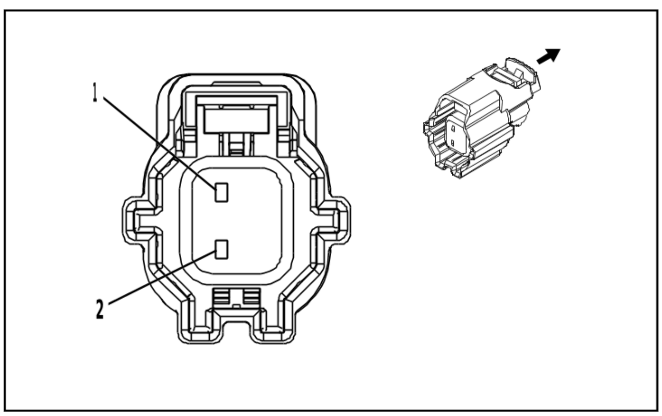
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-2A (GY) | No Tool Required |

## P19AG Radio Front Side Door Speaker - Left

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) BN / BU | (1) 118 | (1) Left Front Speaker [-] Control 1 | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) BU | (2) 201 | (2) Left Front Speaker 1 [+] Control | (2) I | (2) — |

### P19AH Radio Front Side Door Speaker - Right




4223204

**Connector Part Information**
- Harness Type: Front Side Door Door Wiring Harness - Right
- OEM Connector: 34062-0044
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.5 MX Series, Sealed( BK)

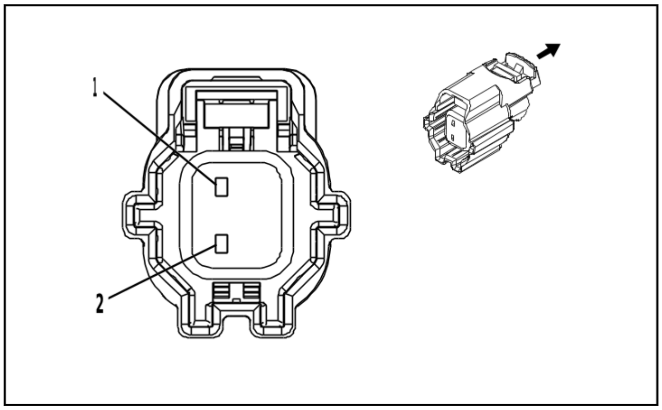
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-2A (GY) | No Tool Required |

## P19AH Radio Front Side Door Speaker - Right

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) YE / BK | (1) 117 | (1) Right Front Speaker [-] Control 1 | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) YE | (2) 200 | (2) Right Front Speaker 1 [+] Control | (2) I | (2) — |

### P19AL Radio Rear Side Door Speaker - Left




4223204

**Connector Part Information**

- Harness Type: Rear Side Door Door Wiring Harness - Left
- OEM Connector: 34062-0044
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.5 MX Series, Sealed( BK)

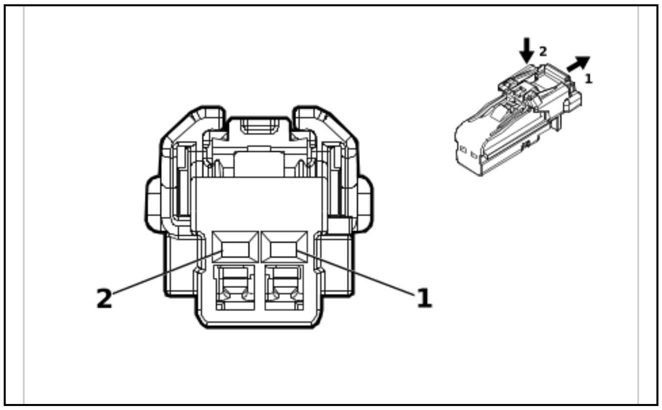
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-2A (GY) | No Tool Required |

## P19AL Radio Rear Side Door Speaker - Left

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) GN / BK | (1) 116 | (1) Left Rear Speaker [-] Control | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) GN | (2) 199 | (2) Left Rear Speaker [+] Control | (2) I | (2) — |

### P19ALU Radio Rear Side Door Upper Speaker - Left (UQS)




4115691

**Connector Part Information**

- Harness Type: Rear Side Door Wiring Harness
- OEM Connector: 6098-8988
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series( BK)

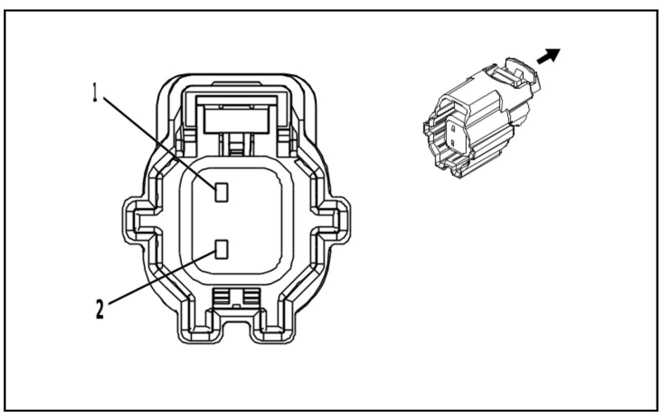
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## P19ALU Radio Rear Side Door Upper Speaker - Left (UQS)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) GN / BK | (1) 116 | (1) Left Rear Speaker [-] Control | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) GN | (2) 199 | (2) Left Rear Speaker [+] Control | (2) I | (2) — |

### P19AM Radio Rear Side Door Speaker - Right




4223204

**Connector Part Information**

- Harness Type: Rear Side Door Door Wiring Harness - Right
- OEM Connector: 34062-0044
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.5 MX Series, Sealed( BK)

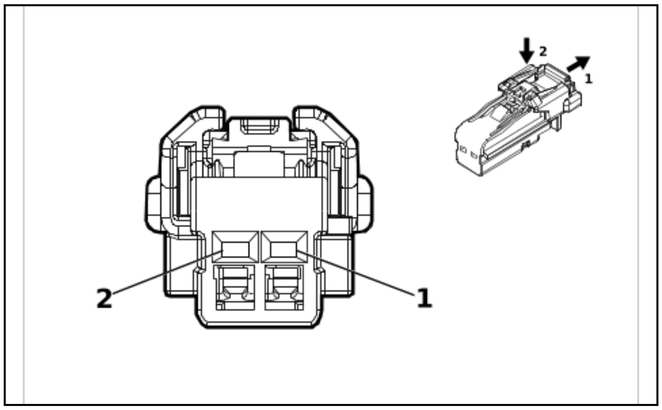
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-2A (GY) | No Tool Required |

## P19AM Radio Rear Side Door Speaker - Right

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) BU / BK | (1) 115 | (1) Right Rear Speaker [-] Control | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) WH | (2) 46 | (2) Right Rear Speaker [+] Control | (2) I | (2) — |

### P19AMU Radio Rear Side Door Upper Speaker - Right (UQS)




4115691

**Connector Part Information**

- Harness Type: Rear Side Door Wiring Harness
- OEM Connector: 6098-8988
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series( BK)

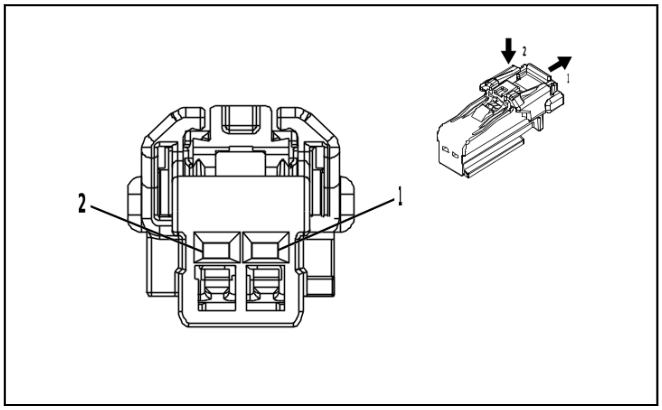
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## P19AMU Radio Rear Side Door Upper Speaker - Right (UQS)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) BU / BK | (1) 115 | (1) Right Rear Speaker [-] Control | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) WH | (2) 46 | (2) Right Rear Speaker [+] Control | (2) I | (2) — |

### P19B Radio Front Center Speaker (UQS)




4373379

**Connector Part Information**
- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 6098-8989
- Service Connector: 19369632
- Description: 2-Way F 1.2 MCON Series( GY)

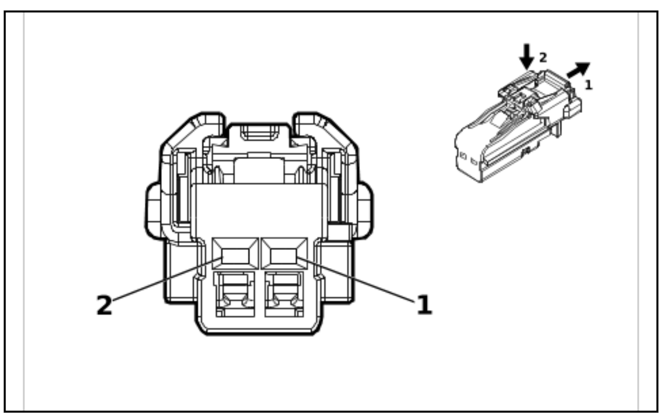
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## P19B Radio Front Center Speaker (UQS)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) BU / YE | (1) 1960 | (1) Front Center Speaker [-] Control | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) YE / WH | (2) 1860 | (2) Front Center Speaker [+] Control | (2) I | (2) — |

### P19H Radio Windshield Side Garnish Molding Speaker - Left Front (UQS)




4115691

**Connector Part Information**
- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 6098-8988
- Service Connector: 87816612
- Description: 2-Way F 1.2 MCON Series( BK)

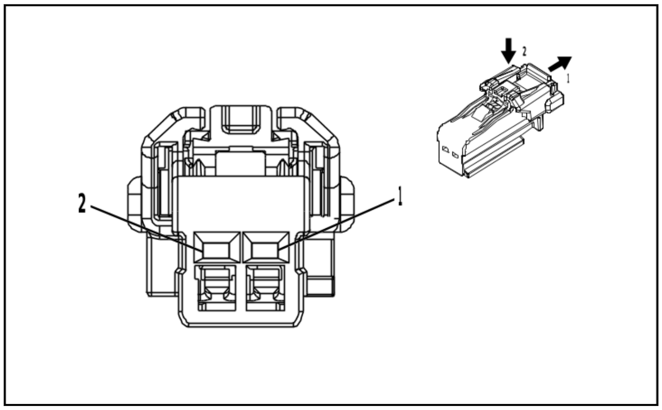
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## P19H Radio Windshield Side Garnish Molding Speaker - Left Front (UQS)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) BN / BU | (1) 118 | (1) Left Front Speaker [-] Control 1 | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) BU | (2) 201 | (2) Left Front Speaker 1 [+] Control | (2) I | (2) — |

### P19J Radio Front Speaker - Instrument Panel Left (UQA)




4373379

**Connector Part Information**
- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 6098-8989
- Service Connector: 19369632
- Description: 2-Way F 1.2 MCON Series( GY)

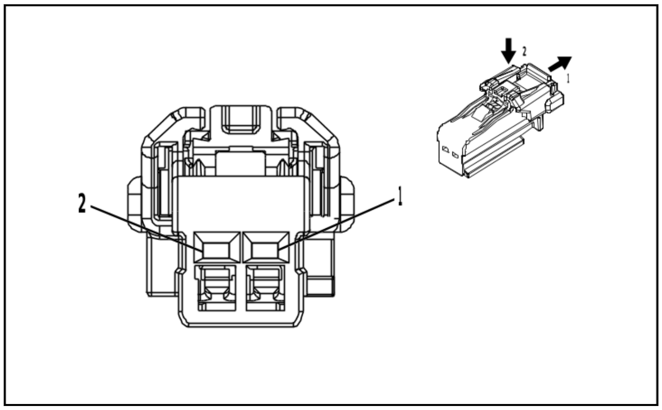
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## P19J Radio Front Speaker - Instrument Panel Left (UQA)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) BU / BN | (1) 1957 | (1) Left Front Midrange Speaker [-] Control | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) BU / VT | (2) 1857 | (2) Left Front Midrange Speaker [+] Control | (2) I | (2) — |

### P19J Radio Front Speaker - Instrument Panel Left (UQA / UQS)




4373379

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 6098-8989
- Service Connector: 19369632
- Description: 2-Way F 1.2 MCON Series( GY)

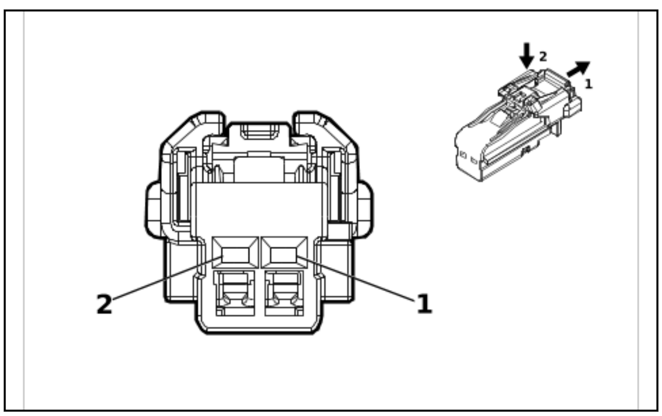
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## P19J Radio Front Speaker - Instrument Panel Left (UQA / UQS)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) BU / BN | (1) 1957 | (1) Left Front Midrange Speaker [-] Control | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) BU / VT | (2) 1857 | (2) Left Front Midrange Speaker [+] Control | (2) I | (2) — |

### P19J Radio Front Speaker - Instrument Panel Left (UQF / UQA)




4115691

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 6098-8988
- Service Connector: 87816612
- Description: 2-Way F 1.2 MCON Series( BK)

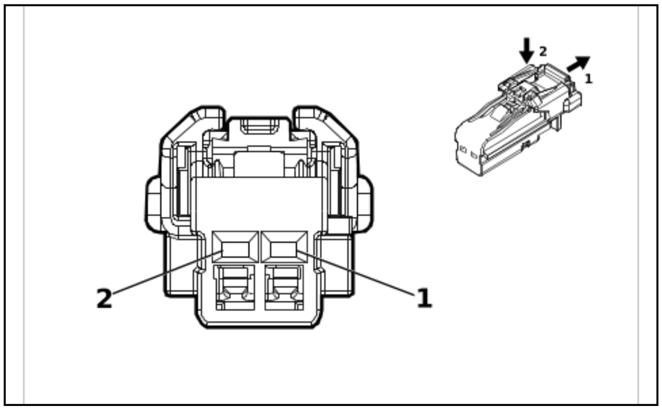
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## P19J Radio Front Speaker - Instrument Panel Left (UQF / UQA)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) BN / BU | (1) 118 | (1) Left Front Speaker [-] Control 1 | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) BU | (2) 201 | (2) Left Front Speaker 1 [+] Control | (2) I | (2) — |

### P19V Radio Windshield Side Garnish Molding Speaker - Right Front (UQS)




4115691

**Connector Part Information**
- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 6098-8988
- Service Connector: 87816612
- Description: 2-Way F 1.2 MCON Series( BK)

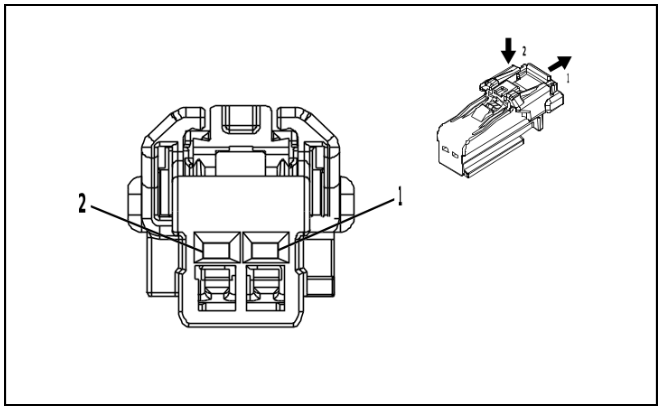
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## P19V Radio Windshield Side Garnish Molding Speaker - Right Front (UQS)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) YE / BK | (1) 117 | (1) Right Front Speaker [-] Control 1 | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) YE | (2) 200 | (2) Right Front Speaker 1 [+] Control | (2) I | (2) — |

### P19W Radio Front Speaker - Instrument Panel Right (UQA)




4373379

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 6098-8989
- Service Connector: 19369632
- Description: 2-Way F 1.2 MCON Series( GY)

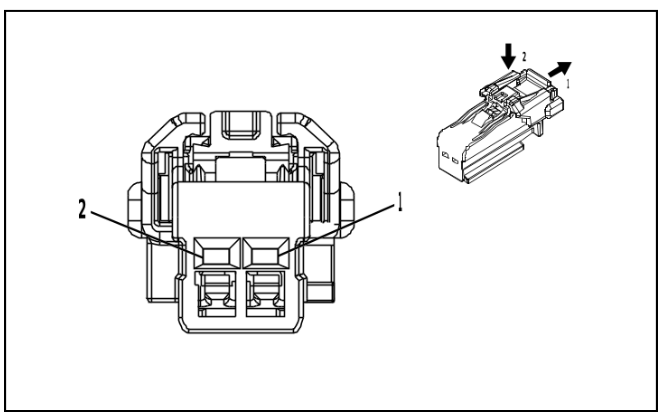
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## P19W Radio Front Speaker - Instrument Panel Right (UQA)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) BN / BK | (1) 1953 | (1) Right Front Midrange Speaker [-] Control | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) WH / YE | (2) 1853 | (2) Right Front Midrange Speaker [+] Control | (2) I | (2) — |

### P19W Radio Front Speaker - Instrument Panel Right (UQA / UQS)




4373379

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 6098-8989
- Service Connector: 19369632
- Description: 2-Way F 1.2 MCON Series( GY)

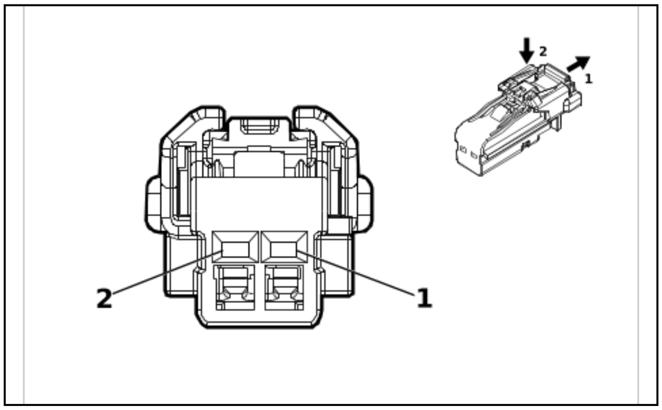
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## P19W Radio Front Speaker - Instrument Panel Right (UQA / UQS)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) BN / BK | (1) 1953 | (1) Right Front Midrange Speaker [-] Control | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) WH / YE | (2) 1853 | (2) Right Front Midrange Speaker [+] Control | (2) I | (2) — |

**P19W Radio Front Speaker - Instrument Panel Right (UQF / UQA)**




4115691

**Connector Part Information**
- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 6098-8988
- Service Connector: 87816612
- Description: 2-Way F 1.2 MCON Series( BK)

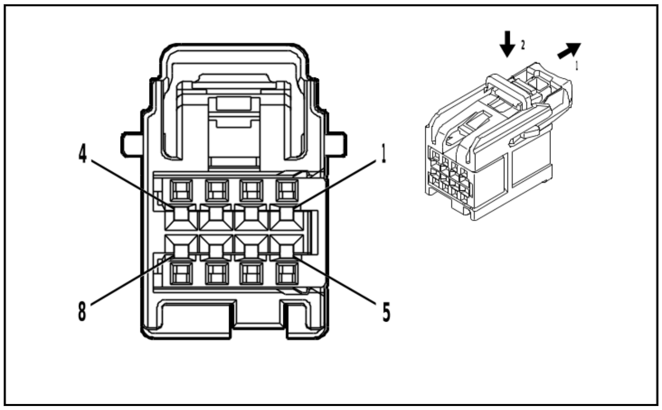
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## P19W Radio Front Speaker - Instrument Panel Right (UQF / UQA)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) YE / BK | (1) 117 | (1) Right Front Speaker [-] Control 1 | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) YE | (2) 200 | (2) Right Front Speaker 1 [+] Control | (2) I | (2) — |

**P29 Head-Up Display X1**




4935776

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 15526972
- Service Connector: 19370429
- Description: 8-Way F 0.64 OCS Series( BK)

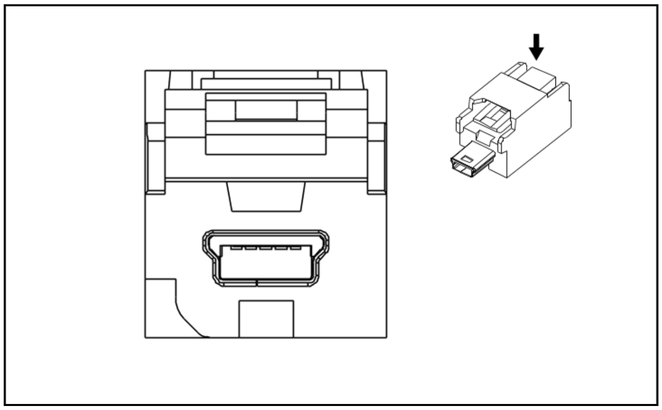
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## P29 Head-Up Display X1

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) GN / BK | (1) 3894 | (1) Instrument Panel Cluster Control Module LIN Bus 1 | (1) I | (1) — |
| 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 0.35 | (3) YE / WH | (3) 622 | (3) Head-Up Display Switch Signal | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) BK / WH | (4) 851 | (4) Signal Ground | (4) I | (4) — |
| 5 | — | — | — | Not Occupied | — | — |
| (6) 6 | (6) 0.5 | (6) RD / WH | (6) 1340 | (6) Battery Positive Voltage | (6) I | (6) — |
| 7 | — | — | — | Not Occupied | — | — |
| (8) 8 | (8) 0.35 | (8) BK / GN | (8) 5699 | (8) Head-Up Display Switch Low Reference | (8) I | (8) — |

### P29 Head-Up Display X2



3214018

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 13871470
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 5-Way M 2.0 Mini-B USB Type( GY)

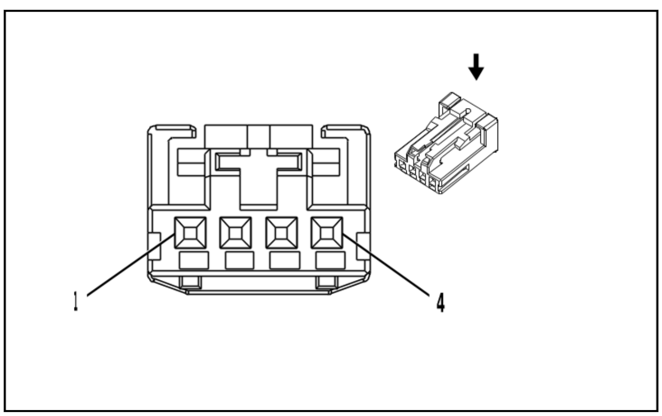
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## P29 Head-Up Display X2

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| — | — | USB | — | USB Serial Data | I | — |

### P43 Forward Collision Alert Display




2717162

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 1-936119-1
- Service Connector: 19332889
- Description: 4-Way F 0.64 Micro-Quadlock Series( BK)

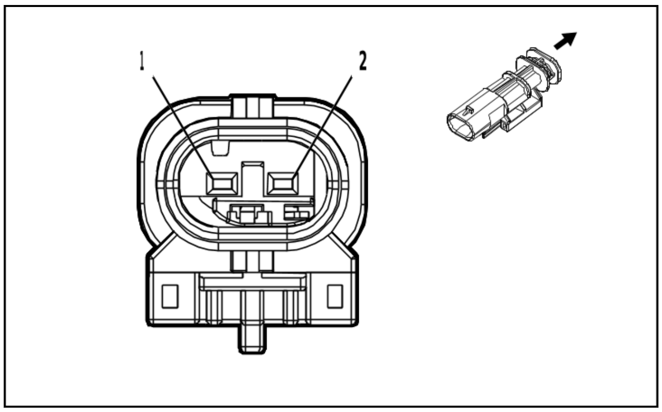
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## P43 Forward Collision Alert Display

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) VT / BK | (1) 339 | (1) Run/Crank Ignition 1 Voltage | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) GY / YE | (2) 3885 | (2) Forward Collision Alert LED Control | (2) I | (2) — |
| (3) 3 | (3) 0.35 | (3) GY / BK | (3) 4787 | (3) Day Night LED Control | (3) I | (3) — |
| (4) 4 | (4) 0.35 | (4) BK / WH | (4) 851 | (4) Signal Ground | (4) I | (4) — |

### P45L Front Seat Lane Departure Warning Actuator - Left




4569729

**Connector Part Information**
- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 34899-2080
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way M 1.2 MCON Series, Sealed( BK)

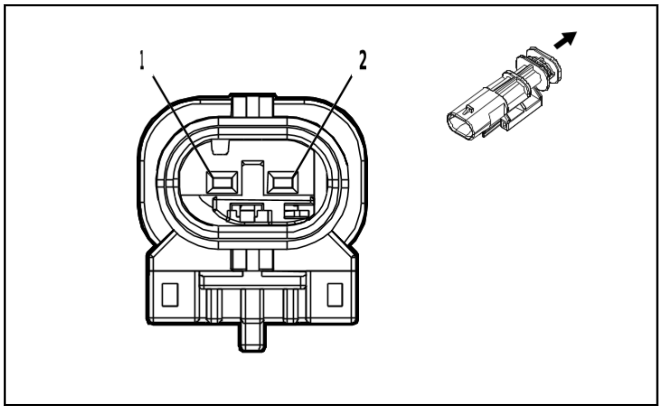
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-13 (BU) | No Tool Required |

## P45L Front Seat Lane Departure Warning Actuator - Left

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BK | (1) 1550 | (1) Ground | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) YE / BN | (2) 3037 | (2) Driver Seat Left Rear Haptic Movement Motor Control | (2) I | (2) — |

### P45R Front Seat Lane Departure Warning Actuator - Right




4569729

**Connector Part Information**

- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 34899-2080
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way M 1.2 MCON Series, Sealed( BK)

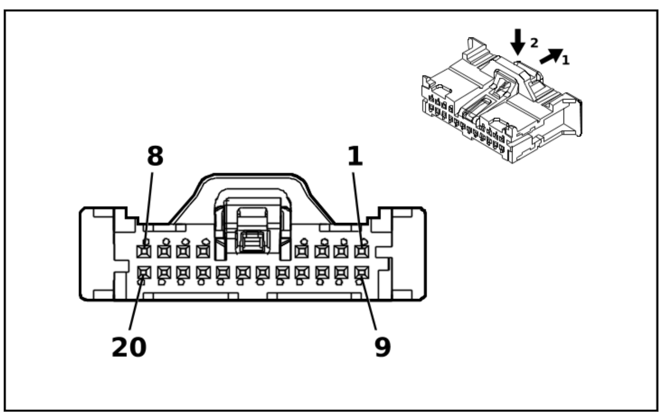
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-13 (BU) | No Tool Required |

## P45R Front Seat Lane Departure Warning Actuator - Right

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BK | (1) 1550 | (1) Ground | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) BN | (2) 3038 | (2) Driver Seat Right Rear Haptic Movement Motor Control | (2) I | (2) — |

### P53 Driver Information Display X1




5200955

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 35068196
- Service Connector: 84769280
- Description: 20-Way F Mini 50 Series( BK)

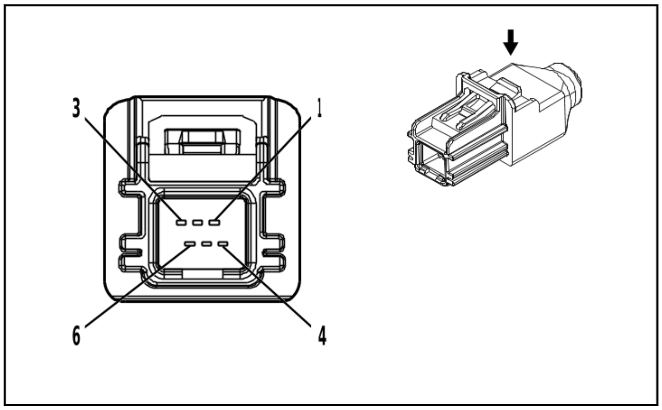
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 84944580 | EL-35616-58 (BK) | EL-38125-58 |

## P53 Driver Information Display X1

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) BU / RD | (1) 11246 | (1) Infotainment Display 5 Volt Reference | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) GY / BU | (2) 11247 | (2) Infotainment Display LCD Enable Signal | (2) I | (2) — |
| 3 | — | — | — | Not Occupied | — | — |
| (4) 4 | (4) 0.35 | (4) BU | (4) 11235 | (4) Radio Switch Volume Up Signal | (4) I | (4) — |
| (5) 5 | (5) 0.35 | (5) GY / BN | (5) 11234 | (5) Radio Switch Volume Down Signal | (5) I | (5) — |
| (6) 6 | (6) 0.35 | (6) BN / WH | (6) 11233 | (6) Radio Switch Power ON/OFF Switch Signal | (6) I | (6) — |
| (7) 7 | (7) 0.35 | (7) VT / WH | (7) 11245 | (7) Radio Switch Buttons Signal | (7) I | (7) — |
| (8) 8 | (8) 0.35 | (8) BU / GY | (8) 11244 | (8) Radio Switch Dimming Control | (8) I | (8) — |
| (9) 9 | (9) 0.35 | (9) BU / GN | (9) 11248 | (9) Infotainment Display Backlight Dimming Control | (9) I | (9) — |
| 10 | — | — | — | Not Occupied | — | — |
| (11) 11 | (11) 0.35 | (11) BK / WH | (11) 11252 | (11) Infotainment Display Low Reference | (11) I | (11) — |
| (12) 12 | (12) 0.35 | (12) YE / RD | (12) 11236 | (12) Radio Switch 5 Volt Reference | (12) I | (12) — |
| (13) 13 | (13) 0.35 | (13) BK / BU | (13) 11237 | (13) Radio Switch Low Reference 1 | (13) I | (13) — |
| (14) 14 | (14) 0.35 | (14) BU | (14) 11235 | (14) Radio Switch Volume Up Signal | (14) I | (14) — |
| (15) 15 | (15) 0.35 | (15) GY / BN | (15) 11234 | (15) Radio Switch Volume Down Signal | (15) I | (15) — |
| (16) 16 | (16) 0.35 | (16) BN / WH | (16) 11233 | (16) Radio Switch Power ON/OFF Switch Signal | (16) I | (16) — |
| (17) 17 | (17) 0.35 | (17) VT / WH | (17) 11245 | (17) Radio Switch Buttons Signal | (17) I | (17) — |
| (18) 18 | (18) 0.35 | (18) BU / GY | (18) 11244 | (18) Radio Switch Dimming Control | (18) I | (18) — |
| (19) 19 | (19) 0.35 | (19) GY / VT | (19) 11249 | (19) Infotainment Display Backlight Enable Control | (19) I | (19) — |
| (20) 20 | (20) 0.35 | (20) BK / GN | (20) 11238 | (20) Radio Switch Low Reference 2 | (20) I | (20) — |

### P53 Driver Information Display X2




4806625

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 100337-1020
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 6-Way M HSAL-2 Series( BK)

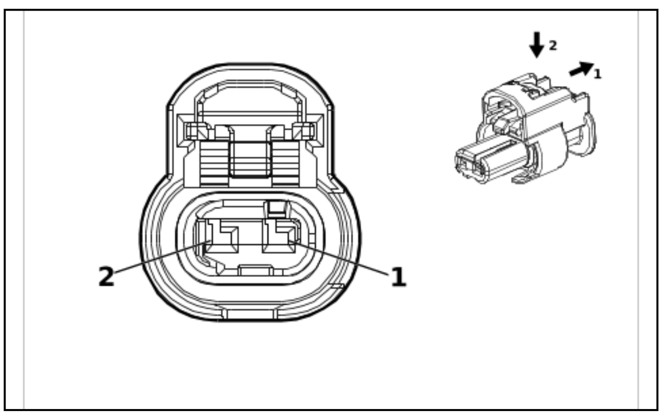
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## P53 Driver Information Display X2

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| BK | — | BARE | LVDS | Low Voltage Differential Signaling | I | — |

### Q2 Air Conditioning Clutch




4649903

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 1-2296694-1
- Service Connector: 85761014
- Description: 2-Way F 1.2 MCON Series, Sealed( BK)

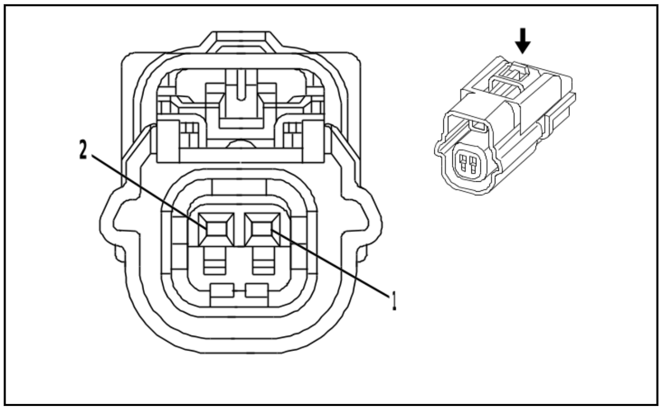
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## Q2 Air Conditioning Clutch

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 1.5 | (1) BK | (1) 450 | (1) Ground | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) BN / GN | (2) 59 | (2) Air Conditioning Compressor Clutch Control | (2) I | (2) — |

### Q6 Camshaft Position Actuator Solenoid Valve




1664592

**Connector Part Information**

- Harness Type: Camshaft Position Sensor Wire
- OEM Connector: 54390239
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 0.64 Kaizen Series, Sealed( BK)

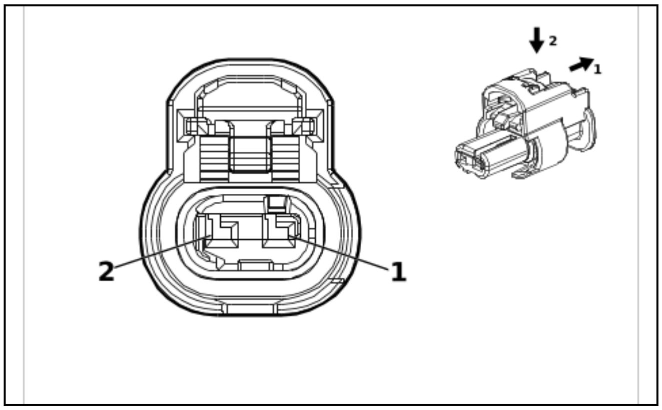
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## Q6 Camshaft Position Actuator Solenoid Valve

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BK / BN | (1) 6753 | (1) Camshaft Position Actuator Solenoid Valve 1 Low Reference | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) VT / BN | (2) 5284 | (2) Intake Camshaft Position Actuator Solenoid Valve 1 | (2) I | (2) — |

### Q9R Differential Locking Actuator - Rear




4649903

**Connector Part Information**

- Harness Type: Chassis Rear Wiring Harness Extension Harness
- OEM Connector: 1-2296694-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series, Sealed( BK)

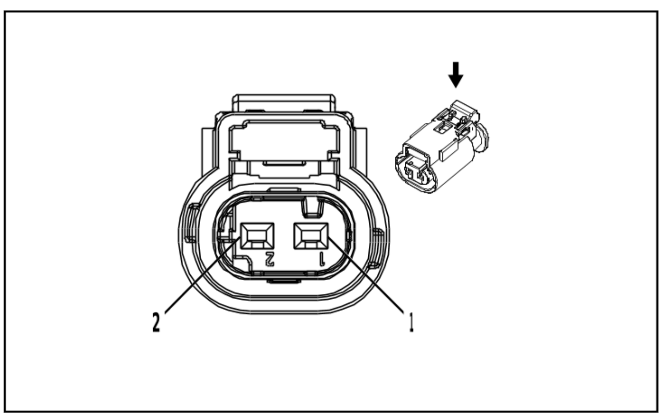
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## Q9R Differential Locking Actuator - Rear

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) VT / BN | (1) 7258 | (1) Rear Differential Lock Actuator Control | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) GY / BK | (2) 7253 | (2) Rear Differential Lock Actuator Low Control | (2) I | (2) — |

### Q12 Evaporative Emission Canister Purge Solenoid Valve




2717066

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 10010337
- Service Connector: 13587326
- Description: 2-Way F 1.2 Multilock Series, Sealed( BK)

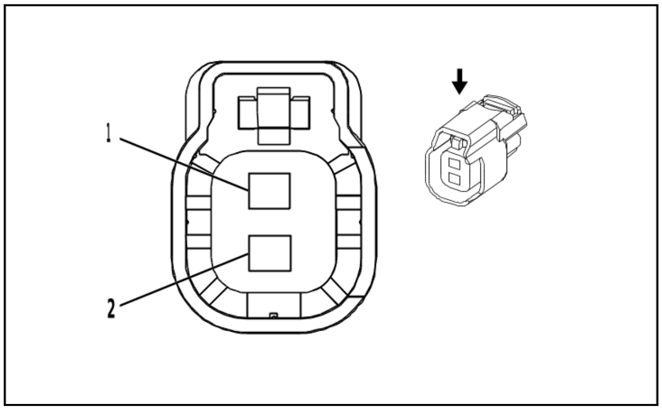
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## Q12 Evaporative Emission Canister Purge Solenoid Valve

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) VT / BU | (1) 5293 | (1) Powertrain Main Relay Fused Supply Voltage 4 | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) GN / BU | (2) 428 | (2) EVAP Canister Purge Solenoid Control | (2) I | (2) — |

### Q13 Evaporative Emission Canister Vent Solenoid Valve




2422378

**Connector Part Information**
- Harness Type: Chassis Wiring Harness
- OEM Connector: 34062-0028
- Service Connector: 13579002
- Description: 2-Way F 1.5 Series, Sealed( BK)

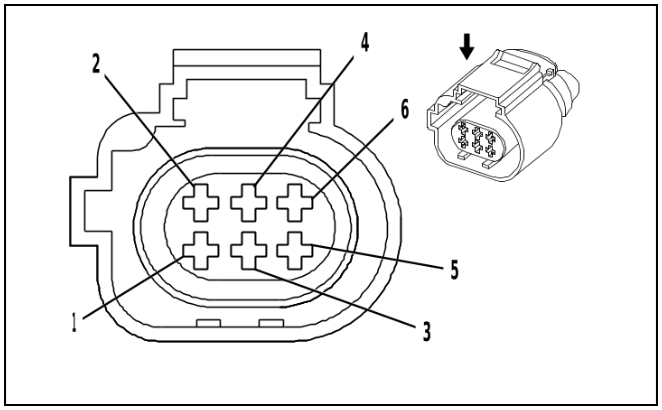
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-14 (GN) | No Tool Required |

## Q13 Evaporative Emission Canister Vent Solenoid Valve

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) WH | (1) 1310 | (1) EVAP Vent Solenoid Valve Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) RD / WH | (2) 3440 | (2) Battery Positive Voltage | (2) I | (2) — |

### Q14 Exhaust Gas Recirculation Valve




2216905

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 55571435
- Service Connector: 19354082
- Description: 6-Way F 1.6 Micro-Timer Series, Sealed( GY)

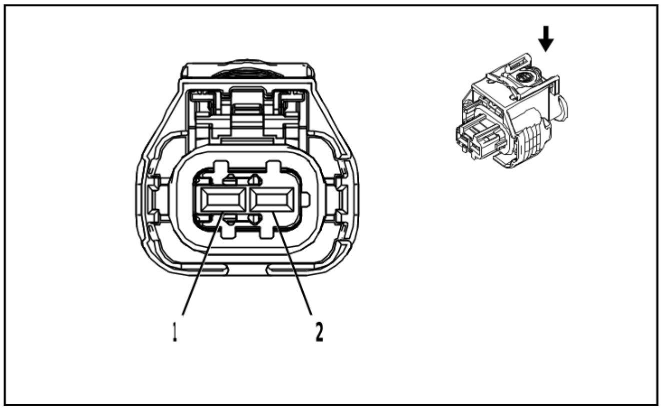
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-14 (GN) | No Tool Required |

## Q14 Exhaust Gas Recirculation Valve

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) WH / VT | (1) 5764 | (1) Exhaust Gas Recirculation Valve High Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BN / WH | (2) 5763 | (2) Exhaust Gas Recirculation Position Signal | (2) I | (2) — |
| 3 | — | — | — | Not Occupied | — | — |
| (4) 4 | (4) 0.5 | (4) BK / YE | (4) 548 | (4) Engine Control Sensors Low Reference 1 | (4) I | (4) — |
| (5) 5 | (5) 0.5 | (5) VT / BK | (5) 5746 | (5) Exhaust Gas Recirculation Valve Low Control | (5) I | (5) — |
| (6) 6 | (6) 0.5 | (6) BU / RD | (6) 460 | (6) Engine Control Sensors 5 Volt Reference 1 | (6) I | (6) — |

## Q17A Fuel Injector 1 (L5P)




2845578

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 13343445
- Service Connector: 19368140
- Description: 2-Way F 2.8 Series, Sealed( BK)

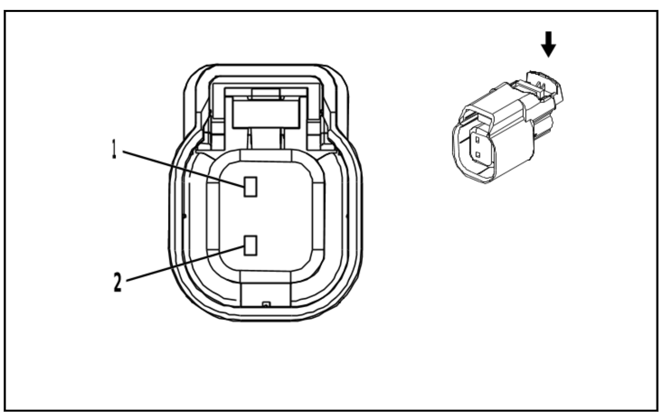
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-35 (VT) | No Tool Required |

### Q17A Fuel Injector 1 (L5P)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) BN / WH | (1) 4901 | (1) Direct Fuel Injector High Voltage Supply Cylinder 1 | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) BN | (2) 4801 | (2) Direct Fuel Injector High Voltage Control Cylinder 1 | (2) I | (2) — |

## Q17A Fuel Injector 1 (L8T)




2792100

**Connector Part Information**

- Harness Type: Fuel Injector Wiring Harness - Left
- OEM Connector: 340624008
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.5 Series, Sealed( BK)

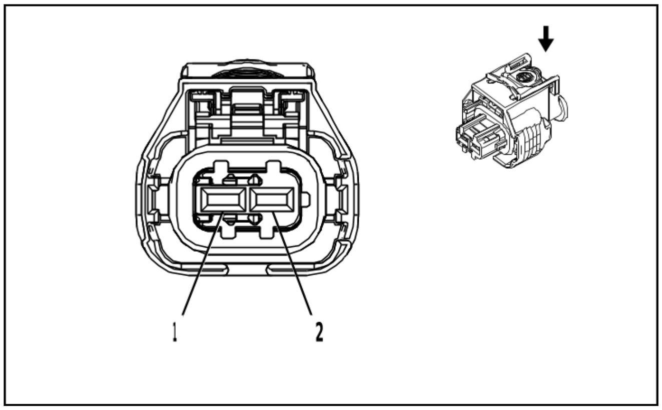
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-2A (GY) | No Tool Required |

## Q17A Fuel Injector 1 (L8T)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) BN / WH | (1) 4901 | (1) Direct Fuel Injector High Voltage Supply Cylinder 1 | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) BN | (2) 4801 | (2) Direct Fuel Injector High Voltage Control Cylinder 1 | (2) I | (2) — |

### Q17B Fuel Injector 2 (L5P)




2845578

**Connector Part Information**
- Harness Type: Engine Wiring Harness
- OEM Connector: 13343445
- Service Connector: 19368140
- Description: 2-Way F 2.8 Series, Sealed( BK)

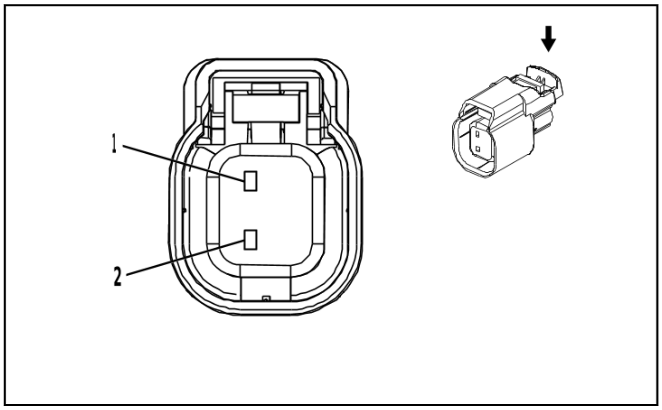
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-35 (VT) | No Tool Required |

## Q17B Fuel Injector 2 (L5P)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) BU / GY | (1) 4902 | (1) Direct Fuel Injector High Voltage Supply Cylinder 2 | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) BU | (2) 4802 | (2) Direct Fuel Injector High Voltage Control Cylinder 2 | (2) I | (2) — |

### Q17B Fuel Injector 2 (L8T)




2792100

**Connector Part Information**

- Harness Type: Fuel Injector Wiring Harness - Right
- OEM Connector: 340624008
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.5 Series, Sealed( BK)

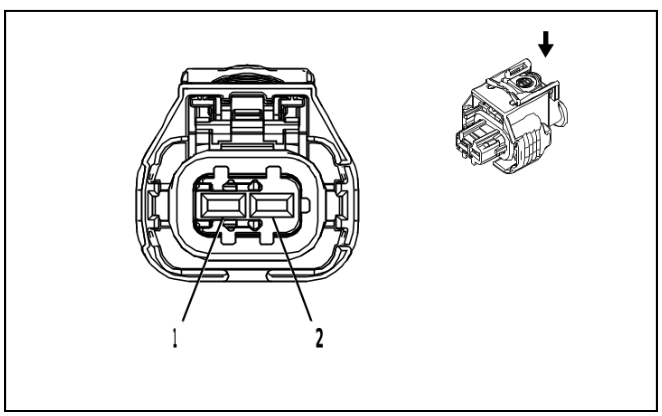
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-2A (GY) | No Tool Required |

## Q17B Fuel Injector 2 (L8T)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) BU / GY | (1) 4902 | (1) Direct Fuel Injector High Voltage Supply Cylinder 2 | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) BU | (2) 4802 | (2) Direct Fuel Injector High Voltage Control Cylinder 2 | (2) I | (2) — |

### Q17C Fuel Injector 3 (L5P)




2845578

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 13343445
- Service Connector: 19368140
- Description: 2-Way F 2.8 Series, Sealed( BK)

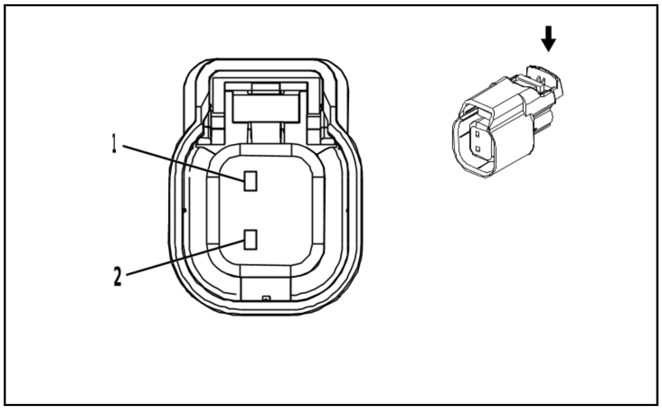
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-35 (VT) | No Tool Required |

## Q17C Fuel Injector 3 (L5P)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) GN / GY | (1) 4903 | (1) Direct Fuel Injector High Voltage Supply Cylinder 3 | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) GN | (2) 4803 | (2) Direct Fuel Injector High Voltage Control Cylinder 3 | (2) I | (2) — |

### Q17C Fuel Injector 3 (L8T)




2792100

**Connector Part Information**

- Harness Type: Fuel Injector Wiring Harness - Left
- OEM Connector: 340624008
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.5 Series, Sealed( BK)

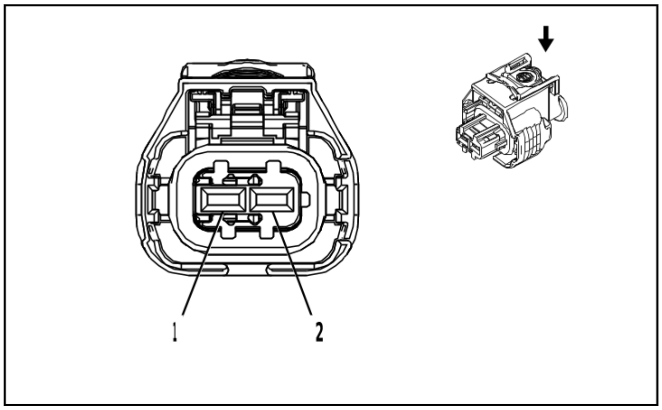
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-2A (GY) | No Tool Required |

## Q17C Fuel Injector 3 (L8T)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) GN / GY | (1) 4903 | (1) Direct Fuel Injector High Voltage Supply Cylinder 3 | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) GN | (2) 4803 | (2) Direct Fuel Injector High Voltage Control Cylinder 3 | (2) I | (2) — |

### Q17D Fuel Injector 4 (L5P)




2845578

**Connector Part Information**
- Harness Type: Engine Wiring Harness
- OEM Connector: 13343445
- Service Connector: 19368140
- Description: 2-Way F 2.8 Series, Sealed( BK)

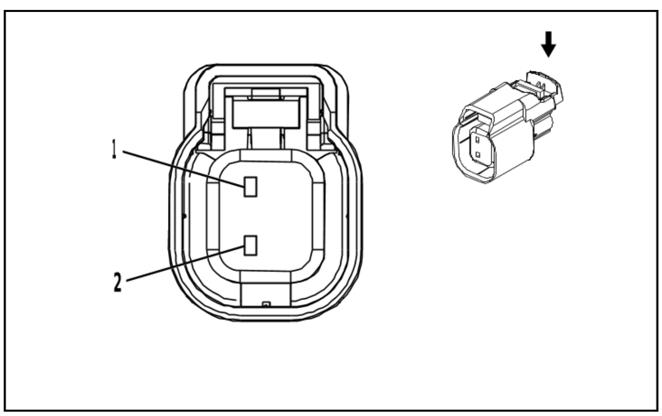
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-35 (VT) | No Tool Required |

## Q17D Fuel Injector 4 (L5P)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) BU / WH | (1) 4904 | (1) Direct Fuel Injector High Voltage Supply Cylinder 4 | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) GY / BU | (2) 4804 | (2) Direct Fuel Injector High Voltage Control Cylinder 4 | (2) I | (2) — |

### Q17D Fuel Injector 4 (L8T)




2792100

**Connector Part Information**
- Harness Type: Fuel Injector Wiring Harness - Right
- OEM Connector: 340624008
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.5 Series, Sealed( BK)

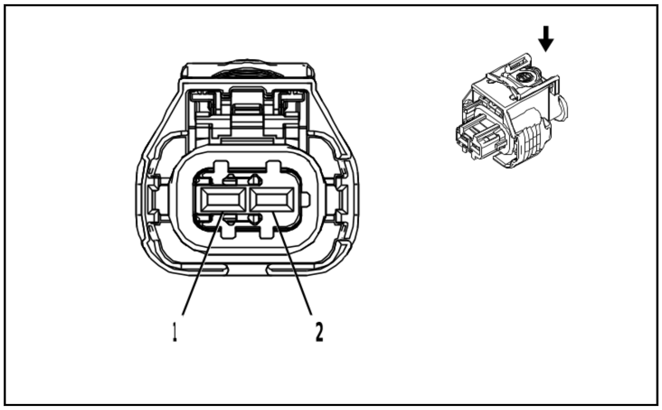
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-2A (GY) | No Tool Required |

## Q17D Fuel Injector 4 (L8T)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) BU / WH | (1) 4904 | (1) Direct Fuel Injector High Voltage Supply Cylinder 4 | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) GY / BU | (2) 4804 | (2) Direct Fuel Injector High Voltage Control Cylinder 4 | (2) I | (2) — |

**Q17E Fuel Injector 5 (L5P)**




2845578

**Connector Part Information**
- Harness Type: Engine Wiring Harness
- OEM Connector: 13343445
- Service Connector: 19368140
- Description: 2-Way F 2.8 Series, Sealed( BK)

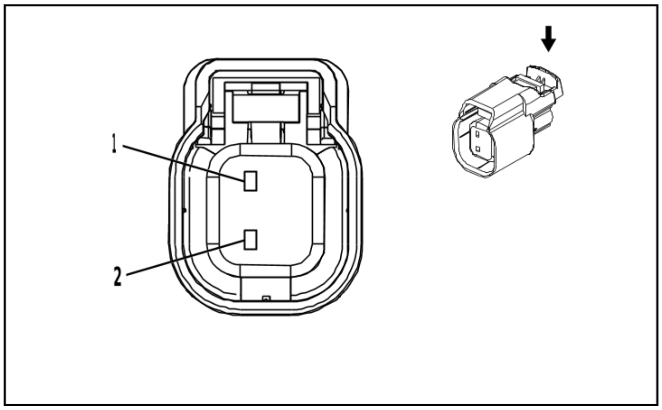
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-35 (VT) | No Tool Required |

## Q17E Fuel Injector 5 (L5P)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) GN / WH | (1) 4905 | (1) Direct Fuel Injector High Voltage Supply Cylinder 5 | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) WH / GN | (2) 4805 | (2) Direct Fuel Injector High Voltage Control Cylinder 5 | (2) I | (2) — |

### Q17E Fuel Injector 5 (L8T)




2792100

**Connector Part Information**

- Harness Type: Fuel Injector Wiring Harness - Left
- OEM Connector: 340624008
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.5 Series, Sealed( BK)

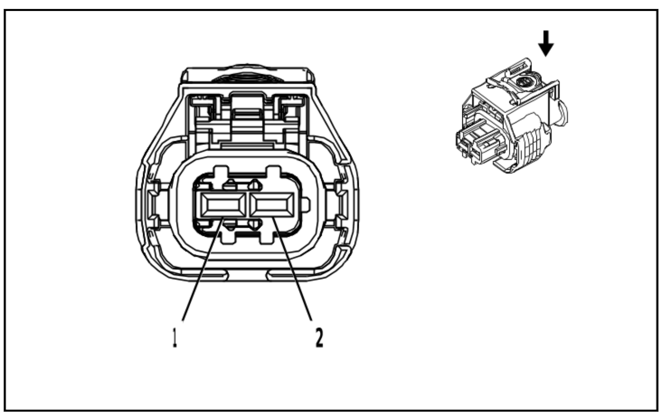
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-2A (GY) | No Tool Required |

## Q17E Fuel Injector 5 (L8T)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) GN / WH | (1) 4905 | (1) Direct Fuel Injector High Voltage Supply Cylinder 5 | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) WH / GN | (2) 4805 | (2) Direct Fuel Injector High Voltage Control Cylinder 5 | (2) I | (2) — |

### Q17F Fuel Injector 6 (L5P)




2845578

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 13343445
- Service Connector: 19368140
- Description: 2-Way F 2.8 Series, Sealed( BK)

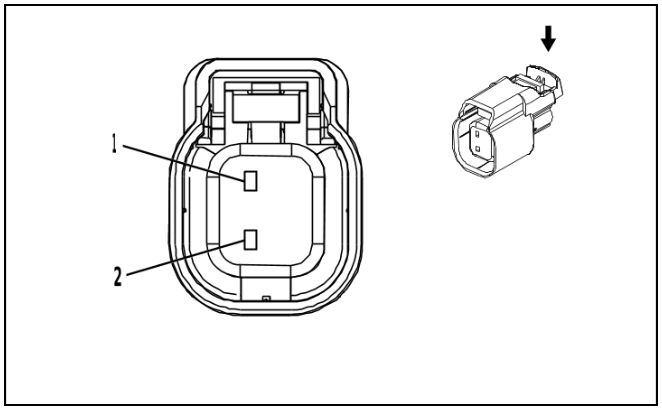
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-35 (VT) | No Tool Required |

## Q17F Fuel Injector 6 (L5P)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) VT / GY | (1) 4906 | (1) Direct Fuel Injector High Voltage Supply Cylinder 6 | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) VT / GN | (2) 4806 | (2) Direct Fuel Injector High Voltage Control Cylinder 6 | (2) I | (2) — |

### Q17F Fuel Injector 6 (L8T)




2792100

**Connector Part Information**

- Harness Type: Fuel Injector Wiring Harness - Right
- OEM Connector: 340624008
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.5 Series, Sealed( BK)

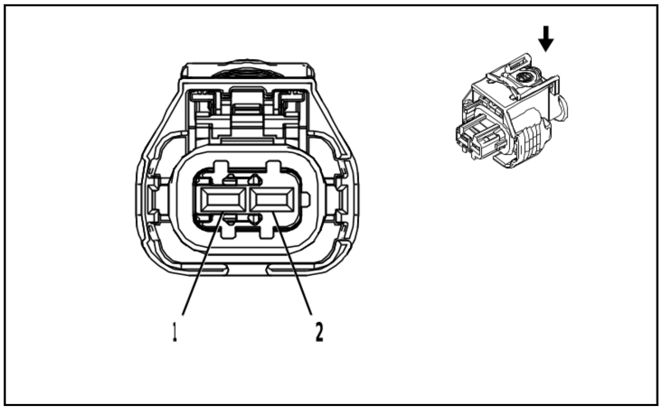
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-2A (GY) | No Tool Required |

## Q17F Fuel Injector 6 (L8T)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) VT / GY | (1) 4906 | (1) Direct Fuel Injector High Voltage Supply Cylinder 6 | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) VT / GN | (2) 4806 | (2) Direct Fuel Injector High Voltage Control Cylinder 6 | (2) I | (2) — |

### Q17G Fuel Injector 7 (L5P)




2845578

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 13343445
- Service Connector: 19368140
- Description: 2-Way F 2.8 Series, Sealed( BK)

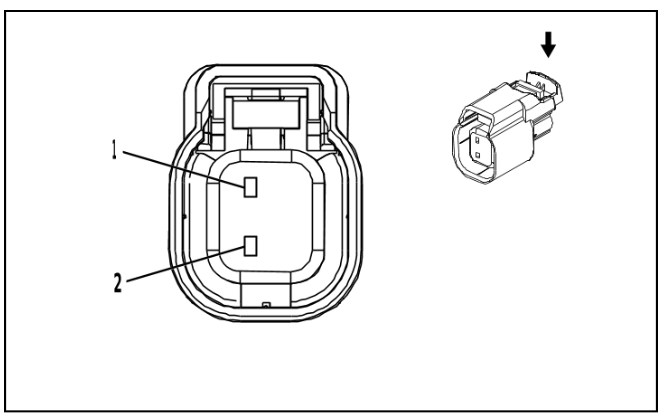
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-35 (VT) | No Tool Required |

## Q17G Fuel Injector 7 (L5P)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) WH / YE | (1) 4907 | (1) Direct Fuel Injector High Voltage Supply Cylinder 7 | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) YE / GY | (2) 4807 | (2) Direct Fuel Injector High Voltage Control Cylinder 7 | (2) I | (2) — |

### Q17G Fuel Injector 7 (L8T)




2792100

**Connector Part Information**

- Harness Type: Fuel Injector Wiring Harness - Left
- OEM Connector: 340624008
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.5 Series, Sealed( BK)

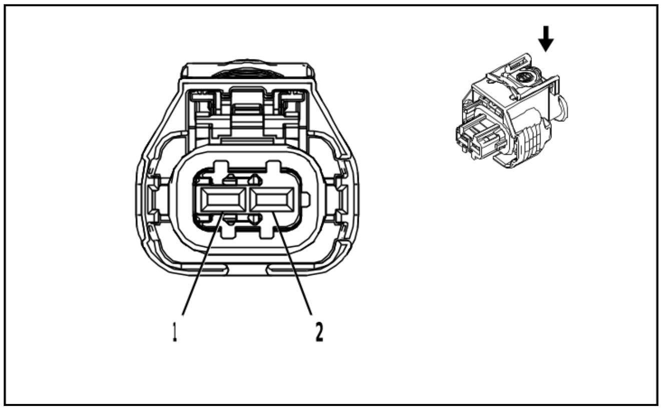
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-2A (GY) | No Tool Required |

## Q17G Fuel Injector 7 (L8T)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) WH / YE | (1) 4907 | (1) Direct Fuel Injector High Voltage Supply Cylinder 7 | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) YE / GY | (2) 4807 | (2) Direct Fuel Injector High Voltage Control Cylinder 7 | (2) I | (2) — |

**Q17H Fuel Injector 8 (L5P)**




2845578

**Connector Part Information**
- Harness Type: Engine Wiring Harness
- OEM Connector: 13343445
- Service Connector: 19368140
- Description: 2-Way F 2.8 Series, Sealed( BK)

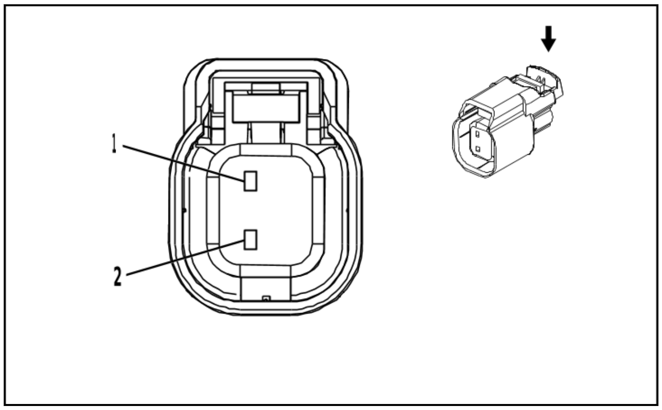
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-35 (VT) | No Tool Required |

## Q17H Fuel Injector 8 (L5P)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) GY / BU | (1) 4908 | (1) Direct Fuel Injector High Voltage Supply Cylinder 8 | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) GY | (2) 4808 | (2) Direct Fuel Injector High Voltage Control Cylinder 8 | (2) I | (2) — |

### Q17H Fuel Injector 8 (L8T)




2792100

**Connector Part Information**

- Harness Type: Fuel Injector Wiring Harness - Right
- OEM Connector: 340624008
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.5 Series, Sealed( BK)

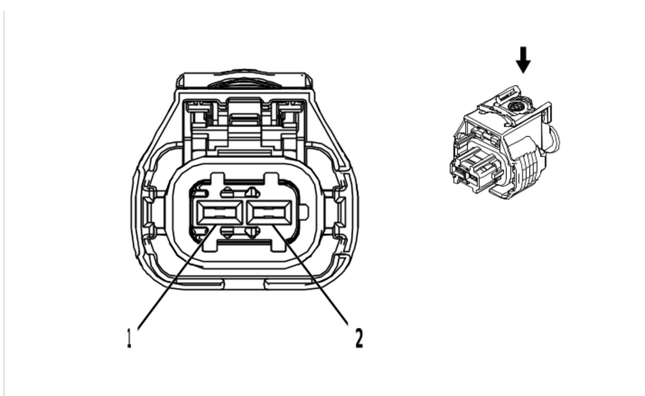
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-2A (GY) | No Tool Required |

## Q17H Fuel Injector 8 (L8T)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) GY / WH | (1) 4908 | (1) Direct Fuel Injector High Voltage Supply Cylinder 8 | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) GY | (2) 4808 | (2) Direct Fuel Injector High Voltage Control Cylinder 8 | (2) I | (2) — |

### Q18A Fuel Pressure Regulator 1 (L5P)




2577394

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 13343443
- Service Connector: 13384371
- Description: 2-Way F 2.8 Series, Sealed( BK)

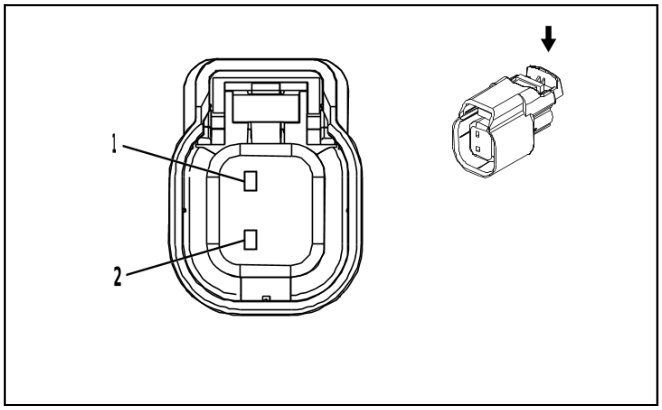
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-35 (VT) | No Tool Required |

## Q18A Fuel Pressure Regulator 1 (L5P)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BN / BK | (1) 2929 | (1) Fuel Metering Solenoid Valve Low Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) YE | (2) 2928 | (2) Fuel Metering Solenoid Valve High Control | (2) I | (2) — |

### Q18B Fuel Pressure Regulator 2 (L5P)




2792100

**Connector Part Information**
- Harness Type: Engine Wiring Harness
- OEM Connector: 13581410
- Service Connector: 19352068
- Description: 2-Way F 1.5 Series, Sealed( BK)

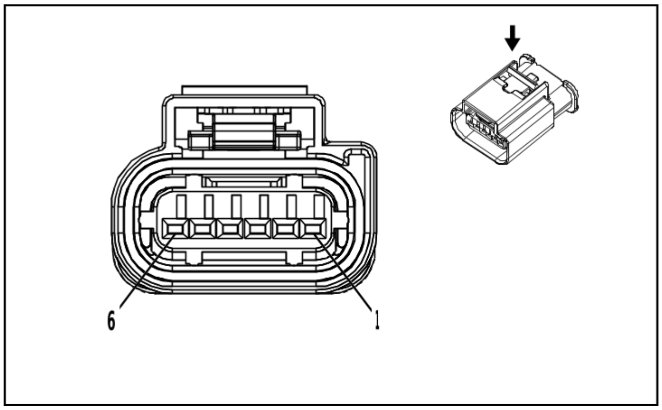
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-2A (GY) | No Tool Required |

## Q18B Fuel Pressure Regulator 2 (L5P)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BU / WH | (1) 2530 | (1) Fuel Rail Pressure Solenoid Valve Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK / YE | (2) 2834 | (2) Fuel Rail Pressure Solenoid Valve Low Control | (2) I | (2) — |

## Q20 Intake Airflow Control Valve




3747579

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 13507087
- Service Connector: 19352911
- Description: 6-Way F 1.2 MCON Series, Sealed( BK)

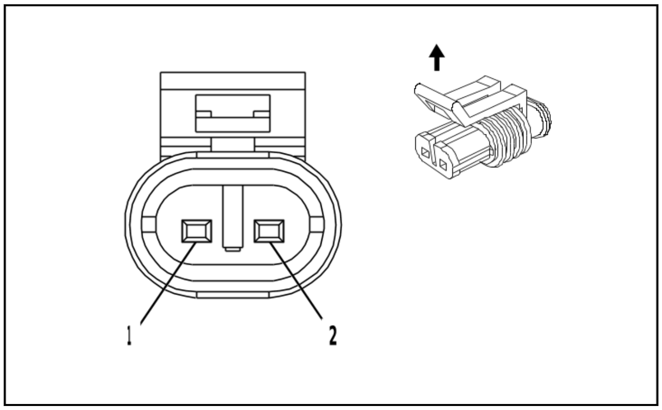
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |

## Q20 Intake Airflow Control Valve

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) YE | (1) 581 | (1) Throttle Actuator Open Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BN / WH | (2) 582 | (2) Throttle Actuator Close Control | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BU / WH | (3) 3630 | (3) Throttle Position Sensor SENT 1 Signal | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) BK / YE | (4) 548 | (4) Engine Control Sensors Low Reference 1 | (4) I | (4) — |
| (5) 5 | (5) 0.5 | (5) BU / RD | (5) 460 | (5) Engine Control Sensors 5 Volt Reference 1 | (5) I | (5) — |
| 6 | — | — | — | Not Occupied | — | — |

### Q32P Shift Solenoid Valve - Power Take-Off (NQF / NQH)




2448482

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 282080-1
- Service Connector: 88988136
- Description: 2-Way F 1.5 Series, Sealed( BK)

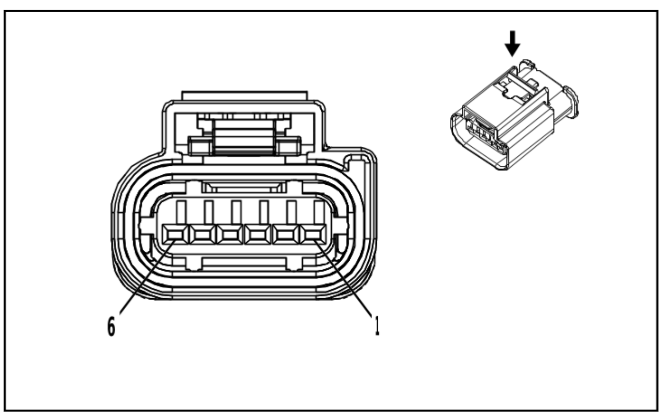
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-14 (GN) | No Tool Required |

## Q32P Shift Solenoid Valve - Power Take-Off (NQF / NQH)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BU / WH | (1) 8235 | (1) Power Take Off Solenoid Control High | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) GN / WH | (2) 8236 | (2) Power Take Off Solenoid Control Low | (2) I | (2) — |

### Q38 Throttle Body




3747579

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 2272975-5
- Service Connector: 19352911
- Description: 6-Way F 1.2 MCON Series, Sealed( BK)

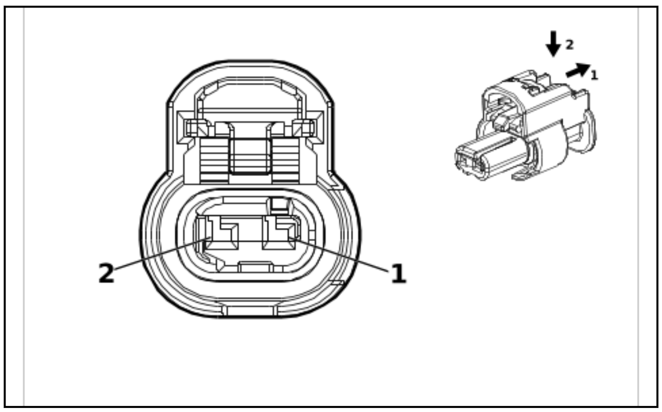
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |

## Q38 Throttle Body

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) YE | (1) 581 | (1) Throttle Actuator Open Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BN / WH | (2) 582 | (2) Throttle Actuator Close Control | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BU / WH | (3) 3630 | (3) Throttle Position Sensor SENT 1 Signal | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) BK / BN | (4) 2752 | (4) Throttle Position Sensor Low Reference | (4) I | (4) — |
| (5) 5 | (5) 0.5 | (5) BN / RD | (5) 2701 | (5) Throttle Position Sensor 5V Reference | (5) I | (5) — |
| 6 | — | — | — | Not Occupied | — | — |

### Q44 Engine Oil Pressure Control Solenoid Valve




4036662

**Connector Part Information**

- Harness Type: Oil Pump Flow Control Solenoid Valve Wire
- OEM Connector: 1-2296704-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON-CB Series, Sealed( BK)

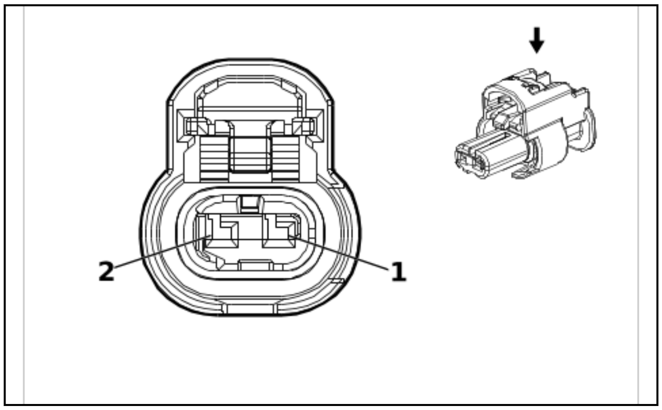
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## Q44 Engine Oil Pressure Control Solenoid Valve

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) VT / BU | (1) 5293 | (1) Powertrain Main Relay Fused Supply Voltage 4 | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BU | (2) 179 | (2) Engine Oil Pump Control | (2) I | (2) — |

### Q46 Air Conditioning Compressor Solenoid Valve




4335931

**Connector Part Information**
- Harness Type: Engine Wiring Harness
- OEM Connector: 1-2296694-2
- Service Connector: 19366843
- Description: 2-Way F 1.2 MCON Series, Sealed( BK)

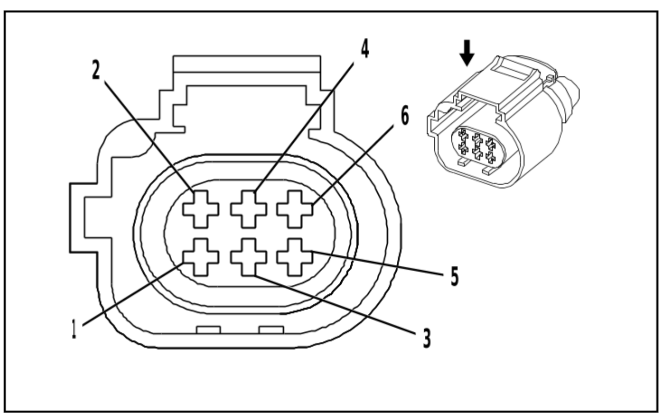
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## Q46 Air Conditioning Compressor Solenoid Valve

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) BU / YE | (1) 7574 | (1) Air Conditioning Compressor Solenoid Valve Control | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) BU / BN | (2) 7573 | (2) Air Conditioning Compressor Solenoid Valve Control | (2) I | (2) — |

### Q47 Exhaust Gas Recirculation Cooler Bypass Solenoid Valve




2216905

**Connector Part Information**
- Harness Type: Engine Wiring Harness
- OEM Connector: 55571435
- Service Connector: 19354082
- Description: 6-Way F 1.6 Micro-Timer Series, Sealed( GY)

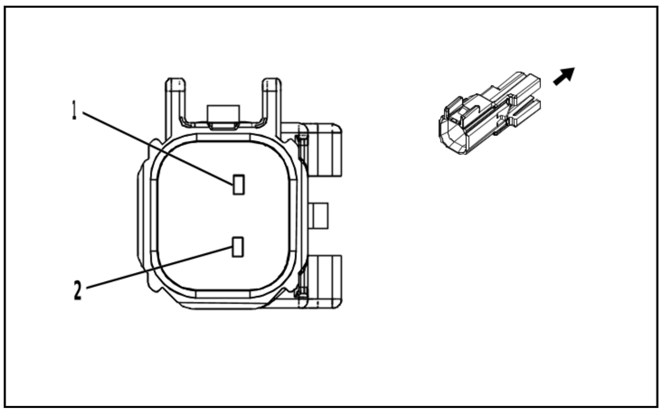
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-14 (GN) | No Tool Required |

## Q47 Exhaust Gas Recirculation Cooler Bypass Solenoid Valve

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BN / VT | (1) 3656 | (1) EGR Cooler Bypass Valve Close Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) GN / GY | (2) 3654 | (2) EGR Cooler Bypass Valve Position Sensor Signal | (2) I | (2) — |
| 3 | — | — | — | Not Occupied | — | — |
| (4) 4 | (4) 0.5 | (4) BK / YE | (4) 548 | (4) Engine Control Sensors Low Reference 1 | (4) I | (4) — |
| (5) 5 | (5) 0.5 | (5) YE / GN | (5) 3655 | (5) EGR Cooler Bypass Valve Open Control | (5) I | (5) — |
| (6) 6 | (6) 0.5 | (6) BU / RD | (6) 460 | (6) Engine Control Sensors 5 Volt Reference 1 | (6) I | (6) — |

### Q61 Reductant Fluid Injector (L5P)




3271068

**Connector Part Information**
- Harness Type: Engine Wiring Harness
- OEM Connector: 34675-0003
- Service Connector: 19301583
- Description: 2-Way M 1.5 Series, Sealed( BK)

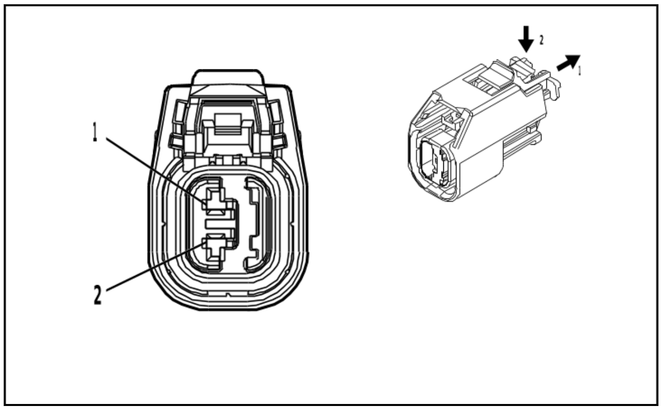
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-3 (GY) | No Tool Required |

## Q61 Reductant Fluid Injector (L5P)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BN / WH | (1) 3100 | (1) Diesel Exhaust Fluid Dosing Valve Low Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BN | (2) 3099 | (2) Diesel Exhaust Fluid Dosing Valve High Control | (2) I | (2) — |

### Q64 Evaporative Emission System Switching Valve




4889830

**Connector Part Information**

- Harness Type: Chassis Wiring Harness
- OEM Connector: 33164011
- Service Connector: 86802964
- Description: 2-Way F 1.5 OCS Series, Sealed( BK)

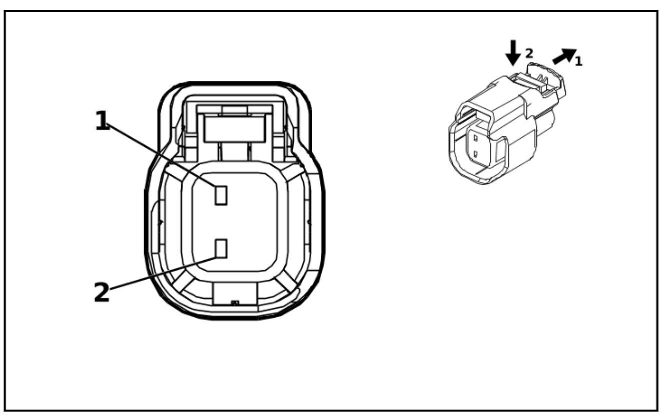
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-14 (GN) | No Tool Required |

## Q64 Evaporative Emission System Switching Valve

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) VT / BU | (1) 5294 | (1) Powertrain Main Relay Fused Supply Voltage 5 | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) WH / RD | (2) 11031 | (2) Fuel Tank Isolation Valve Supply Voltage | (2) I | (2) — |

### Q67 Exhaust Aftertreatment Fuel Injector - Chassis Cab (L5P)




5199958

**Connector Part Information**

- Harness Type: Chassis Wiring Harness
- OEM Connector: 34062-0025
- Service Connector: 13580230
- Description: 2-Way F 1.5 Series, Sealed( BK)

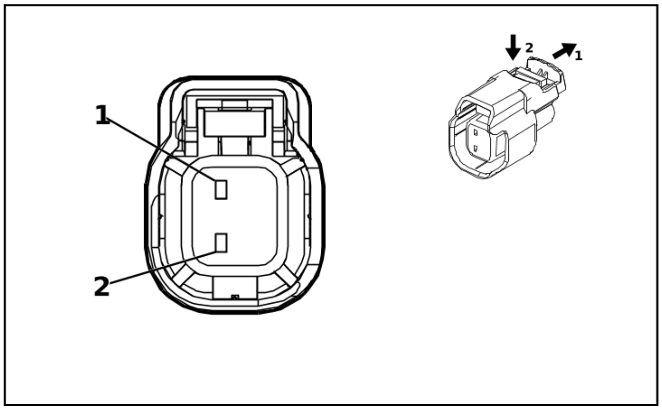
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-2A (GY) | No Tool Required |

## Q67 Exhaust Aftertreatment Fuel Injector - Chassis Cab (L5P)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) VT / BN | (1) 2927 | (1) Exhaust Aftertreatment Fuel Injector Low Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BN / BU | (2) 2926 | (2) Exhaust Aftertreatment Fuel Injector High Control | (2) I | (2) — |

### Q67 Exhaust Aftertreatment Fuel Injector - Pickup (L5P)




5199958

**Connector Part Information**

- Harness Type: Chassis Wiring Harness
- OEM Connector: 34062-4006
- Service Connector: 84769203
- Description: 2-Way F 1.5 Series, Sealed( BK)

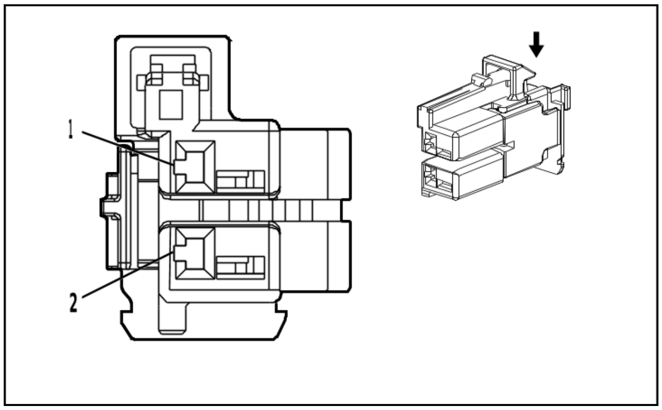
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-2A (GY) | No Tool Required |

## Q67 Exhaust Aftertreatment Fuel Injector - Pickup (L5P)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) VT / BN | (1) 2927 | (1) Exhaust Aftertreatment Fuel Injector Low Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BN / BU | (2) 2926 | (2) Exhaust Aftertreatment Fuel Injector High Control | (2) I | (2) — |

### Q77A Transmission Control Solenoid Valve 1




4672650

**Connector Part Information**

- Harness Type: Automatic Transmission Wiring Harness
- OEM Connector: 2356394-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series( BN)

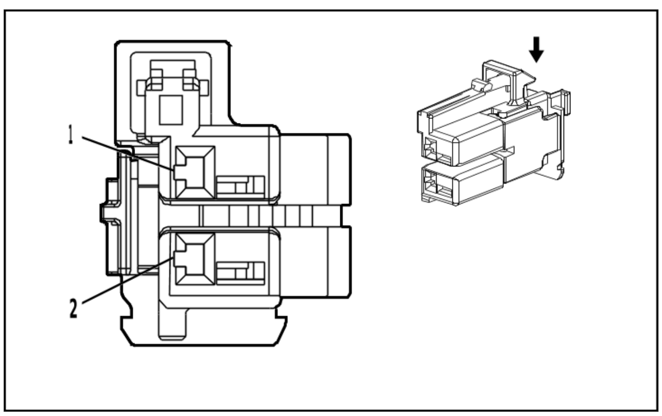
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |

## Q77A Transmission Control Solenoid Valve 1

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) WH | (1) 6388 | (1) Transmission High Side Driver 2 Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BU / GN | (2) 6404 | (2) Clutch Solenoid Valve E Control | (2) I | (2) — |

### Q77B Transmission Control Solenoid Valve 2




4672650

**Connector Part Information**

- Harness Type: Automatic Transmission Wiring Harness
- OEM Connector: 2356394-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series( BN)

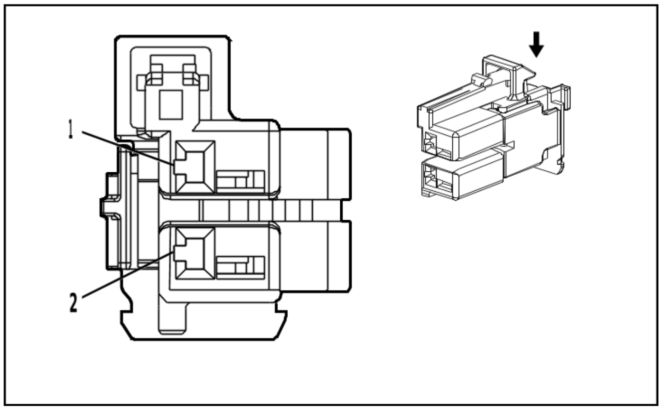
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |

## Q77B Transmission Control Solenoid Valve 2

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) WH | (1) 6388 | (1) Transmission High Side Driver 2 Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) GN / BN | (2) 6403 | (2) Clutch Solenoid Valve D Control | (2) I | (2) — |

### Q77C Transmission Control Solenoid Valve 3




4672650

**Connector Part Information**

- Harness Type: Automatic Transmission Wiring Harness
- OEM Connector: 2356394-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series( BN)

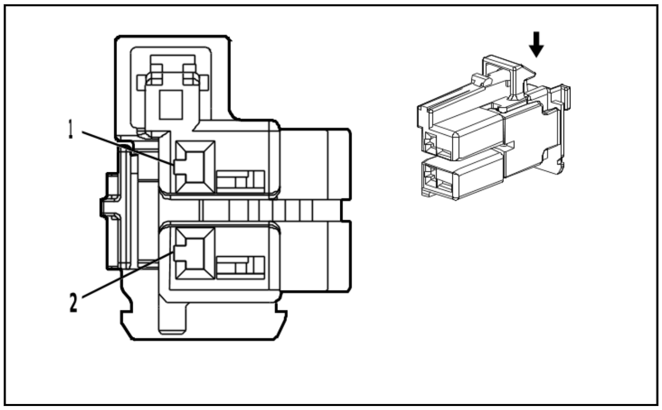
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |

## Q77C Transmission Control Solenoid Valve 3

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) WH | (1) 6388 | (1) Transmission High Side Driver 2 Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) GY | (2) 6402 | (2) Clutch Solenoid Valve C Control | (2) I | (2) — |

### Q77D Transmission Control Solenoid Valve 4




4672650

**Connector Part Information**

- Harness Type: Automatic Transmission Wiring Harness
- OEM Connector: 2356394-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series( BN)

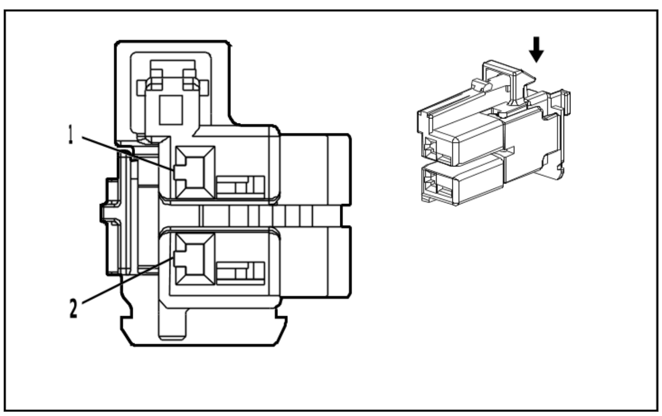
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |

## Q77D Transmission Control Solenoid Valve 4

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) WH | (1) 6388 | (1) Transmission High Side Driver 2 Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BN / WH | (2) 4509 | (2) Transmission Clutch F Control | (2) I | (2) — |

### Q77E Transmission Control Solenoid Valve 5




4672650

**Connector Part Information**

- Harness Type: Automatic Transmission Wiring Harness
- OEM Connector: 2356394-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series( BN)

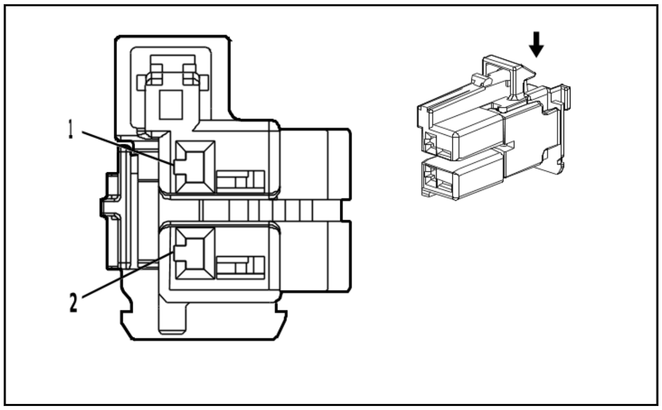
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |

## Q77E Transmission Control Solenoid Valve 5

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) WH | (1) 6388 | (1) Transmission High Side Driver 2 Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) YE / VT | (2) 4507 | (2) Transmission Clutch H Control | (2) I | (2) — |

### Q77F Transmission Control Solenoid Valve 6




4672650

**Connector Part Information**

- Harness Type: Automatic Transmission Wiring Harness
- OEM Connector: 2356394-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series( BN)

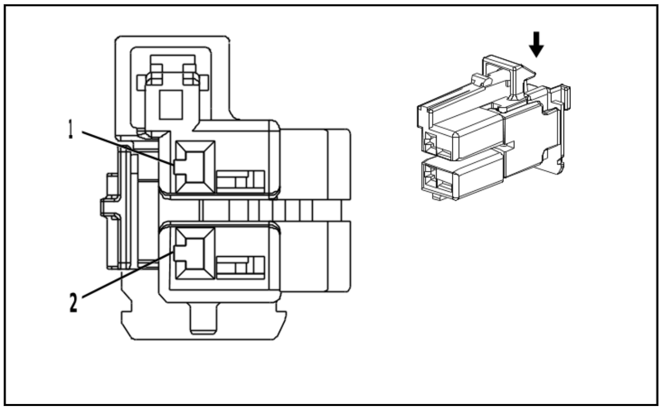
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |

## Q77F Transmission Control Solenoid Valve 6

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) WH | (1) 6388 | (1) Transmission High Side Driver 2 Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BU / GY | (2) 4508 | (2) Transmission Clutch G Control | (2) I | (2) — |

### Q77G Transmission Control Solenoid Valve 7




4364736

**Connector Part Information**

- Harness Type: Automatic Transmission Wiring Harness
- OEM Connector: 2356394-2
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series( BU)

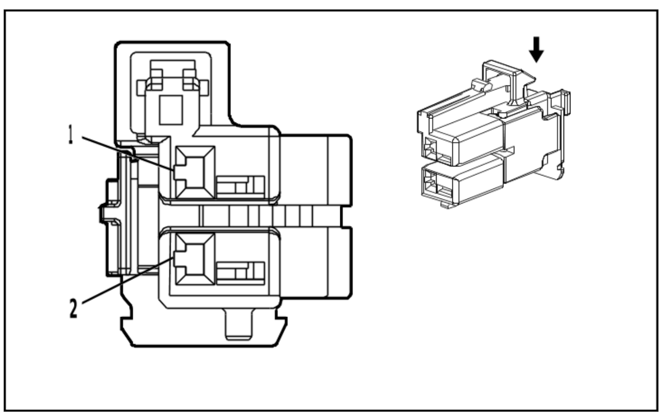
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |

## Q77G Transmission Control Solenoid Valve 7

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BN | (1) 6387 | (1) Transmission High Side Driver 1 Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) GN / OG | (2) 1530 | (2) Transmission Line Pressure Control Solenoid Valve Control | (2) I | (2) — |

### Q77H Transmission Control Solenoid Valve 8




4672683

**Connector Part Information**

- Harness Type: Automatic Transmission Wiring Harness
- OEM Connector: 2356394-3
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series( GN)

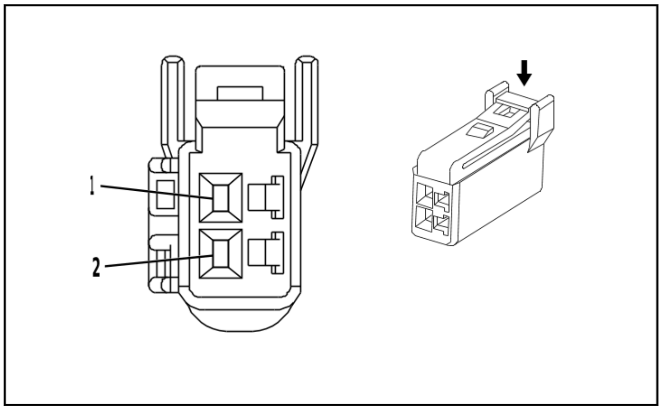
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |

## Q77H Transmission Control Solenoid Valve 8

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BN | (1) 6387 | (1) Transmission High Side Driver 1 Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) GY / BN | (2) 422 | (2) Torque Converter Clutch Solenoid Valve Control | (2) I | (2) — |

### Q77J Transmission Control Solenoid Valve 9




4051682

**Connector Part Information**

- Harness Type: Automatic Transmission Wiring Harness
- OEM Connector: 7287-0122
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 040 III Series( NA)

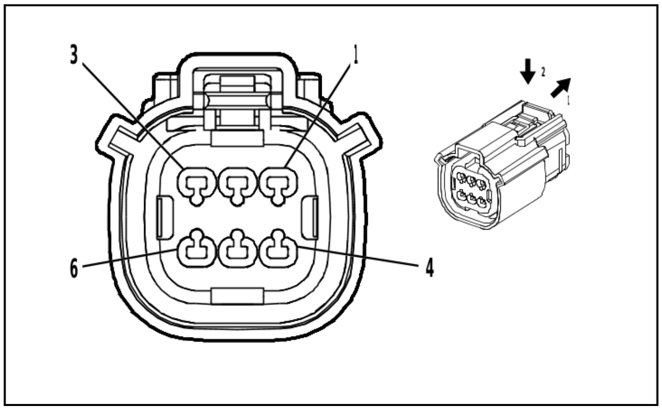
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## Q77J Transmission Control Solenoid Valve 9

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) WH | (1) 6388 | (1) Transmission High Side Driver 2 Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) VT | (2) 7819 | (2) Default Disable Solenoid Control | (2) I | (2) — |

## Q85 Cooling Fan Clutch




4574736

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 33472-0681
- Service Connector: 13578533
- Description: 6-Way F 1.5 MX Series, Sealed( BK)

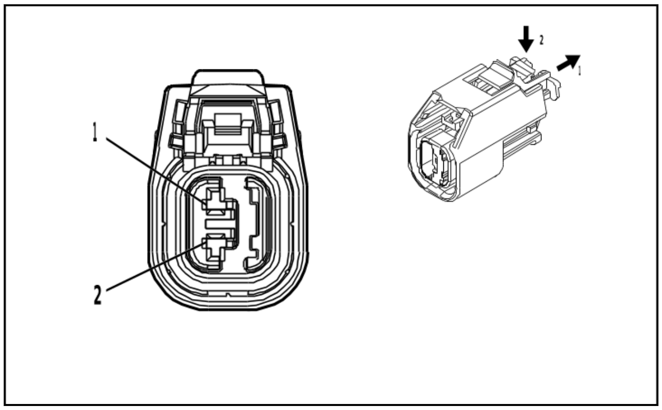
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-14 (GN) | No Tool Required |

### Q85 Cooling Fan Clutch

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 1.5 | (1) BK | (1) 450 | (1) Ground | (1) I | (1) — |
| 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 0.5 | (3) WH | (3) 2368 | (3) Cooling Fan Control Signal | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) BK / GY | (4) 626 | (4) Engine Control Vehicle Sensors Low Reference 1 | (4) I | (4) — |
| (5) 5 | (5) 0.5 | (5) BU / VT | (5) 2364 | (5) Cooling Fan Speed Signal | (5) I | (5) — |
| (6) 6 | (6) 0.5 | (6) WH / RD | (6) 480 | (6) Engine Control Vehicle Sensors 5 Volt Reference 1 | (6) I | (6) — |

### R6A Terminating Resistor - High Speed Bus




4889830

**Connector Part Information**

- Harness Type: Rear Object Alarm Sensor Wiring Harness
- OEM Connector: 33164011
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.5 OCS Series, Sealed( BK)

## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-14 (GN) | No Tool Required |

## R6A Terminating Resistor - High Speed Bus

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) WH | (1) 4100 | (1) AUTOSAR CAN Bus [-] 4 Serial Data | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BU / VT | (2) 4101 | (2) AUTOSAR CAN Bus [+] 4 Serial Data | (2) I | (2) — |

### R12 Power Take-Off Switch Diode (PTO)

—

**Connector Part Information**

- Harness Type: PTO Harness
- OEM Connector: DID00000
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way

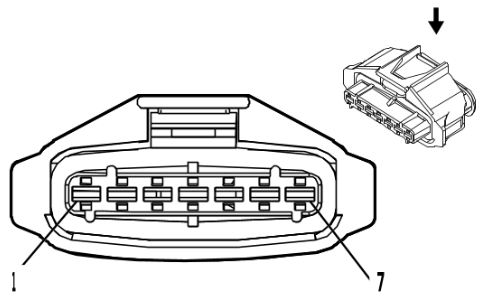
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## R12 Power Take-Off Switch Diode (PTO)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| A | — | BU / BN | 4408 | Power Take-Off Enable Signal | I | — |
| C | — | GY / GN | 6239 | Transmission Power Take-Off Engage/ Disengage Signal Power | I | — |

## R29 Fuel Filter




2537256

**Connector Part Information**
- Harness Type: Chassis Wiring Harness
- OEM Connector: 1928403222
- Service Connector: 19354080
- Description: 7-Way F 2.8 Junior Power Timer Series, Sealed( BK)

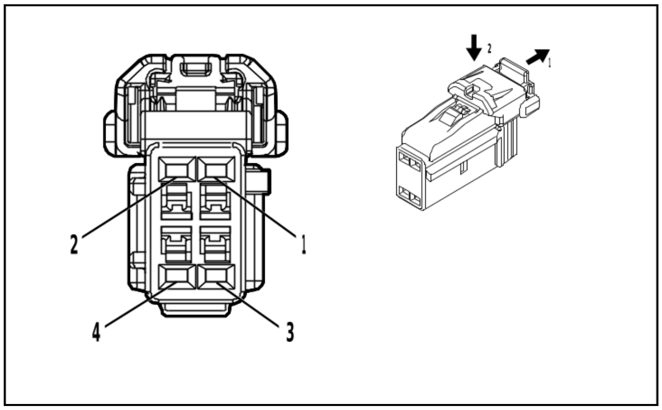
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-35 (VT) | No Tool Required |

### R29 Fuel Filter

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 2.5 | (1) BK / WH | (1) 1951 | (1) Signal Ground | (1) I | (1) — |
| (2) 2 | (2) 2.5 | (2) BN / YE | (2) 2996 | (2) Fuel Heater Control 1 | (2) I | (2) — |
| (3) 3 | (3) 1 | (3) VT / GN | (3) 4320 | (3) Powertrain Sensor Bus Enable | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) BK / BU | (4) 6863 | (4) Water In Fuel Sensor Low Reference | (4) I | (4) — |
| (5) 5 | (5) 0.5 | (5) BU / YE | (5) 6861 | (5) Water In Fuel Sensor Signal | (5) I | (5) — |
| (6) 6 | (6) 0.5 | (6) BN / GY | (6) 7072 | (6) Fuel Temperature Sensor 1 Signal | (6) I | (6) — |
| (7) 7 | (7) 0.5 | (7) BN / WH | (7) 7073 | (7) Fuel Temperature Sensor 1 Low Reference | (7) I | (7) — |

### S3 Automatic Transmission Control




4872683

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 6098-8435
- Service Connector: 19369633
- Description: 4-Way F 1.2 Series( BK)

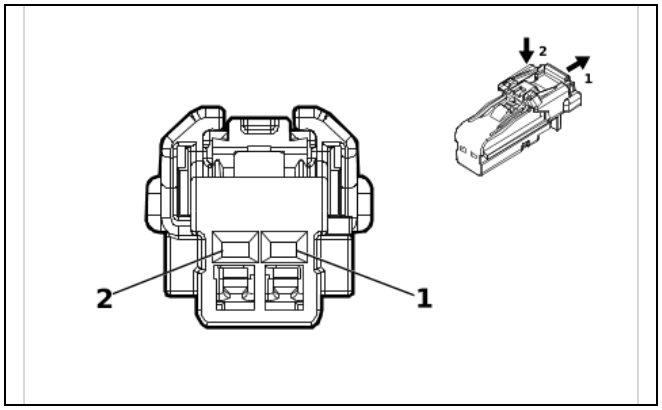
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |
| II | Not required | J-35616-16 (L-GN) | No Tool Required |

## S3 Automatic Transmission Control

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) YE / WH | (1) 816 | (1) Brake Transmission Shift Interlock Solenoid Actuator Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK | (2) 1050 | (2) Ground | (2) II | (2) — |
| (3) 3 | (3) 0.35 | (3) WH / VT | (3) 5905 | (3) Key Capture/Column Lock Shift Position Signal | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) BK | (4) 1050 | (4) Ground | (4) II | (4) — |

### S3C Automatic Transmission Control Lever




4115691

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 6098-8988
- Service Connector: 87816612
- Description: 2-Way F 1.2 MCON Series( BK)

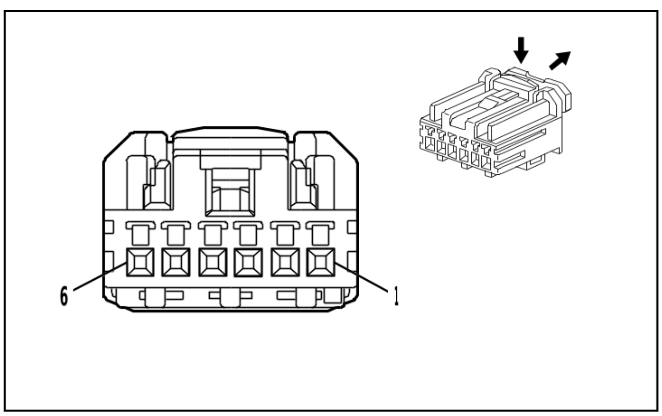
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |

## S3C Automatic Transmission Control Lever

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) GN / BU | (1) 3738 | (1) Tap Up/Tap Down Switch Signal 2 | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) BK / WH | (2) 851 | (2) Signal Ground | (2) I | (2) — |

### S13D Door Lock Switch - Driver (- A45)




4650256

**Connector Part Information**

- Harness Type: Front Side Door Door Lock Door Wiring Harness - Left
- OEM Connector: HCMPB-C06A-K
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 0.64 HCM Series( BK)

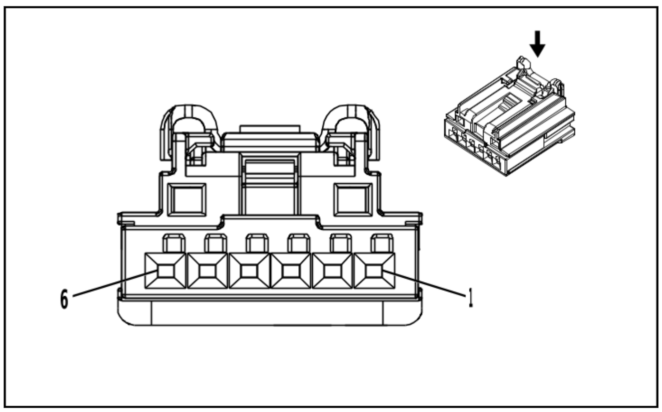
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## S13D Door Lock Switch - Driver (- A45)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5<br>(1) 0.5 | (1) BN / GY<br>(1) YE | (1) 4784<br>(1) 6817 | (1) Left Front Door LED Backlight Dimming Control<br>(1) LED Backlight Dimming Control 1 | (1) I<br>(1) I | (1) DLN<br>(1) - DLN |
| (2) 2 | (2) 0.5 | (2) BN / YE | (2) 2771 | (2) Left Front Door Lock Switch Lock Signal | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BN / WH | (3) 2772 | (3) Left Front Door Lock Switch Unlock Signal | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) BK | (4) 1550 | (4) Ground | (4) I | (4) — |
| 5 - 6 | — | — | — | Not Occupied | — | — |

### S13D Door Lock Switch - Driver (A45)




4145138

**Connector Part Information**

- Harness Type: Front Side Door Door Lock Door Wiring Harness - Left
- OEM Connector: 2035363-2
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 0.64 Generation Y Series( BK)

## Terminal Part Information

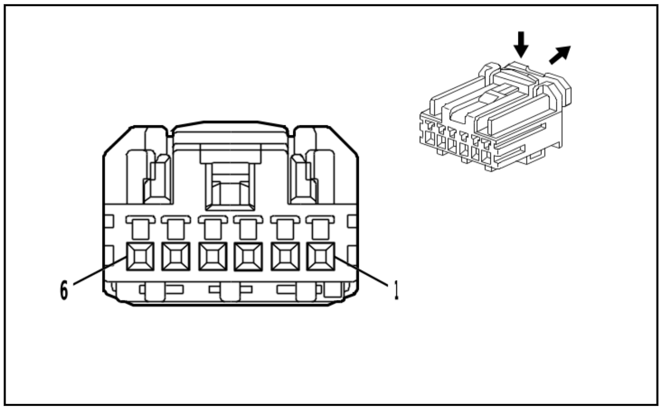
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## S13D Door Lock Switch - Driver (A45)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BN / GY | (1) 4784 | (1) Left Front Door LED Backlight Dimming Control | (1) I | (1) — |
| 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 0.5 | (3) BN / YE | (3) 2771 | (3) Left Front Door Lock Switch Lock Signal | (3) I | (3) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (4) 4 | (4) 0.5 | (4) BN / WH | (4) 2772 | (4) Left Front Door Lock Switch Unlock Signal | (4) I | (4) — |
| (5) 5 | (5) 0.5 | (5) BK | (5) 1550 | (5) Ground | (5) I | (5) — |
| 6 | — | — | — | Not Occupied | — | — |

**S13P Door Lock Switch - Passenger (- A45)**




4650256

**Connector Part Information**

- Harness Type: Front Side Door Door Lock Door Wiring Harness - Right
- OEM Connector: HCMPB-C06A-K
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 0.64 HCM Series( BK)

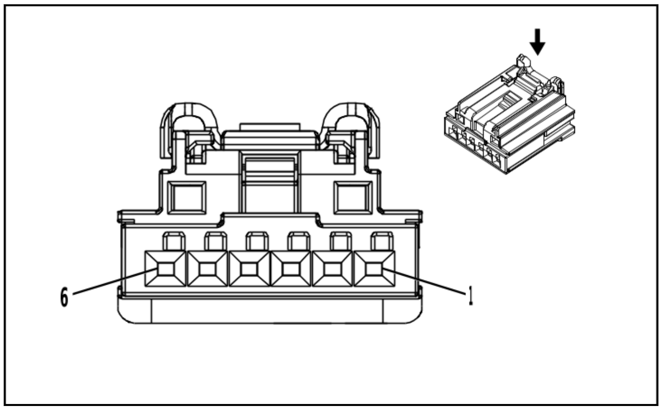
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## S13P Door Lock Switch - Passenger (- A45)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5<br>(1) 0.5 | (1) GY / VT<br>(1) YE | (1) 4638<br>(1) 6817 | (1) LED Backlight Dimming Control Right Front Door<br>(1) LED Backlight Dimming Control 1 | (1) I<br>(1) I | (1) DLN<br>(1) - DLN |
| (2) 2 | (2) 0.5 | (2) YE / VT | (2) 2773 | (2) Right Front Door Lock Switch Lock Control | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BN / VT | (3) 2774 | (3) Right Front Door Lock Switch Unlock Control | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) BK | (4) 1350 | (4) Ground | (4) I | (4) — |
| 5 - 6 | — | — | — | Not Occupied | — | — |

## S13P Door Lock Switch - Passenger (A45)




4145138

**Connector Part Information**

- Harness Type: Front Side Door Door Lock Door Wiring Harness - Right
- OEM Connector: 2035363-2
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 0.64 Generation Y Series( BK)

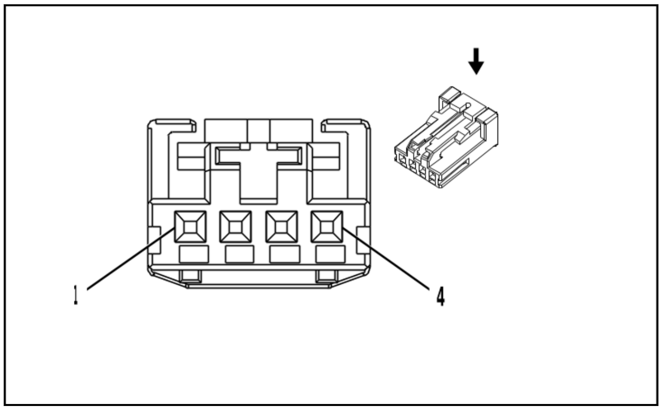
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## S13P Door Lock Switch - Passenger (A45)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) GY / VT | (1) 4638 | (1) LED Backlight Dimming Control Right Front Door | (1) I | (1) — |
| 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 0.5 | (3) YE / VT | (3) 2773 | (3) Right Front Door Lock Switch Lock Control | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) BN / VT | (4) 2774 | (4) Right Front Door Lock Switch Unlock Control | (4) I | (4) — |
| (5) 5 | (5) 0.5 | (5) BK | (5) 1350 | (5) Ground | (5) I | (5) — |
| 6 | — | — | — | Not Occupied | — | — |

### S27 Head-Up Display Switch




2717162

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 1-936119-1
- Service Connector: 19332889
- Description: 4-Way F 0.64 Micro-Quadlock Series( BK)

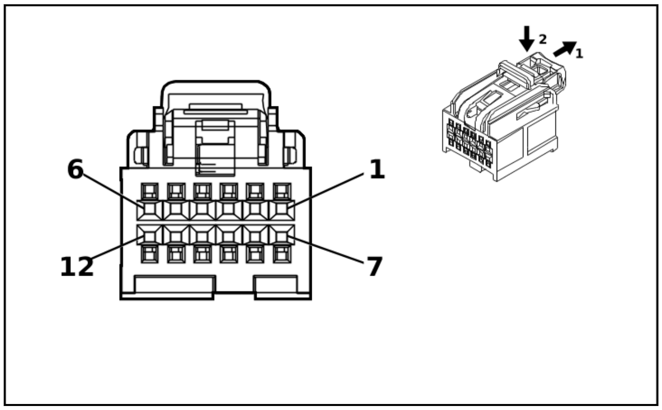
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## S27 Head-Up Display Switch

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) YE | (1) 6817 | (1) LED Backlight Dimming Control 1 | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) BK / WH | (2) 851 | (2) Signal Ground | (2) I | (2) — |
| (3) 3 | (3) 0.35 | (3) BK / GN | (3) 5699 | (3) Head-Up Display Switch Low Reference | (3) I | (3) — |
| (4) 4 | (4) 0.35 | (4) YE / WH | (4) 622 | (4) Head-Up Display Switch Signal | (4) I | (4) — |

## S30 Headlamp Switch




4975223

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 35016616
- Service Connector: 13519750
- Description: 12-Way F 0.64 OCS Series( BK)

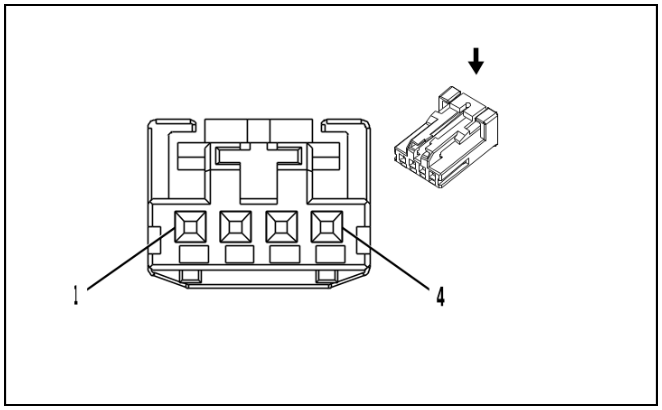
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 19354230 | J-35616-64B (L-BU) | J-38125-215A |

## S30 Headlamp Switch

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) WH / VT | (1) 103 | (1) Headlamp Switch On Signal | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) YE | (2) 6817 | (2) LED Backlight Dimming Control 1 | (2) I | (2) — |
| (3) 3 | (3) 0.35 | (3) GN / BN | (3) 306 | (3) Headlamp Switch Off Signal | (3) I | (3) — |
| (4) 4 | (4) 0.35 | (4) GY | (4) 158 | (4) Cargo Lamp Switch Signal | (4) I | (4) — |
| (5) 5 | (5) 0.35 | (5) GN / GY | (5) 13 | (5) Headlamp Switch Park Lamp Signal | (5) I | (5) — |
| (6) 6 | (6) 0.35 | (6) BU / GN | (6) 4248 | (6) Cargo Lamp Indicator Control | (6) I | (6) — |
| (7) 7 | (7) 0.35 | (7) WH / GY | (7) 2935 | (7) Task Lamp Switch Signal | (7) I | (7) — |
| (8) 8 | (8) 0.35 | (8) BK / WH | (8) 851 | (8) Signal Ground | (8) I | (8) — |
| 9 - 10 | — | — | — | Not Occupied | — | — |
| (11) 11 | (11) 0.35 | (11) WH / BN | (11) 7555 | (11) Headlamp Switch Signal | (11) I | (11) — |
| (12) 12 | (12) 0.35 | (12) YE | (12) 7556 | (12) Headlamp Switch Reference | (12) I | (12) — |

### S32R Rear Seat Heater Switch




2717162

**Connector Part Information**

- Harness Type: Front Floor Console Wiring Harness
- OEM Connector: 1-936119-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 0.64 Micro-Quadlock Series( BK)

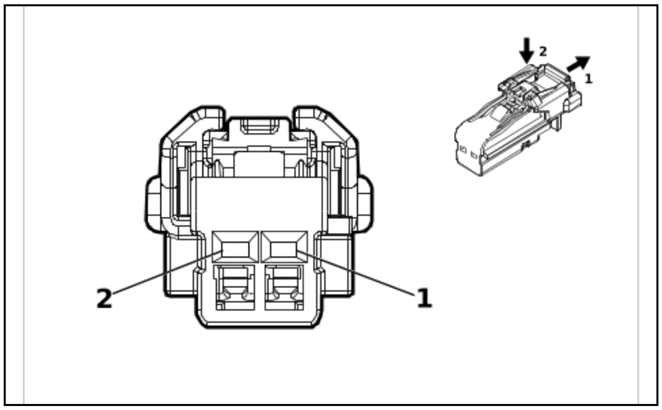
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## S32R Rear Seat Heater Switch

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) RD / BU | (1) 1240 | (1) Battery Positive Voltage | (1) I | (1) — |
| 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 0.5 | (3) GN / VT | (3) 2857 | (3) Body Control Module LIN Bus 11 | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) BK / WH | (4) 1451 | (4) Signal Ground | (4) I | (4) — |

### S33 Steering Wheel Horn Contact (- K34)




4115691

**Connector Part Information**

- Harness Type: Steering Wheel Horn Switch Wiring Harness
- OEM Connector: 6098-8988
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series( BK)

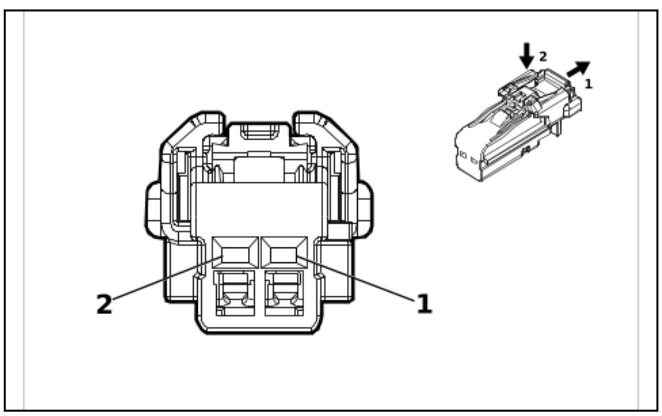
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## S33 Steering Wheel Horn Contact (- K34)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) BK | (1) 6051 | (1) Steering Wheel Ground | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) RD | (2) 3287 | (2) Horn Switch Signal | (2) I | (2) — |

### S33 Steering Wheel Horn Contact (K34)




4115691

**Connector Part Information**

- Harness Type: Steering Wheel Horn Switch Wiring Harness
- OEM Connector: 6098-8431
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 Series( BK)

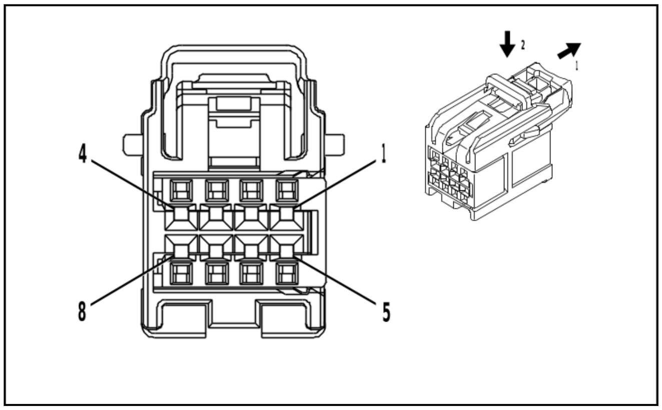
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## S33 Steering Wheel Horn Contact (K34)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) BK / WH | (1) 6051 | (1) Steering Wheel Ground | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) GN / WH | (2) 3287 | (2) Horn Switch Signal | (2) I | (2) — |

### S38 On/Off Vehicle Switch




4232228

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 15526973
- Service Connector: 19353873
- Description: 8-Way F 0.64 OCS Series( GY)

## Terminal Part Information

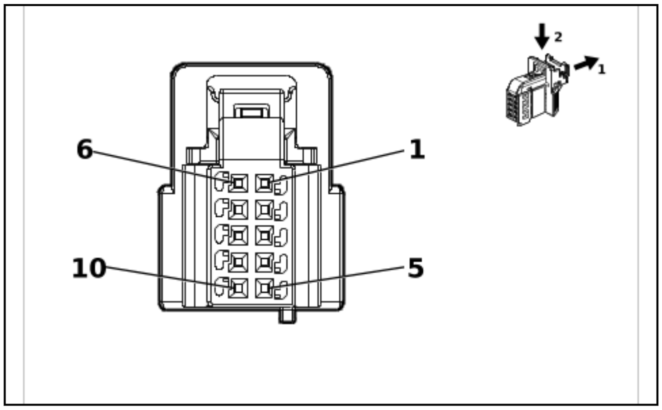
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## S38 On/Off Vehicle Switch

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) BU / BK | (1) 5719 | (1) Ignition Mode Switch Start LED Signal | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) BN / BK | (2) 5720 | (2) Ignition Mode Switch Accessory LED Signal | (2) I | (2) — |
| (3) 3 | (3) 0.35 | (3) BK / WH | (3) 851 | (3) Signal Ground | (3) I | (3) — |
| (4) 4 | (4) 0.35 | (4) BU / GN | (4) 5723 | (4) Ignition Mode Switch Mode Voltage | (4) I | (4) — |
| (5) 5 | (5) 0.35 | (5) YE | (5) 6817 | (5) LED Backlight Dimming Control 1 | (5) I | (5) — |
| 6 | — | — | — | Not Occupied | — | — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (7) 7 | (7) 0.35 | (7) BK / GY | (7) 3559 | (7) Passive Start Switch 2 Low Reference | (7) I | (7) — |
| (8) 8 | (8) 0.35 | (8) GN / BK | (8) 3558 | (8) Passive Start Switch Signal 2 | (8) I | (8) — |

### S47D Front Seat Adjuster Memory Switch - Driver




5838155

**Connector Part Information**

- Harness Type: Front Side Door Door Lock Door Wiring Harness - Left
- OEM Connector: 2310000-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 10-Way F 0.64 MQS Series( BK)

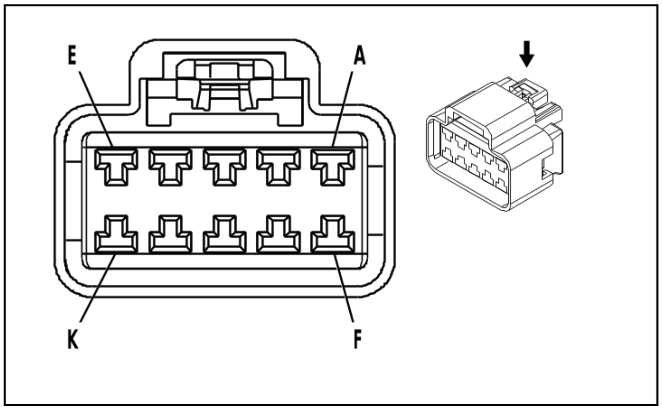
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## S47D Front Seat Adjuster Memory Switch - Driver

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BN / GY | (1) 4784 | (1) Left Front Door LED Backlight Dimming Control | (1) I | (1) — |
| 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 0.5 | (3) BN / YE | (3) 2771 | (3) Left Front Door Lock Switch Lock Signal | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) BN / WH | (4) 2772 | (4) Left Front Door Lock Switch Unlock Signal | (4) I | (4) — |
| (5) 5 | (5) 0.5 | (5) BK / WH | (5) 1551 | (5) Signal Ground | (5) I | (5) — |
| (6) 6 | (6) 0.5 | (6) BU / GN | (6) 614 | (6) Seat Memory Switch Set Signal | (6) I | (6) — |
| (7) 7 | (7) 0.5 | (7) WH | (7) 615 | (7) Seat Memory Switch Signal 1 | (7) I | (7) — |
| 8 - 10 | — | — | — | Not Occupied | — | — |

### S64D Front Seat Adjuster Switch - Driver (A2X - A45)




623046

**Connector Part Information**

- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 35058909
- Service Connector: Service by Harness - See Part Catalog
- Description: 10-Way F 280 GT Series( BK)

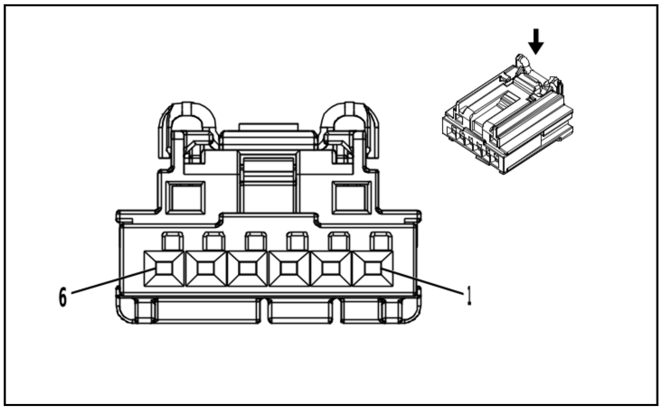
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-4A (PU) | No Tool Required |

## S64D Front Seat Adjuster Switch - Driver (A2X - A45)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| A | 2.5 | RD / YE | 5040 | Battery Positive Voltage | I | — |
| B | 1.5 | BU / YE | 277 | Driver Seat Recline Motor Rearward Control | I | — |
| C | 1.5 | YE / BU | 285 | Driver Seat Horizontal Motor Forward Control | I | — |
| D | 1.5 | GY / GN | 284 | Driver Seat Horizontal Motor Rearward Control | I | — |
| E | 1.5 | GY / BU | 283 | Driver Seat Rear Vertical Motor Down Control | I | — |
| F | 1.5 | GN / BN | 286 | Driver Seat Front Vertical Motor Up Control | I | — |
| G | 1.5 | YE | 282 | Driver Seat Rear Vertical Motor Up Control | I | — |
| H | 1.5 | GN / YE | 276 | Driver Seat Recline Motor Forward Control | I | — |
| J | 2.5 | BK | 1550 | Ground | I | — |
| K | 1.5 | BU / VT | 287 | Driver Seat Front Vertical Motor Down Control | I | — |

**S64D Front Seat Adjuster Switch - Driver (A45)**




3960313

**Connector Part Information**

- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 2035363-4
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 0.64 Generation Y Series( BK)

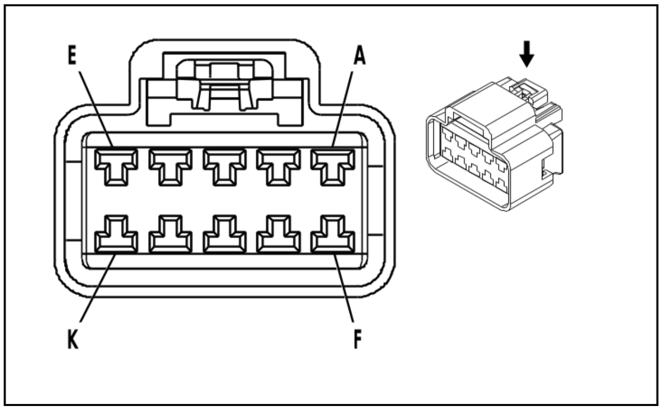
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## S64D Front Seat Adjuster Switch - Driver (A45)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) RD / BN | (1) 2240 | (1) Battery Positive Voltage | (1) I | (1) — |
| 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 0.35<br>(3) 0.5 | (3) GN / GY<br>(3) GN / GY | (3) 3758<br>(3) 3758 | (3) Driver Seat Adjuster Memory Module LIN Bus 2<br>(3) Driver Seat Adjuster Memory Module LIN Bus 2 | (3) I<br>(3) I | (3) —<br>(3) — |
| (4) 4 | (4) 0.5 | (4) BK | (4) 1550 | (4) Ground | (4) I | (4) — |
| (5) 5 | (5) 0.5 | (5) BU / YE | (5) 2818 | (5) Driver Seat Auxiliary Adjustment Switch Signal | (5) I | (5) — |
| (6) 6 | (6) 0.5 | (6) BK / VT | (6) 2817 | (6) Auxiliary Driver Seat Adjustment Switch Low Reference | (6) I | (6) — |

## S64P Front Seat Adjuster Switch - Passenger (- AKE / AHH)




623046

**Connector Part Information**

- Harness Type: Front Seat Wiring Harness - Passenger
- OEM Connector: 35058909
- Service Connector: Service by Harness - See Part Catalog
- Description: 10-Way F 280 GT Series( BK)

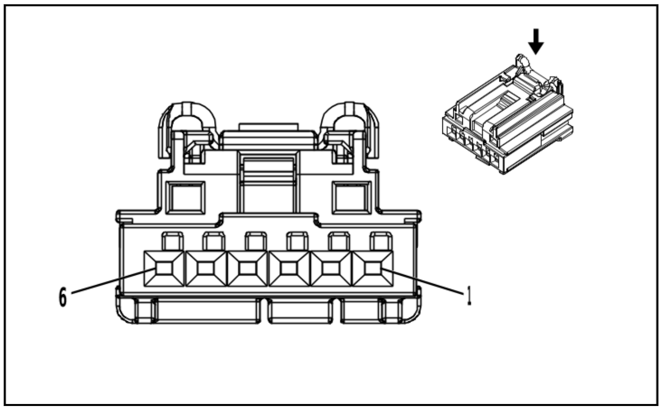
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-4A (PU) | No Tool Required |

### S64P Front Seat Adjuster Switch - Passenger (- AKE / AHH)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| A | 1.5 | BU / WH | 289 | Passenger Seat Rear Vertical Motor Down Control | I | — |
| B | 1.5 | YE / BU | 290 | Passenger Seat Horizontal Motor Rearward Control | I | — |
| C | 1.5 | YE / WH | 296 | Passenger Seat Horizontal Motor Forward Control | I | — |
| D | 1.5 | BU / BN | 77 | Passenger Seat Recline Motor Rearward Control | I | — |
| E | 2.5 | BK | 1350 | Ground | I | — |
| F | 1.5 | GN / BU | 298 | Passenger Seat Front Vertical Motor Down Control | I | — |
| G | 2.5 | RD / YE | 7440 | Battery Positive Voltage | I | — |
| H | 1.5 | GN | 76 | Passenger Seat Recline Motor Forward Control | I | — |
| J | 1.5 | GN / WH | 288 | Passenger Seat Rear Vertical Motor Up Control | I | — |
| K | 1.5 | GN / VT | 297 | Passenger Seat Front Vertical Motor Up Control | I | — |

### S64P Front Seat Adjuster Switch - Passenger (AKE / AHH)




3960313

**Connector Part Information**

- Harness Type: Front Seat Wiring Harness - Passenger
- OEM Connector: 2035363-4
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 0.64 Generation Y Series( BK)

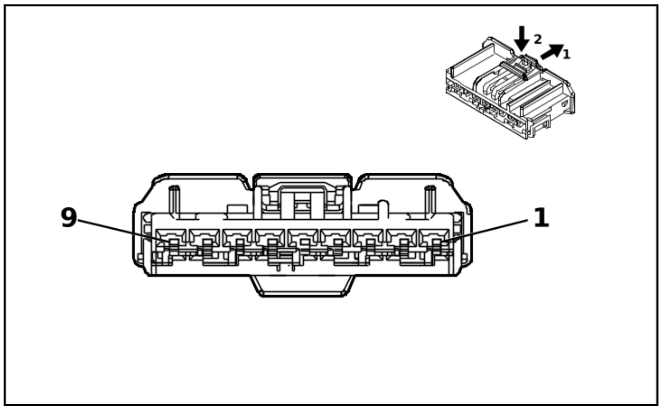
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## S64P Front Seat Adjuster Switch - Passenger (AKE / AHH)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) RD / BN | (1) 2240 | (1) Battery Positive Voltage | (1) I | (1) — |
| 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 0.5 | (3) GN / YE | (3) 4116 | (3) Passenger Seat Adjuster Memory Module LIN Bus 2 | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) BK | (4) 1350 | (4) Ground | (4) I | (4) — |
| (5) 5 | (5) 0.5 | (5) GN / WH | (5) 2816 | (5) Passenger Seat Auxiliary Adjustment Switch Signal | (5) I | (5) — |
| (6) 6 | (6) 0.5 | (6) BK / BN | (6) 2815 | (6) Auxiliary Passenger Seat Adjustment Switch Low Reference | (6) I | (6) — |

### S65D Front Seat Lumbar Switch - Driver (A2X - AVK)




5204289

**Connector Part Information**

- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 7289-6875-40
- Service Connector: Service by Harness - See Part Catalog
- Description: 9-Way F 2.8 YESC Series( GY)

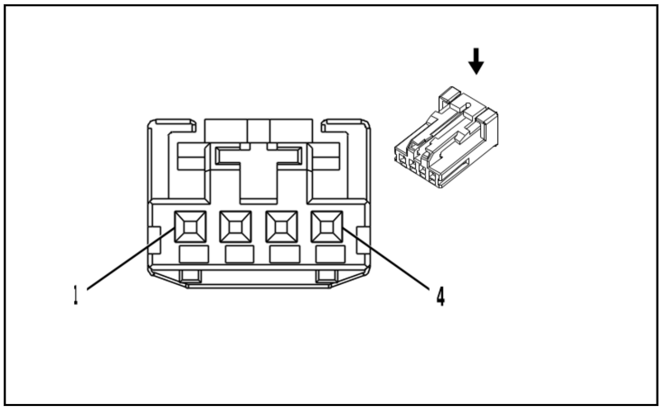
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-4A (PU) | No Tool Required |

## S65D Front Seat Lumbar Switch - Driver (A2X - AVK)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) BK | (1) 1550 | (1) Ground | (1) I | (1) — |
| 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 0.75 | (3) RD / BN | (3) 2240 | (3) Battery Positive Voltage | (3) I | (3) — |
| 4 | — | — | — | Not Occupied | — | — |
| (5) 5 | (5) 0.75 | (5) BU | (5) 611 | (5) Driver Seat Lumbar Support Motor Forward Control | (5) I | (5) — |
| 6 | — | — | — | Not Occupied | — | — |
| (7) 7 | (7) 0.75 | (7) VT | (7) 610 | (7) Driver Seat Lumbar Support Motor Backward Control | (7) I | (7) — |
| 8 - 9 | — | — | — | Not Occupied | — | — |

## S65D Front Seat Lumbar Switch - Driver (AVK)




2717162

**Connector Part Information**

- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 1-936119-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 0.64 Micro-Quadlock Series( BK)

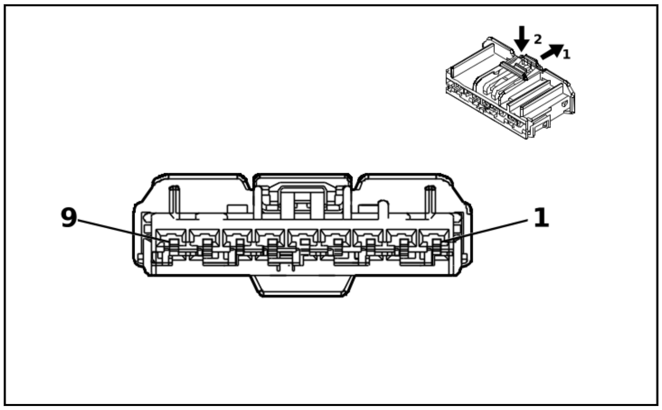
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

### S65D Front Seat Lumbar Switch - Driver (AVK)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 - 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 0.5 | (3) BU / YE | (3) 2818 | (3) Driver Seat Auxiliary Adjustment Switch Signal | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) BK / VT | (4) 2817 | (4) Auxiliary Driver Seat Adjustment Switch Low Reference | (4) I | (4) — |

### S65P Front Seat Lumbar Switch - Passenger (- AVU)




5204289

**Connector Part Information**

- Harness Type: Front Seat Wiring Harness - Passenger
- OEM Connector: 7289-6875-40
- Service Connector: Service by Harness - See Part Catalog
- Description: 9-Way F 2.8 YESC Series( GY)

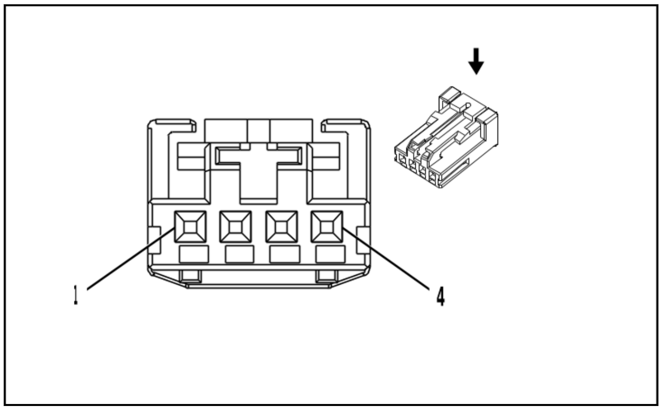
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-4A (PU) | No Tool Required |

## S65P Front Seat Lumbar Switch - Passenger (- AVU)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) BK | (1) 1350 | (1) Ground | (1) I | (1) — |
| 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 0.75 | (3) RD / BN | (3) 2240 | (3) Battery Positive Voltage | (3) I | (3) — |
| 4 | — | — | — | Not Occupied | — | — |
| (5) 5 | (5) 0.75 | (5) BU | (5) 211 | (5) Passenger Seat Lumbar Support Motor Forward Control | (5) I | (5) — |
| 6 | — | — | — | Not Occupied | — | — |
| (7) 7 | (7) 0.75 | (7) VT | (7) 210 | (7) Passenger Seat Lumbar Support Motor Backward Control | (7) I | (7) — |
| 8 - 9 | — | — | — | Not Occupied | — | — |

### S65P Front Seat Lumbar Switch - Passenger (AVU)




2717162

**Connector Part Information**

- Harness Type: Front Seat Wiring Harness - Passenger
- OEM Connector: 1-936119-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 0.64 Micro-Quadlock Series( BK)

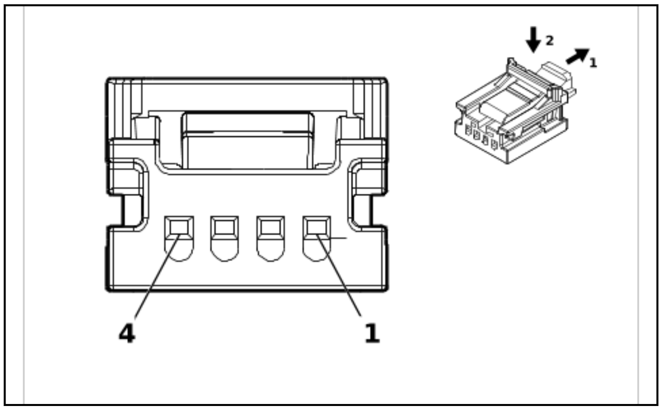
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## S65P Front Seat Lumbar Switch - Passenger (AVU)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 - 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 0.5<br>(3) 0.5 | (3) YE / GN<br>(3) GN / WH | (3) 1068<br>(3) 2816 | (3) Passenger Seat Lumbar Support Switch Analog Signal<br>(3) Passenger Seat Auxiliary Adjustment Switch Signal | (3) I<br>(3) I | (3) —<br>(3) — |
| (4) 4 | (4) 0.5<br>(4) 0.5 | (4) BK / BU<br>(4) BK / BN | (4) 2194<br>(4) 2815 | (4) Passenger Seat Position Switch Low Reference<br>(4) Auxiliary Passenger Seat Adjustment Switch Low Reference | (4) I<br>(4) I | (4) —<br>(4) — |

### S70E Radio Favorites Switch - Steering Wheel




5493278

**Connector Part Information**

- Harness Type: Steering Wheel Horn Switch Wiring Harness
- OEM Connector: 34791-5140
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F Mini 50 Series( BK)

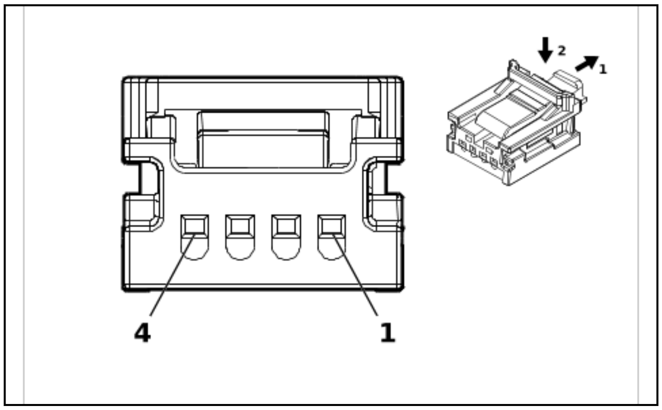
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | EL-35616-58 (BK) | No Tool Required |

## S70E Radio Favorites Switch - Steering Wheel

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35<br>(1) 0.35 | (1) BK<br>(1) BK | (1) 5061<br>(1) 6051 | (1) Left Front Fog Lamp Control<br>(1) Steering Wheel Ground | (1) I<br>(1) I | (1) —<br>(1) — |
| (2) 2 | (2) 0.35 | (2) BU / RD | (2) 4313 | (2) Radio Favorite Forward Switch Signal | (2) I | (2) — |
| (3) 3 | (3) 0.35<br>(3) 0.35 | (3) BU / RD<br>(3) OG / RD | (3) 4312<br>(3) 4312 | (3) Radio Favorite Back Switch Signal<br>(3) Radio Favorite Back Switch Signal | (3) I<br>(3) I | (3) —<br>(3) — |
| 4 | — | — | — | Not Occupied | — | — |

## S70F Radio Volume Switch - Steering Wheel




5493584

**Connector Part Information**

- Harness Type: Steering Wheel Horn Switch Wiring Harness
- OEM Connector: 34791-5141
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F Mini 50 Series( GY)

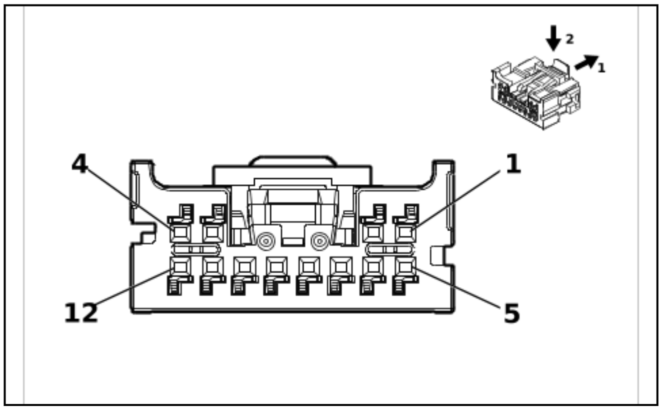
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | EL-35616-58 (BK) | No Tool Required |

## S70F Radio Volume Switch - Steering Wheel

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) BK | (1) 6051 | (1) Steering Wheel Ground | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) GN / RD | (2) 4314 | (2) Radio Volume Down Switch Signal | (2) I | (2) — |
| (3) 3 | (3) 0.35 | (3) OG / RD | (3) 4315 | (3) Radio Volume Up Switch Signal | (3) I | (3) — |
| 4 | — | — | — | Not Occupied | — | — |

## S70L Cruise Control Switch (- K34)




5823893

**Connector Part Information**

- Harness Type: Steering Wheel Horn Switch Wiring Harness
- OEM Connector: 206523-2122
- Service Connector: Service by Harness - See Part Catalog
- Description: 12-Way F Mini 50 Series( GY)

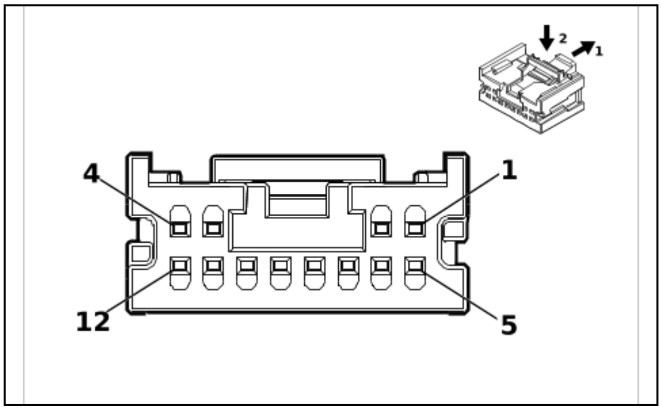
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | EL-35616-58 (BK) | No Tool Required |

### S70L Cruise Control Switch (- K34)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) GN | (1) 5140 | (1) Battery Positive Voltage | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) PK | (2) 6817 | (2) LED Backlight Dimming Control 1 | (2) I | (2) — |
| (3) 3 | (3) 0.35 | (3) GN / OG | (3) 1884 | (3) Cruise Control Set/Coast/Resume/Accelerate Switch Signal | (3) I | (3) — |
| (4) 4 | (4) 0.35 | (4) PU | (4) 5737 | (4) Distance Sensing Cruise Control Gap Up/ Down Switch Signal | (4) I | (4) — |
| 5 | — | — | — | Not Occupied | — | — |
| (6) 6 | (6) 0.35 | (6) BK / WH | (6) 851 | (6) Signal Ground | (6) I | (6) — |
| (7) 7 | (7) 0.35 | (7) GY / OG | (7) 5884 | (7) Steering Wheel Heating Switch LED Control | (7) I | (7) — |
| (8) 8 | (8) 0.35 | (8) GN | (8) 5883 | (8) Steering Wheel Heating Switch Signal | (8) I | (8) — |
| (9) 9 | (9) 0.35 | (9) BK / RD | (9) 3892 | (9) Indicator Dimming Control 2 | (9) I | (9) — |
| (10) 10 | (10) 0.35 | (10) BU | (10) 1449 | (10) Steering Wheel Resistor Ladder Low Reference | (10) I | (10) — |
| 11 - 12 | — | — | — | Not Occupied | — | — |

## S70L Cruise Control Switch (K34)




4539608

**Connector Part Information**

- Harness Type: Steering Wheel Horn Switch Wiring Harness
- OEM Connector: 34824-5125
- Service Connector: Service by Harness - See Part Catalog
- Description: 12-Way F Mini 50 Series( GY)

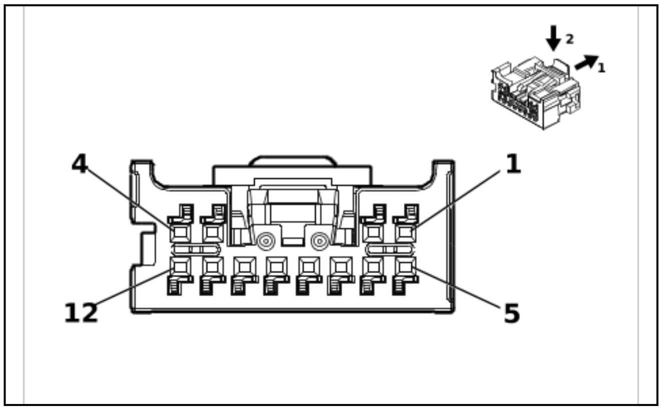
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | EL-35616-58 (BK) | No Tool Required |

### S70L Cruise Control Switch (K34)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) RD / GN | (1) 5140 | (1) Battery Positive Voltage | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) PK | (2) 6817 | (2) LED Backlight Dimming Control 1 | (2) I | (2) — |
| (3) 3 | (3) 0.35 | (3) BN / GN | (3) 1884 | (3) Cruise Control Set/Coast/Resume/Accelerate Switch Signal | (3) I | (3) — |
| (4) 4 | (4) 0.35 | (4) GY / GN | (4) 5737 | (4) Distance Sensing Cruise Control Gap Up/ Down Switch Signal | (4) I | (4) — |
| 5 | — | — | — | Not Occupied | — | — |
| (6) 6 | (6) 0.35 | (6) BK / WH | (6) 851 | (6) Signal Ground | (6) I | (6) — |
| 7 - 9 | — | — | — | Not Occupied | — | — |
| (10) 10 | (10) 0.3 5 | (10) BK / VT | (10) 1449 | (10) Steering Wheel Resistor Ladder Low Reference | (10) I | (10) — |
| 11 - 12 | — | — | — | Not Occupied | — | — |

## S70R Radio Control Switch - Steering Wheel




5911307

**Connector Part Information**

- Harness Type: Steering Wheel Horn Switch Wiring Harness
- OEM Connector: 206523-2123
- Service Connector: Service by Harness - See Part Catalog
- Description: 12-Way F Mini 50 Series( GY)

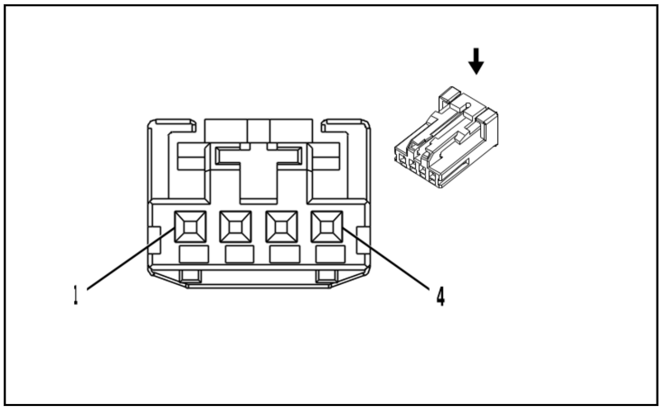
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | EL-35616-58 (BK) | No Tool Required |

### S70R Radio Control Switch - Steering Wheel

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) GN | (1) 5140 | (1) Battery Positive Voltage | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) PK | (2) 3893 | (2) Steering Wheel LED Backlight Dimming Control | (2) I | (2) — |
| (3) 3 | (3) 0.35 | (3) BK / BU | (3) 3894 | (3) Instrument Panel Cluster Control Module LIN Bus 1 | (3) I | (3) — |
| 4 - 5 | — | — | — | Not Occupied | — | — |
| (6) 6 | (6) 0.35<br>(6) 0.35 | (6) BK<br>(6) BK | (6) 5061<br>(6) 6051 | (6) Left Front Fog Lamp Control<br>(6) Steering Wheel Ground | (6) I<br>(6) I | (6) —<br>(6) — |
| (7) 7 | (7) 0.35 | (7) BU / RD | (7) 4313 | (7) Radio Favorite Forward Switch Signal | (7) I | (7) — |
| (8) 8 | (8) 0.35 | (8) BU / RD | (8) 4312 | (8) Radio Favorite Back Switch Signal | (8) I | (8) — |
| (9) 9 | (9) 0.35 | (9) BK / RD | (9) 3892 | (9) Indicator Dimming Control 2 | (9) I | (9) — |
| (10) 10 | (10) 0.35 | (10) OG / RD | (10) 4315 | (10) Radio Volume Up Switch Signal | (10) I | (10) — |
| (11) 11 | (11) 0.35 | (11) GN / RD | (11) 4314 | (11) Radio Volume Down Switch Signal | (11) I | (11) — |
| 12 | — | — | — | Not Occupied | — | — |

## S76 Trailer Brake Control Switch (- D07)




2717162

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 1-936119-1
- Service Connector: 19332889
- Description: 4-Way F 0.64 Micro-Quadlock Series( BK)

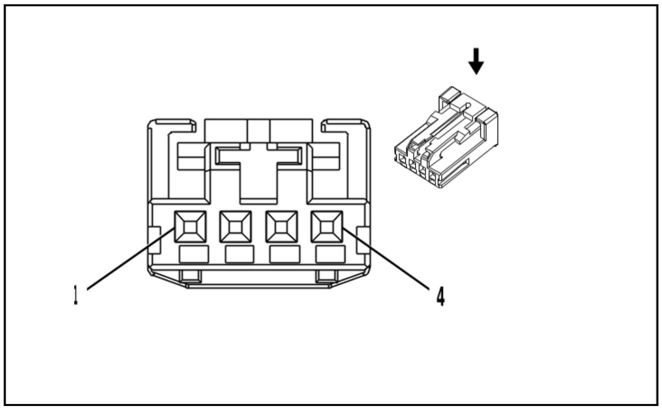
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

### S76 Trailer Brake Control Switch (- D07)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) RD / YE | (1) 2340 | (1) Battery Positive Voltage | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) GN / BU | (2) 2733 | (2) Brake System Control Module LIN Bus 2 | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BK | (3) 1050 | (3) Ground | (3) I | (3) — |
| 4 | — | — | — | Not Occupied | — | — |

### S76 Trailer Brake Control Switch (D07)




2717162

**Connector Part Information**

- Harness Type: Front Floor Console Wiring Harness
- OEM Connector: 1-936119-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 0.64 Micro-Quadlock Series( BK)

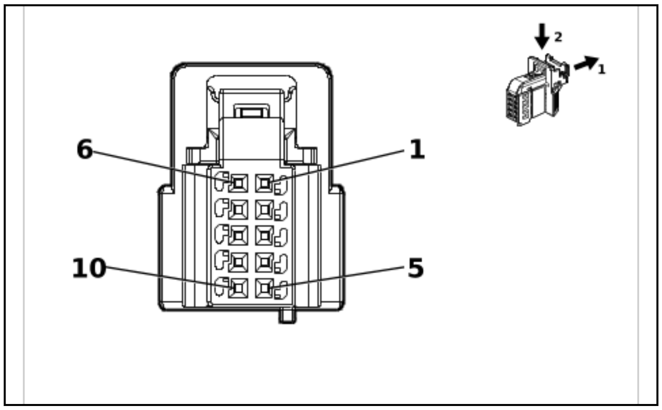
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## S76 Trailer Brake Control Switch (D07)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) RD / YE | (1) 2340 | (1) Battery Positive Voltage | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) GN / BU | (2) 2733 | (2) Brake System Control Module LIN Bus 2 | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BK | (3) 1350 | (3) Ground | (3) I | (3) — |
| 4 | — | — | — | Not Occupied | — | — |

## S78 Turn Signal Switch




5838155

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 2310000-1
- Service Connector: 13518417
- Description: 10-Way F 0.64 MQS Series( BK)

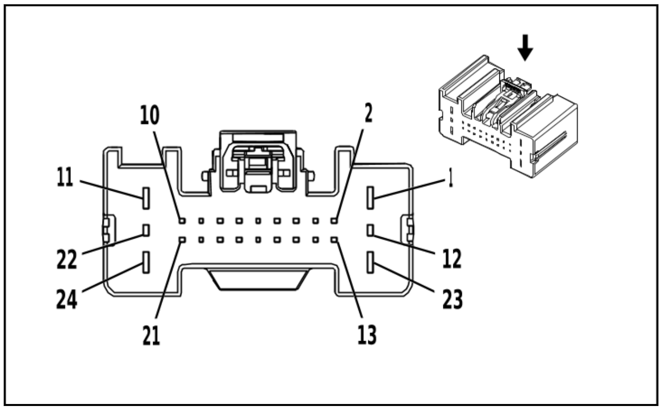
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 19300632 | J-35616-64B (L-BU) | J-38125-215A |

### S78 Turn Signal Switch

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) WH / GN | (1) 2915 | (1) Left Turn Signal Switch Signal | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) VT / BU | (2) 2916 | (2) Right Turn Signal Switch Signal | (2) I | (2) — |
| (3) 3 | (3) 0.35 | (3) BK / WH | (3) 851 | (3) Signal Ground | (3) I | (3) — |
| (4) 4 | (4) 0.35 | (4) GY / BN | (4) 3904 | (4) Auto High Beam Assist Switch Signal | (4) I | (4) — |
| (5) 5 | (5) 0.35 | (5) WH / BK | (5) 94 | (5) Windshield Washer Switch Signal | (5) I | (5) — |
| (6) 6 | (6) 0.35 | (6) YE / BN | (6) 307 | (6) Headlamp Switch Flash Signal | (6) I | (6) — |
| (7) 7 | (7) 0.35 | (7) WH | (7) 524 | (7) High Beam Select Switch High Beam Signal | (7) I | (7) — |
| (8) 8 | (8) 0.35 | (8) BK / GY | (8) 6009 | (8) Windshield Wiper Switch Low Reference | (8) I | (8) — |
| (9) 9 | (9) 0.35 | (9) GY | (9) 1715 | (9) Windshield Wiper Switch High Signal | (9) I | (9) — |
| (10) 10 | (10) 0.35 | (10) YE / BU | (10) 1714 | (10) Windshield Wiper Switch Low Signal | (10) I | (10) — |

### S79D Front Side Door Window Control Switch - Driver X1




2871905

**Connector Part Information**

- Harness Type: Front Side Door Door Lock Door Wiring Harness - Left
- OEM Connector: 7287-3260-30
- Service Connector: Service by Harness - See Part Catalog
- Description: 24-Way F 0.64 GEN-Y, 1.5, 2.8 YESC Series( BK)

## Terminal Part Information

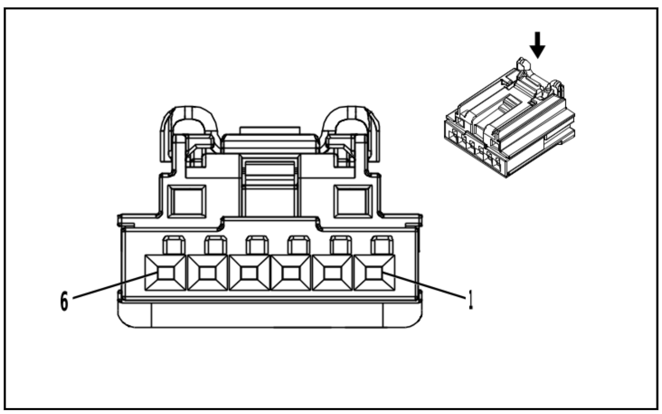
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-2A (GY) | No Tool Required |
| II | Not required | J-35616-4A (PU) | No Tool Required |
| III | Not required | J-35616-64B (L-BU) | No Tool Required |

## S79D Front Side Door Window Control Switch - Driver X1

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5<br>(1) 0.5 | (1) BN<br>(1) WH / BN | (1) 10201<br>(1) 2764 | (1) Left Front Mirror Motor Extend Control<br>(1) Window Switch Left Front Down Signal | (1) II<br>(1) II | (1) —<br>(1) — |
| (2) 2 | (2) 0.5 | (2) GN | (2) 2766 | (2) Power Window Switch Left Front Express Signal | (2) III | (2) — |
| (3) 3 | (3) 0.5 | (3) BN / YE | (3) 2771 | (3) Left Front Door Lock Switch Lock Signal | (3) III | (3) — |
| (4) 4 | (4) 0.5 | (4) BN / WH | (4) 2772 | (4) Left Front Door Lock Switch Unlock Signal | (4) III | (4) — |
| (5) 5 | (5) 0.5 | (5) GY / VT | (5) 2767 | (5) LED Ambient Lighting Control Left Front Door | (5) III | (5) — |
| 6 | — | — | — | Not Occupied | — | — |
| (7) 7 | (7) 0.5 | (7) BN / GY | (7) 4784 | (7) Left Front Door LED Backlight Dimming Control | (7) III | (7) — |
| (8) 8 | (8) 0.35 | (8) GY / YE | (8) 1760 | (8) Left Side Object Detection LED Control | (8) III | (8) — |
| (9) 9 | (9) 0.5 | (9) WH / GN | (9) 2786 | (9) Left Front Mirror Motor Fold In Control | (9) III | (9) — |
| (10) 10 | (10) 0.5 | (10) YE / BN | (10) 2789 | (10) Left Front Mirror Motor Common Control | (10) III | (10) — |
| (11) 11 | (11) 0.5 | (11) BK | (11) 1550 | (11) Ground | (11) II | (11) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (12) 12 | (12) 0.5 | (12) GY / WH | (12) 2785 | (12) Left Front Mirror Motor Fold Out Control | (12) I | (12) — |
| (13) 13 | (13) 0.5 | (13) WH / BN | (13) 2764 | (13) Window Switch Left Front Down Signal | (13) III | (13) — |
| 14 - 15 | — | — | — | Not Occupied | — | — |
| (16) 16 | (16) 0.5 | (16) GY / GN | (16) 2763 | (16) Window Switch Left Front Up Signal | (16) III | (16) — |
| (17) 17 | (17) 0.5 | (17) WH / VT | (17) 4258 | (17) Left Front Door Lock Status Signal | (17) III | (17) — |
| (18) 18 | (18) 0.5 | (18) VT / BU | (18) 2788 | (18) Left Front Mirror Motor Up [+] Down [-] Control | (18) III | (18) — |
| (19) 19 | (19) 0.5 | (19) BN / BK | (19) 2790 | (19) Left Front Mirror Motor Right [+] Left [-] Control | (19) III | (19) — |
| 20 | — | — | — | Not Occupied | — | — |
| (21) 21 | (21) 0.5 | (21) GN / YE | (21) 6134 | (21) Body Control Module LIN Bus 3 | (21) III | (21) — |
| (22) 22 | (22) 0.5 | (22) WH | (22) 606 | (22) Left Outside Rearview Mirror Heater Control | (22) I | (22) — |
| (23) 23 | (23) 0.5<br>(23) 0.5 | (23) WH / BK<br>(23) GY / GN | (23) 10202<br>(23) 2763 | (23) Left Front Mirror Motor Retract Control<br>(23) Window Switch Left Front Up Signal | (23) II<br>(23) II | (23) —<br>(23) — |
| (24) 24 | (24) 0.5 | (24) RD / BU | (24) 1240 | (24) Battery Positive Voltage | (24) II | (24) — |

**S79D Front Side Door Window Control Switch - Driver X2**




4145138

**Connector Part Information**

- Harness Type: Front Side Door Door Lock Door Wiring Harness - Left
- OEM Connector: 2035363-2
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 0.64 Generation Y Series( BK)

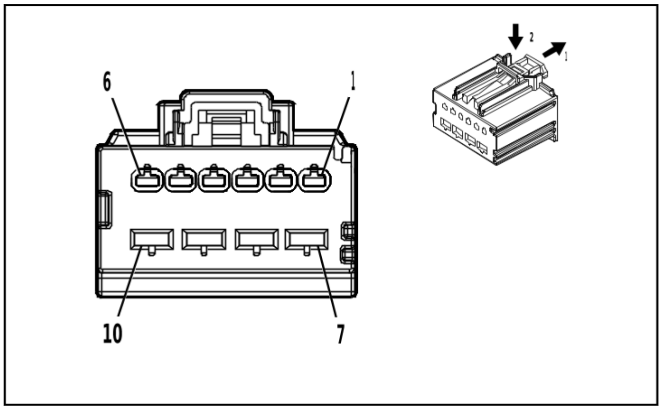
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## S79D Front Side Door Window Control Switch - Driver X2

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) WH / YE | (1) 2792 | (1) Left Front Mirror Position Sensor Left [-] Right [+] Signal | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) GY / BN | (2) 2787 | (2) Left Front Mirror Position Sensor Up [+] Down [-] Signal | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) VT / RD | (3) 2791 | (3) Left Front Mirror Position Sensor High Reference | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) BK / BN | (4) 673 | (4) Left Outside Rearview Mirror Position Sensor Low Reference | (4) I | (4) — |
| 5 - 6 | — | — | — | Not Occupied | — | — |

### S79LR Rear Side Door Window Switch - Left




5035058

**Connector Part Information**

- Harness Type: Rear Side Door Door Wiring Harness - Left
- OEM Connector: 31372-1600
- Service Connector: Service by Harness - See Part Catalog
- Description: 10-Way F 1.5, 2.8 MX Series( BK)

## Terminal Part Information

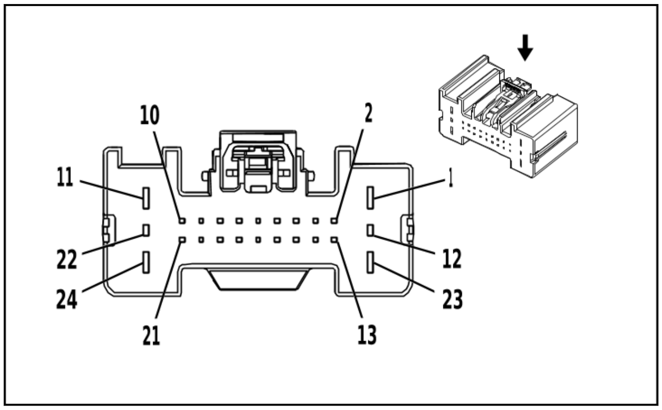
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-2A (GY) | No Tool Required |
| II | Not required | J-35616-4A (PU) | No Tool Required |

## S79LR Rear Side Door Window Switch - Left

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) GN / GY | (1) 6135 | (1) Body Control Module LIN Bus 4 | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) GY | (2) 747 | (2) Left Rear Door Ajar Switch Signal | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BK | (3) 1550 | (3) Ground | (3) I | (3) — |
| 4 - 6 | — | — | — | Not Occupied | — | — |
| (7) 7 | (7) 2.5 | (7) BK | (7) 1550 | (7) Ground | (7) II | (7) — |
| (8) 8 | (8) 2.5 | (8) RD / BU | (8) 3240 | (8) Battery Positive Voltage | (8) II | (8) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (9) 9 | (9) 2 | (9) BU / VT | (9) 668 | (9) Left Rear Window Motor Up Control | (9) II | (9) — |
| (10) 10 | (10) 2 | (10) YE / BU | (10) 669 | (10) Left Rear Window Motor Down Control | (10) II | (10) — |

**S79P Front Side Door Window Switch - Passenger X1**




2871905

**Connector Part Information**

- Harness Type: Front Side Door Door Lock Door Wiring Harness - Right
- OEM Connector: 7287-3260-30
- Service Connector: Service by Harness - See Part Catalog
- Description: 24-Way F 0.64 GEN-Y, 1.5, 2.8 YESC Series( BK)

## Terminal Part Information

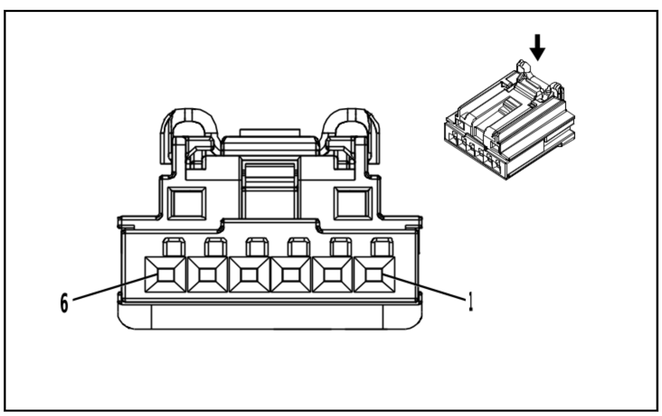
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-2A (GY) | No Tool Required |
| II | Not required | J-35616-4A (PU) | No Tool Required |
| III | Not required | J-35616-64B (L-BU) | No Tool Required |

## S79P Front Side Door Window Switch - Passenger X1

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 2.5 | (1) BK | (1) 1350 | (1) Ground | (1) II | (1) — |
| (2) 2 | (2) 0.5 | (2) YE / RD | (2) 2799 | (2) Right Front Mirror Position Sensor High Reference | (2) III | (2) — |
| (3) 3 | (3) 0.5 | (3) GN / BK | (3) 2798 | (3) Right Front Mirror Motor Right [+] Left [-] Control | (3) III | (3) — |
| (4) 4 | (4) 0.5 | (4) YE / VT | (4) 2796 | (4) Right Front Mirror Motor Up [+] Down [-] Control | (4) III | (4) — |
| (5) 5 | (5) 0.5 | (5) BN | (5) 5295 | (5) Window Switch Right Front Down Signal | (5) III | (5) — |
| 6 | — | — | — | Not Occupied | — | — |
| (7) 7 | (7) 0.5 | (7) GY / VT | (7) 4638 | (7) LED Backlight Dimming Control Right Front Door | (7) III | (7) — |
| (8) 8 | (8) 0.35 | (8) GY | (8) 1761 | (8) Right Side Object Detection LED Control | (8) III | (8) — |
| (9) 9 | (9) 0.5 | (9) BU / GY | (9) 2794 | (9) Right Front Mirror Motor Fold In Control | (9) III | (9) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (10) 10 | (10) 0.5 | (10) YE / WH | (10) 2793 | (10) Right Front Mirror Motor Fold Out Control | (10) III | (10) — |
| (11) 11 | (11) 2.5<br>(11) 0.5 | (11) GN / GY<br>(11) VT | (11) 666<br>(11) 10204 | (11) Right Front Window Motor Up Control<br>(11) Right Front Mirror Motor Retract Control | (11) II<br>(11) II | (11) AED+ AXG<br>(11) DZC |
| (12) 12 | (12) 0.5 | (12) BN / VT | (12) 607 | (12) Right Outside Rearview Mirror Heater Control | (12) I | (12) — |
| (13) 13 | (13) 0.5 | (13) GN | (13) 1184 | (13) Window Switch Right Front Up Signal | (13) III | (13) — |
| (14) 14 | (14) 0.5 | (14) GN / YE | (14) 6134 | (14) Body Control Module LIN Bus 3 | (14) III | (14) — |
| (15) 15 | (15) 0.5 | (15) VT / WH | (15) 2800 | (15) Right Front Mirror Position Sensor Left [-] Right [+] Signal | (15) III | (15) — |
| (16) 16 | (16) 0.5 | (16) BU / YE | (16) 2795 | (16) Right Front Mirror Position Sensor Up [+] Down [-] Signal | (16) III | (16) — |
| (17) 17 | (17) 0.5 | (17) YE / VT | (17) 2773 | (17) Right Front Door Lock Switch Lock Control | (17) III | (17) — |
| (18) 18 | (18) 0.5 | (18) BN / VT | (18) 2774 | (18) Right Front Door Lock Switch Unlock Control | (18) III | (18) — |
| 19 | — | — | — | Not Occupied | — | — |
| (20) 20 | (20) 0.5<br>(20) 0.5 | (20) GY<br>(20) VT / GY | (20) 746<br>(20) 2765 | (20) Right Front Door Ajar Switch Signal<br>(20) Window Switch Right Front Express Signal | (20) III<br>(20) III | (20) AED<br>(20) AXG+ AEF |
| (21) 21 | (21) 0.5 | (21) WH | (21) 2797 | (21) Right Front Mirror Motor Common Control | (21) III | (21) — |
| (22) 22 | (22) 0.5 | (22) BK / GN | (22) 675 | (22) Right Outside Rearview Mirror Position Sensor Low Reference | (22) I | (22) — |
| (23) 23 | (23) 2.5 | (23) RD / BN | (23) 4240 | (23) Battery Positive Voltage | (23) II | (23) — |
| (24) 24 | (24) 2.5<br>(24) 0.5 | (24) YE / BU<br>(24) BN / GN | (24) 667<br>(24) 10203 | (24) Right Front Window Motor Down Control<br>(24) Right Front Mirror Motor Extend Control | (24) II<br>(24) II | (24) AED+ AXG<br>(24) DZC |

### S79P Front Side Door Window Switch - Passenger X2




4145138

**Connector Part Information**

- Harness Type: Front Side Door Door Lock Door Wiring Harness - Right
- OEM Connector: 2035363-2
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 0.64 Generation Y Series( BK)

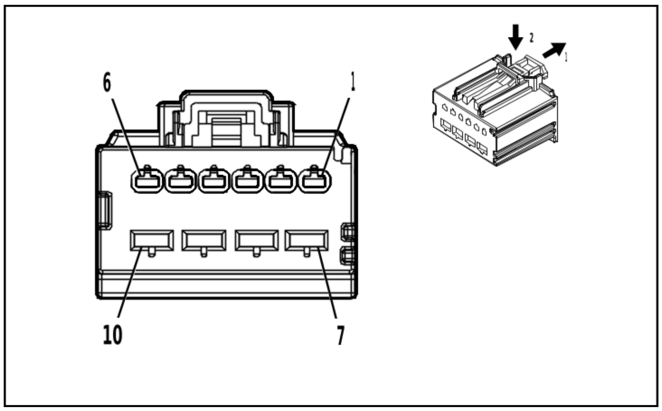
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## S79P Front Side Door Window Switch - Passenger X2

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 | — | — | — | Not Occupied | — | — |
| (2) 2 | (2) 0.5 | (2) WH / BN | (2) 2768 | (2) LED Ambient Lighting Control Right Front Door | (2) I | (2) — |
| 3 - 6 | — | — | — | Not Occupied | — | — |

**S79RR Rear Side Door Window Switch - Right**




5035058

**Connector Part Information**
- Harness Type: Rear Side Door Door Wiring Harness - Right
- OEM Connector: 31372-1600
- Service Connector: Service by Harness - See Part Catalog
- Description: 10-Way F 1.5, 2.8 MX Series( BK)

## Terminal Part Information

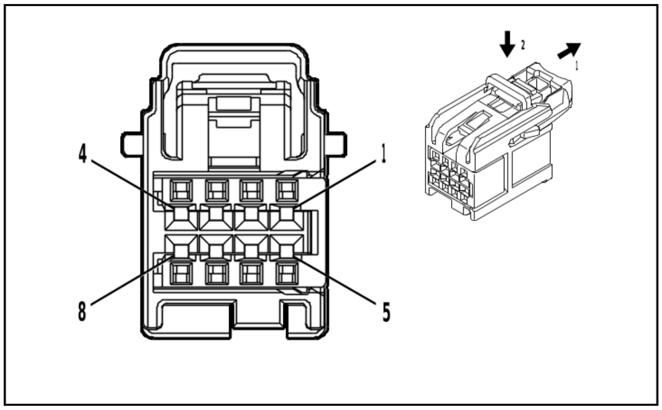
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-2A (GY) | No Tool Required |
| II | Not required | J-35616-4A (PU) | No Tool Required |

## S79RR Rear Side Door Window Switch - Right

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) GN / GY | (1) 6135 | (1) Body Control Module LIN Bus 4 | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) GY | (2) 748 | (2) Right Rear Door Ajar Switch Signal | (2) I | (2) — |
| 3 - 6 | — | — | — | Not Occupied | — | — |
| (7) 7 | (7) 2.5 | (7) BK | (7) 1350 | (7) Ground | (7) II | (7) — |
| (8) 8 | (8) 2.5 | (8) YE / BK | (8) 4840 | (8) Battery Positive Voltage | (8) II | (8) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (9) 9 | (9) 2 | (9) BU / GY | (9) 670 | (9) Right Rear Window Motor Up Control | (9) II | (9) — |
| (10) 10 | (10) 2 | (10) GN / BK | (10) 671 | (10) Right Rear Window Motor Down Control | (10) II | (10) — |

**S86 Vehicle Stability Control System Switch**




4935776

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 15526972
- Service Connector: 19370429
- Description: 8-Way F 0.64 OCS Series( BK)

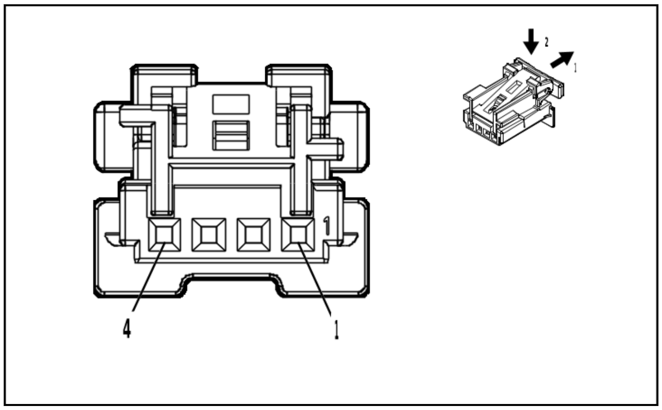
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## S86 Vehicle Stability Control System Switch

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) BU / VT | (1) 1788 | (1) Traction Control Switch Signal 1 | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) YE | (2) 6817 | (2) LED Backlight Dimming Control 1 | (2) I | (2) — |
| (3) 3 | (3) 0.35 | (3) BN | (3) 7291 | (3) Major Endgate Release Switch Signal Interior | (3) I | (3) — |
| (4) 4 | (4) 0.35 | (4) BU / YE | (4) 6844 | (4) ABS/Traction Control Hill Descent Control Switch Signal | (4) I | (4) — |
| 5 | — | — | — | Not Occupied | — | — |
| (6) 6 | (6) 0.35 | (6) BK / WH | (6) 851 | (6) Signal Ground | (6) I | (6) — |
| (7) 7 | (7) 0.35 | (7) GN / WH | (7) 111 | (7) Hazard Warning Switch Signal | (7) I | (7) — |
| (8) 8 | (8) 0.35 | (8) GY | (8) 1198 | (8) Endgate Release Switch Analog Signal Interior | (8) I | (8) — |

### S91 Parking Brake Control Switch




4997407

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 2294218-1
- Service Connector: 19371192
- Description: 4-Way F 0.64 Micro-Quadlock Series( BK)

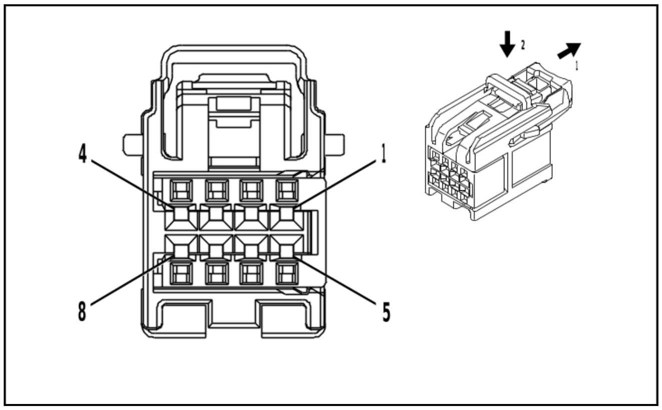
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## S91 Parking Brake Control Switch

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) RD / YE | (1) 4340 | (1) Battery Positive Voltage | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) GN / YE | (2) 2731 | (2) Brake System Control Module LIN Bus 1 | (2) I | (2) — |
| 3 | — | — | — | Not Occupied | — | — |
| (4) 4 | (4) 0.35 | (4) BK / WH | (4) 851 | (4) Signal Ground | (4) I | (4) — |

## S126 Ride Control Switch




4232228

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 15526973
- Service Connector: 19353873
- Description: 8-Way F 0.64 OCS Series( GY)

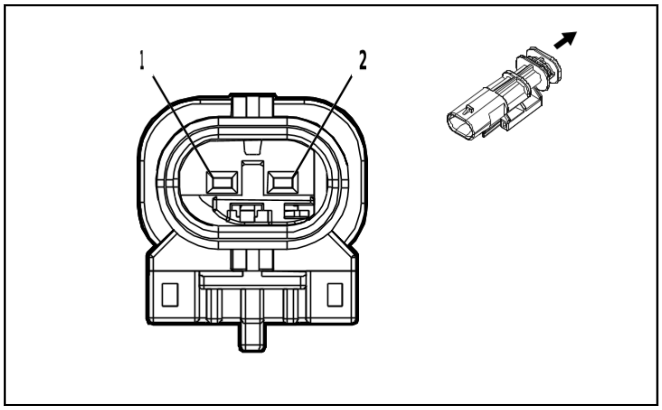
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

### S126 Ride Control Switch

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) WH / BN | (1) 2203 | (1) Enhanced Driver Mode 2 Switch Signal | (1) I | (1) — |
| 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 0.35 | (3) BK / GY | (3) 2204 | (3) Enhanced Driver Mode 1 Switch Low Reference | (3) I | (3) — |
| (4) 4 | (4) 0.35 | (4) YE | (4) 6817 | (4) LED Backlight Dimming Control 1 | (4) I | (4) — |
| (5) 5 | (5) 0.35 | (5) BK / WH | (5) 851 | (5) Signal Ground | (5) I | (5) — |
| 6 - 8 | — | — | — | Not Occupied | — | — |

### S158 Liftgate Exterior Release Switch - Auxiliary Endgate




4994410

**Connector Part Information**

- Harness Type: Endgate Wiring Harness
- OEM Connector: 34899-2081
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way M 1.2 MCON Series, Sealed( GY)

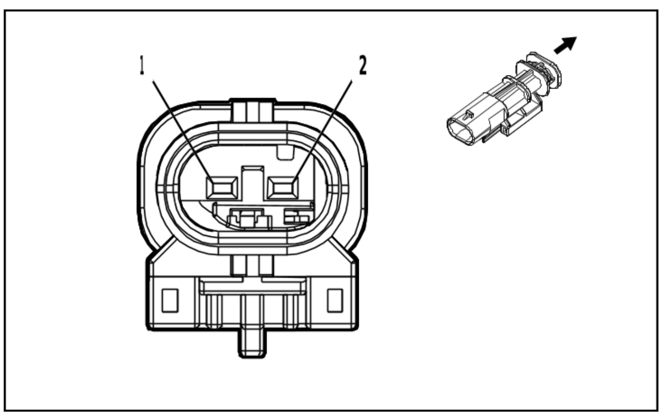
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-17 (L-GN) | No Tool Required |

## S158 Liftgate Exterior Release Switch - Auxiliary Endgate

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) YE | (1) 7294 | (1) Minor Endgate Release Switch Discrete Signal Exterior | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK | (2) 1850 | (2) Ground | (2) I | (2) — |

### S159E Liftgate Exterior Release Switch - Endgate




4994411

**Connector Part Information**

- Harness Type: Endgate Wiring Harness
- OEM Connector: 34899-2082
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way M 1.2 MCON Series, Sealed( GY)

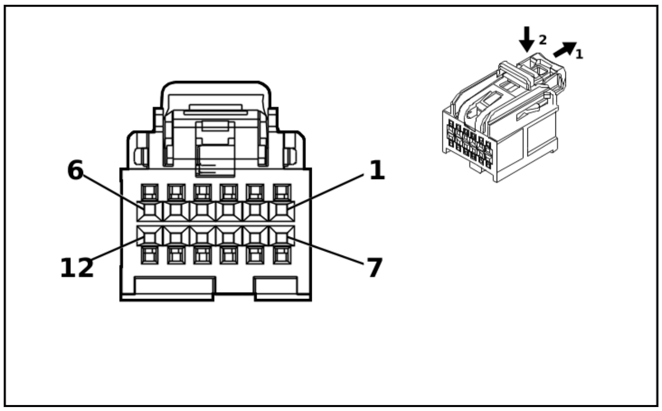
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-17 (L-GN) | No Tool Required |

## S159E Liftgate Exterior Release Switch - Endgate

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5<br>(1) 0.5 | (1) YE<br>(1) GY | (1) 1144<br>(1) 7292 | (1) Endgate Release Switch Discrete Signal Exterior<br>(1) Major Endgate Release Switch Signal Exterior | (1) I<br>(1) I | (1) QK1+ QT6<br>(1) QT5 |
| (2) 2 | (2) 0.5 | (2) BK | (2) 1850 | (2) Ground | (2) I | (2) — |

### S171L Instrument Panel Center Accessory Function Switch - Left




4975223

**Connector Part Information**
- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 35016616
- Service Connector: 13519750
- Description: 12-Way F 0.64 OCS Series( BK)

## Terminal Part Information

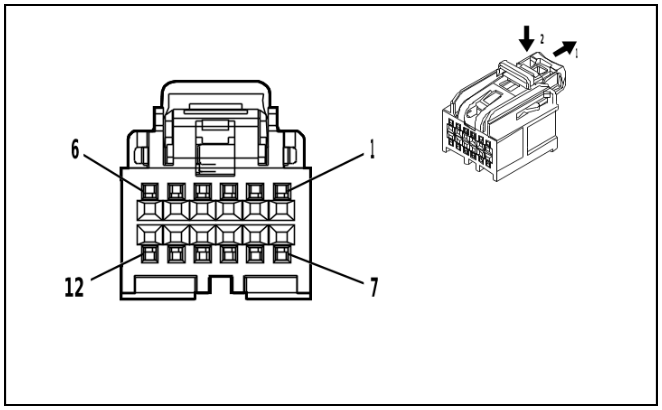
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 19354230 | J-35616-64B (L-BU) | J-38125-215A |

## S171L Instrument Panel Center Accessory Function Switch - Left

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) GY / GN | (1) 2555 | (1) Rear Parking Assist Disable Signal | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) YE | (2) 6817 | (2) LED Backlight Dimming Control 1 | (2) I | (2) — |
| (3) 3 | (3) 0.35 | (3) BU / WH | (3) 3119 | (3) Roof Rail Air Bag Disable Switch Signal | (3) I | (3) — |
| (4) 4 | (4) 0.35 | (4) GY / WH | (4) 3153 | (4) Lane Departure Warning Disable Switch Signal | (4) I | (4) — |
| (5) 5 | (5) 0.35 | (5) WH | (5) 3152 | (5) Lane Departure Warning Indicator Control | (5) I | (5) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (6) 6 | (6) 0.35 | (6) BU / YE | (6) 6844 | (6) ABS/Traction Control Hill Descent Control Switch Signal | (6) I | (6) — |
| 7 | — | — | — | Not Occupied | — | — |
| (8) 8 | (8) 0.35 | (8) GN / BN | (8) 5852 | (8) Rear Parking Assist Disable LED Signal | (8) I | (8) — |
| (9) 9 | (9) 0.35 | (9) BK / WH | (9) 851 | (9) Signal Ground | (9) I | (9) — |
| (10) 10 | (10) 0.35 | (10) BN / WH | (10) 3895 | (10) Roof Rail Air Bag Disable Switch Low Reference | (10) I | (10) — |
| (11) 11 | (11) 0.35 | (11) YE / BU | (11) 2912 | (11) Driver Mode 2 Indicator Control | (11) I | (11) — |
| (12) 12 | (12) 0.35 | (12) GY | (12) 4989 | (12) Driver Mode 2 Switch Signal | (12) I | (12) — |

### S171R Instrument Panel Center Accessory Function Switch - Right




4997362

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 35016613
- Service Connector: 13519752
- Description: 12-Way F 0.64 OCS Series( BN)

## Terminal Part Information

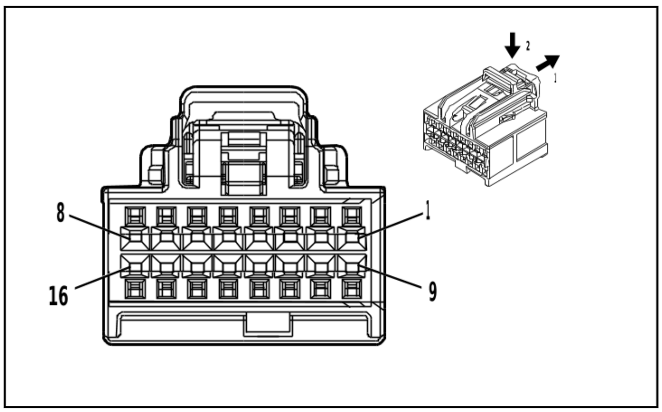
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 19300660 | J-35616-64B (L-BU) | J-38125-215A |

## S171R Instrument Panel Center Accessory Function Switch - Right

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 | — | — | — | Not Occupied | — | — |
| (2) 2 | (2) 0.35 | (2) YE | (2) 6817 | (2) LED Backlight Dimming Control 1 | (2) I | (2) — |
| (3) 3 | (3) 0.35 | (3) BU / YE | (3) 6844 | (3) ABS/Traction Control Hill Descent Control Switch Signal | (3) I | (3) — |
| (4) 4 | (4) 0.35<br>(4) 0.35 | (4) VT / BK<br>(4) YE / GN | (4) 339<br>(4) 7122 | (4) Run/Crank Ignition 1 Voltage<br>(4) Axle Differential Lock Switch Signal | (4) I<br>(4) I | (4) —<br>(4) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (5) 5 | (5) 0.35<br>(5) 0.35 | (5) BN / GN<br>(5) YE | (5) 4311<br>(5) 7115 | (5) Power Take-Off Enable Cabin Switch Normally Closed Signal<br>(5) Rear Axle Differential Lock Indicator Control | (5) I<br>(5) I | (5) —<br>(5) — |
| 6 | — | — | — | Not Occupied | — | — |
| (7) 7 | (7) 0.35 | (7) GN / WH | (7) 488 | (7) Power Take-Off Control Switch Signal | (7) I | (7) — |
| (8) 8 | (8) 0.35 | (8) BU / YE | (8) 7176 | (8) All Windows Open Switch Signal | (8) I | (8) — |
| (9) 9 | (9) 0.35 | (9) BK / WH | (9) 851 | (9) Signal Ground | (9) I | (9) — |
| (10) 10 | (10) 0.35 | (10) WH | (10) 6816 | (10) Indicator Dimming Control | (10) I | (10) — |
| 11 | — | — | — | Not Occupied | — | — |
| (12) 12 | (12) 0.35 | (12) BU / GY | (12) 4990 | (12) Driver Mode 1 Switch Signal | (12) I | (12) — |

**S172 Auxiliary Multifunction Switch**




4873243

**Connector Part Information**

- Harness Type: Auxiliary Fuse Block Wiring Harness
- OEM Connector: 35016343
- Service Connector: Service by Harness - See Part Catalog
- Description: 16-Way F 0.64 OCS Series( BK)

## Terminal Part Information

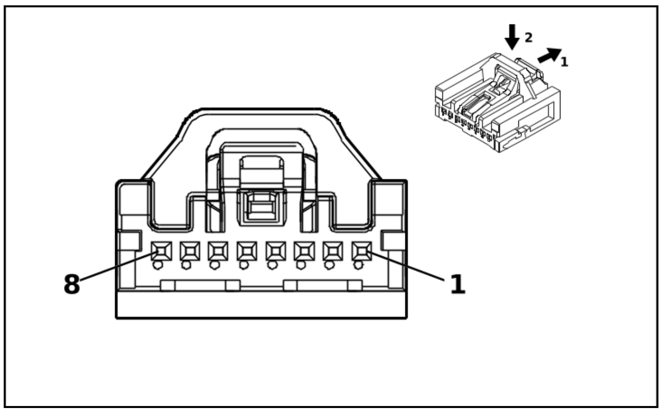
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## S172 Auxiliary Multifunction Switch

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 | — | — | — | Not Occupied | — | — |
| (2) 2 | (2) 0.35 | (2) YE | (2) 6817 | (2) LED Backlight Dimming Control 1 | (2) I | (2) — |
| (3) 3 | (3) 0.35 | (3) WH | (3) 6816 | (3) Indicator Dimming Control | (3) I | (3) — |
| 4 - 5 | — | — | — | Not Occupied | — | — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (6) 6 | (6) 0.35 | (6) BU / WH | (6) 10716 | (6) Upfitter Accessory Relay 1 Coil Control | (6) I | (6) — |
| (7) 7 | (7) 0.35 | (7) VT / GY | (7) 10717 | (7) Upfitter Accessory Relay 2 Coil Control | (7) I | (7) — |
| (8) 8 | (8) 0.35 | (8) GN / BN | (8) 10718 | (8) Upfitter Accessory Relay 3 Coil Control | (8) I | (8) — |
| (9) 9 | (9) 0.35 | (9) WH / YE | (9) 10719 | (9) Upfitter Accessory Relay 4 Coil Control | (9) I | (9) — |
| (10) 10 | (10) 0.35 | (10) GY / VT | (10) 10720 | (10) Upfitter Accessory Relay 5 Coil Control | (10) I | (10) — |
| 11 | — | — | — | Not Occupied | — | — |
| (12) 12 | (12) 0.75 | (12) BK / WH | (12) 1050 | (12) Ground | (12) I | (12) — |
| 13 - 16 | — | — | — | Not Occupied | — | — |

### S192 Radio Function Switch (IOR)




5200269

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 35068228
- Service Connector: 84769201
- Description: 8-Way F Mini 50 Series( BK)

## Terminal Part Information

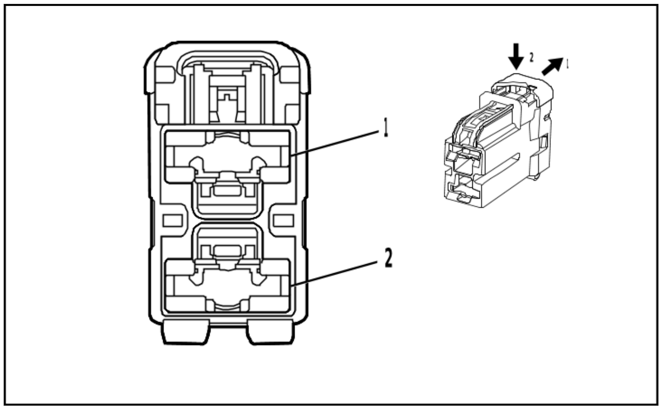
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | EL-35616-58 (BK) | No Tool Required |

## S192 Radio Function Switch (IOR)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) YE / RD | (1) 11236 | (1) Radio Switch 5 Volt Reference | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) BK / BU | (2) 11237 | (2) Radio Switch Low Reference 1 | (2) I | (2) — |
| (3) 3 | (3) 0.35 | (3) BN / WH | (3) 11233 | (3) Radio Switch Power ON/OFF Switch Signal | (3) I | (3) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (4) 4 | (4) 0.35 | (4) BK / GN | (4) 11238 | (4) Radio Switch Low Reference 2 | (4) I | (4) — |
| (5) 5 | (5) 0.35 | (5) BU / GY | (5) 11244 | (5) Radio Switch Dimming Control | (5) I | (5) — |
| (6) 6 | (6) 0.35 | (6) VT / WH | (6) 11245 | (6) Radio Switch Buttons Signal | (6) I | (6) — |
| (7) 7 | (7) 0.35 | (7) BU | (7) 11235 | (7) Radio Switch Volume Up Signal | (7) I | (7) — |
| (8) 8 | (8) 0.35 | (8) GY / BN | (8) 11234 | (8) Radio Switch Volume Down Signal | (8) I | (8) — |

**T1 DC/AC Converter Control Module X1**




2453116

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 7283-0724-30
- Service Connector: 85011842
- Description: 2-Way F 9.5 Series( BK)

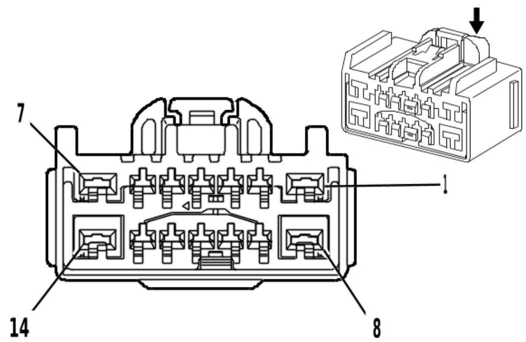
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-22 (RD) | No Tool Required |

## T1 DC/AC Converter Control Module X1

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 5 | (1) BN / BK | (1) 4629 | (1) DC/AC Inverter Control | (1) I | (1) — |
| (2) 2 | (2) 5 | (2) BK | (2) 1550 | (2) Ground | (2) I | (2) — |

### T1 DC/AC Converter Control Module X2




1540775

**Connector Part Information**

- Harness Type: Body Rear Wiring Harness Extension Harness
- OEM Connector: 7289-7631-90
- Service Connector: Service by Harness - See Part Catalog
- Description: 14-Way F 1.5, 2.8 YESC Series( BU)

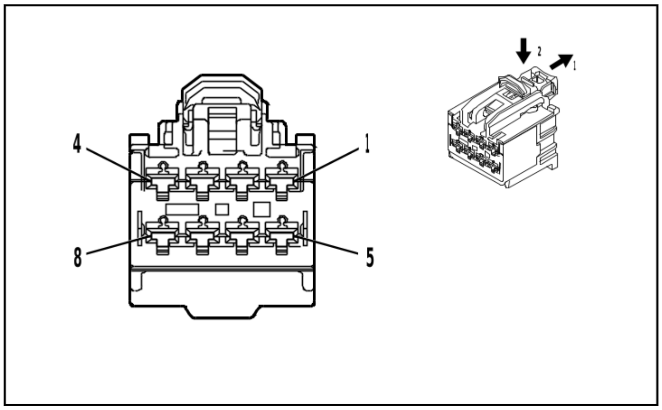
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-2A (GY) | No Tool Required |
| II | Not required | J-35616-4A (PU) | No Tool Required |

## T1 DC/AC Converter Control Module X2

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) BK | (1) 10117 | (1) AC Outlet Phase A Control | (1) II | (1) — |
| (2) 2 | (2) 0.5 | (2) VT / RD | (2) 4049 | (2) AC Power Outlet Sensor High Reference | (2) I | (2) — |
| (3) 3 | (3) 0.35 | (3) VT / WH | (3) 239 | (3) Run/Crank Ignition 1 Voltage | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) WH / GN | (4) 4628 | (4) DC/AC Inverter Relay Control | (4) I | (4) — |
| (5) 5 | (5) 0.5 | (5) BU / BN | (5) 6807 | (5) DC/AC Inverter Control | (5) I | (5) — |
| 6 | — | — | — | Not Occupied | — | — |
| (7) 7 | (7) 0.75 | (7) BK / WH | (7) 10120 | (7) AC Outlet 2 Phase A Control | (7) II | (7) — |
| (8) 8 | (8) 0.75 | (8) RD | (8) 10118 | (8) AC Outlet Phase B Control | (8) II | (8) — |
| (9) 9 | (9) 0.35 | (9) WH | (9) 10116 | (9) AC Outlet Low Reference | (9) I | (9) — |
| (10) 10 | (10) 0.5 | (10) GN / BU | (10) 6133 | (10) Body Control Module LIN Bus 2 | (10) I | (10) — |
| 11 | — | — | — | Not Occupied | — | — |
| (12) 12 | (12) 0.5 | (12) GN / BN | (12) 2266 | (12) DC/AC Inverter Control 2 | (12) I | (12) — |
| (13) 13 | (13) 0.35 | (13) BARE | (13) 10119 | (13) AC Outlet 2 Low Reference | (13) I | (13) — |
| (14) 14 | (14) 0.75 | (14) RD / WH | (14) 10121 | (14) AC Outlet 2 Phase B Control | (14) II | (14) — |

## T3 Audio Amplifier X1




4875738

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 33223792
- Service Connector: 19369366
- Description: 8-Way F 2.8 OCS Series( BK)

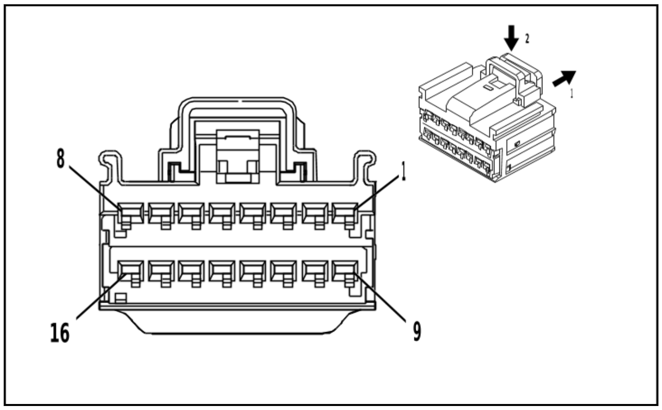
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-4A (PU) | No Tool Required |

## T3 Audio Amplifier X1

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 2.5 | (1) BU / GY | (1) 346 | (1) Left/Rear Subwoofer [+] Control | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) YE | (2) 200 | (2) Right Front Speaker 1 [+] Control | (2) I | (2) — |
| (3) 3 | (3) 0.75 | (3) BU | (3) 201 | (3) Left Front Speaker 1 [+] Control | (3) I | (3) — |
| (4) 4 | (4) 2.5 | (4) RD / YE | (4) 3740 | (4) Battery Positive Voltage | (4) I | (4) — |
| (5) 5 | (5) 2.5 | (5) GN / BK | (5) 1794 | (5) Left/Rear Subwoofer [-] Control | (5) I | (5) — |
| (6) 6 | (6) 0.75 | (6) YE / BK | (6) 117 | (6) Right Front Speaker [-] Control 1 | (6) I | (6) — |
| (7) 7 | (7) 0.75 | (7) BN / BU | (7) 118 | (7) Left Front Speaker [-] Control 1 | (7) I | (7) — |
| (8) 8 | (8) 2.5 | (8) BK / WH | (8) 1051 | (8) Signal Ground | (8) I | (8) — |

### T3 Audio Amplifier X2




4332214

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 15512506
- Service Connector: 13591061
- Description: 16-Way F 1.5 OCS Series( BK)

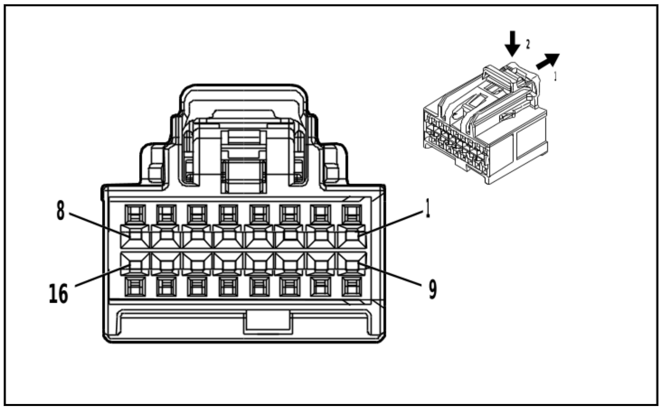
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 84757974 | J-35616-2A (GY) | J-38125-215A |

## T3 Audio Amplifier X2

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 | — | — | — | Not Occupied | — | — |
| (2) 2 | (2) 0.75 | (2) BN / BK | (2) 1953 | (2) Right Front Midrange Speaker [-] Control | (2) I | (2) — |
| (3) 3 | (3) 0.75 | (3) BU / VT | (3) 1857 | (3) Left Front Midrange Speaker [+] Control | (3) I | (3) — |
| (4) 4 | (4) 1.5 | (4) WH | (4) 46 | (4) Right Rear Speaker [+] Control | (4) I | (4) — |
| (5) 5 | (5) 1.5 | (5) GN | (5) 199 | (5) Left Rear Speaker [+] Control | (5) I | (5) — |
| 6 | — | — | — | Not Occupied | — | — |
| (7) 7 | (7) 0.75 | (7) YE / WH | (7) 1860 | (7) Front Center Speaker [+] Control | (7) I | (7) — |
| 8 - 9 | — | — | — | Not Occupied | — | — |
| (10) 10 | (10) 0.75 | (10) WH / YE | (10) 1853 | (10) Right Front Midrange Speaker [+] Control | (10) I | (10) — |
| (11) 11 | (11) 0.75 | (11) BU / BN | (11) 1957 | (11) Left Front Midrange Speaker [-] Control | (11) I | (11) — |
| (12) 12 | (12) 1.5 | (12) BU / BK | (12) 115 | (12) Right Rear Speaker [-] Control | (12) I | (12) — |
| (13) 13 | (13) 1.5 | (13) GN / BK | (13) 116 | (13) Left Rear Speaker [-] Control | (13) I | (13) — |
| 14 | — | — | — | Not Occupied | — | — |
| (15) 15 | (15) 0.75 | (15) BU / YE | (15) 1960 | (15) Front Center Speaker [-] Control | (15) I | (15) — |
| 16 | — | — | — | Not Occupied | — | — |

### T3 Audio Amplifier X3




4873243

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 35016343
- Service Connector: 13519738
- Description: 16-Way F 0.64 OCS Series( BK)

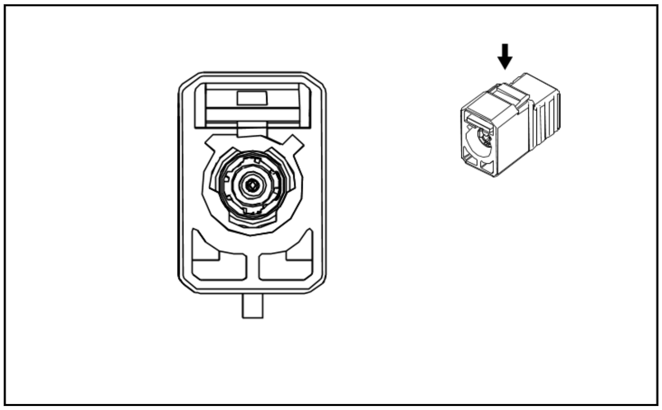
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 84619127 | J-35616-64B (L-BU) | J-38125-215A |
| II | Service by Cable | J-35616-64B (L-BU) | J-38125-215A |

## T3 Audio Amplifier X3

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) YE | (1) 7215 | (1) Ethernet Bus 6 [+] | (1) II | (1) — |
| (2) 2 | (2) 0.35 | (2) GN | (2) 7214 | (2) Ethernet Bus 6 [-] | (2) II | (2) — |
| 3 - 4 | — | — | — | Not Occupied | — | — |
| (5) 5 | (5) 0.35 | (5) GN / BN | (5) 3005 | (5) Active Noise Cancellation Microphone 1 Signal | (5) I | (5) — |
| 6 - 10 | — | — | — | Not Occupied | — | — |
| (11) 11 | (11) 0.5 | (11) BU / WH | (11) 4985 | (11) AUTOSAR CAN Bus [+] 5 Serial Data | (11) I | (11) — |
| (12) 12 | (12) 0.5 | (12) BU / YE | (12) 4984 | (12) AUTOSAR CAN Bus [-] 5 Serial Data | (12) I | (12) — |
| (13) 13 | (13) 0.35 | (13) GN / BK | (13) 3008 | (13) Active Noise Cancellation Microphone 1 Feedback Signal | (13) I | (13) — |
| 14 - 16 | — | — | — | Not Occupied | — | — |

### T4M Radio Antenna



2893647

**Connector Part Information**
- Harness Type: Radio Antenna Cable Extension Cable COAX
- OEM Connector: 3FA1-NASJ-C01W6
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type( BK)

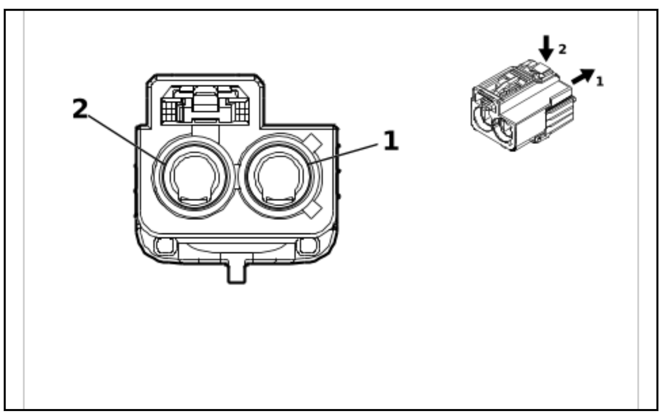
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## T4M Radio Antenna

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| — | — | Coax Cable | — | (AM/FM) Antenna RF Signal | I | — |

### T4P High Frequency Antenna X1 (UE1)




5661671

**Connector Part Information**
- Harness Type: Instrument Panel Wiring Harness TWINAX
- OEM Connector: 33351060
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 2-Way F Coax Type( VT)

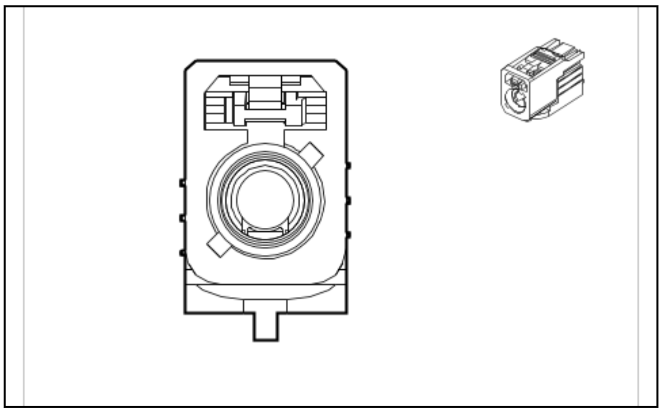
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## T4P High Frequency Antenna X1 (UE1)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) — | (1) Coax Cable | (1) 3134 | (1) Coaxial Antenna Cell/GPS Combined Signal | (1) I | (1) — |
| (2) 2 | (2) — | (2) Coax Cable | (2) 6449 | (2) Coaxial Antenna Cell Phone Signal | (2) I | (2) — |

### T4P High Frequency Antenna X1 (-UE1)



6267120

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness COAX
- OEM Connector: 33351013
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type( BU)

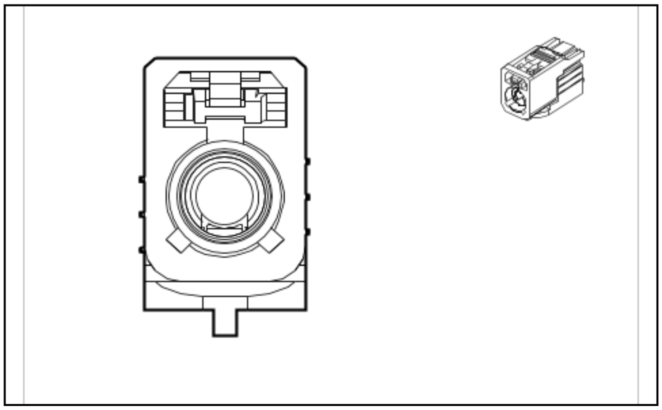
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## T4P High Frequency Antenna X1 (-UE1)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| — | — | Coax Cable | — | (GPS only) Coaxial Antenna GPS Signal | I | — |

### T4P High Frequency Antenna X2 (UE1)



5661657

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness COAX
- OEM Connector: 33351022
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type( YE)

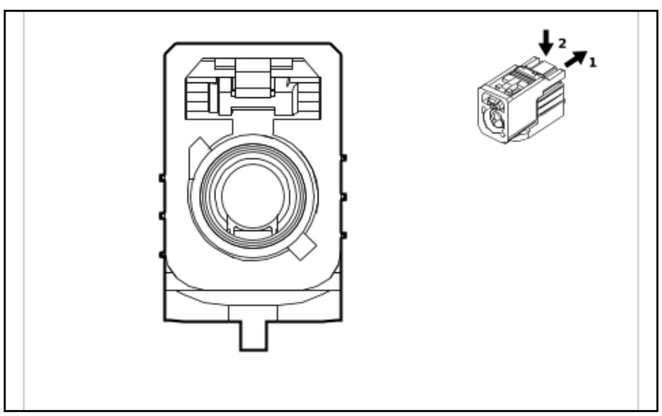
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## T4P High Frequency Antenna X2 (UE1)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| — | — | Coax Cable | — | (XM +/-HD) Coaxial Antenna XM Signal | I | — |

### T4TA Auxiliary Wireless Communication Interface Antenna




5518436

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness COAX
- OEM Connector: 33351021
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type( BG)

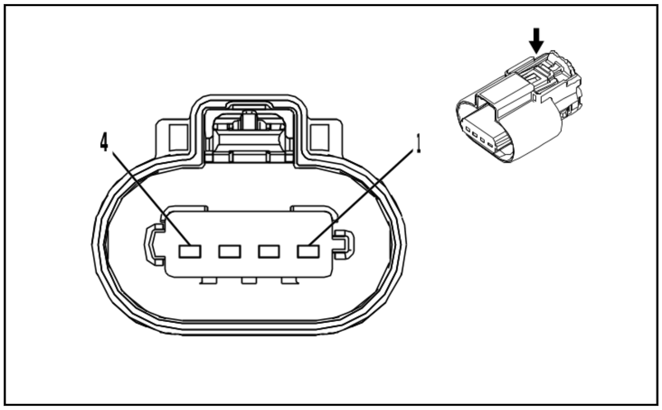
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## T4TA Auxiliary Wireless Communication Interface Antenna

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| — | — | Coax Cable | — | WiFi Antenna Coaxial Signal | I | — |

### T8A Ignition Coil 1




3240115

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 34770-0402
- Service Connector: 19367596
- Description: 4-Way F 1.5 MX Series, Sealed( BK)

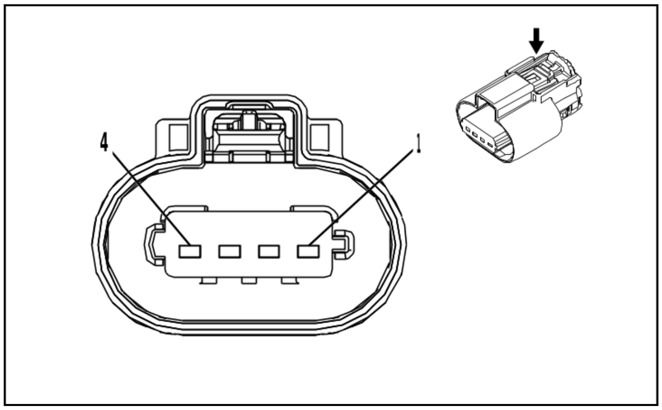
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-14 (GN) | No Tool Required |

## T8A Ignition Coil 1

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) BK | (1) 6150 | (1) Engine Odd Bank Ground | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK / BU | (2) 2129 | (2) Ignition Control Low Reference Bank 1 | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BU / VT | (3) 2121 | (3) Ignition Control 1 | (3) I | (3) — |
| (4) 4 | (4) 0.75 | (4) VT / BU | (4) 5291 | (4) Powertrain Main Relay Fused Supply Voltage 2 | (4) I | (4) — |

### T8B Ignition Coil 2




3240115

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 34770-0402
- Service Connector: 19367596
- Description: 4-Way F 1.5 MX Series, Sealed( BK)

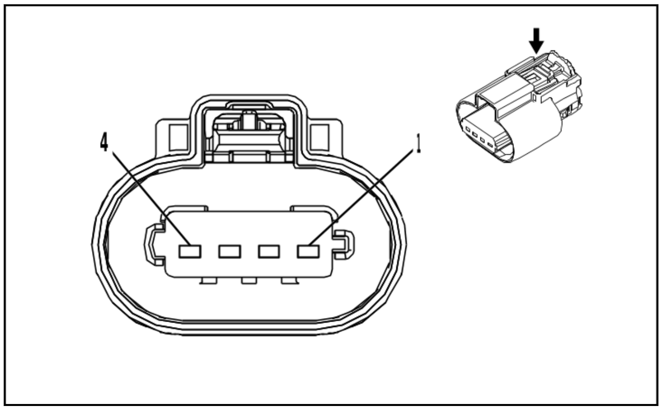
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-14 (GN) | No Tool Required |

## T8B Ignition Coil 2

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) BK | (1) 6450 | (1) Engine Even Bank Ground | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK / GY | (2) 2130 | (2) Ignition Control Low Reference Bank 2 | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BU / WH | (3) 2122 | (3) Ignition Control 2 | (3) I | (3) — |
| (4) 4 | (4) 0.75 | (4) VT / BU | (4) 5292 | (4) Powertrain Main Relay Fused Supply Voltage 3 | (4) I | (4) — |

## T8C Ignition Coil 3




3240115

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 34770-0402
- Service Connector: 19367596
- Description: 4-Way F 1.5 MX Series, Sealed( BK)

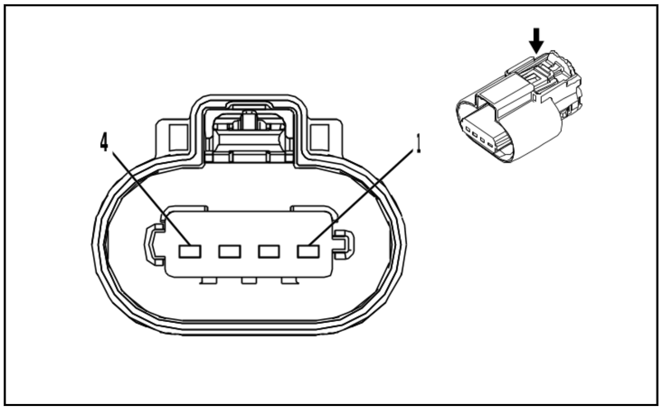
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-14 (GN) | No Tool Required |

## T8C Ignition Coil 3

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) BK | (1) 6150 | (1) Engine Odd Bank Ground | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK / BU | (2) 2129 | (2) Ignition Control Low Reference Bank 1 | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) GN / BU | (3) 2123 | (3) Ignition Control 3 | (3) I | (3) — |
| (4) 4 | (4) 0.75 | (4) VT / BU | (4) 5291 | (4) Powertrain Main Relay Fused Supply Voltage 2 | (4) I | (4) — |

## T8D Ignition Coil 4




3240115

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 34770-0402
- Service Connector: 19367596
- Description: 4-Way F 1.5 MX Series, Sealed( BK)

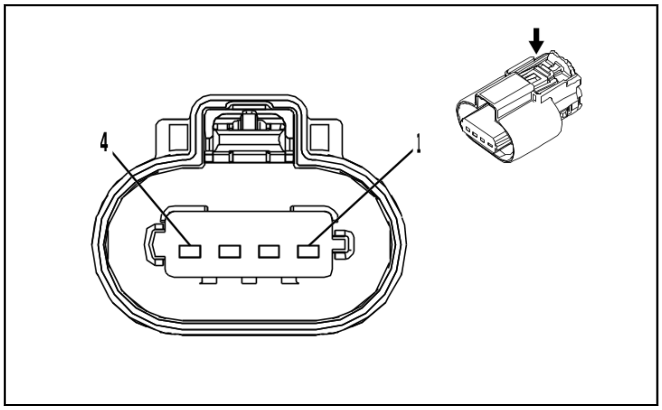
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-14 (GN) | No Tool Required |

### T8D Ignition Coil 4

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) BK | (1) 6450 | (1) Engine Even Bank Ground | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK / GY | (2) 2130 | (2) Ignition Control Low Reference Bank 2 | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) YE / BU | (3) 2124 | (3) Ignition Control 4 | (3) I | (3) — |
| (4) 4 | (4) 0.75 | (4) VT / BU | (4) 5292 | (4) Powertrain Main Relay Fused Supply Voltage 3 | (4) I | (4) — |

**T8E Ignition Coil 5**




3240115

**Connector Part Information**
- Harness Type: Engine Wiring Harness
- OEM Connector: 34770-0402
- Service Connector: 19367596
- Description: 4-Way F 1.5 MX Series, Sealed( BK)

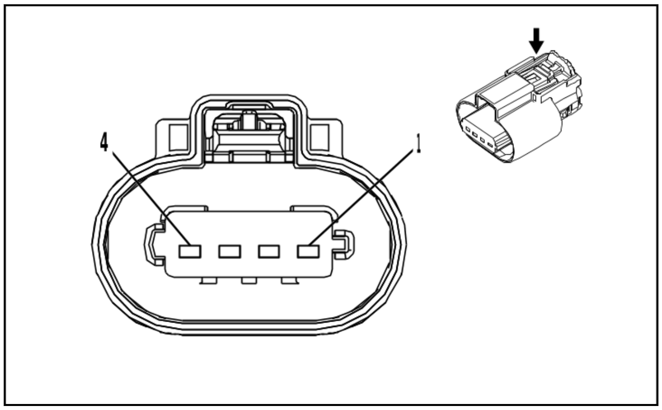
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-14 (GN) | No Tool Required |

## T8E Ignition Coil 5

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) BK | (1) 6150 | (1) Engine Odd Bank Ground | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK / BU | (2) 2129 | (2) Ignition Control Low Reference Bank 1 | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BU / GY | (3) 2125 | (3) Ignition Control 5 | (3) I | (3) — |
| (4) 4 | (4) 0.75 | (4) VT / BU | (4) 5291 | (4) Powertrain Main Relay Fused Supply Voltage 2 | (4) I | (4) — |

## T8F Ignition Coil 6




3240115

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 34770-0402
- Service Connector: 19367596
- Description: 4-Way F 1.5 MX Series, Sealed( BK)

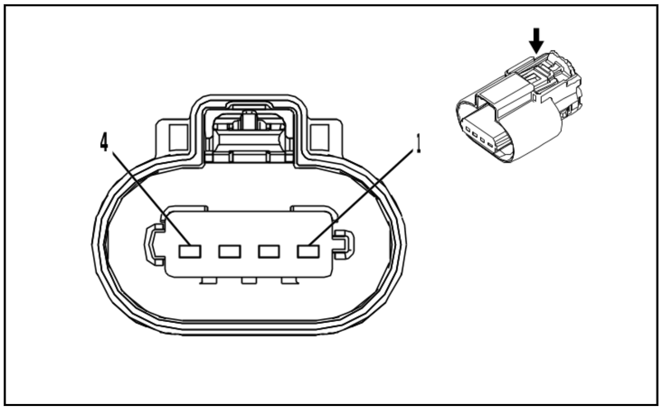
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-14 (GN) | No Tool Required |

### T8F Ignition Coil 6

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) BK | (1) 6450 | (1) Engine Even Bank Ground | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK / GY | (2) 2130 | (2) Ignition Control Low Reference Bank 2 | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BN / BU | (3) 2126 | (3) Ignition Control 6 | (3) I | (3) — |
| (4) 4 | (4) 0.75 | (4) VT / BU | (4) 5292 | (4) Powertrain Main Relay Fused Supply Voltage 3 | (4) I | (4) — |

### T8G Ignition Coil 7




3240115

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 34770-0402
- Service Connector: 19367596
- Description: 4-Way F 1.5 MX Series, Sealed( BK)

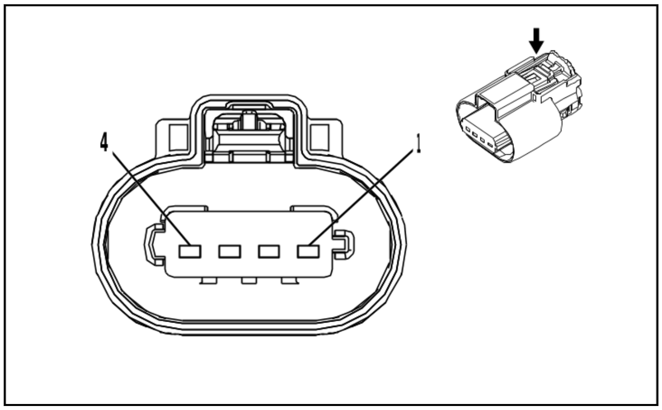
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-14 (GN) | No Tool Required |

## T8G Ignition Coil 7

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) BK | (1) 6150 | (1) Engine Odd Bank Ground | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK / BU | (2) 2129 | (2) Ignition Control Low Reference Bank 1 | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) GN / GY | (3) 2127 | (3) Ignition Control 7 | (3) I | (3) — |
| (4) 4 | (4) 0.75 | (4) VT / BU | (4) 5291 | (4) Powertrain Main Relay Fused Supply Voltage 2 | (4) I | (4) — |

**T8H Ignition Coil 8**




3240115

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 34770-0402
- Service Connector: 19367596
- Description: 4-Way F 1.5 MX Series, Sealed( BK)

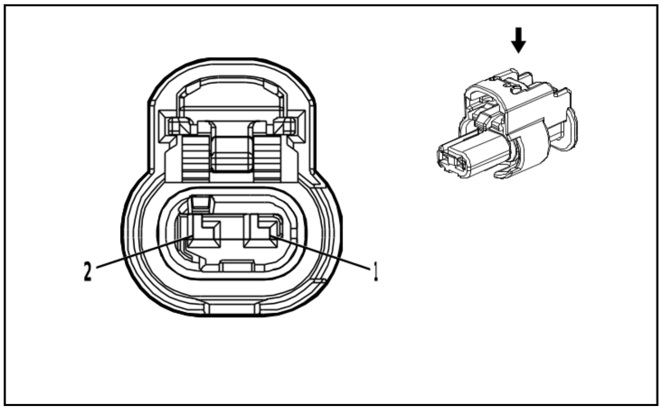
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-14 (GN) | No Tool Required |

## T8H Ignition Coil 8

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) BK | (1) 6450 | (1) Engine Even Bank Ground | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK / GY | (2) 2130 | (2) Ignition Control Low Reference Bank 2 | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) VT / WH | (3) 2128 | (3) Ignition Control 8 | (3) I | (3) — |
| (4) 4 | (4) 0.75 | (4) VT / BU | (4) 5292 | (4) Powertrain Main Relay Fused Supply Voltage 3 | (4) I | (4) — |

### T10G Low Frequency Rear Bumper Antenna




4690744

**Connector Part Information**
- Harness Type: Chassis Wiring Harness
- OEM Connector: 1-2296694-3
- Service Connector: 19366871
- Description: 2-Way F 1.2 MCON Series, Sealed( BK)

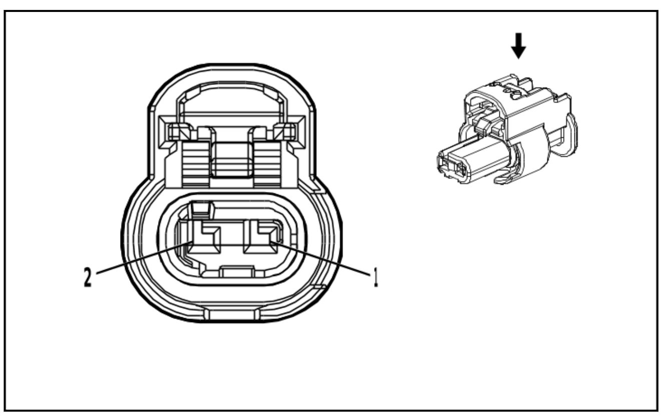
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |

## T10G Low Frequency Rear Bumper Antenna

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BN / GN | (1) 3568 | (1) Rear Closure Passive Entry Antenna High Signal | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) GN / GY | (2) 3569 | (2) Rear Closure Passive Entry Antenna Low Signal | (2) I | (2) — |

### T10J Low Frequency Instrument Panel Antenna




4690744

**Connector Part Information**
- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 1-2296694-3
- Service Connector: 19366871
- Description: 2-Way F 1.2 MCON Series, Sealed( BK)

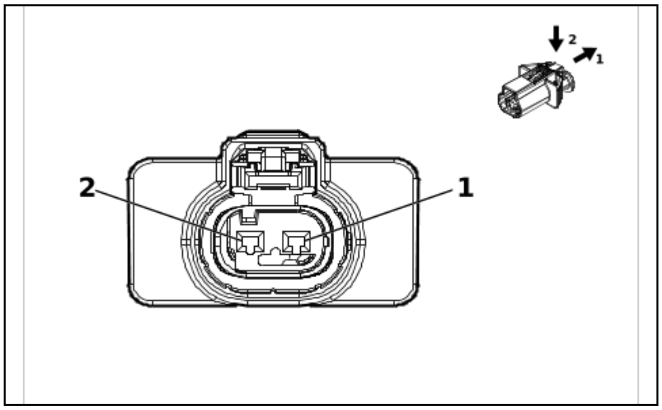
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |

## T10J Low Frequency Instrument Panel Antenna

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) BN / BK | (1) 3552 | (1) Interior Passive Entry Antenna 1 High Signal | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) WH | (2) 3553 | (2) Interior Passive Entry Antenna 1 Low Signal | (2) I | (2) — |

### T10KA Low Frequency Console Number 2 Antenna




6757461

**Connector Part Information**
- Harness Type: Front Floor Console Wiring Harness
- OEM Connector: 35747315
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MLK Series, Sealed( BK)

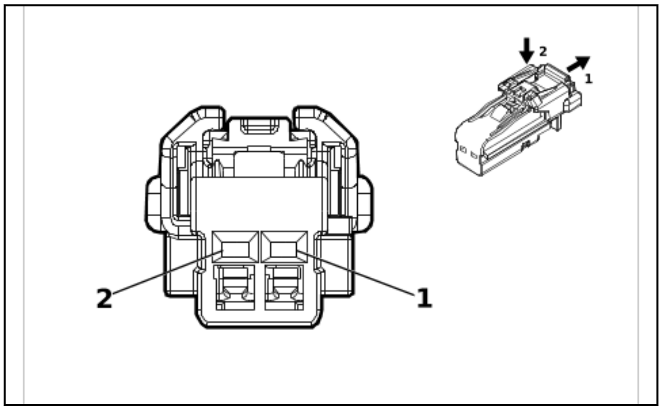
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |

## T10KA Low Frequency Console Number 2 Antenna

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) BN / BK | (1) 3552 | (1) Interior Passive Entry Antenna 1 High Signal | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) WH | (2) 3553 | (2) Interior Passive Entry Antenna 1 Low Signal | (2) I | (2) — |

### T10UA Low Frequency Console Antenna (- D07)




4115691

**Connector Part Information**
- Harness Type: Front Seat Wiring Harness - Center
- OEM Connector: 6098-8988
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series( BK)

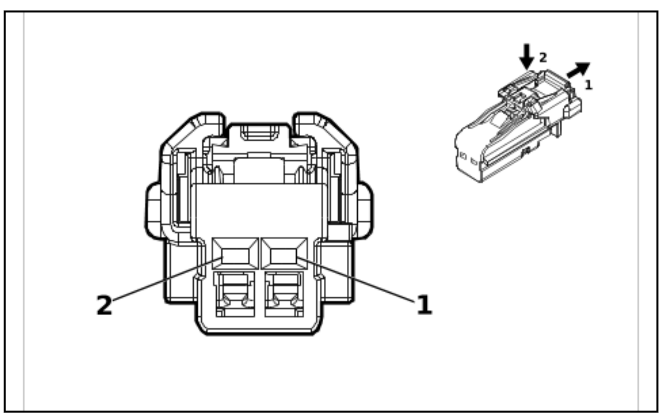
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## T10UA Low Frequency Console Antenna (- D07)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BN / BK | (1) 4996 | (1) Immobilizer Antenna Signal [+] | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) WH / GY | (2) 4997 | (2) Immobilizer Antenna Low Signal | (2) I | (2) — |

### T10UA Low Frequency Console Antenna (D07)




4115691

**Connector Part Information**
- Harness Type: Front Floor Console Wiring Harness
- OEM Connector: 6098-8988
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series( BK)

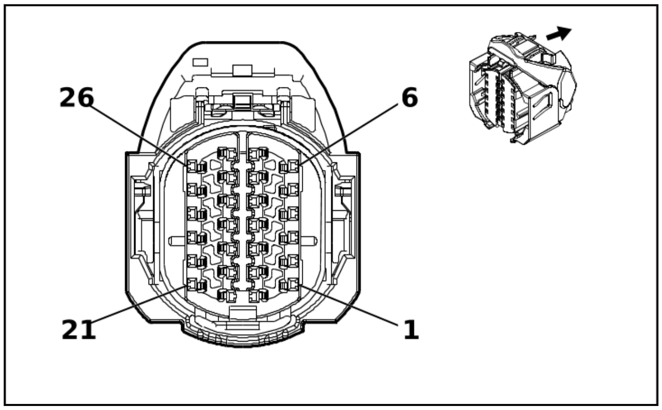
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |

## T10UA Low Frequency Console Antenna (D07)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) BN / BK | (1) 4996 | (1) Immobilizer Antenna Signal [+] | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) WH / GY | (2) 4997 | (2) Immobilizer Antenna Low Signal | (2) I | (2) — |

### T12 Automatic Transmission X1




5275597

**Connector Part Information**
- Harness Type: Engine Wiring Harness
- OEM Connector: 2327375-1
- Service Connector: 13528029
- Description: 26-Way F 1.2 MCON Series, Sealed( BK)

## Terminal Part Information

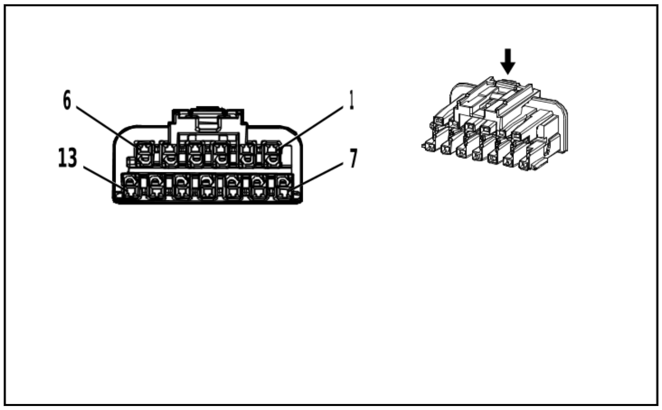
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 19331733 | J-35616-12 (BU) | J-38125-553 |

## T12 Automatic Transmission X1

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) GN / YE | (1) 6353 | (1) Input Speed Signal | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) GN / VT | (2) 4510 | (2) Transmission Intermediate Speed Signal | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BN / WH | (3) 6254 | (3) Transmission Input Speed Sensor Signal | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) GY / BU | (4) 6358 | (4) Output Speed Signal | (4) I | (4) — |
| (5) 5 | (5) 0.5 | (5) BU / WH | (5) 3338 | (5) Transmission Internal Mode Switch Mode Control X | (5) I | (5) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (6) 6 | (6) 0.5 | (6) GN / YE | (6) 3337 | (6) Transmission Internal Mode Switch Mode Control Y | (6) I | (6) — |
| (7) 7 | (7) 0.5 | (7) YE / GN | (7) 4170 | (7) Transmission Output Shaft Speed Sensor Circuit 9V Reference | (7) I | (7) — |
| (8) 8 | (8) 0.5 | (8) YE / BU | (8) 4171 | (8) Transmission Input Shaft Speed Sensor Circuit 9V Reference | (8) I | (8) — |
| (9) 9 | (9) 0.5 | (9) GY / BN | (9) 6388 | (9) Transmission High Side Driver 2 Control | (9) I | (9) — |
| 10 | — | — | — | Not Occupied | — | — |
| (11) 11 | (11) 0.5 | (11) GN / GY | (11) 6387 | (11) Transmission High Side Driver 1 Control | (11) I | (11) — |
| (12) 12 | (12) 0.5 | (12) WH / RD | (12) 480 | (12) Engine Control Vehicle Sensors 5 Volt Reference 1 | (12) I | (12) — |
| (13) 13 | (13) 0.5 | (13) BN / WH | (13) 585 | (13) Transmission Fluid Temperature Sensor Signal | (13) I | (13) — |
| (14) 14 | (14) 0.5 | (14) YE / BN | (14) 6404 | (14) Clutch Solenoid Valve E Control | (14) I | (14) — |
| (15) 15 | (15) 0.5 | (15) GY / GN | (15) 6403 | (15) Clutch Solenoid Valve D Control | (15) I | (15) — |
| (16) 16 | (16) 0.5 | (16) GY | (16) 6402 | (16) Clutch Solenoid Valve C Control | (16) I | (16) — |
| 17 - 18 | — | — | — | Not Occupied | — | — |
| (19) 19 | (19) 0.5 | (19) GN / BK | (19) 7819 | (19) Default Disable Solenoid Control | (19) I | (19) — |
| (20) 20 | (20) 0.5 | (20) BK / GY | (20) 626 | (20) Engine Control Vehicle Sensors Low Reference 1 | (20) I | (20) — |
| (21) 21 | (21) 0.5 | (21) VT | (21) 4509 | (21) Transmission Clutch F Control | (21) I | (21) — |
| (22) 22 | (22) 0.5 | (22) WH / BU | (22) 4507 | (22) Transmission Clutch H Control | (22) I | (22) — |
| (23) 23 | (23) 0.5 | (23) WH | (23) 4508 | (23) Transmission Clutch G Control | (23) I | (23) — |
| (24) 24 | (24) 0.5 | (24) GN / WH | (24) 1530 | (24) Transmission Line Pressure Control Solenoid Valve Control | (24) I | (24) — |
| (25) 25 | (25) 0.5 | (25) VT / WH | (25) 422 | (25) Torque Converter Clutch Solenoid Valve Control | (25) I | (25) — |
| (26) 26 | (26) 0.5 | (26) BK / BN | (26) 586 | (26) Transmission Fluid Temperature Sensor Low Reference | (26) I | (26) — |

### T12 Automatic Transmission X2




4757907

**Connector Part Information**
- Harness Type: Automatic Transmission Wiring Harness
- OEM Connector: 2203990-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 13-Way F 1.2 MCON Series( BN)

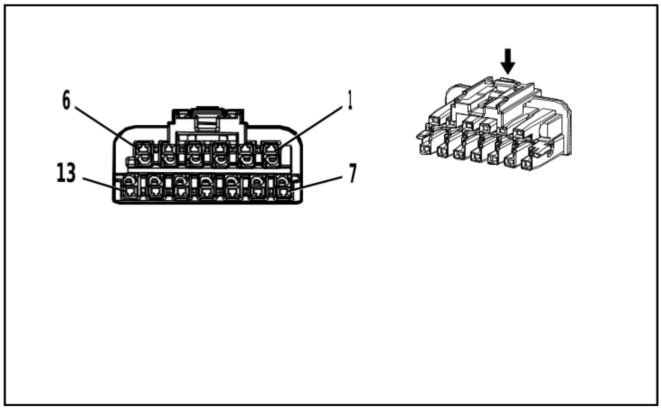
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |

## T12 Automatic Transmission X2

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) YE / GY | (1) 3337 | (1) Transmission Internal Mode Switch Mode Control Y | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) YE | (2) 3338 | (2) Transmission Internal Mode Switch Mode Control X | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) YE / OG | (3) 6358 | (3) Output Speed Signal | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) WH / BU | (4) 6254 | (4) Transmission Input Speed Sensor Signal | (4) I | (4) — |
| (5) 5 | (5) 0.5 | (5) VT / GN | (5) 4510 | (5) Transmission Intermediate Speed Signal | (5) I | (5) — |
| (6) 6 | (6) 0.5 | (6) WH / VT | (6) 6353 | (6) Input Speed Signal | (6) I | (6) — |
| (7) 7 | (7) 0.5 | (7) BN / YE | (7) 585 | (7) Transmission Fluid Temperature Sensor Signal | (7) I | (7) — |
| (8) 8 | (8) 0.5 | (8) OG | (8) 480 | (8) Engine Control Vehicle Sensors 5 Volt Reference 1 | (8) I | (8) — |
| (9) 9 | (9) 0.5 | (9) BN | (9) 6387 | (9) Transmission High Side Driver 1 Control | (9) I | (9) — |
| 10 | — | — | — | Not Occupied | — | — |
| (11) 11 | (11) 0.5 | (11) WH | (11) 6388 | (11) Transmission High Side Driver 2 Control | (11) I | (11) — |
| (12) 12 | (12) 0.5 | (12) BU | (12) 4171 | (12) Transmission Input Shaft Speed Sensor Circuit 9V Reference | (12) I | (12) — |
| (13) 13 | (13) 0.5 | (13) GN | (13) 4170 | (13) Transmission Output Shaft Speed Sensor Circuit 9V Reference | (13) I | (13) — |

### T12 Automatic Transmission X3




4757999

**Connector Part Information**

- Harness Type: Automatic Transmission Wiring Harness
- OEM Connector: 2203990-2
- Service Connector: Service by Harness - See Part Catalog
- Description: 13-Way F 1.2 MCON Series( BN)

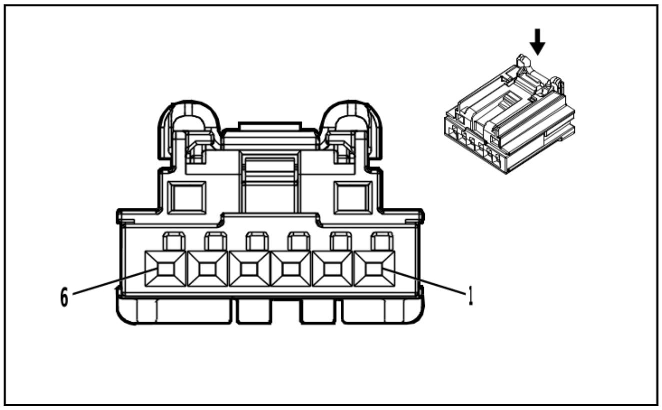
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |

## T12 Automatic Transmission X3

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BN / WH | (1) 4509 | (1) Transmission Clutch F Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) YE / VT | (2) 4507 | (2) Transmission Clutch H Control | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BU / GY | (3) 4508 | (3) Transmission Clutch G Control | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) GN / OG | (4) 1530 | (4) Transmission Line Pressure Control Solenoid Valve Control | (4) I | (4) — |
| (5) 5 | (5) 0.5 | (5) GY / BN | (5) 422 | (5) Torque Converter Clutch Solenoid Valve Control | (5) I | (5) — |
| (6) 6 | (6) 0.5 | (6) BU / BN | (6) 586 | (6) Transmission Fluid Temperature Sensor Low Reference | (6) I | (6) — |
| (7) 7 | (7) 0.5 | (7) BU / GN | (7) 6404 | (7) Clutch Solenoid Valve E Control | (7) I | (7) — |
| (8) 8 | (8) 0.5 | (8) GN / BN | (8) 6403 | (8) Clutch Solenoid Valve D Control | (8) I | (8) — |
| (9) 9 | (9) 0.5 | (9) GY | (9) 6402 | (9) Clutch Solenoid Valve C Control | (9) I | (9) — |
| 10 - 11 | — | — | — | Not Occupied | — | — |
| (12) 12 | (12) 0.5 | (12) VT | (12) 7819 | (12) Default Disable Solenoid Control | (12) I | (12) — |
| (13) 13 | (13) 0.5 | (13) BK / GY | (13) 626 | (13) Engine Control Vehicle Sensors Low Reference 1 | (13) I | (13) — |

### T22 Wireless Accessory Charging Module




5020940

**Connector Part Information**

- Harness Type: Front Floor Console Wiring Harness
- OEM Connector: 2035363-6
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 0.64 Generation Y Series( BK)

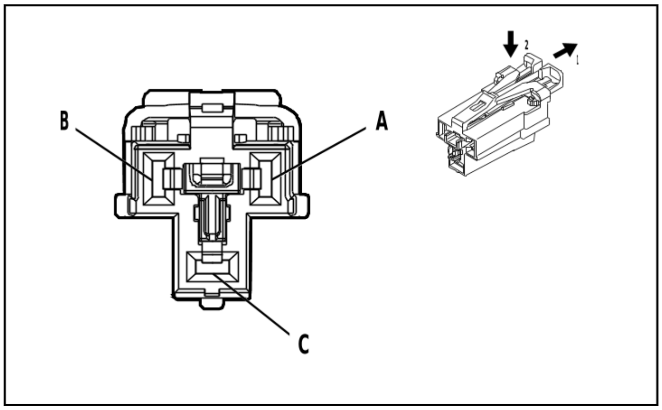
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## T22 Wireless Accessory Charging Module

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) RD / VT | (1) 2640 | (1) Battery Positive Voltage | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK | (2) 1350 | (2) Ground | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BU / YE | (3) 4984 | (3) AUTOSAR CAN Bus [-] 5 Serial Data | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) BU / WH | (4) 4985 | (4) AUTOSAR CAN Bus [+] 5 Serial Data | (4) I | (4) — |
| (5) 5 | (5) 0.5 | (5) BU / YE | (5) 4984 | (5) AUTOSAR CAN Bus [-] 5 Serial Data | (5) I | (5) — |
| (6) 6 | (6) 0.5 | (6) BU / WH | (6) 4985 | (6) AUTOSAR CAN Bus [+] 5 Serial Data | (6) I | (6) — |

### X80G Accessory Power Receptacle - Instrument Panel




4872413

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 33386302
- Service Connector: 19369281
- Description: 3-Way F 2.8 APEX Series( GY)

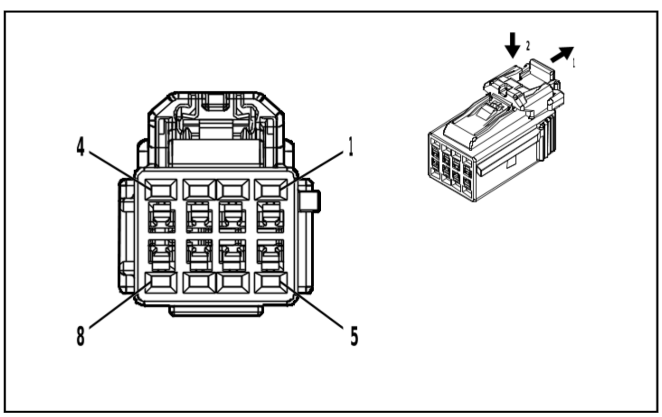
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-35 (VT) | No Tool Required |

## X80G Accessory Power Receptacle - Instrument Panel

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| A | 1.5 | VT | 1001 | Retained Accessory Power Ignition Voltage | I | — |
| B | — | — | — | Not Occupied | — | — |
| C | 1.5 | BK | 1050 | Ground | I | — |

### X81ACA Front Floor Console Accessory Power Rear Receptacle - 110V AC (KI4)




5086387

**Connector Part Information**

- Harness Type: Front Floor Console Wiring Harness
- OEM Connector: 6098-8443
- Service Connector: Service by Harness - See Part Catalog
- Description: 8-Way F 1.2 Series( BK)

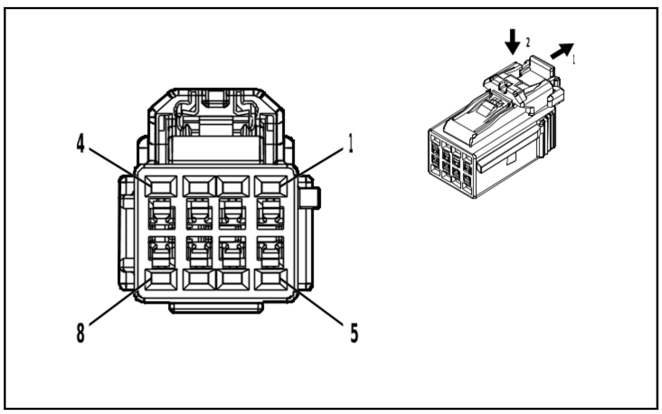
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |
| II | Not required | J-35616-16 (L-GN) | No Tool Required |

## X81ACA Front Floor Console Accessory Power Rear Receptacle - 110V AC (KI4)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) BK | (1) 10117 | (1) AC Outlet Phase A Control | (1) II | (1) — |
| 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 0.5 | (3) VT / RD | (3) 4049 | (3) AC Power Outlet Sensor High Reference | (3) II | (3) — |
| (4) 4 | (4) 0.5 | (4) BU / BN | (4) 6807 | (4) DC/AC Inverter Control | (4) II | (4) — |
| (5) 5 | (5) 0.75 | (5) RD | (5) 10118 | (5) AC Outlet Phase B Control | (5) II | (5) — |
| 6 | — | — | — | Not Occupied | — | — |
| (7) 7 | (7) 0.5 | (7) BK | (7) 1350 | (7) Ground | (7) II | (7) — |
| (8) 8 | (8) 0.35 | (8) YE | (8) 6817 | (8) LED Backlight Dimming Control 1 | (8) I | (8) — |

### X81AI Accessory Power Receptacle - Instrument Panel 110V AC




5086387

**Connector Part Information**
- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 6098-8443
- Service Connector: 84613126
- Description: 8-Way F 1.2 Series( BK)

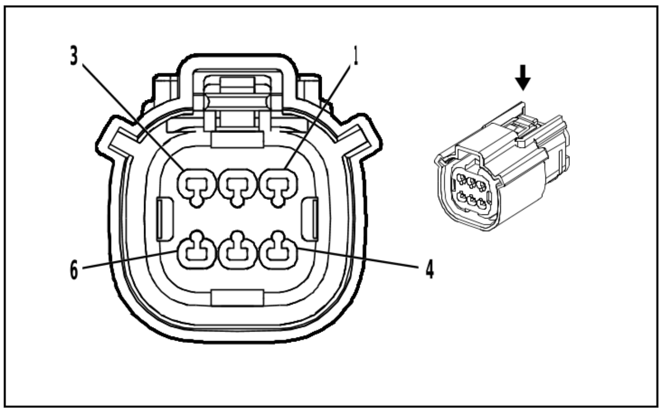
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |
| II | Not required | J-35616-16 (L-GN) | No Tool Required |

## X81AI Accessory Power Receptacle - Instrument Panel 110V AC

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) BK | (1) 10117 | (1) AC Outlet Phase A Control | (1) II | (1) — |
| 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 0.5 | (3) VT / RD | (3) 4049 | (3) AC Power Outlet Sensor High Reference | (3) II | (3) — |
| (4) 4 | (4) 0.5 | (4) BU / BN | (4) 6807 | (4) DC/AC Inverter Control | (4) II | (4) — |
| (5) 5 | (5) 0.75 | (5) RD | (5) 10118 | (5) AC Outlet Phase B Control | (5) II | (5) — |
| 6 | — | — | — | Not Occupied | — | — |
| (7) 7 | (7) 0.5 | (7) BK | (7) 1050 | (7) Ground | (7) II | (7) — |
| (8) 8 | (8) 0.35 | (8) YE | (8) 6817 | (8) LED Backlight Dimming Control 1 | (8) I | (8) — |

### X81AP Pickup Box Accessory Power Receptacle - 110V AC (KC9)




1986157

**Connector Part Information**

- Harness Type: Chassis Rear Wiring Harness
- OEM Connector: 33472-0616
- Service Connector: 13578533
- Description: 6-Way F 1.5 MX Series, Sealed( BK)

## Terminal Part Information

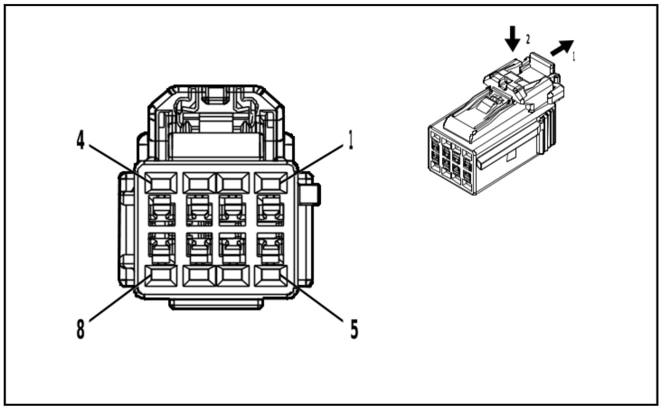
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-2A (GY) | No Tool Required |

## X81AP Pickup Box Accessory Power Receptacle - 110V AC (KC9)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) VT / RD | (1) 4049 | (1) AC Power Outlet Sensor High Reference | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) GN / BN | (2) 2266 | (2) DC/AC Inverter Control 2 | (2) I | (2) — |
| 3 | — | — | — | Not Occupied | — | — |
| (4) 4 | (4) 0.75 | (4) BK / WH | (4) 10120 | (4) AC Outlet 2 Phase A Control | (4) I | (4) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (5) 5 | (5) 0.5 | (5) BK | (5) 1750 | (5) Ground | (5) I | (5) — |
| (6) 6 | (6) 0.75 | (6) RD / WH | (6) 10121 | (6) AC Outlet 2 Phase B Control | (6) I | (6) — |

**X81BCA Front Floor Console Accessory Power Rear Receptacle - 220V AC (KI5)**




5086387

**Connector Part Information**

- Harness Type: Front Floor Console Wiring Harness
- OEM Connector: 6098-8443
- Service Connector: Service by Harness - See Part Catalog
- Description: 8-Way F 1.2 Series( BK)

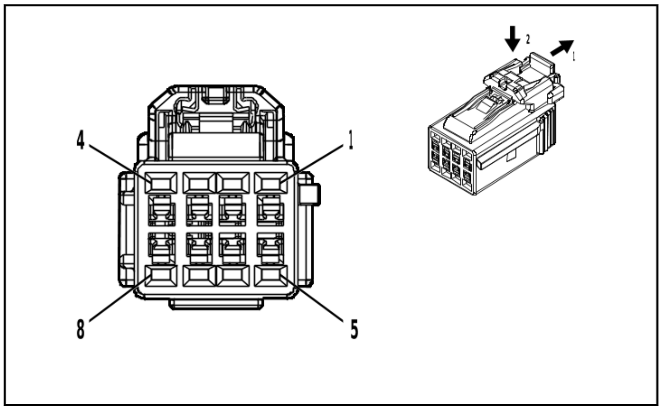
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |
| II | Not required | J-35616-16 (L-GN) | No Tool Required |

## X81BCA Front Floor Console Accessory Power Rear Receptacle - 220V AC (KI5)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) BK | (1) 10117 | (1) AC Outlet Phase A Control | (1) II | (1) — |
| 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 0.5 | (3) VT / RD | (3) 4049 | (3) AC Power Outlet Sensor High Reference | (3) II | (3) — |
| (4) 4 | (4) 0.5 | (4) BU / BN | (4) 6807 | (4) DC/AC Inverter Control | (4) II | (4) — |
| (5) 5 | (5) 0.75 | (5) RD | (5) 10118 | (5) AC Outlet Phase B Control | (5) II | (5) — |
| 6 | — | — | — | Not Occupied | — | — |
| (7) 7 | (7) 0.5 | (7) BK | (7) 1350 | (7) Ground | (7) II | (7) — |
| (8) 8 | (8) 0.35 | (8) YE | (8) 6817 | (8) LED Backlight Dimming Control 1 | (8) I | (8) — |

### X81BI Accessory Power Receptacle - Instrument Panel 220V AC




5086387

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 6098-8443
- Service Connector: 84613126
- Description: 8-Way F 1.2 Series( BK)

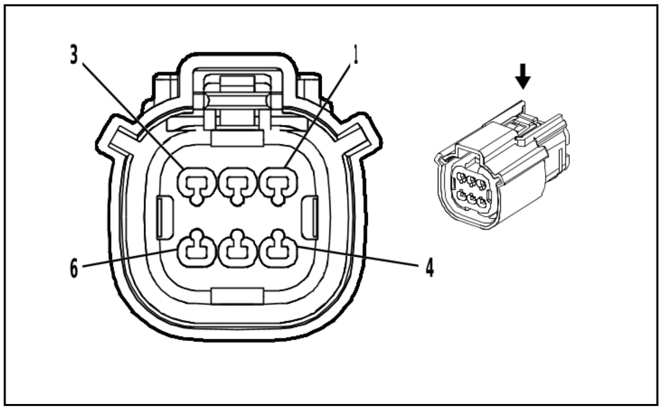
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |
| II | Not required | J-35616-16 (L-GN) | No Tool Required |

## X81BI Accessory Power Receptacle - Instrument Panel 220V AC

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) BK | (1) 10117 | (1) AC Outlet Phase A Control | (1) II | (1) — |
| 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 0.5 | (3) VT / RD | (3) 4049 | (3) AC Power Outlet Sensor High Reference | (3) II | (3) — |
| (4) 4 | (4) 0.5 | (4) BU / BN | (4) 6807 | (4) DC/AC Inverter Control | (4) II | (4) — |
| (5) 5 | (5) 0.75 | (5) RD | (5) 10118 | (5) AC Outlet Phase B Control | (5) II | (5) — |
| 6 | — | — | — | Not Occupied | — | — |
| (7) 7 | (7) 0.5 | (7) BK | (7) 1050 | (7) Ground | (7) II | (7) — |
| (8) 8 | (8) 0.35 | (8) YE | (8) 6817 | (8) LED Backlight Dimming Control 1 | (8) I | (8) — |

### X81BP Pickup Box Accessory Power Receptacle - 220V AC (KCA)




1986157

**Connector Part Information**

- Harness Type: Chassis Rear Wiring Harness
- OEM Connector: 33472-0616
- Service Connector: 13578533
- Description: 6-Way F 1.5 MX Series, Sealed( BK)

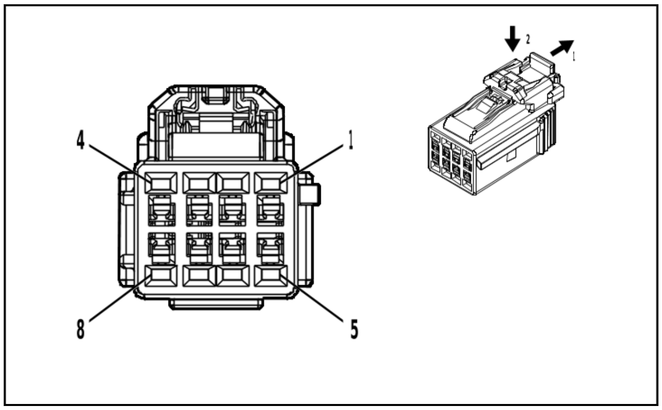
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-2A (GY) | No Tool Required |

## X81BP Pickup Box Accessory Power Receptacle - 220V AC (KCA)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) VT / RD | (1) 4049 | (1) AC Power Outlet Sensor High Reference | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) GN / BN | (2) 2266 | (2) DC/AC Inverter Control 2 | (2) I | (2) — |
| 3 | — | — | — | Not Occupied | — | — |
| (4) 4 | (4) 0.75 | (4) BK / WH | (4) 10120 | (4) AC Outlet 2 Phase A Control | (4) I | (4) — |
| (5) 5 | (5) 0.5 | (5) BK | (5) 1750 | (5) Ground | (5) I | (5) — |
| (6) 6 | (6) 0.75 | (6) RD / WH | (6) 10121 | (6) AC Outlet 2 Phase B Control | (6) I | (6) — |

### X81FSA Accessory Power Receptacle - Front Center Seat Rear Cover 110V AC (KI4)




5086387

**Connector Part Information**

- Harness Type: Front Seat Wiring Harness - Center
- OEM Connector: 6098-8443
- Service Connector: Service by Harness - See Part Catalog
- Description: 8-Way F 1.2 Series( BK)

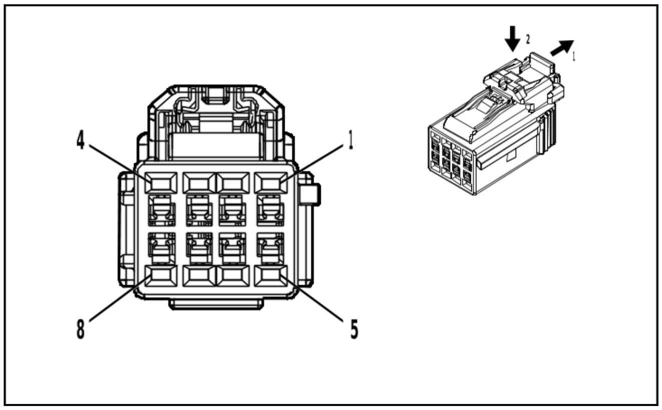
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## X81FSA Accessory Power Receptacle - Front Center Seat Rear Cover 110V AC (KI4)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) BK | (1) 10117 | (1) AC Outlet Phase A Control | (1) I | (1) — |
| 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 0.75 | (3) VT / RD | (3) 4049 | (3) AC Power Outlet Sensor High Reference | (3) I | (3) — |
| (4) 4 | (4) 0.75 | (4) BU / BN | (4) 6807 | (4) DC/AC Inverter Control | (4) I | (4) — |
| (5) 5 | (5) 0.75 | (5) RD | (5) 10118 | (5) AC Outlet Phase B Control | (5) I | (5) — |
| 6 | — | — | — | Not Occupied | — | — |
| (7) 7 | (7) 0.75 | (7) BK | (7) 1050 | (7) Ground | (7) I | (7) — |
| (8) 8 | (8) 0.35 | (8) YE | (8) 6817 | (8) LED Backlight Dimming Control 1 | (8) I | (8) — |

## X81FSB Accessory Power Receptacle - Front Center Seat Rear Cover 220V AC (KI5)




5086387

**Connector Part Information**

- Harness Type: Front Seat Wiring Harness - Center
- OEM Connector: 6098-8443
- Service Connector: Service by Harness - See Part Catalog
- Description: 8-Way F 1.2 Series( BK)

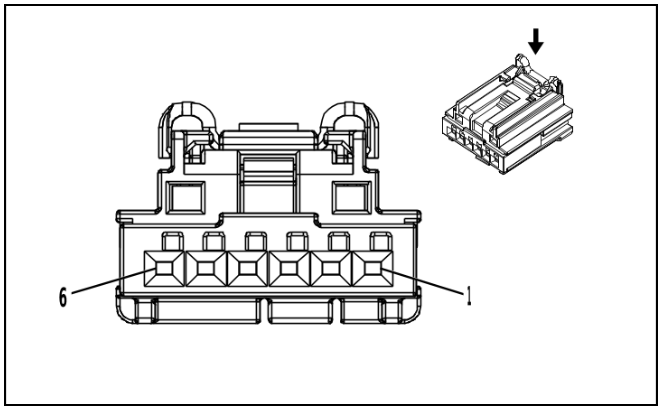
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

### X81FSB Accessory Power Receptacle - Front Center Seat Rear Cover 220V AC (KI5)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) BK | (1) 10117 | (1) AC Outlet Phase A Control | (1) I | (1) — |
| 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 0.75 | (3) VT / RD | (3) 4049 | (3) AC Power Outlet Sensor High Reference | (3) I | (3) — |
| (4) 4 | (4) 0.75 | (4) BU / BN | (4) 6807 | (4) DC/AC Inverter Control | (4) I | (4) — |
| (5) 5 | (5) 0.75 | (5) RD | (5) 10118 | (5) AC Outlet Phase B Control | (5) I | (5) — |
| 6 | — | — | — | Not Occupied | — | — |
| (7) 7 | (7) 0.75 | (7) BK | (7) 1050 | (7) Ground | (7) I | (7) — |
| (8) 8 | (8) 0.35 | (8) YE | (8) 6817 | (8) LED Backlight Dimming Control 1 | (8) I | (8) — |

### X83B Audio/Video Receptacle X1




3960313

**Connector Part Information**

- Harness Type: Front Floor Console Wiring Harness
- OEM Connector: 2035363-4
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 0.64 Generation Y Series( BK)

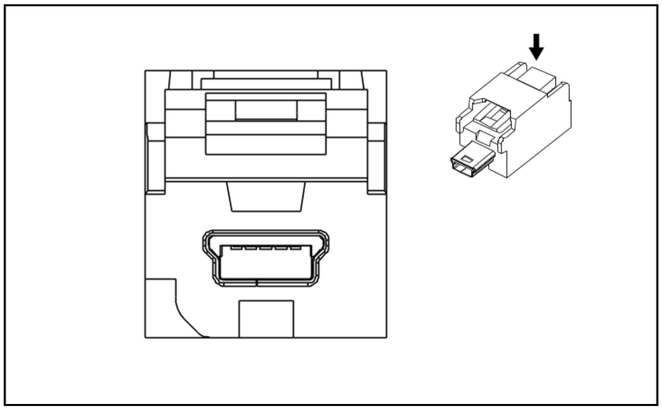
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## X83B Audio/Video Receptacle X1

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) RD / VT | (1) 2640 | (1) Battery Positive Voltage | (1) I | (1) — |
| (2) 2 | (2) 0.35<br>(2) 0.5 | (2) YE<br>(2) YE | (2) 6817<br>(2) 6817 | (2) LED Backlight Dimming Control 1<br>(2) LED Backlight Dimming Control 1 | (2) I<br>(2) I | (2) —<br>(2) — |
| (3) 3 | (3) 0.5 | (3) BK / WH | (3) 1051 | (3) Signal Ground | (3) I | (3) — |
| 4 - 6 | — | — | — | Not Occupied | — | — |

### X83B Audio/Video Receptacle X2



3214018

**Connector Part Information**
- Harness Type: Front Floor Console Wiring Harness
- OEM Connector: 13890926
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 5-Way M 2.0 Mini-B USB Type( GY)

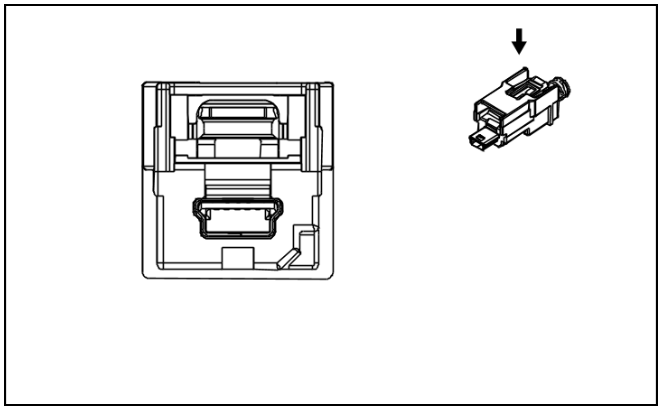
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## X83B Audio/Video Receptacle X2

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| GY | — | BARE | USB | USB Serial Data | I | — |
| | — | BK | USB | USB Serial Data | I | — |
| | — | GN | USB | USB Serial Data | I | — |
| | — | RD | USB | USB Serial Data | I | — |
| | — | WH | USB | USB Serial Data | I | — |

### X83B Audio/Video Receptacle X3



2807425

**Connector Part Information**
- Harness Type: Front Floor Console Wiring Harness USB
- OEM Connector: 13890925
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 5-Way M 2.0 Mini-B USB Type( BK)

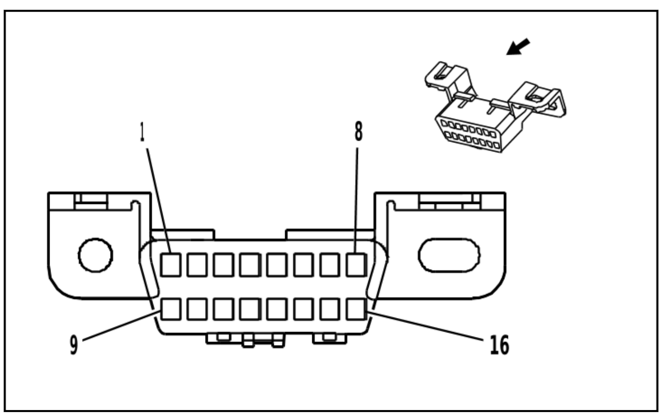
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## X83B Audio/Video Receptacle X3

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| — | — | USB | — | USB Serial Data | I | — |

### X84 Data Link Connector




68793

**Connector Part Information**
- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 12110250
- Service Connector: 12110250
- Description: 16-Way F 150 Metri-Pack Series( BK)

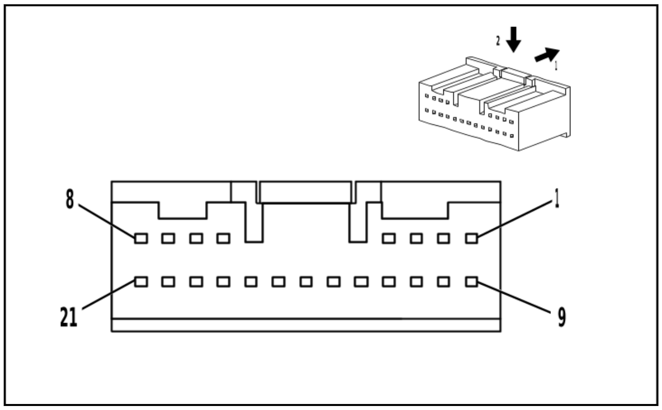
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 13580059 | J-35616-14 (GN) | J-38125-12A |
| II | Service by Cable | J-35616-14 (GN) | J-38125-215A |

## X84 Data Link Connector

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) BU / BN | (1) 4983 | (1) AUTOSAR CAN Bus [+] 7 Serial Data | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) GN | (2) 2578 | (2) Private Serial Data Presentation CAN Bus [+] 1 Serial Data | (2) I | (2) — |
| (3) 3 | (3) 0.35 | (3) BU | (3) 4973 | (3) Ethernet Bus 1R [+] | (3) II | (3) — |
| (4) 4 | (4) 0.5 | (4) BK | (4) 1050 | (4) Ground | (4) I | (4) — |
| (5) 5 | (5) 0.5 | (5) BK / WH | (5) 851 | (5) Signal Ground | (5) I | (5) — |
| (6) 6 | (6) 0.35 | (6) YE | (6) 4981 | (6) AUTOSAR CAN Bus [+] 6 Serial Data | (6) I | (6) — |
| (7) 7 | (7) 0.35 | (7) VT | (7) 2580 | (7) Private Serial Data Presentation CAN Bus [+] 2 Serial Data | (7) I | (7) — |
| (8) 8 | (8) 0.35 | (8) WH | (8) 7207 | (8) Ethernet Bus 1 Enable Signal | (8) I | (8) — |
| (9) 9 | (9) 0.35 | (9) WH | (9) 4982 | (9) AUTOSAR CAN Bus [-] 7 Serial Data | (9) I | (9) — |
| (10) 10 | (10) 0.35 | (10) BN | (10) 2577 | (10) Private Serial Data Presentation CAN Bus [-] 1 Serial Data | (10) I | (10) — |
| (11) 11 | (11) 0.35 | (11) YE | (11) 4972 | (11) Ethernet Bus 1R [-] | (11) II | (11) — |
| (12) 12 | (12) 0.35 | (12) BU | (12) 4975 | (12) Ethernet Bus 1T [+] | (12) II | (12) — |
| (13) 13 | (13) 0.35 | (13) GN | (13) 4974 | (13) Ethernet Bus 1T [-] | (13) II | (13) — |
| (14) 14 | (14) 0.35 | (14) WH | (14) 4980 | (14) AUTOSAR CAN Bus [-] 6 Serial Data | (14) I | (14) — |
| (15) 15 | (15) 0.35 | (15) GY | (15) 2579 | (15) Private Serial Data Presentation CAN Bus [-] 2 Serial Data | (15) I | (15) — |
| (16) 16 | (16) 0.5 | (16) RD / YE | (16) 6540 | (16) Battery Positive Voltage | (16) I | (16) — |

### X85 Steering Wheel Airbag Coil X1




3960237

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: ATLCPB-21B-2AY
- Service Connector: 13510218
- Description: 21-Way F 0.64 Series( YE)

## Terminal Part Information

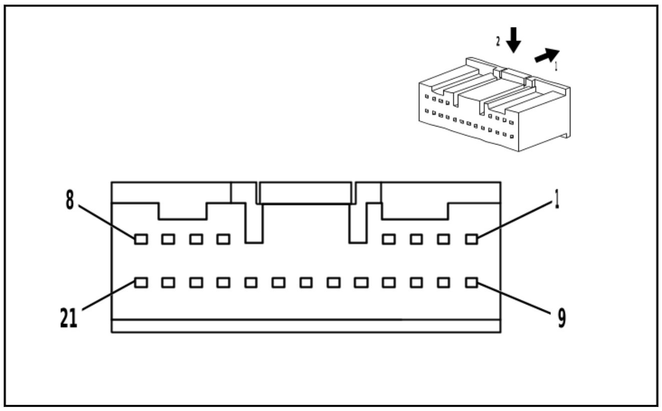
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 13575742 | J-35616-64B (L-BU) | J-38125-215A |
| II | 13575865 | J-35616-64B (L-BU) | J-38125-215A |

## X85 Steering Wheel Airbag Coil X1

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BK / WH | (1) 851 | (1) Signal Ground | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) GN / WH | (2) 3287 | (2) Horn Switch Signal | (2) I | (2) — |
| 3 - 4 | — | — | — | Not Occupied | — | — |
| (5) 5 | (5) 0.35 | (5) OG / GN | (5) 3023 | (5) Steering Wheel Air Bag Stage 2 High Control | (5) II | (5) — |
| (6) 6 | (6) 0.35 | (6) WH / OG | (6) 3022 | (6) Steering Wheel Air Bag Stage 2 Low Control | (6) II | (6) — |
| (7) 7 | (7) 0.35 | (7) BN / OG | (7) 3020 | (7) Steering Wheel Air Bag Stage 1 Low Control | (7) II | (7) — |
| (8) 8 | (8) 0.35 | (8) OG / VT | (8) 3021 | (8) Steering Wheel Air Bag Stage 1 High Control | (8) II | (8) — |
| (9) 9 | (9) 0.5 | (9) GN / BK | (9) 3894 | (9) Instrument Panel Cluster Control Module LIN Bus 1 | (9) I | (9) — |
| (10) 10 | (10) 0.35 | (10) GN / BK | (10) 2858 | (10) Body Control Module LIN Bus 12 | (10) I | (10) — |
| (11) 11 | (11) 0.35 | (11) BN / GN | (11) 1884 | (11) Cruise Control Set/Coast/Resume/ Accelerate Switch Signal | (11) I | (11) — |
| (12) 12 | (12) 0.35 | (12) BK / VT | (12) 1449 | (12) Steering Wheel Resistor Ladder Low Reference | (12) I | (12) — |
| 13 | — | — | — | Not Occupied | — | — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (14) 14 | (14) 0.35 | (14) RD / GN | (14) 5140 | (14) Battery Positive Voltage | (14) I | (14) — |
| (15) 15 | (15) 0.35 | (15) GY / GN | (15) 5737 | (15) Distance Sensing Cruise Control Gap Up/ Down Switch Signal | (15) I | (15) — |
| 16 | — | — | — | Not Occupied | — | — |
| (17) 17 | (17) 0.35 | (17) YE | (17) 6817 | (17) LED Backlight Dimming Control 1 | (17) I | (17) — |
| 18 - 19 | — | — | — | Not Occupied | — | — |
| (20) 20 | (20) 0.5 | (20) BK | (20) 1050 | (20) Ground | (20) I | (20) — |
| (21) 21 | (21) 0.5 | (21) RD / BN | (21) 10040 | (21) Battery Positive Voltage | (21) I | (21) — |

### X85 Steering Wheel Airbag Coil X2




3960237

**Connector Part Information**
- Harness Type: Steering Wheel Horn Switch Wiring Harness
- OEM Connector: 13510218
- Service Connector: Service by Harness - See Part Catalog
- Description: 21-Way F 0.64 Series( YE)

## Terminal Part Information

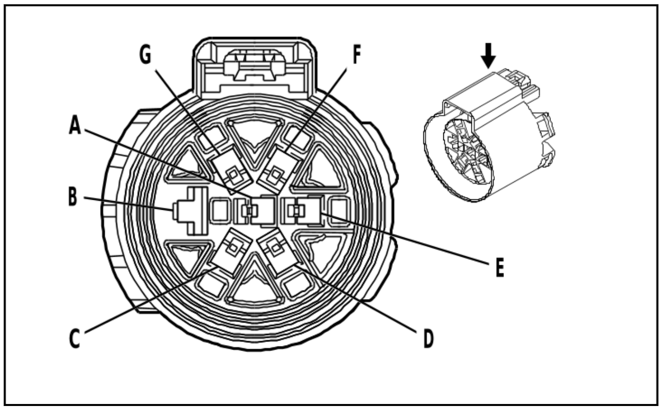
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## X85 Steering Wheel Airbag Coil X2

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35<br>(1) 0.35<br>(1) 0.35 | (1) BK<br>(1) BK / WH<br>(1) BK | (1) 51<br>(1) 51<br>(1) 51 | (1) Signal Ground<br>(1) Signal Ground<br>(1) Signal Ground | (1) I<br>(1) I<br>(1) I | (1) —<br>(1) —<br>(1) — |
| (2) 2 | (2) 0.35<br>(2) 0.35<br>(2) 0.35 | (2) RD<br>(2) GN / WH<br>(2) RD | (2) 3287<br>(2) 3287<br>(2) 3287 | (2) Horn Switch Signal<br>(2) Horn Switch Signal<br>(2) Horn Switch Signal | (2) I<br>(2) I<br>(2) I | (2) —<br>(2) —<br>(2) — |
| 3 - 4 | — | — | — | Not Occupied | — | — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (5) 5 | (5) 0.5<br>(5) 0.5 | (5) GY / OG<br>(5) OG / GN | (5) 3023<br>(5) 3023 | (5) Steering Wheel Air Bag Stage 2 High Control<br>(5) Steering Wheel Air Bag Stage 2 High Control | (5) I<br>(5) I | (5) —<br>(5) — |
| (6) 6 | (6) 0.5<br>(6) 0.5 | (6) OG / VT<br>(6) WH / OG | (6) 3022<br>(6) 3022 | (6) Steering Wheel Air Bag Stage 2 Low Control<br>(6) Steering Wheel Air Bag Stage 2 Low Control | (6) I<br>(6) I | (6) —<br>(6) — |
| (7) 7 | (7) 0.5<br>(7) 0.5<br>(7) 0.5 | (7) OG / WH<br>(7) BN / OG<br>(7) OG / WH | (7) 3020<br>(7) 3020<br>(7) 3020 | (7) Steering Wheel Air Bag Stage 1 Low Control<br>(7) Steering Wheel Air Bag Stage 1 Low Control<br>(7) Steering Wheel Air Bag Stage 1 Low Control | (7) I<br>(7) I<br>(7) I | (7) —<br>(7) —<br>(7) — |
| (8) 8 | (8) 0.5<br>(8) 0.5 | (8) YE / OG<br>(8) OG / VT | (8) 3021<br>(8) 3021 | (8) Steering Wheel Air Bag Stage 1 High Control<br>(8) Steering Wheel Air Bag Stage 1 High Control | (8) I<br>(8) I | (8) —<br>(8) — |
| (9) 9 | (9) 0.5 | (9) OG | (9) 40 | (9) Battery Positive Voltage | (9) I | (9) — |
| (10) 10 | (10) 0.5 | (10) BK | (10) 50 | (10) Ground | (10) I | (10) — |
| 11 - 12 | — | — | — | Not Occupied | — | — |
| (13) 13 | (13) 0.35 | (13) PK | (13) 6817 | (13) LED Backlight Dimming Control 1 | (13) I | (13) — |
| 14 | — | — | — | Not Occupied | — | — |
| (15) 15 | (15) 0.35<br>(15) 0.35<br>(15) 0.35 | (15) PU<br>(15) GY / GN<br>(15) PU | (15) 5737<br>(15) 5737<br>(15) 5737 | (15) Distance Sensing Cruise Control Gap Up/ Down Switch Signal<br>(15) Distance Sensing Cruise Control Gap Up/ Down Switch Signal<br>(15) Distance Sensing Cruise Control Gap Up/ Down Switch Signal | (15) I<br>(15) I<br>(15) I | (15) —<br>(15) —<br>(15) — |
| (16) 16 | (16) 0.35<br>(16) 0.35 | (16) GN<br>(16) RD / GN | (16) 40<br>(16) 40 | (16) Battery Positive Voltage<br>(16) Battery Positive Voltage | (16) I<br>(16) I | (16) —<br>(16) — |
| 17 | — | — | — | Not Occupied | — | — |
| (18) 18 | (18) 0.35<br>(18) 0.35 | (18) BK / VT<br>(18) BU | (18) 1449<br>(18) 1449 | (18) Steering Wheel Resistor Ladder Low Reference<br>(18) Steering Wheel Resistor Ladder Low Reference | (18) I<br>(18) I | (18) —<br>(18) — |
| (19) 19 | (19) 0.35<br>(19) 0.35 | (19) BN / GN<br>(19) GN / OG | (19) 1884<br>(19) 1884 | (19) Cruise Control Set/Coast/Resume/ Accelerate Switch Signal<br>(19) Cruise Control Set/Coast/Resume/ Accelerate Switch Signal | (19) I<br>(19) I | (19) —<br>(19) — |
| (20) 20 | (20) 0.35 | (20) WH | (20) 2858 | (20) Body Control Module LIN Bus 12 | (20) I | (20) — |
| (21) 21 | (21) 0.35 | (21) BK / BU | (21) 3894 | (21) Instrument Panel Cluster Control Module LIN Bus 1 | (21) I | (21) — |

### X88B Tow Vehicle Electrical Receptacle X1 (- UY2)




2056936

**Connector Part Information**

- Harness Type: Chassis Wiring Harness
- OEM Connector: 13857223
- Service Connector: 86816072
- Description: 7-Way F 280, 630 Metri-Pack Series, Sealed( BK)

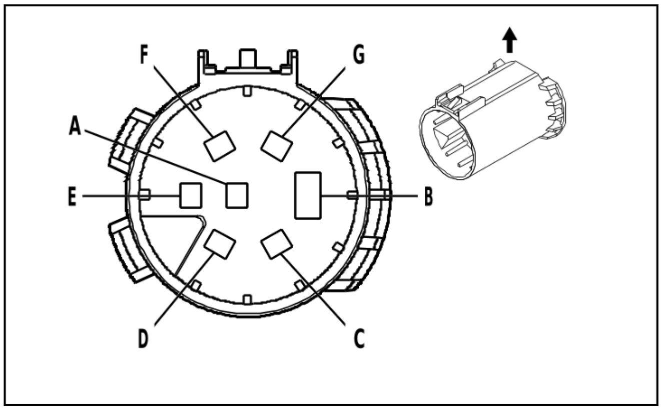
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-42 (RD) | No Tool Required |
| II | Not required | J-35616-4A (PU) | No Tool Required |

## X88B Tow Vehicle Electrical Receptacle X1 (- UY2)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| A | 1<br>1 | GY<br>GY | 1624<br>5189 | Trailer Backup Lamp Control<br>Trailer Backup Lamp Control | II<br>II | —<br>— |
| B | 5 | WH | 22 | Trailer Ground | I | — |
| C | 4 | BU | 47 | Trailer Auxiliary Control | II | — |
| D | 1 | GN | 1619 | Right Rear Trailer Stop/Turn Lamp Control | II | — |
| E | 4<br>4 | OG<br>OG | 3640<br>3940 | Battery Positive Voltage<br>Battery Positive Voltage | II<br>II | —<br>— |
| F | 1<br>1.5 | BN<br>BN | 2109<br>2109 | Trailer Park Lamp Control<br>Trailer Park Lamp Control | II<br>II | —<br>— |
| G | 1 | YE | 1618 | Left Rear Trailer Stop/Turn Lamp Control | II | — |

### X88B Tow Vehicle Electrical Receptacle X1 (8S3)




366087

**Connector Part Information**

- Harness Type: Backup Alarm Wiring Harness
- OEM Connector: 15317327
- Service Connector: Service by Harness - See Part Catalog
- Description: 7-Way M 280 Metri-Pack Series, Sealed( BK)

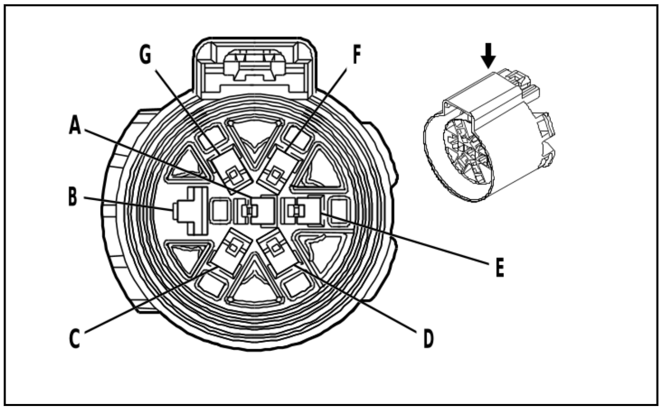
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-43 (RD) | No Tool Required |
| II | Not required | J-35616-5 (PU) | No Tool Required |

## X88B Tow Vehicle Electrical Receptacle X1 (8S3)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| A | 1 | WH / GN | 1624 | Trailer Backup Lamp Control | II | — |
| B | 5 | WH | 22 | Trailer Ground | I | — |
| C | 3 | BU | 47 | Trailer Auxiliary Control | II | — |
| D | 1 | GN | 1619 | Right Rear Trailer Stop/Turn Lamp Control | II | — |
| E | 3 | OG | 3640 | Battery Positive Voltage | II | — |
| F | 1.5 | BN | 2109 | Trailer Park Lamp Control | II | — |
| G | 1 | YE | 1618 | Left Rear Trailer Stop/Turn Lamp Control | II | — |

### X88B Tow Vehicle Electrical Receptacle X1 (UY2)




2056936

**Connector Part Information**

- Harness Type: Trailer Rear Wiring Harness
- OEM Connector: 13857223
- Service Connector: Service by Harness - See Part Catalog
- Description: 7-Way F 280, 630 Metri-Pack Series, Sealed( BK)

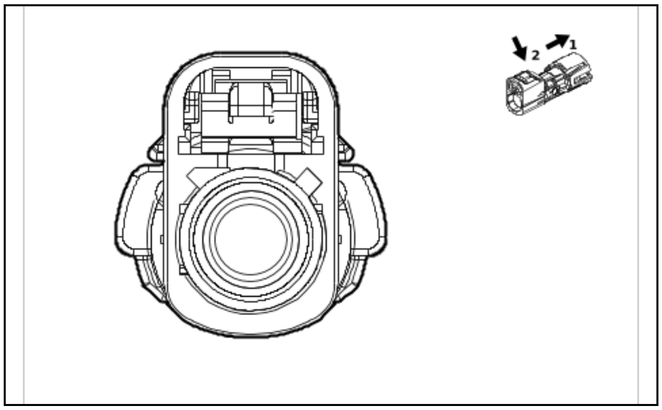
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-42 (RD) | No Tool Required |
| II | Not required | J-35616-4A (PU) | No Tool Required |

## X88B Tow Vehicle Electrical Receptacle X1 (UY2)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| A | 1 | GY | 1624 | Trailer Backup Lamp Control | II | — |
| B | 5 | WH | 22 | Trailer Ground | I | — |
| C | 4 | BU | 47 | Trailer Auxiliary Control | II | — |
| D | 1 | GN | 1619 | Right Rear Trailer Stop/Turn Lamp Control | II | — |
| E | 4 | OG | 3640 | Battery Positive Voltage | II | — |
| F | 1.5 | BN | 2109 | Trailer Park Lamp Control | II | — |
| G | 1 | YE | 1618 | Left Rear Trailer Stop/Turn Lamp Control | II | — |

### X88B Tow Vehicle Electrical Receptacle X2




5758030

**Connector Part Information**

- Harness Type: Chassis Wiring Harness COAX
- OEM Connector: 35187032
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type( BK)

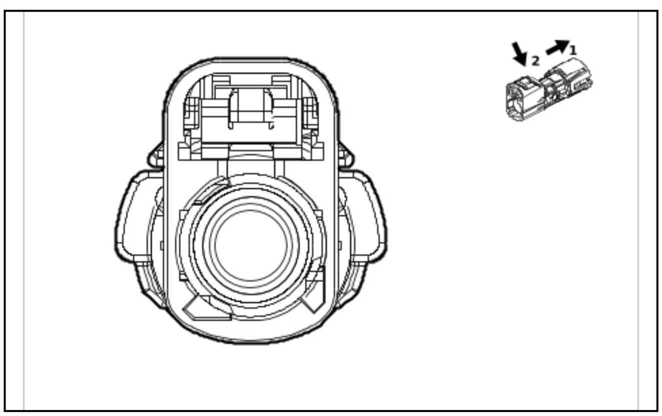
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## X88B Tow Vehicle Electrical Receptacle X2

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| — | — | Coax Cable | — | Trailer Rear Vision Camera Coaxial Video Signal | I | — |

### X88B Tow Vehicle Electrical Receptacle X3




5757455

**Connector Part Information**

- Harness Type: Chassis Wiring Harness COAX
- OEM Connector: 35187043
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type( OG)

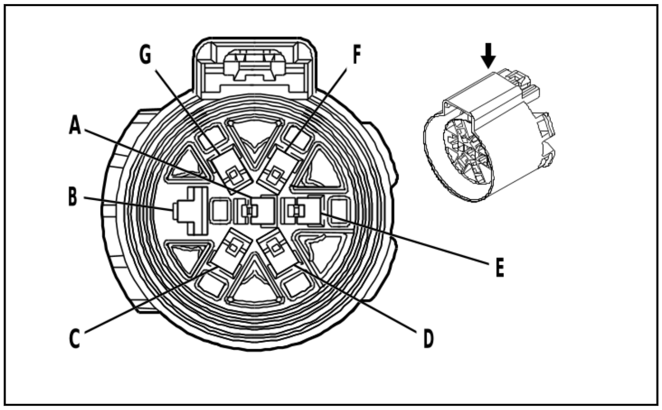
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## X88B Tow Vehicle Electrical Receptacle X3

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| — | — | Coax Cable | — | Trailer 2 Rear Vision Camera Coaxial Video Signal | I | — |

### X88GB Tow Vehicle Electrical Receptacle - 5th Wheel/Camper




2056936

**Connector Part Information**
- Harness Type: Trailer Rear Wiring Harness
- OEM Connector: 13857223
- Service Connector: Service by Harness - See Part Catalog
- Description: 7-Way F 280, 630 Metri-Pack Series, Sealed( BK)

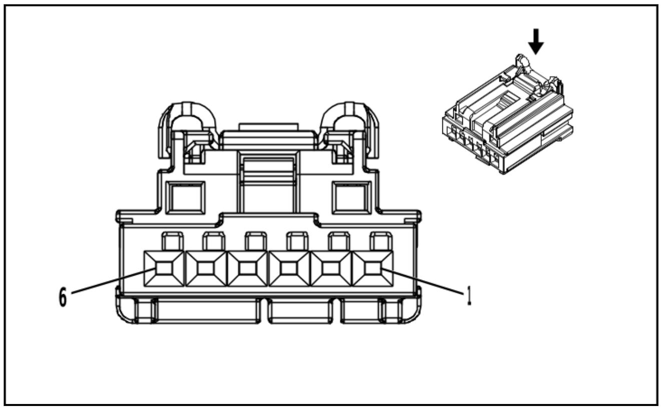
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-42 (RD) | No Tool Required |
| II | Not required | J-35616-4A (PU) | No Tool Required |

## X88GB Tow Vehicle Electrical Receptacle - 5th Wheel/Camper

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| A | 1 | GY | 1624 | Trailer Backup Lamp Control | II | — |
| B | 5 | WH | 22 | Trailer Ground | I | — |
| C | 4 | BU | 47 | Trailer Auxiliary Control | II | — |
| D | 1 | GN | 1619 | Right Rear Trailer Stop/Turn Lamp Control | II | — |
| E | 4 | OG | 3640 | Battery Positive Voltage | II | — |
| F | 1.5 | BN | 2109 | Trailer Park Lamp Control | II | — |
| G | 1 | YE | 1618 | Left Rear Trailer Stop/Turn Lamp Control | II | — |

### X92CD Dual Charge Only Receptacle - Floor Console Rear




3960313

**Connector Part Information**

- Harness Type: Front Floor Console Wiring Harness
- OEM Connector: 2035363-4
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 0.64 Generation Y Series( BK)

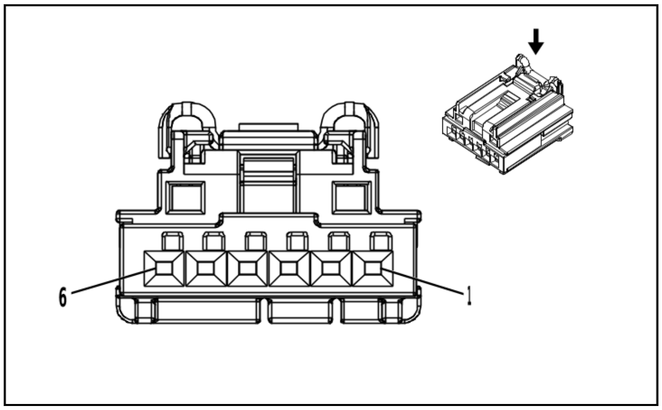
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## X92CD Dual Charge Only Receptacle - Floor Console Rear

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) VT | (1) 4701 | (1) Retained Accessory Power Control | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) YE | (2) 6817 | (2) LED Backlight Dimming Control 1 | (2) I | (2) — |
| (3) 3 | (3) 0.35 | (3) BK | (3) 1350 | (3) Ground | (3) I | (3) — |
| 4 - 6 | — | — | — | Not Occupied | — | — |

### X92CF USB 2 Port Receptacle - Floor Console Front X1




3960313

**Connector Part Information**

- Harness Type: Front Floor Console Wiring Harness
- OEM Connector: 2035363-4
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 0.64 Generation Y Series( BK)

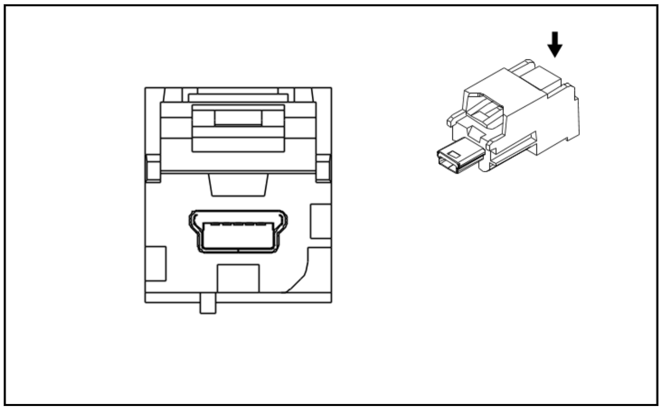
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## X92CF USB 2 Port Receptacle - Floor Console Front X1

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) RD / VT | (1) 2640 | (1) Battery Positive Voltage | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) YE | (2) 6817 | (2) LED Backlight Dimming Control 1 | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BK / WH | (3) 1051 | (3) Signal Ground | (3) I | (3) — |
| 4 - 6 | — | — | — | Not Occupied | — | — |

### X92CF USB 2 Port Receptacle - Floor Console Front X2



3028807

**Connector Part Information**
- Harness Type: Front Floor Console Wiring Harness USB
- OEM Connector: 13921002
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 5-Way M 2.0 Mini-B USB Type( GY)

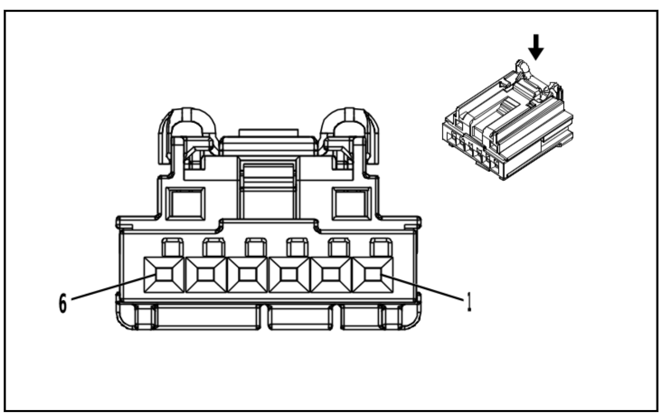
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## X92CF USB 2 Port Receptacle - Floor Console Front X2

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| — | — | USB | — | USB Serial Data | I | — |

### X92FSR Dual Charge Only Receptacle - Front Center Seat Rear Cover




3960313

**Connector Part Information**
- Harness Type: Front Seat Wiring Harness - Center
- OEM Connector: 2035363-4
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 0.64 Generation Y Series( BK)

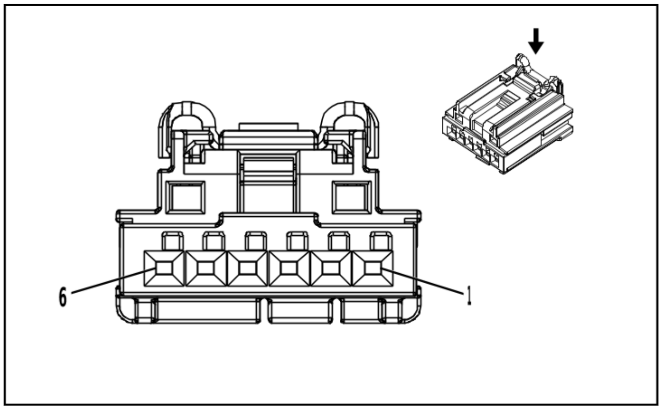
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## X92FSR Dual Charge Only Receptacle - Front Center Seat Rear Cover

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) VT | (1) 4701 | (1) Retained Accessory Power Control | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) YE | (2) 6817 | (2) LED Backlight Dimming Control 1 | (2) I | (2) — |
| (3) 3 | (3) 0.35 | (3) BK | (3) 1350 | (3) Ground | (3) I | (3) — |
| 4 - 6 | — | — | — | Not Occupied | — | — |

### X92IP USB 2 Port Receptacle - Instrument Panel X1




3960313

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 2035363-4
- Service Connector: 19332786
- Description: 6-Way F 0.64 Generation Y Series( BK)

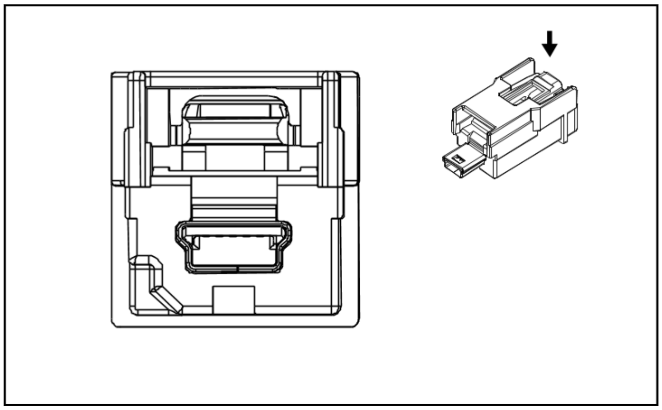
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## X92IP USB 2 Port Receptacle - Instrument Panel X1

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) RD / VT | (1) 2640 | (1) Battery Positive Voltage | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) YE | (2) 6817 | (2) LED Backlight Dimming Control 1 | (2) I | (2) — |
| (3) 3 | (3) 0.75 | (3) BK / WH | (3) 1051 | (3) Signal Ground | (3) I | (3) — |
| 4 - 6 | — | — | — | Not Occupied | — | — |

### X92IP USB 2 Port Receptacle - Instrument Panel X2 (IOK)



2807491

**Connector Part Information**
- Harness Type: Instrument Panel Wiring Harness USB
- OEM Connector: 111014-9001
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 5-Way M 2.0 Mini-B USB Type( GY)

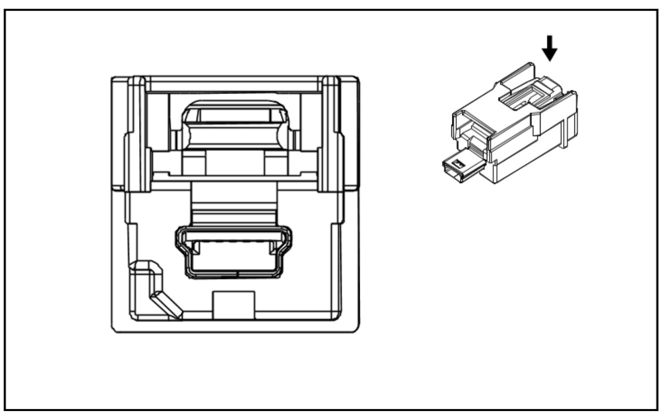
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## X92IP USB 2 Port Receptacle - Instrument Panel X2 (IOK)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| — | — | USB | — | USB Serial Data | I | — |

### X92IP USB 2 Port Receptacle - Instrument Panel X2 (IOR)



2807491

**Connector Part Information**
- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 111014-9501
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 5-Way M 2.0 Mini-B USB Type( GY)

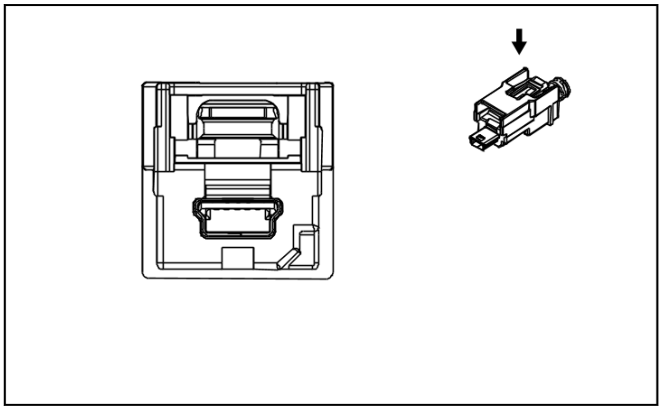
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## X92IP USB 2 Port Receptacle - Instrument Panel X2 (IOR)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| GY | — | BARE | USB | USB Serial Data | I | — |

### X92IP USB 2 Port Receptacle - Instrument Panel X3



2807425

**Connector Part Information**
- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 13576672
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 5-Way M 2.0 Mini-B USB Type( BK)

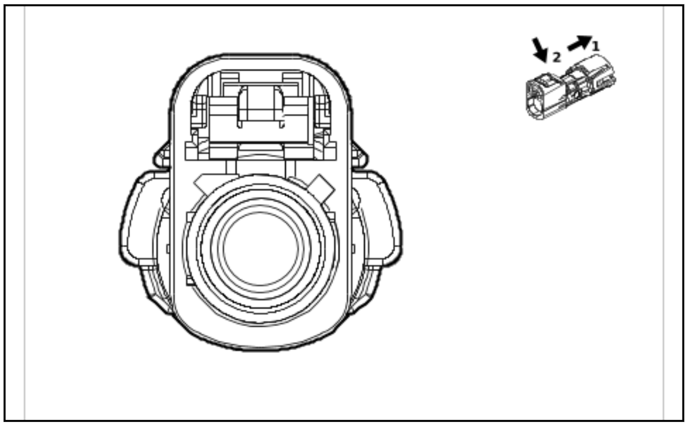
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## X92IP USB 2 Port Receptacle - Instrument Panel X3

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| BK | — | BARE | USB | USB Serial Data | I | — |

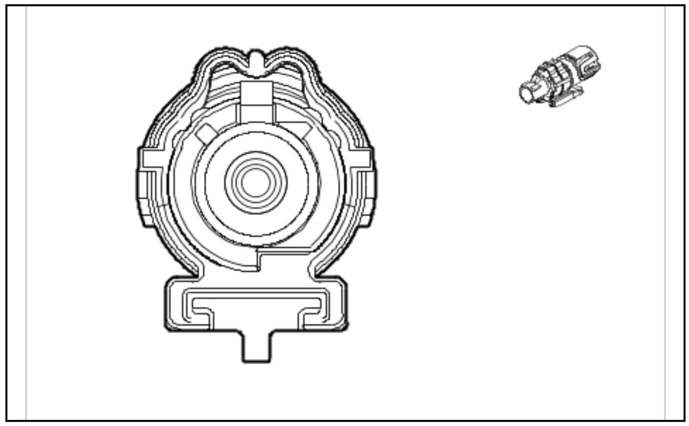
### X122 Front View Camera Switch Wiring Harness to Body Wiring Harness




5758030

**Connector Part Information**

- Harness Type: Front View Camera Switch Wiring Harness COAX
- OEM Connector: 13529782
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type( BK)



5758019

**Connector Part Information**

- Harness Type: Body Wiring Harness COAX
- OEM Connector: 33338239
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way M Coax Type, Sealed( BK)

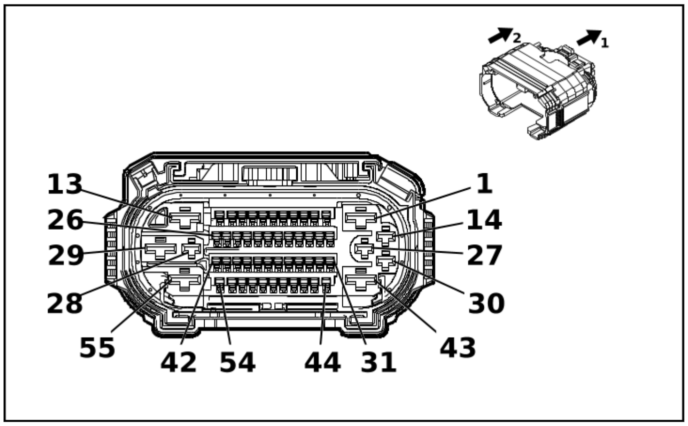
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

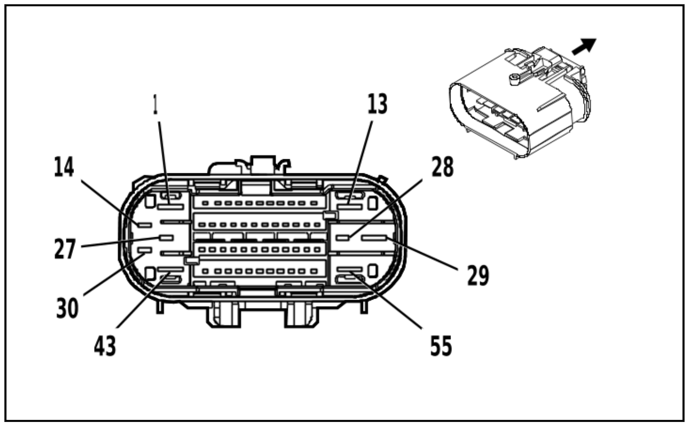
## X122 Front View Camera Switch Wiring Harness to Body Wiring Harness

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| — | — | Coax Cable | — | I | — | Front Vision Camera 1 Coaxial Video Signal | — | — | Coax Cable | — | I | — |

### X125 Body Wiring Harness to Engine Wiring Harness




5246872




4994369

**Connector Part Information**
- Harness Type: Body Wiring Harness
- OEM Connector: 35582969
- Service Connector: 19371184
- Description: 55-Way F 1.2 OCS, 2.8, 6.3 CTS Series, Sealed( GY)

**Connector Part Information**
- Harness Type: Engine Wiring Harness
- OEM Connector: 13530983
- Service Connector: 84727363
- Description: 55-Way M 1.2 OCS, 2.8, 6.3 CTS Series, Sealed( GY)

## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 19332901 | J-35616-35 (VT) | J-38125-212 |
| II | 19370818 | J-35616-12 (BU) | J-38125-553 |
| III | 19371217 | J-35616-12 (BU) | J-38125-553 |
| IV | 84634921 | J-35616-42 (RD) | J-38125-212 |
| V | 84847992 | J-35616-32 (OG) | J-38125-36 |
| VI | 84867140 | J-35616-13 (BU) | J-38125-553 |
| VII | 84867141 | J-35616-13 (BU) | J-38125-215A |
| VIII | 84992391 | J-35616-5 (PU) | J-38125-36 |

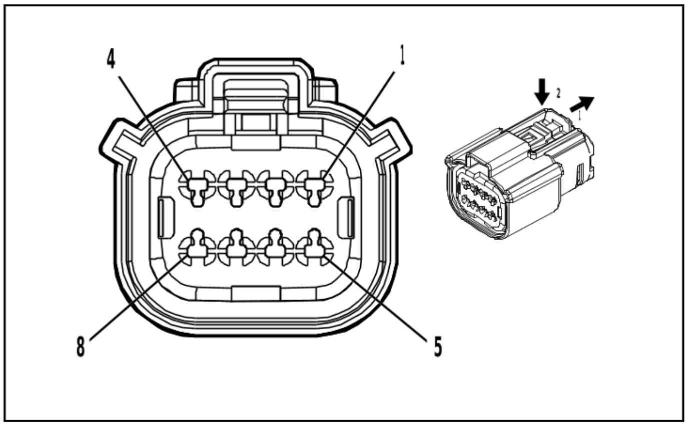
## X125 Body Wiring Harness to Engine Wiring Harness

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 4 | (1) BK / WH | (1) 251 | (1) IV | (1) — | (1) Signal Ground | (1) 1 | (1) 4 | (1) BK / WH | (1) 251 | (1) V | (1) — |
| (2) 2 | (2) 1.5 | (2) RD / GN | (2) 1840 | (2) III | (2) — | (2) Battery Positive Voltage | (2) 2 | (2) 1.5 | (2) RD / GN | (2) 1840 | (2) VII | (2) — |
| (3) 3 | (3) 0.5 | (3) BN / GN | (3) 4311 | (3) II | (3) — | (3) Power Take-Off Enable Cabin Switch Normally Closed Signal | (3) 3 | (3) 0.5 | (3) BN / GN | (3) 4311 | (3) VI | (3) — |
| 4 - 7 | — | — | — | — | — | Not Occupied | 4 - 7 | — | — | — | — | — |
| (8) 8 | (8) 0.35 | (8) WH / RD | (8) 1164 | (8) II | (8) — | (8) Accelerator Pedal Position 5V Reference 1 | (8) 8 | (8) 0.5 | (8) WH / RD | (8) 1164 | (8) VI | (8) — |

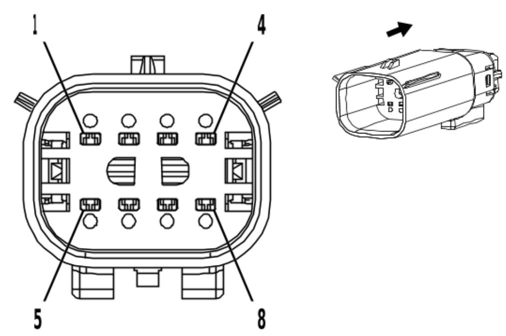
| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (9) 9 | (9) 0.35 | (9) BK / BU | (9) 1271 | (9) II | (9) — | (9) Accelerator Pedal Position Low Reference 1 | (9) 9 | (9) 0.5 | (9) BK / BU | (9) 1271 | (9) VI | (9) — |
| (10) 10 | (10) 0.35 | (10) YE / WH | (10) 1161 | (10) II | (10) — | (10) Accelerator Pedal Position Signal 1 | (10) 10 | (10) 0.5 | (10) YE / WH | (10) 1161 | (10) VI | (10) — |
| (11) 11 | (11) 0.35 | (11) GN / WH | (11) 1162 | (11) II | (11) — | (11) Accelerator Pedal Position Signal 2 | (11) 11 | (11) 0.5 | (11) GN / WH | (11) 1162 | (11) VI | (11) — |
| (12) 12 | (12) — | (12) — | (12) — | (12) — | (12) — | (12) — | (12) 12 | (12) 1 | (12) BK | (12) 9003 | (12) VII | (12) — |
| (13) 13 | (13) 0.5 | (13) RD / BU | (13) 4540 | (13) IV | (13) — | (13) Battery Positive Voltage | (13) 13 | (13) 0.5 | (13) RD / BU | (13) 4540 | (13) V | (13) — |
| (14) 14 | (14) 0.5 | (14) RD / VT | (14) 2640 | (14) I | (14) — | (14) Battery Positive Voltage | (14) 14 | (14) 0.5 | (14) RD / VT | (14) 2640 | (14) VIII | (14) — |
| (15) 15 | (15) 0.35 | (15) BN / RD | (15) 1274 | (15) II | (15) — | (15) Accelerator Pedal Position 5V Reference 2 | (15) 15 | (15) 0.5 | (15) BN / RD | (15) 1274 | (15) VI | (15) — |
| (16) 16 | (16) 0.5 | (16) YE | (16) 4063 | (16) II | (16) — | (16) Hood Status A Signal | (16) 16 | (16) 0.5 | (16) YE | (16) 4063 | (16) VI | (16) — |
| 17 | — | — | — | — | — | Not Occupied | 17 | — | — | — | — | — |
| (18) 18 | (18) 0.35 | (18) WH / RD | (18) 480 | (18) II | (18) — | (18) Engine Control Vehicle Sensors 5 Volt Reference 1 | (18) 18 | (18) 0.5 | (18) WH / RD | (18) 480 | (18) VI | (18) — |
| (19) 19 | (19) 0.35 | (19) GN / BN | (19) 507 | (19) II | (19) — | (19) Wait To Start Indicator Control | (19) 19 | (19) 0.5 | (19) GN / BN | (19) 507 | (19) VI | (19) — |
| (20) 20 | (20) 0.35 | (20) WH / GN | (20) 5380 | (20) II | (20) — | (20) Brake Position Sensor Signal | (20) 20 | (20) 0.5 | (20) WH / GN | (20) 5380 | (20) VI | (20) — |
| 21 | — | — | — | — | — | Not Occupied | 21 | — | — | — | — | — |
| (22) 22 | (22) 0.35 | (22) BK / VT | (22) 1272 | (22) II | (22) — | (22) Accelerator Pedal Position Low Reference 2 | (22) 22 | (22) 0.5 | (22) BK / VT | (22) 1272 | (22) VI | (22) — |
| (23) 23 | (23) 0.5 | (23) BK / GY | (23) 626 | (23) II | (23) — | (23) Engine Control Vehicle Sensors Low Reference 1 | (23) 23 | (23) 0.5 | (23) BK / GY | (23) 626 | (23) VI | (23) — |
| 24 | — | — | — | — | — | Not Occupied | 24 | — | — | — | — | — |
| (25) 25 | (25) 0.5 | (25) BU / GY | (25) 636 | (25) II | (25) — | (25) Ambient Air Temperature Sensor Signal | (25) 25 | (25) 0.5 | (25) BU / GY | (25) 636 | (25) VI | (25) — |

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (26) 26 | (26) 0.5 | (26) B U / BN | (26) 75 73 | (26) II | (26) — | (26) Air Conditioning Compressor Solenoid Valve Control | (26) 26 | (26) 0.75 | (26) B U / BN | (26) 75 73 | (26) VI | (26) — |
| (27) 27 | (27) 0.5 | (27) B U / YE | (27) 75 74 | (27) I | (27) — | (27) Air Conditioning Compressor Solenoid Valve Control | (27) 27 | (27) 0.75 | (27) B U / YE | (27) 75 74 | (27) VIII | (27) — |
| (28) 28 | (28) 0.5 | (28) G N / WH | (28) 48 8 | (28) I | (28) — | (28) Power Take-Off Control Switch Signal | (28) 28 | (28) 0.5 | (28) G N / WH | (28) 48 8 | (28) VIII | (28) — |
| 29 - 32 | — | — | — | — | — | Not Occupied | 29 - 32 | — | — | — | — | — |
| (33) 33 | (33) 0.5 | (33) V T / WH | (33) 23 9 | (33) II | (33) — | (33) Run/ Crank Ignition 1 Voltage | (33) 33 | (33) 0.5 | (33) V T / WH | (33) 23 9 | (33) VI | (33) — |
| (34) 34 | (34) 0.5 | (34) G Y / BN | (34) 70 65 | (34) II | (34) — | (34) Right Front Wheel Speed Sensor Control | (34) 34 | (34) 0.5 | (34) G Y / BN | (34) 70 65 | (34) VI | (34) — |
| (35) 35 | (35) 0.5 | (35) Y E | (35) 87 2 | (35) II | (35) — | (35) Right Front Wheel Speed Sensor Signal | (35) 35 | (35) 0.5 | (35) Y E | (35) 87 2 | (35) VI | (35) — |
| 36 - 43 | — | — | — | — | — | Not Occupied | 36 - 43 | — | — | — | — | — |
| (44) 44 | (44) — | (44) — | (44) — | (44) — | (44) — | (44) — | (44) 44 | (44) 1 | (44) B K | (44) 90 03 | (44) VII | (44) — |
| 45 - 46 | — | — | — | — | — | Not Occupied | 45 - 46 | — | — | — | — | — |
| (47) 47 | (47) 0.35 | (47) B U / YE | (47) 68 | (47) II | (47) — | (47) Low Coolant Level Indicator Control | (47) 47 | (47) 0.5 | (47) B U / YE | (47) 68 | (47) VI | (47) — |
| 48 - 52 | — | — | — | — | — | Not Occupied | 48 - 52 | — | — | — | — | — |
| (53) 53 | (53) 0.35 | (53) B N / BU | (53) 48 92 | (53) II | (53) — | (53) Auxiliary Battery Relay Control | (53) 53 | (53) 0.5 | (53) B N / BU | (53) 48 92 | (53) VI | (53) — |
| (54) 54 | (54) — | (54) — | (54) — | (54) — | (54) — | (54) — | (54) 54 | (54) 1 | (54) B K | (54) 90 03 | (54) VII | (54) — |
| 55 | — | — | — | — | — | Not Occupied | 55 | — | — | — | — | — |

### X128 Engine Wiring Harness to Camshaft Position Sensor Wiring Harness (L8T)



4846407



2667653

**Connector Part Information**
- Harness Type: Engine Wiring Harness
- OEM Connector: 33472-4877
- Service Connector: 84928314
- Description: 8-Way F 1.5 MX Series, Sealed( BK)

**Connector Part Information**
- Harness Type: Camshaft Position Sensor Wiring Harness
- OEM Connector: Not Available
- Service Connector: Service by Harness - See Part Catalog
- Description: 8-Way M ( BK)

## Terminal Part Information

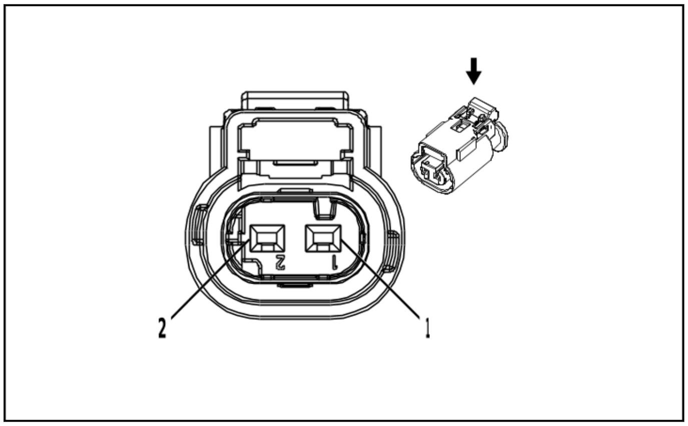
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-14 (GN) | No Tool Required |
| II | Not required | No Tool Required | No Tool Required |

## X128 Engine Wiring Harness to Camshaft Position Sensor Wiring Harness (L8T)

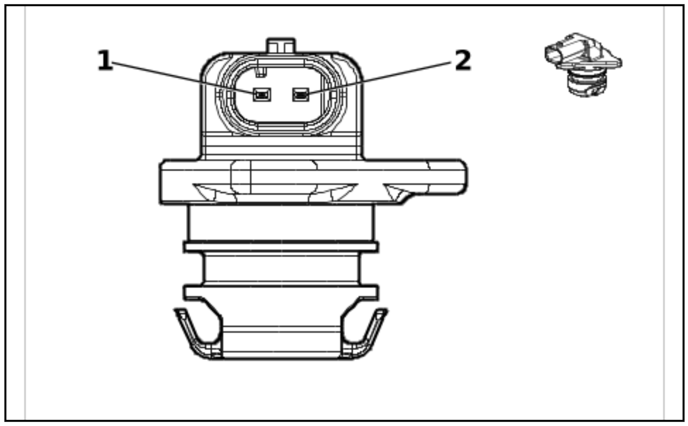
| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) GY / BU | (1) 5300 | (1) I | (1) — | (1) Intake Camshaft Position Sensor 1 Voltage Reference | (1) 1 | (1) 0.5 | (1) GY / BU | (1) 5300 | (1) II | (1) — |
| (2) 2 | (2) 0.5 | (2) BK / GN | (2) 5301 | (2) I | (2) — | (2) Intake Camshaft Position Sensor Low Reference 1 | (2) 2 | (2) 0.5 | (2) BK / GN | (2) 5301 | (2) II | (2) — |
| (3) 3 | (3) 0.5 | (3) YE / VT | (3) 5275 | (3) I | (3) — | (3) Intake Camshaft Position Sensor 1 | (3) 3 | (3) 0.5 | (3) YE / VT | (3) 5275 | (3) II | (3) — |
| (4) 4 | (4) 0.5 | (4) BU | (4) 179 | (4) I | (4) — | (4) Engine Oil Pump Control | (4) 4 | (4) 0.5 | (4) BU | (4) 179 | (4) II | (4) — |
| (5) 5 | (5) 0.5 | (5) VT / BN | (5) 5284 | (5) I | (5) — | (5) Intake Camshaft Position Actuator Solenoid Valve 1 | (5) 5 | (5) 0.5 | (5) VT / BN | (5) 5284 | (5) II | (5) — |

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (6) 6 | (6) 0.5 | (6) BK / BN | (6) 6753 | (6) I | (6) — | (6) Camshaft Position Actuator Solenoid Valve 1 Low Reference | (6) 6 | (6) 0.5 | (6) BK / BN | (6) 6753 | (6) II | (6) — |
| (7) 7 | (7) 0.5 | (7) VT / BU | (7) 5293 | (7) I | (7) — | (7) Powertrain Main Relay Fused Supply Voltage 4 | (7) 7 | (7) 0.5 | (7) VT / BU | (7) 5293 | (7) II | (7) — |
| 8 | — | — | — | — | — | Not Occupied | 8 | — | — | — | — | — |

### X129 Camshaft Position Sensor Wire to Oil Pump Flow Control Solenoid Valve Wire




2717066




5869753

**Connector Part Information**
- Harness Type: Camshaft Position Sensor Wire
- OEM Connector: 13503566
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 Multilock Series, Sealed( BK)

**Connector Part Information**
- Harness Type: Oil Pump Flow Control Solenoid Valve Wire
- OEM Connector: 310832B
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way M 1.2 Series, Sealed( BK)

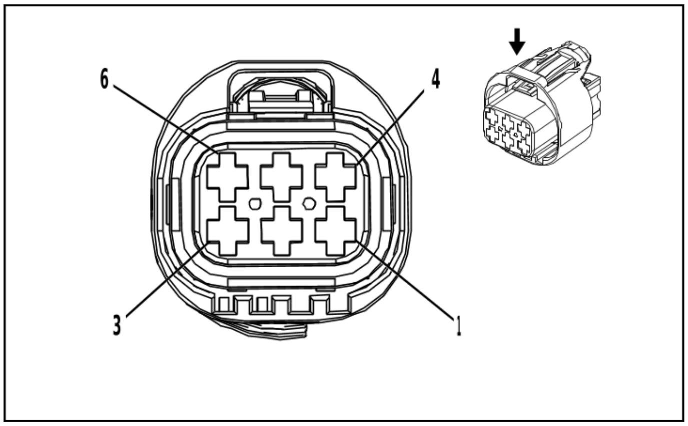
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |
| II | Not required | J-35616-13 (BU) | No Tool Required |

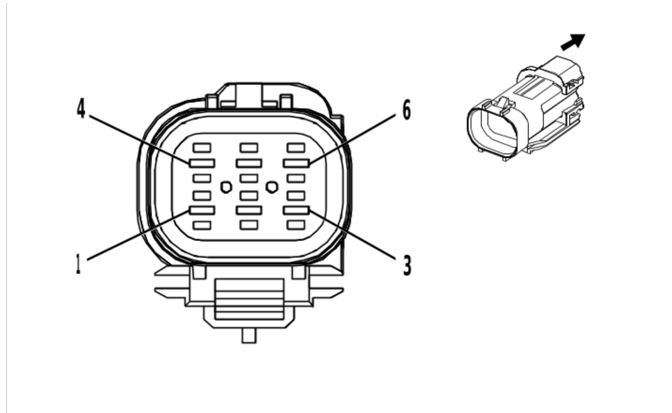
## X129 Camshaft Position Sensor Wire to Oil Pump Flow Control Solenoid Valve Wire

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) VT / BU | (1) 5293 | (1) I | (1) — | (1) Powertrain Main Relay Fused Supply Voltage 4 | (1) 1 | (1) 0.5 | (1) VT / BU | (1) 5293 | (1) II | (1) — |
| (2) 2 | (2) 0.5 | (2) BU | (2) 179 | (2) I | (2) — | (2) Engine Oil Pump Control | (2) 2 | (2) 0.5 | (2) BU | (2) 179 | (2) II | (2) — |

### X135 Engine Wiring Harness to Battery Positive Cable




2042938




2042939

**Connector Part Information**
- Harness Type: Engine Wiring Harness
- OEM Connector: 1452327-2
- Service Connector: 19332889
- Description: 6-Way F 2.8 Junior Power Timer Series, Sealed( GY)

**Connector Part Information**
- Harness Type: Battery Positive Cable
- OEM Connector: 13580778
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way M 2.8 Series, Sealed( BK)

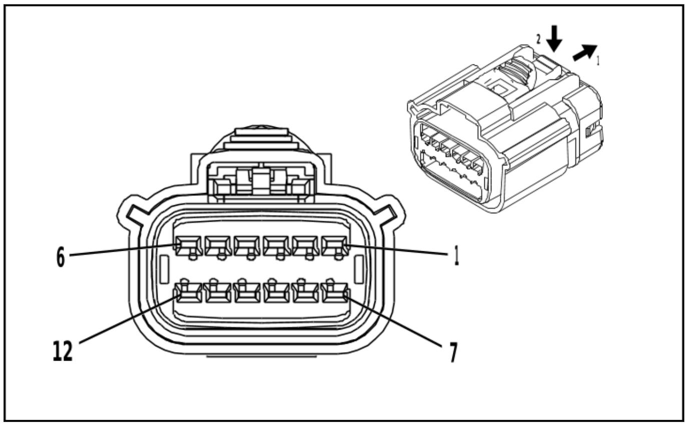
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-4A (PU) | No Tool Required |
| II | Not required | J-35616-5 (PU) | No Tool Required |

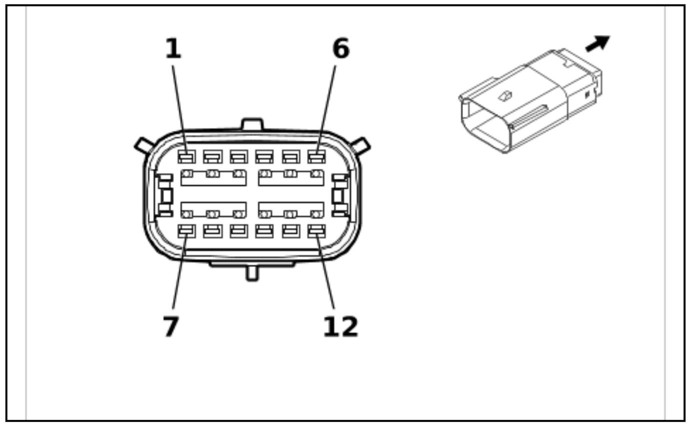
## X135 Engine Wiring Harness to Battery Positive Cable

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BN / BU | (1) 4892 | (1) I | (1) — | (1) Auxiliary Battery Relay Control | (1) 1 | (1) 0.5 | (1) VT / BN | (1) 300 | (1) II | (1) K4Z |
| 2 | — | — | — | — | — | Not Occupied | 2 | — | — | — | — | — |
| (3) 3 | (3) 0.5 | (3) RD / WH | (3) 3440 | (3) I | (3) — | (3) Battery Positive Voltage | (3) 3 | (3) 0.5 | (3) RD / YE | (3) 4540 | (3) II | (3) K4Z |
| (4) 4 | (4) 1.5 | (4) BK | (4) 450 | (4) I | (4) — | (4) Ground | (4) 4 | (4) 0.5<br>(4) 1 | (4) BK<br>(4) BK | (4) 450<br>(4) 450 | (4) II<br>(4) II | (4) K4Z<br>(4) K4Z |
| 5 - 6 | — | — | — | — | — | Not Occupied | 5 - 6 | — | — | — | — | — |

### X150 Front Object Alarm Sensor Wiring Harness to Body Wiring Harness




4621955




4862194

**Connector Part Information**

- Harness Type: Front Object Alarm Sensor Wiring Harness
- OEM Connector: 13590425
- Service Connector: Service by Harness - See Part Catalog
- Description: 12-Way F 1.5 OCS Series, Sealed( BK)

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 35600463
- Service Connector: 19371239
- Description: 12-Way M 1.5 OCS Series, Sealed( BK)

## Terminal Part Information

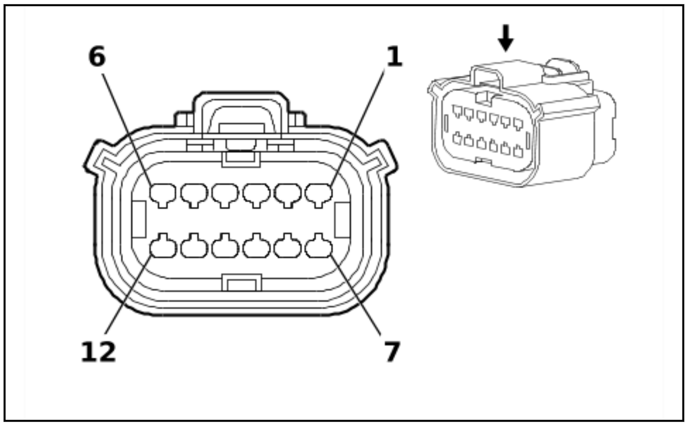
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-2A (GY) | No Tool Required |
| II | 19352418 | J-35616-3 (GY) | J-38125-215A |

## X150 Front Object Alarm Sensor Wiring Harness to Body Wiring Harness

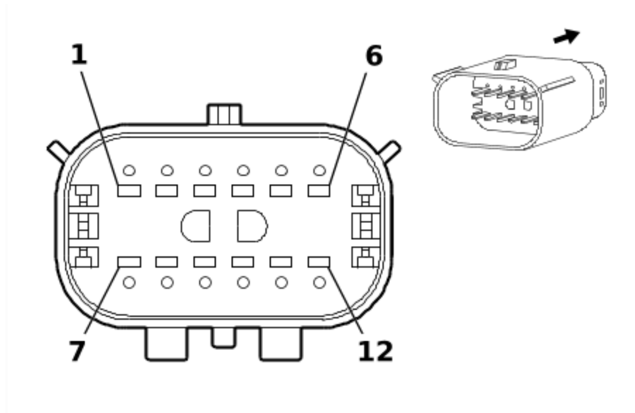
| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 - 2 | — | — | — | — | — | Not Occupied | 1 - 2 | — | — | — | — | — |
| (3) 3 | (3) 0.5 | (3) BK / BU | (3) 5214 | (3) I | (3) — | (3) Front Parking Assist Sensor Low Reference | (3) 3 | (3) 0.5 | (3) BK / BU | (3) 5214 | (3) II | (3) — |
| (4) 4 | (4) 0.5 | (4) VT / WH | (4) 5215 | (4) I | (4) — | (4) Left Front Outer Parking Assist Sensor | (4) 4 | (4) 0.5 | (4) VT / WH | (4) 5215 | (4) II | (4) — |
| (5) 5 | (5) 0.5 | (5) YE / GY | (5) 5216 | (5) I | (5) — | (5) Left Front Middle Parking Assist Sensor | (5) 5 | (5) 0.5 | (5) YE / GY | (5) 5216 | (5) II | (5) — |
| (6) 6 | (6) 0.5 | (6) WH / GY | (6) 5217 | (6) I | (6) — | (6) Right Front Outer Parking Assist Sensor | (6) 6 | (6) 0.5 | (6) WH / GY | (6) 5217 | (6) II | (6) — |
| (7) 7 | (7) 0.5 | (7) VT / GY | (7) 5218 | (7) I | (7) — | (7) Right Front Middle Parking Assist Sensor | (7) 7 | (7) 0.5 | (7) VT / GY | (7) 5218 | (7) II | (7) — |
| (8) 8 | (8) 0.5 | (8) BK | (8) 650 | (8) I | (8) — | (8) Ground | (8) 8 | (8) 0.5 | (8) BK | (8) 650 | (8) II | (8) — |
| 9 | — | — | — | — | — | Not Occupied | 9 | — | — | — | — | — |

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (10) 10 | (10) 0.5 | (10) B N / GY | (10) 50 61 | (10) I | (10) — | (10) Left Front Fog Lamp Control | (10) 10 | (10) 0.5 | (10) B N / GY | (10) 50 61 | (10) II | (10) — |
| (11) 11 | (11) 0.5 | (11) B N | (11) 65 81 | (11) I | (11) — | (11) Front Parking Assist Display Control | (11) 11 | (11) 0.5 | (11) B N | (11) 65 81 | (11) II | (11) — |
| 12 | — | — | — | — | — | Not Occupied | 12 | — | — | — | — | — |

### X160 Engine Wiring Harness to Fuel Injector Wiring Harness - Left



1825165



1825167

**Connector Part Information**
- Harness Type: Engine Wiring Harness
- OEM Connector: 33472-1216
- Service Connector: 19352907
- Description: 12-Way F 1.5 MX Series, Sealed( BK)

**Connector Part Information**
- Harness Type: Fuel Injector Wiring Harness - Left
- OEM Connector: 13520581
- Service Connector: Service by Harness - See Part Catalog
- Description: 12-Way M 1.5 MX Series, Sealed( BK)

## Terminal Part Information

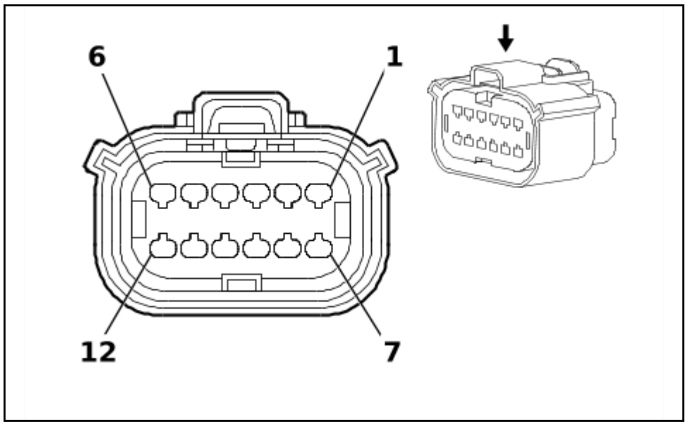
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 85528055 | J-35616-2A (GY) | J-38125-217 |
| II | Not required | J-35616-3 (GY) | No Tool Required |

## X160 Engine Wiring Harness to Fuel Injector Wiring Harness - Left

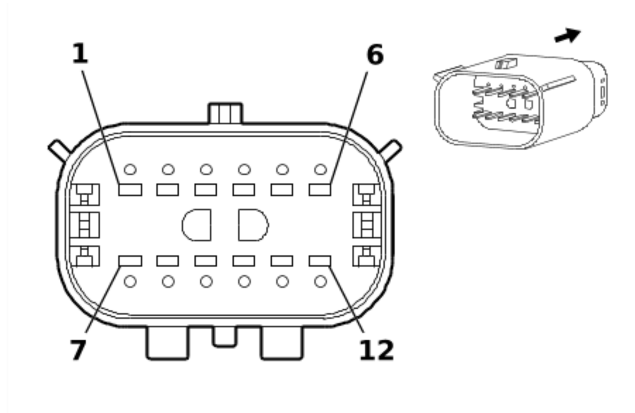
| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 0. 75 | (1) BN / WH | (1) 490 1 | (1) I | (1) — | (1) Direct Fuel Injector High Voltage Supply Cylinder 1 | (1) 1 | (1) 0. 75 | (1) BN / WH | (1) 490 1 | (1) II | (1) — |
| (2) 2 | (2) 0. 75 | (2) G N / GY | (2) 490 3 | (2) I | (2) — | (2) Direct Fuel Injector High Voltage Supply Cylinder 3 | (2) 2 | (2) 0. 75 | (2) G N / GY | (2) 490 3 | (2) II | (2) — |

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (3) 3 | (3) 0.75 | (3) GN / WH | (3) 4905 | (3) I | (3) — | (3) Direct Fuel Injector High Voltage Supply Cylinder 5 | (3) 3 | (3) 0.75 | (3) GN / WH | (3) 4905 | (3) II | (3) — |
| (4) 4 | (4) 0.75 | (4) WH / YE | (4) 4907 | (4) I | (4) — | (4) Direct Fuel Injector High Voltage Supply Cylinder 7 | (4) 4 | (4) 0.75 | (4) WH / YE | (4) 4907 | (4) II | (4) — |
| (5) 5 | (5) 0.75 | (5) BN | (5) 4801 | (5) I | (5) — | (5) Direct Fuel Injector High Voltage Control Cylinder 1 | (5) 5 | (5) 0.75 | (5) BN | (5) 4801 | (5) II | (5) — |
| 6 | — | — | — | — | — | Not Occupied | 6 | — | — | — | — | — |
| (7) 7 | (7) 0.75 | (7) GN | (7) 4803 | (7) I | (7) — | (7) Direct Fuel Injector High Voltage Control Cylinder 3 | (7) 7 | (7) 0.75 | (7) GN | (7) 4803 | (7) II | (7) — |
| (8) 8 | (8) 0.75 | (8) WH / GN | (8) 4805 | (8) I | (8) — | (8) Direct Fuel Injector High Voltage Control Cylinder 5 | (8) 8 | (8) 0.75 | (8) WH / GN | (8) 4805 | (8) II | (8) — |
| (9) 9 | (9) 0.75 | (9) YE / GY | (9) 4807 | (9) I | (9) — | (9) Direct Fuel Injector High Voltage Control Cylinder 7 | (9) 9 | (9) 0.75 | (9) YE / GY | (9) 4807 | (9) II | (9) — |
| (10) 10 | (10) 0.5 | (10) WH / RD | (10) 480 | (10) I | (10) — | (10) Engine Control Vehicle Sensors 5 Volt Reference 1 | (10) 10 | (10) 0.5 | (10) BN / RD | (10) 480 | (10) II | (10) — |
| (11) 11 | (11) 0.5 | (11) BU / WH | (11) 10786 | (11) I | (11) — | (11) Fuel Rail Pressure Sensor SENT 1 Signal | (11) 11 | (11) 0.5 | (11) BU / WH | (11) 10786 | (11) II | (11) — |
| (12) 12 | (12) 0.5 | (12) BK / YE | (12) 548 | (12) I | (12) — | (12) Engine Control Sensors Low Reference 1 | (12) 12 | (12) 0.5 | (12) BK / GN | (12) 548 | (12) II | (12) — |

### X161 Engine Wiring Harness to Fuel Injector Wiring Harness - Right




1825165




1825167

**Connector Part Information**
- Harness Type: Engine Wiring Harness
- OEM Connector: 33472-1226
- Service Connector: 19352907
- Description: 12-Way F 1.5 MX Series, Sealed( BK)

**Connector Part Information**
- Harness Type: Fuel Injector Wiring Harness - Right
- OEM Connector: 334826211
- Service Connector: Service by Harness - See Part Catalog
- Description: 12-Way M 1.5 MX Series, Sealed( BK)

## Terminal Part Information

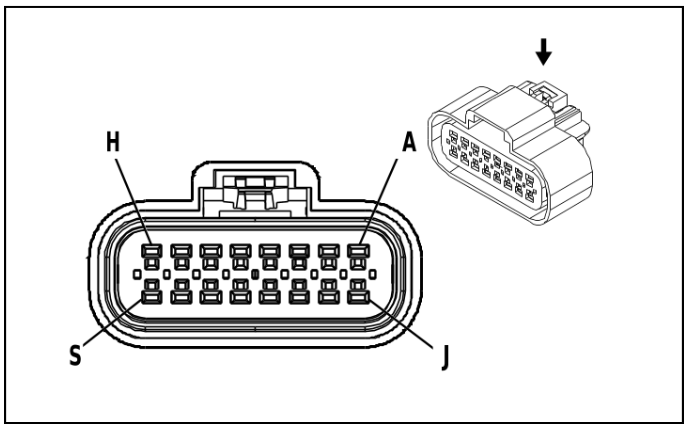
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 85528055 | J-35616-2A (GY) | J-38125-217 |
| II | Not required | J-35616-3 (GY) | No Tool Required |

## X161 Engine Wiring Harness to Fuel Injector Wiring Harness - Right

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) BU / GY | (1) 4902 | (1) I | (1) — | (1) Direct Fuel Injector High Voltage Supply Cylinder 2 | (1) 1 | (1) 0.75 | (1) BU / GY | (1) 4902 | (1) II | (1) — |
| (2) 2 | (2) 0.75 | (2) BU / WH | (2) 4904 | (2) I | (2) — | (2) Direct Fuel Injector High Voltage Supply Cylinder 4 | (2) 2 | (2) 0.75 | (2) BU / WH | (2) 4904 | (2) II | (2) — |
| (3) 3 | (3) 0.75 | (3) VT / GY | (3) 4906 | (3) I | (3) — | (3) Direct Fuel Injector High Voltage Supply Cylinder 6 | (3) 3 | (3) 0.75 | (3) VT / GY | (3) 4906 | (3) II | (3) — |
| (4) 4 | (4) 0.75 | (4) GY / WH | (4) 4908 | (4) I | (4) — | (4) Direct Fuel Injector High Voltage Supply Cylinder 8 | (4) 4 | (4) 0.75 | (4) GY / WH | (4) 4908 | (4) II | (4) — |
| (5) 5 | (5) 0.75 | (5) BU | (5) 4802 | (5) I | (5) — | (5) Direct Fuel Injector High Voltage Control Cylinder 2 | (5) 5 | (5) 0.75 | (5) BU | (5) 4802 | (5) II | (5) — |
| 6 - 7 | — | — | — | — | — | Not Occupied | 6 - 7 | — | — | — | — | — |

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (8) 8 | (8) 0.75 | (8) GY / BU | (8) 4804 | (8) I | (8) — | (8) Direct Fuel Injector High Voltage Control Cylinder 4 | (8) 8 | (8) 0.75 | (8) GY / BU | (8) 4804 | (8) II | (8) — |
| (9) 9 | (9) 0.75 | (9) VT / GN | (9) 4806 | (9) I | (9) — | (9) Direct Fuel Injector High Voltage Control Cylinder 6 | (9) 9 | (9) 0.75 | (9) VT / GN | (9) 4806 | (9) II | (9) — |
| (10) 10 | (10) 0.75 | (10) GY | (10) 4808 | (10) I | (10) — | (10) Direct Fuel Injector High Voltage Control Cylinder 8 | (10) 10 | (10) 0.75 | (10) GY | (10) 4808 | (10) II | (10) — |
| (11) 11 | (11) 0.75 | (11) VT / BK | (11) 7300 | (11) I | (11) — | (11) High Pressure Fuel Pump Low Control | (11) 11 | (11) 0.75 | (11) VT / BK | (11) 7300 | (11) II | (11) — |
| (12) 12 | (12) 0.75 | (12) YE | (12) 7301 | (12) I | (12) — | (12) High Pressure Fuel Pump High Control | (12) 12 | (12) 0.75 | (12) YE | (12) 7301 | (12) II | (12) — |

### X175P Engine Wiring Harness to PTO Harness

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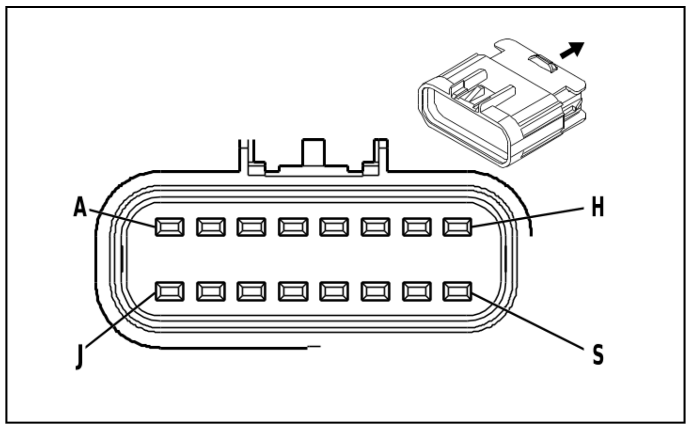



632345

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 15326863
- Service Connector: 19180282
- Description: 16-Way F 150 GT Series, Sealed( BK)

**Connector Part Information**

- Harness Type: PTO Harness
- OEM Connector: Not Available
- Service Connector: Service by Harness - See Part Catalog
- Description: 16-Way M ( BK)

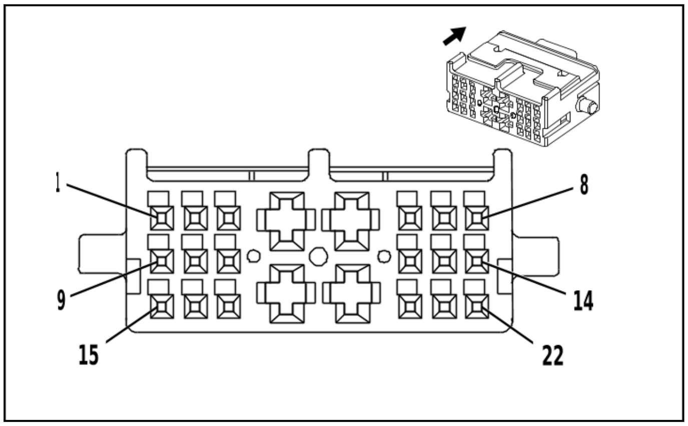
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 19368215 | J-35616-14 (GN) | J-38125-553 |
| II | Not required | No Tool Required | No Tool Required |

## X175P Engine Wiring Harness to PTO Harness

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | 0.5 | GY / GN | 6239 | I | — | Transmission Power Take-Off Engage/ Disengage Signal Power | A | 0.5 | GY / GN | 6239 | II | — |
| B - C | — | — | — | — | — | Not Occupied | B - C | — | — | — | — | — |
| D | 1.5 | BK | 450 | I | — | Ground | D | 1.5 | BK | 450 | II | — |
| E - F | — | — | — | — | — | Not Occupied | E - F | — | — | — | — | — |
| G | 0.5 | WH / BK | 8238 | I | — | Power Take Off Upfitter Interlock Switch Signal 2 | G | 0.5 | WH / BK | 8238 | II | — |
| H | — | — | — | — | — | Not Occupied | H | — | — | — | — | — |
| J | 0.5 | WH / GN | 6142 | I | — | Power Take-Off Engine Shutdown Signal | J | 0.5 | WH / GN | 6142 | II | — |
| K | 0.5 | RD / VT | 2640 | I | — | Battery Positive Voltage | K | 0.5 | RD / VT | 2640 | II | — |
| L - M | — | — | — | — | — | Not Occupied | L - M | — | — | — | — | — |
| N | 0.5 | VT / GN | 4308 | I | — | Power Take-Off Remote Throttle Signal | N | 0.5 | VT / GN | 4308 | II | — |
| P | — | — | — | — | — | Not Occupied | P | — | — | — | — | — |
| R | 0.5 | VT / WH | 239 | I | — | Run/Crank Ignition 1 Voltage | R | 0.5 | VT / WH | 239 | II | — |
| S | — | — | — | — | — | Not Occupied | S | — | — | — | — | — |

### X176 Automatic Transmission Wiring Harness to Automatic Transmission Wiring Harness

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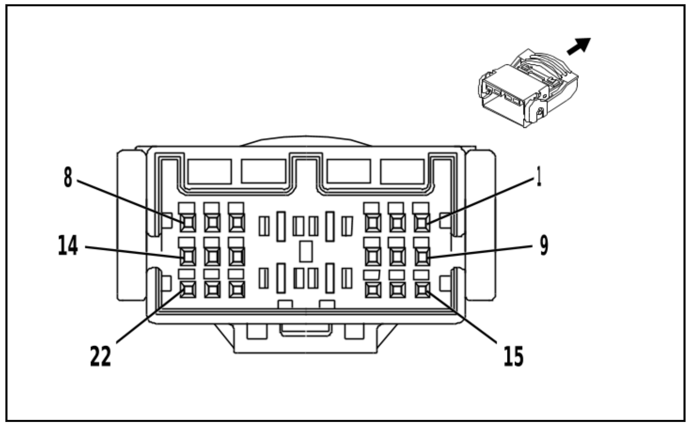



3977770

**Connector Part Information**
- Harness Type: Automatic Transmission Wiring Harness
- OEM Connector: 1897543-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 22-Way F 0.64 Micro-Quadlock, 2.8 Micro-Power Series( NA)

**Connector Part Information**
- Harness Type: Automatic Transmission Wiring Harness
- OEM Connector: 1897540-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 22-Way M 0.64 Micro-Quadlock, 2.8 Micro-Power Series( NA)

## Terminal Part Information

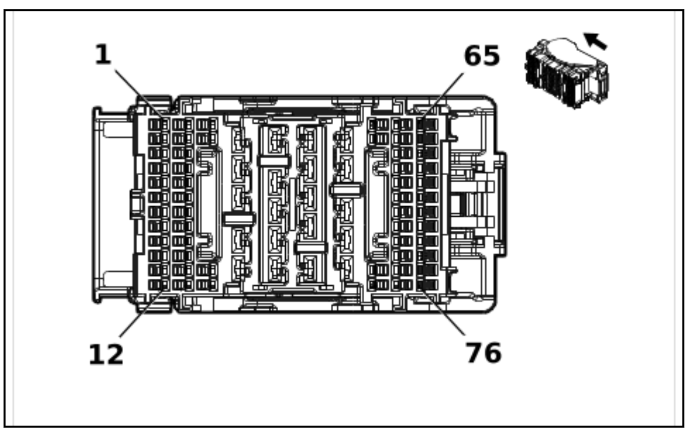
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-35 (VT) | No Tool Required |
| II | Not required | J-35616-64B (L-BU) | No Tool Required |
| III | Not required | J-35616-5 (PU) | No Tool Required |
| IV | Not required | J-35616-65B (L-BU) | No Tool Required |

## X176 Automatic Transmission Wiring Harness to Automatic Transmission Wiring Harness

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) VT | (1) 7819 | (1) II | (1) — | (1) Default Disable Solenoid Control | (1) 1 | (1) 0.5 | (1) VT | (1) 7819 | (1) IV | (1) — |
| (2) 2 | (2) 0.5 | (2) GN / OG | (2) 1530 | (2) II | (2) — | (2) Transmission Line Pressure Control Solenoid Valve Control | (2) 2 | (2) 0.5 | (2) GN / OG | (2) 1530 | (2) IV | (2) — |
| (3) 3 | (3) 0.5 | (3) GY / BN | (3) 422 | (3) II | (3) — | (3) Torque Converter Clutch Solenoid Valve Control | (3) 3 | (3) 0.5 | (3) GY / BN | (3) 422 | (3) IV | (3) — |
| (4) 4 | (4) 0.5 | (4) BN | (4) 6387 | (4) I | (4) — | (4) Transmission High Side Driver 1 Control | (4) 4 | (4) 0.5 | (4) BN | (4) 6387 | (4) III | (4) — |
| 5 - 12 | — | — | — | — | — | Not Occupied | 5 - 12 | — | — | — | — | — |

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (13) 13 | (13) 0.5 | (13) B U / BN | (13) 58 6 | (13) II | (13) — | (13) Transmis sion Fluid Temperature Sensor Low Reference | (13) 13 | (13) 0.5 | (13) B U / BN | (13) 58 6 | (13) IV | (13) — |
| (14) 14 | (14) 0.5 | (14) B N / YE | (14) 58 5 | (14) II | (14) — | (14) Transmis sion Fluid Temperature Sensor Signal | (14) 14 | (14) 0.5 | (14) B N / YE | (14) 58 5 | (14) IV | (14) — |
| (15) 15 | (15) 0.5 | (15) B U / GN | (15) 64 04 | (15) II | (15) — | (15) Clutch Solenoid Valve E Control | (15) 15 | (15) 0.5 | (15) B U / GN | (15) 64 04 | (15) IV | (15) — |
| (16) 16 | (16) 0.5 | (16) G N / BN | (16) 64 03 | (16) II | (16) — | (16) Clutch Solenoid Valve D Control | (16) 16 | (16) 0.5 | (16) G N / BN | (16) 64 03 | (16) IV | (16) — |
| (17) 17 | (17) 0.5 | (17) G Y | (17) 64 02 | (17) II | (17) — | (17) Clutch Solenoid Valve C Control | (17) 17 | (17) 0.5 | (17) G Y | (17) 64 02 | (17) IV | (17) — |
| (18) 18 | (18) 0.5 | (18) WH | (18) 63 88 | (18) I | (18) — | (18) Transmis sion High Side Driver 2 Control | (18) 18 | (18) 0.5 | (18) WH | (18) 63 88 | (18) III | (18) — |
| 19 | — | — | — | — | — | Not Occupied | 19 | — | — | — | — | — |
| (20) 20 | (20) 0.5 | (20) B N / WH | (20) 45 09 | (20) II | (20) — | (20) Transmis sion Clutch F Control | (20) 20 | (20) 0.5 | (20) B N / WH | (20) 45 09 | (20) IV | (20) — |
| (21) 21 | (21) 0.5 | (21) Y E / VT | (21) 45 07 | (21) II | (21) — | (21) Transmis sion Clutch H Control | (21) 21 | (21) 0.5 | (21) Y E / VT | (21) 45 07 | (21) IV | (21) — |
| (22) 22 | (22) 0.5 | (22) B U / GY | (22) 45 08 | (22) II | (22) — | (22) Transmis sion Clutch G Control | (22) 22 | (22) 0.5 | (22) B U / GY | (22) 45 08 | (22) IV | (22) — |

### X210 Instrument Panel Wiring Harness to Body Wiring Harness

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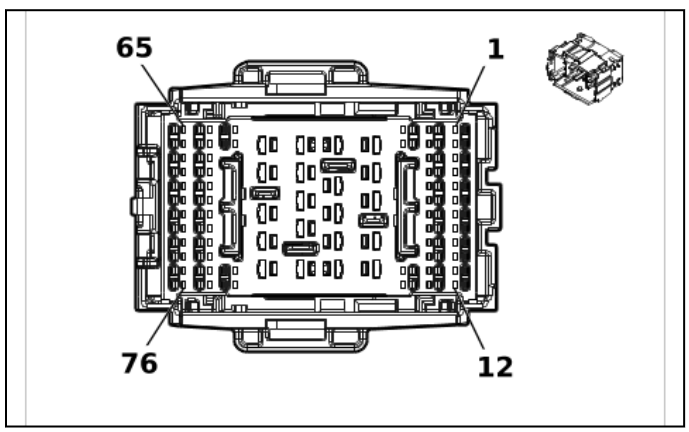



6171465

**Connector Part Information**
- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 6099-0188
- Service Connector: 85026856
- Description: 76-Way F 1.2 Sumitomo, 2.8 YESC Ser- ies( BK)

**Connector Part Information**
- Harness Type: Body Wiring Harness
- OEM Connector: 6099-0184
- Service Connector: 13549030
- Description: 76-Way M 1.2 Sumitomo, 2.8 YESC Ser- ies( BK)

## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 84962854 | J-35616-12 (BU) | J-38125-215A |
| II | 84962855 | J-35616-4A (PU) | J-38125-11A |
| III | 84616651 | J-35616-13 (BU) | J-38125-215A |
| IV | 84888592 | J-35616-5 (PU) | J-38125-11A |

## X210 Instrument Panel Wiring Harness to Body Wiring Harness

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) RD / GN | (1) 1540 | (1) I | (1) — | (1) Battery Positive Voltage | (1) 1 | (1) 0.5 | (1) RD / GN | (1) 1540 | (1) III | (1) — |
| (2) 2 | (2) 0.5 | (2) RD / YE | (2) 6540 | (2) I | (2) — | (2) Battery Positive Voltage | (2) 2 | (2) 0.5 | (2) RD / YE | (2) 6540 | (2) III | (2) — |
| (3) 3 | (3) 0.35 | (3) BN / OG | (3) 3020 | (3) I | (3) — | (3) Steering Wheel Air Bag Stage 1 Low Control | (3) 3 | (3) 0.35 | (3) BN / OG | (3) 3020 | (3) III | (3) — |
| (4) 4 | (4) 0.35 | (4) OG / VT | (4) 3021 | (4) I | (4) — | (4) Steering Wheel Air Bag Stage 1 High Control | (4) 4 | (4) 0.35 | (4) OG / VT | (4) 3021 | (4) III | (4) — |
| (5) 5 | (5) 0.35 | (5) WH / OG | (5) 3022 | (5) I | (5) — | (5) Steering Wheel Air Bag Stage 2 Low Control | (5) 5 | (5) 0.35 | (5) WH / OG | (5) 3022 | (5) III | (5) — |
| (6) 6 | (6) 0.35 | (6) OG / GN | (6) 3023 | (6) I | (6) — | (6) Steering Wheel Air Bag Stage 2 High Control | (6) 6 | (6) 0.35 | (6) OG / GN | (6) 3023 | (6) III | (6) — |
| (7) 7 | (7) 0.35 | (7) BN / BU | (7) 4892 | (7) I | (7) — | (7) Auxiliary Battery Relay Control | (7) 7 | (7) 0.35 | (7) BN / BU | (7) 4892 | (7) III | (7) — |
| (8) 8 | (8) — | (8) — | (8) — | (8) — | (8) — | (8) — | (8) 8 | (8) 0.35 | (8) YE / WH | (8) 900 | (8) III | (8) — |
| (9) 9 | (9) — | (9) — | (9) — | (9) — | (9) — | (9) — | (9) 9 | (9) 0.35 | (9) YE / BK | (9) 901 | (9) III | (9) — |
| (10) 10 | (10) — | (10) — | (10) — | (10) — | (10) — | (10) — | (10) 10 | (10) 0.35 | (10) YE / BU | (10) 902 | (10) III | (10) — |
| 11 - 12 | — | — | — | — | — | Not Occupied | 11 - 12 | — | — | — | — | — |
| (13) 13 | (13) 0.35 | (13) BN / BK | (13) 3552 | (13) I | (13) — | (13) Interior Passive Entry Antenna 1 High Signal | (13) 13 | (13) 0.35 | (13) BN / BK | (13) 3552 | (13) III | (13) — |
| (14) 14 | (14) 0.35 | (14) WH | (14) 3553 | (14) I | (14) — | (14) Interior Passive Entry Antenna 1 Low Signal | (14) 14 | (14) 0.35 | (14) WH | (14) 3553 | (14) III | (14) — |
| (15) 15 | (15) 0.35 | (15) WH | (15) 4100 | (15) I | (15) — | (15) AUTOSAR CAN Bus [-] 4 Serial Data | (15) 15 | (15) 0.5 | (15) WH | (15) 4100 | (15) III | (15) — |

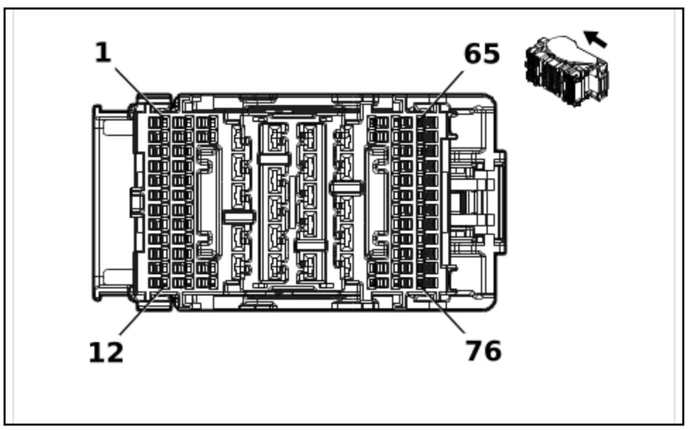
| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (16) 16 | (16) 0.35 | (16) B U / VT | (16) 41 01 | (16) I | (16) — | (16) AUTOSA R CAN Bus [+] 4 Serial Data | (16) 16 | (16) 0.5 | (16) B U / VT | (16) 41 01 | (16) III | (16) — |
| (17) 17 | (17) 0.35 | (17) WH | (17) 49 76 | (17) I | (17) — | (17) AUTOSA R CAN Bus [-] 3 Serial Data | (17) 17 | (17) 0.5 | (17) WH | (17) 49 76 | (17) III | (17) — |
| (18) 18 | (18) 0.35 | (18) B U / BK | (18) 49 77 | (18) I | (18) — | (18) AUTOSA R CAN Bus [+] 3 Serial Data | (18) 18 | (18) 0.5 | (18) B U / BK | (18) 49 77 | (18) III | (18) — |
| (19) 19 | (19) 0.5 | (19) R D / GN | (19) 77 40 | (19) I | (19) — | (19) Battery Positive Volt- age | (19) 19 | (19) 0.5 | (19) R D / GN | (19) 77 40 | (19) III | (19) — |
| 20 | — | — | — | — | — | Not Occupied | 20 | — | — | — | — | — |
| (21) 21 | (21) 0.35 | (21) B U / YE | (21) 49 84 | (21) I | (21) — | (21) AUTOSA R CAN Bus [-] 5 Serial Data | (21) 21 | (21) 0.5 | (21) B U / YE | (21) 49 84 | (21) III | (21) — |
| (22) 22 | (22) 0.35 | (22) B U / WH | (22) 49 85 | (22) I | (22) — | (22) AUTOSA R CAN Bus [+] 5 Serial Data | (22) 22 | (22) 0.5 | (22) B U / WH | (22) 49 85 | (22) III | (22) — |
| (23) 23 | (23) 0.35 | (23) WH | (23) 49 86 | (23) I | (23) — | (23) AUTOSA R CAN Bus [-] 1 Serial Data | (23) 23 | (23) 0.5 | (23) WH | (23) 49 86 | (23) III | (23) — |
| (24) 24 | (24) 0.35 | (24) B U | (24) 49 87 | (24) I | (24) — | (24) AUTOSA R CAN Bus [+] 1 Serial Data | (24) 24 | (24) 0.5 | (24) B U | (24) 49 87 | (24) III | (24) — |
| 25 - 26 | — | — | — | — | — | Not Occupied | 25 - 26 | — | — | — | — | — |
| (27) 27 | (27) 0.35 | (27) B N / BK | (27) 49 96 | (27) I | (27) — | (27) Immobili zer Antenna Signal [+] | (27) 27 | (27) 0.35 | (27) B N / BK | (27) 49 96 | (27) III | (27) — |
| (28) 28 | (28) 0.35 | (28) WH / GY | (28) 49 97 | (28) I | (28) — | (28) Immobili zer Antenna Low Signal | (28) 28 | (28) 0.35 | (28) WH / GY | (28) 49 97 | (28) III | (28) — |
| (29) 29 | (29) 2.5 | (29) R D / BN | (29) 41 42 | (29) II | (29) — | (29) Primary Fused Battery Positive Volt- age | (29) 29 | (29) 2.5 | (29) R D / BN | (29) 41 42 | (29) IV | (29) — |
| (30) 30 | (30) 0.35 | (30) G Y | (30) 17 15 | (30) II | (30) — | (30) Windshie ld Wiper Switch High Signal | (30) 30 | (30) 0.35 | (30) G Y | (30) 17 15 | (30) IV | (30) — |
| (31) 31 | (31) 0.5 | (31) G N / YE | (31) 27 31 | (31) II | (31) — | (31) Brake System Control Module LIN Bus 1 | (31) 31 | (31) 0.5 | (31) G N / YE | (31) 27 31 | (31) IV | (31) — |
| (32) 32 | (32) 0.35<br>(32) 0.5 | (32) B U<br>(32) B U | (32) 49 87<br>(32) 49 87 | (32) II<br>(32) II | (32) —<br>(32) — | (32) AUTOSA R CAN Bus [+] 1 Serial Data<br>(32) AUTOSA R CAN Bus [+] 1 Serial Data | (32) 32 | (32) 0.5 | (32) B U | (32) 49 87 | (32) IV | (32) — |

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (33) 33 | (33) 0.35<br>(33) 0.5 | (33) WH<br>(33) WH | (33) 49 86<br>(33) 49 86 | (33) II<br>(33) II | (33) —<br>(33) — | (33) AUTOSA R CAN Bus [-] 1 Serial Data<br>(33) AUTOSA R CAN Bus [-] 1 Serial Data | (33) 33 | (33) 0.5 | (33) WH | (33) 49 86 | (33) IV | (33) — |
| 34 | — | — | — | — | — | Not Occupied | 34 | — | — | — | — | — |
| (35) 35 | (35) 0.75 | (35) G N / BK | (35) 11 6 | (35) II | (35) — | (35) Left Rear Speaker [-] Control | (35) 35 | (35) 0.75 | (35) G N / BK | (35) 11 6 | (35) IV | (35) — |
| (36) 36 | (36) 0.75 | (36) G N | (36) 19 9 | (36) II | (36) — | (36) Left Rear Speaker [+] Control | (36) 36 | (36) 0.75 | (36) G N | (36) 19 9 | (36) IV | (36) — |
| (37) 37 | (37) 0.75 | (37) B N / BU | (37) 11 8 | (37) II | (37) — | (37) Left Front Speaker [-] Control 1 | (37) 37 | (37) 0.75 | (37) B N / BU | (37) 11 8 | (37) IV | (37) — |
| (38) 38 | (38) 0.75 | (38) B U | (38) 20 1 | (38) II | (38) — | (38) Left Front Speaker 1 [+] Control | (38) 38 | (38) 0.75 | (38) B U | (38) 20 1 | (38) IV | (38) — |
| 39 | — | — | — | — | — | Not Occupied | 39 | — | — | — | — | — |
| (40) 40 | (40) 0.35 | (40) B U / WH | (40) 31 19 | (40) II | (40) — | (40) Roof Rail Air Bag Disable Switch Signal | (40) 40 | (40) 0.35 | (40) B U / WH | (40) 31 19 | (40) IV | (40) — |
| (41) 41 | (41) 0.35 | (41) B N / WH | (41) 38 95 | (41) II | (41) — | (41) Roof Rail Air Bag Disable Switch Low Reference | (41) 41 | (41) 0.35 | (41) B N / WH | (41) 38 95 | (41) IV | (41) — |
| 42 - 44 | — | — | — | — | — | Not Occupied | 42 - 44 | — | — | — | — | — |
| (45) 45 | (45) 0.35 | (45) G N / VT | (45) 47 86 | (45) II | (45) — | (45) Dome/ Reading Lamp Enable Signal | (45) 45 | (45) 0.5 | (45) G N / VT | (45) 47 86 | (45) IV | (45) — |
| (46) 46 | (46) 0.35 | (46) G N / BN | (46) 50 7 | (46) II | (46) — | (46) Wait To Start Indicator Control | (46) 46 | (46) 0.35 | (46) G N / BN | (46) 50 7 | (46) IV | (46) — |
| 47 | — | — | — | — | — | Not Occupied | 47 | — | — | — | — | — |
| (48) 48 | (48) 0.5 | (48) Y E / VT | (48) 61 91 | (48) II | (48) — | (48) Power Rear Window Switch Open Signal | (48) 48 | (48) 0.5 | (48) Y E / VT | (48) 61 91 | (48) IV | (48) — |
| (49) 49 | (49) 0.5 | (49) WH | (49) 61 92 | (49) I | (49) — | (49) Sliding Rear Window Switch Close Signal | (49) 49 | (49) 0.5 | (49) WH | (49) 61 92 | (49) III | (49) — |
| (50) 50 | (50) 0.5 | (50) Y E | (50) 68 17 | (50) I | (50) — | (50) LED Backlight Dimming Control 1 | (50) 50 | (50) 0.5 | (50) Y E | (50) 68 17 | (50) III | (50) — |
| (51) 51 | (51) 0.35 | (51) WH / GY | (51) 72 97 | (51) I | (51) — | (51) Minor Endgate High Relay Control | (51) 51 | (51) 0.75 | (51) WH / GY | (51) 72 97 | (51) III | (51) — |
| 52 | — | — | — | — | — | Not Occupied | 52 | — | — | — | — | — |

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (53) 53 | (53) 0.5 | (53) R D / VT | (53) 71 40 | (53) I | (53) — | (53) Battery Positive Volt-age | (53) 53 | (53) 0.5 | (53) R D / VT | (53) 71 40 | (53) III | (53) — |
| (54) 54 | (54) 0.35 | (54) WH / GN | (54) 77 28 | (54) I | (54) — | (54) Major Endgate High Relay Control | (54) 54 | (54) 0.75 | (54) WH / GN | (54) 77 28 | (54) III | (54) — |
| (55) 55 | (55) 0.35 | (55) B U / VT | (55) 77 29 | (55) I | (55) — | (55) Major Endgate Low Relay Control | (55) 55 | (55) 0.75 | (55) B U / VT | (55) 77 29 | (55) III | (55) — |
| (56) 56 | (56) 0.5 | (56) V T | (56) 80 1 | (56) I | (56) — | (56) Retained Accessory Power Control | (56) 56 | (56) 0.35 | (56) V T | (56) 80 1 | (56) III | (56) — |
| (57) 57 | (57) 0.5 | (57) B N / YE | (57) 82 0 | (57) I | (57) — | (57) Center High Mounted Stop Lamp Supply Volt-age<br>(57) Center High Mounted Stop Lamp Supply Volt-age | (57) 57 | (57) 0.35<br>(57) 0.5 | (57) B N / YE<br>(57) B N / YE | (57) 82 0<br>(57) 82 0 | (57) III<br>(57) III | (57) —<br>(57) — |
| (58) 58 | (58) 0.35 | (58) G N / BU | (58) 27 33 | (58) I | (58) — | (58) Brake System Control Module LIN Bus 2 | (58) 58 | (58) 0.5 | (58) G N / BU | (58) 27 33 | (58) III | (58) — |
| (59) 59 | (59) 0.5 | (59) R D / VT | (59) 26 40 | (59) I | (59) — | (59) Battery Positive Volt-age | (59) 59 | (59) 0.5 | (59) R D / VT | (59) 26 40 | (59) III | (59) — |
| (60) 60 | (60) 0.35 | (60) B U / YE | (60) 49 84 | (60) I | (60) — | (60) AUTOSA R CAN Bus [-] 5 Serial Data | (60) 60 | (60) 0.5 | (60) B U / YE | (60) 49 84 | (60) III | (60) — |
| (61) 61 | (61) 0.35 | (61) B U / WH | (61) 49 85 | (61) I | (61) — | (61) AUTOSA R CAN Bus [+] 5 Serial Data | (61) 61 | (61) 0.5 | (61) B U / WH | (61) 49 85 | (61) III | (61) — |
| (62) 62 | (62) 0.35 | (62) Y E | (62) 10 280 | (62) I | (62) — | (62) Private Steering Angle CAN Bus [+] Serial Data | (62) 62 | (62) 0.35 | (62) Y E | (62) 10 280 | (62) III | (62) — |
| (63) 63 | (63) 0.35 | (63) B U / WH | (63) 10 279 | (63) I | (63) — | (63) Private Steering Angle CAN Bus [-] Serial Data | (63) 63 | (63) 0.35 | (63) B U / WH | (63) 10 279 | (63) III | (63) — |
| (64) 64 | (64) 0.35 | (64) G N / BN | (64) 20 87 | (64) I | (64) — | (64) Multi-axis Acceleration Sensor Sup-ply Voltage | (64) 64 | (64) 0.35 | (64) G N / BN | (64) 20 87 | (64) III | (64) — |
| (65) 65 | (65) 0.35 | (65) G N / GY | (65) 81 7 | (65) I | (65) — | (65) Vehicle Speed Signal | (65) 65 | (65) 0.35 | (65) G N / GY | (65) 81 7 | (65) III | (65) — |
| (66) 66 | (66) 0.35 | (66) WH / GY | (66) 29 35 | (66) I | (66) — | (66) Task Lamp Switch Signal | (66) 66 | (66) 0.35 | (66) WH / GY | (66) 29 35 | (66) III | (66) — |
| (67) 67 | (67) 0.5 | (67) R D / YE | (67) 23 40 | (67) I | (67) — | (67) Battery Positive Volt-age | (67) 67 | (67) 0.5 | (67) R D / YE | (67) 23 40 | (67) III | (67) — |

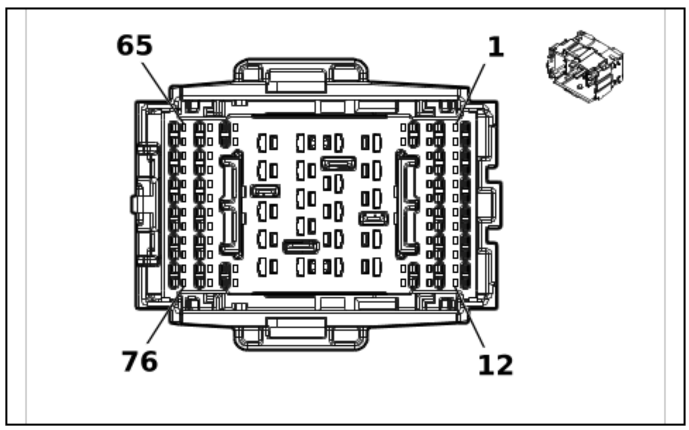
| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (68) 68 | (68) 0.5 | (68) WH / VT | (68) 14 30 | (68) I | (68) — | (68) Exterior Courtesy Lamp Control | (68) 68 | (68) 0.5 | (68) WH / VT | (68) 14 30 | (68) III | (68) — |
| (69) 69 | (69) 0.5 | (69) G N / WH | (69) 28 54 | (69) I | (69) — | (69) Body Control Module LIN Bus 8 | (69) 69 | (69) 0.35 | (69) G N / WH | (69) 28 54 | (69) III | (69) — |
| (70) 70 | (70) 0.5 | (70) B U / BN | (70) 68 07 | (70) I | (70) — | (70) DC/AC Inverter Control | (70) 70 | (70) 0.5 | (70) B U / BN | (70) 68 07 | (70) III | (70) — |
| (71) 71 | (71) 0.5 | (71) V T / RD | (71) 40 49 | (71) I | (71) — | (71) AC Power Outlet Sensor High Reference | (71) 71 | (71) 0.5 | (71) V T / RD | (71) 40 49 | (71) III | (71) — |
| 72 | — | — | — | — | — | Not Occupied | 72 | — | — | — | — | — |
| (73) 73 | (73) 0.5 | (73) B N / GN | (73) 42 46 | (73) I | (73) — | (73) Identifi-cation Lamp Control | (73) 73 | (73) 0.5 | (73) B N / GN | (73) 42 46 | (73) III | (73) — |
| (74) 74 | (74) 0.35 | (74) WH | (74) 10 116 | (74) I | (74) — | (74) AC Outlet Low Reference | (74) 74 | (74) 0.35 | (74) B ARE | (74) 10 116 | (74) III | (74) — |
| (75) 75 | (75) 0.75 | (75) B K | (75) 10 117 | (75) I | (75) — | (75) AC Outlet Phase A Control | (75) 75 | (75) 0.75 | (75) B K | (75) 10 117 | (75) III | (75) — |
| (76) 76 | (76) 0.75 | (76) R D | (76) 10 118 | (76) I | (76) — | (76) AC Outlet Phase B Control | (76) 76 | (76) 0.75 | (76) R D | (76) 10 118 | (76) III | (76) — |

### X211 Instrument Panel Wiring Harness to Body Wiring Harness



6171454

**Connector Part Information**
- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 6099-0188
- Service Connector: 85026856
- Description: 76-Way F 1.2 Sumitomo, 2.8 YESC Ser-ies( BK)



6171465

**Connector Part Information**
- Harness Type: Body Wiring Harness
- OEM Connector: 6099-0184
- Service Connector: 13549030
- Description: 76-Way M 1.2 Sumitomo, 2.8 YESC Ser-ies( BK)

## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 84962854 | J-35616-12 (BU) | J-38125-215A |
| II | 84962855 | J-35616-4A (PU) | J-38125-11A |
| III | 84616651 | J-35616-13 (BU) | J-38125-215A |
| IV | 84888592 | J-35616-5 (PU) | J-38125-11A |

## X211 Instrument Panel Wiring Harness to Body Wiring Harness

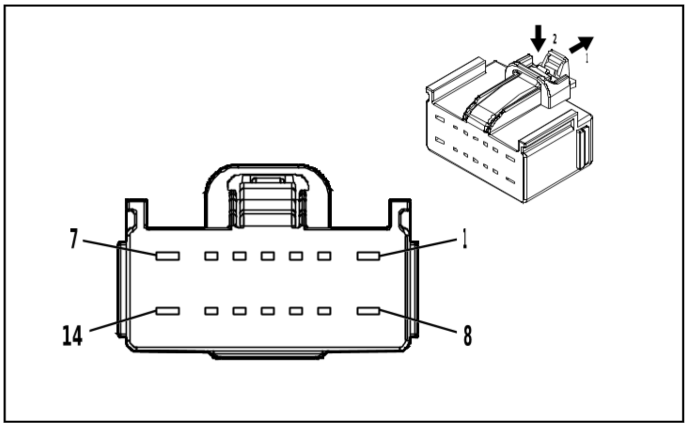
| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 0. 5 | (1) VT / BK | (1) 339 | (1) I | (1) — | (1) Run/ Crank Ignition 1 Voltage | (1) 1 | (1) 0. 5 | (1) VT / BK | (1) 339 | (1) III | (1) — |
| (2) 2 | (2) 0. 35 | (2) BU / VT | (2) 807 | (2) I | (2) — | (2) Ignition Off/Accessory Ignition Volt- age | (2) 2 | (2) 0. 35 | (2) BU / VT | (2) 807 | (2) III | (2) — |
| 3 | — | — | — | — | — | Not Occupied | 3 | — | — | — | — | — |
| (4) 4 | (4) 0. 5 | (4) G N / WH | (4) 24 | (4) I | (4) — | (4) Backup Lamp Control | (4) 4 | (4) 0. 5 | (4) G N / WH | (4) 24 | (4) III | (4) — |
| (5) 5 | (5) 0. 35 | (5) O G / WH | (5) 302 4 | (5) I | (5) — | (5) Passenge r Instrument Panel Air Bag Stage 1 Low Control | (5) 5 | (5) 0. 35 | (5) O G / WH | (5) 302 4 | (5) III | (5) — |
| (6) 6 | (6) 0. 35 | (6) YE / OG | (6) 302 5 | (6) I | (6) — | (6) Passenge r Instrument Panel Air Bag Stage 1 High Control | (6) 6 | (6) 0. 35 | (6) YE / OG | (6) 302 5 | (6) III | (6) — |
| (7) 7 | (7) 0. 35 | (7) O G / VT | (7) 302 6 | (7) I | (7) — | (7) Passenge r Instrument Panel Air Bag Stage 2 Low Control | (7) 7 | (7) 0. 35 | (7) O G / VT | (7) 302 6 | (7) III | (7) — |
| (8) 8 | (8) 0. 35 | (8) GY / OG | (8) 302 7 | (8) I | (8) — | (8) Passenge r Instrument Panel Air Bag Stage 2 High Control | (8) 8 | (8) 0. 35 | (8) GY / OG | (8) 302 7 | (8) III | (8) — |
| 9 | — | — | — | — | — | Not Occupied | 9 | — | — | — | — | — |
| (10) 10 | (10) 0.35 | (10) Y E | (10) 71 15 | (10) I | (10) — | (10) Rear Axle Differential Lock Indicator Control | (10) 10 | (10) 0.35 | (10) Y E | (10) 71 15 | (10) III | (10) — |
| (11) 11 | (11) 0.35 | (11) Y E / GN | (11) 71 22 | (11) I | (11) — | (11) Axle Differential Lock Switch Signal | (11) 11 | (11) 0.35 | (11) Y E / GN | (11) 71 22 | (11) III | (11) — |
| 12 - 15 | — | — | — | — | — | Not Occupied | 12 - 15 | — | — | — | — | — |
| (16) 16 | (16) 0.35 | (16) G N / BN | (16) 30 05 | (16) I | (16) — | (16) Active Noise Cancellation Microphone 1 Signal | (16) 16 | (16) 0.35 | (16) G N / BN | (16) 30 05 | (16) III | (16) — |

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (17) 17 | (17) 0.35 | (17) G N / BK | (17) 30 08 | (17) I | (17) — | (17) Active Noise Cancellation Microphone 1 Feedback Signal | (17) 17 | (17) 0.35 | (17) G N / BK | (17) 30 08 | (17) III | (17) — |
| 18 - 24 | — | — | — | — | — | Not Occupied | 18 - 24 | — | — | — | — | — |
| (25) 25 | (25) 0.35 | (25) B U | (25) 49 87 | (25) I | (25) — | (25) AUTOSA R CAN Bus [+] 1 Serial Data | (25) 25 | (25) 0.5 | (25) B U | (25) 49 87 | (25) III | (25) — |
| (26) 26 | (26) 0.35 | (26) WH | (26) 49 86 | (26) I | (26) — | (26) AUTOSA R CAN Bus [-] 1 Serial Data | (26) 26 | (26) 0.5 | (26) WH | (26) 49 86 | (26) III | (26) — |
| 27 - 28 | — | — | — | — | — | Not Occupied | 27 - 28 | — | — | — | — | — |
| (29) 29 | (29) 1 | (29) G N / YE | (29) 68 40 | (29) II | (29) — | (29) Auxiliary Device 2 Switched Volt age | (29) 29 | (29) 1 | (29) G N / YE | (29) 68 40 | (29) IV | (29) — |
| 30 - 31 | — | — | — | — | — | Not Occupied | 30 - 31 | — | — | — | — | — |
| (32) 32 | (32) 0.5 | (32) B U / BK | (32) 10 53 | (32) II | (32) — | (32) Center High Mounted Stop Lamp Control 3 | (32) 32 | (32) 0.5 | (32) B U / BK | (32) 10 53 | (32) IV | (32) — |
| (33) 33 | (33) 0.75 | (33) WH | (33) 46 | (33) II | (33) — | (33) Right Rear Speaker [+] Control | (33) 33 | (33) 0.75 | (33) WH | (33) 46 | (33) IV | (33) — |
| (34) 34 | (34) 0.75 | (34) B U / BK | (34) 11 5 | (34) II | (34) — | (34) Right Rear Speaker [-] Control | (34) 34 | (34) 0.75 | (34) B U / BK | (34) 11 5 | (34) IV | (34) — |
| (35) 35 | (35) 0.75 | (35) Y E / BK | (35) 11 7 | (35) II | (35) — | (35) Right Front Speaker [-] Control 1 | (35) 35 | (35) 0.75 | (35) Y E / BK | (35) 11 7 | (35) IV | (35) — |
| (36) 36 | (36) 0.75 | (36) Y E | (36) 20 0 | (36) II | (36) — | (36) Right Front Speaker 1 [+] Control | (36) 36 | (36) 0.75 | (36) Y E | (36) 20 0 | (36) IV | (36) — |
| (37) 37 | (37) 0.75 | (37) Y E / BK | (37) 11 7 | (37) II | (37) — | (37) Right Front Speaker [-] Control 1 | (37) 37 | (37) 0.75 | (37) Y E / BK | (37) 11 7 | (37) IV | (37) — |
| (38) 38 | (38) 0.75 | (38) Y E | (38) 20 0 | (38) II | (38) — | (38) Right Front Speaker 1 [+] Control | (38) 38 | (38) 0.75 | (38) Y E | (38) 20 0 | (38) IV | (38) — |
| (39) 39 | (39) 0.75 | (39) Y E / BK | (39) 11 7 | (39) II | (39) — | (39) Right Front Speaker [-] Control 1 | (39) 39 | (39) 0.75 | (39) Y E / BK | (39) 11 7 | (39) IV | (39) — |
| (40) 40 | (40) 0.75 | (40) Y E | (40) 20 0 | (40) II | (40) — | (40) Right Front Speaker 1 [+] Control | (40) 40 | (40) 0.75 | (40) Y E | (40) 20 0 | (40) IV | (40) — |

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (41) 41 | (41) 0.75 | (41) WH / YE | (41) 18 53 | (41) II | (41) — | (41) Right Front Midrange Speaker [+] Control | (41) 41 | (41) 0.75 | (41) WH / YE | (41) 18 53 | (41) IV | (41) — |
| (42) 42 | (42) 0.75 | (42) B N / BK | (42) 19 53 | (42) II | (42) — | (42) Right Front Midrange Speaker [-] Control | (42) 42 | (42) 0.75 | (42) B N / BK | (42) 19 53 | (42) IV | (42) — |
| (43) 43 | (43) 0.75 | (43) Y E / WH | (43) 18 60 | (43) II | (43) — | (43) Front Center Speaker [+] Control | (43) 43 | (43) 0.75 | (43) Y E / WH | (43) 18 60 | (43) IV | (43) — |
| (44) 44 | (44) 0.75 | (44) B U / YE | (44) 19 60 | (44) II | (44) — | (44) Front Center Speaker [-] Control | (44) 44 | (44) 0.75 | (44) B U / YE | (44) 19 60 | (44) IV | (44) — |
| (45) 45 | (45) 0.75 | (45) B U / VT | (45) 18 57 | (45) II | (45) — | (45) Left Front Midrange Speaker [+] Control | (45) 45 | (45) 0.75 | (45) B U / VT | (45) 18 57 | (45) IV | (45) — |
| (46) 46 | (46) 0.75 | (46) B U / BN | (46) 19 57 | (46) II | (46) — | (46) Left Front Midrange Speaker [-] Control | (46) 46 | (46) 0.75 | (46) B U / BN | (46) 19 57 | (46) IV | (46) — |
| (47) 47 | (47) 2 | (47) B U | (47) 47 | (47) II | (47) — | (47) Trailer Auxiliary Control | (47) 47 | (47) 2 | (47) B U | (47) 47 | (47) IV | (47) — |
| (48) 48 | (48) 2.5 | (48) B K / WH | (48) 10 51 | (48) II | (48) — | (48) Signal Ground<br>(48) Signal Ground | (48) 48 | (48) 0.5<br>(48) 2.5 | (48) B K / WH<br>(48) B K / WH | (48) 10 51<br>(48) 10 51 | (48) IV<br>(48) IV | (48) —<br>(48) — |
| (49) 49 | (49) 0.35 | (49) G N / WH | (49) 48 8 | (49) I | (49) — | (49) Power Take-Off Control Switch Signal | (49) 49 | (49) 0.5 | (49) G N / WH | (49) 48 8 | (49) III | (49) — |
| (50) 50 | (50) 0.35 | (50) B N / GN | (50) 43 11 | (50) I | (50) — | (50) Power Take-Off Enable Cabin Switch Normally Closed Signal | (50) 50 | (50) 0.5 | (50) B N / GN | (50) 43 11 | (50) III | (50) — |
| (51) 51 | (51) 0.35<br>(51) 0.5 | (51) B U / YE<br>(51) B U / YE | (51) 49 79<br>(51) 49 79 | (51) I<br>(51) I | (51) —<br>(51) — | (51) AUTOSA R CAN Bus [+] 2 Serial Data<br>(51) AUTOSA R CAN Bus [+] 2 Serial Data | (51) 51 | (51) 0.5 | (51) B U / YE | (51) 49 79 | (51) III | (51) — |
| (52) 52 | (52) 0.35<br>(52) 0.5 | (52) WH<br>(52) WH | (52) 49 78<br>(52) 49 78 | (52) I<br>(52) I | (52) —<br>(52) — | (52) AUTOSA R CAN Bus [-] 2 Serial Data<br>(52) AUTOSA R CAN Bus [-] 2 Serial Data | (52) 52 | (52) 0.5 | (52) WH | (52) 49 78 | (52) III | (52) — |

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 53 | — | — | — | — | — | Not Occupied | 53 | — | — | — | — | — |
| (54) 54 | (54) 0.5 | (54) G N / VT | (54) 51 99 | (54) I | (54) — | (54) Run/ Crank Relay Coil Control | (54) 54 | (54) 0.5 | (54) G N / VT | (54) 51 99 | (54) III | (54) — |
| 55 - 59 | — | — | — | — | — | Not Occupied | 55 - 59 | — | — | — | — | — |
| (60) 60 | (60) 0.35 | (60) Y E / WH | (60) 16 90 | (60) I | (60) — | (60) Mirror Dimming Signal | (60) 60 | (60) 0.35 | (60) Y E / WH | (60) 16 90 | (60) III | (60) — |
| (61) 61 | (61) 0.35 | (61) B K / YE | (61) 16 91 | (61) I | (61) — | (61) Automati c Day/Night Mirror Low Reference | (61) 61 | (61) 0.35 | (61) B K / YE | (61) 16 91 | (61) III | (61) — |
| 62 - 76 | — | — | — | — | — | Not Occupied | 62 - 76 | — | — | — | — | — |

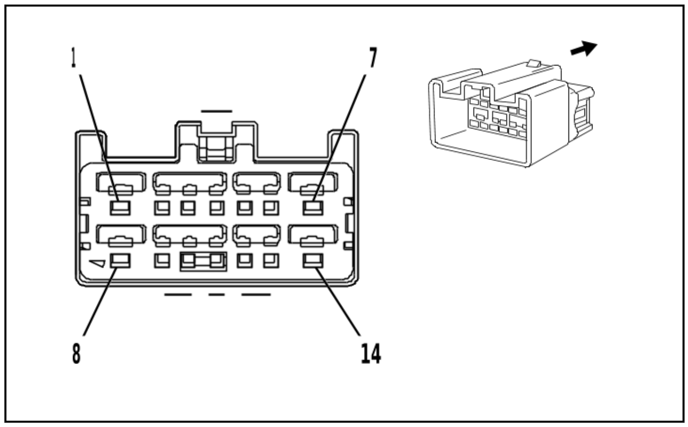
**X213 Auxiliary Fuse Block Wiring Harness to Instrument Panel Wiring Harness**




4934172

**Connector Part Information**

- Harness Type: Auxiliary Fuse Block Wiring Harness
- OEM Connector: 7289-7630-40
- Service Connector: Service by Harness - See Part Catalog
- Description: 14-Way F 1.5, 2.8 YESC Series( GY)




1283905

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 7282-6447-40
- Service Connector: 88956523
- Description: 14-Way M 1.5, 2.8 YESC Series( L-GY)

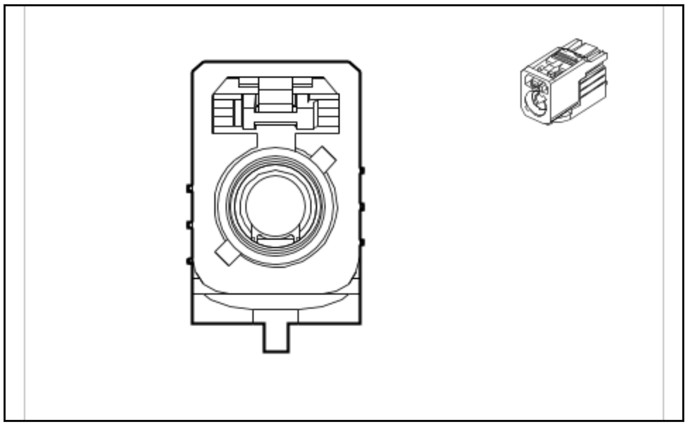
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-14 (GN) | No Tool Required |
| II | Not required | J-35616-4A (PU) | No Tool Required |
| III | 13578908 | J-35616-5 (PU) | J-38125-11A |
| IV | 85544421 | J-35616-3 (GY) | J-38125-215A |

## X213 Auxiliary Fuse Block Wiring Harness to Instrument Panel Wiring Harness

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 0. 75 | (1) BK / WH | (1) 105 0 | (1) II | (1) — | (1) Ground | (1) 1 | (1) 2. 5 | (1) BK | (1) 105 0 | (1) III | (1) — |
| 2 | — | — | — | — | — | Not Occupied | 2 | — | — | — | — | — |
| (3) 3 | (3) 0. 35 | (3) YE | (3) 681 7 | (3) I | (3) — | (3) LED Backlight Dimming Control 1 | (3) 3 | (3) 0. 35 | (3) YE | (3) 681 7 | (3) IV | (3) — |
| 4 | — | — | — | — | — | Not Occupied | 4 | — | — | — | — | — |
| (5) 5 | (5) 0. 5 | (5) W H / BU | (5) 369 1 | (5) I | (5) — | (5) Trailer Brake Apply Signal | (5) 5 | (5) 0. 35 | (5) W H / BU | (5) 369 1 | (5) IV | (5) — |
| 6 | — | — | — | — | — | Not Occupied | 6 | — | — | — | — | — |
| (7) 7 | (7) 2. 5 | (7) RD / BN | (7) 414 2 | (7) II | (7) — | (7) Primary Fused Battery Positive Volt- age | (7) 7 | (7) 2. 5 | (7) RD / BN | (7) 414 2 | (7) III | (7) — |
| (8) 8 | (8) 2. 5 | (8) VT / BU | (8) 107 35 | (8) II | (8) — | (8) Upfitter Accessory 5 Supply Volt- age | (8) 8 | (8) 2. 5 | (8) VT / BU | (8) 107 35 | (8) III | (8) — |
| (9) 9 | (9) — | (9) — | (9) — | (9) — | (9) — | (9) Out of Park Signal | (9) 9 | (9) 0. 35 | (9) YE | (9) 681 2 | (9) IV | (9) — |
| (10) 10 | (10) — | (10) — | (10) — | (10) — | (10) — | (10) Vehicle Speed Signal | (10) 10 | (10) 0.35 | (10) G N / GY | (10) 81 7 | (10) IV | (10) — |
| (11) 11 | (11) 0.35 | (11) W H | (11) 68 16 | (11) I | (11) — | (11) Indicator Dimming Control | (11) 11 | (11) 0.35 | (11) W H | (11) 68 16 | (11) IV | (11) — |
| 12 | — | — | — | — | — | Not Occupied | 12 | — | — | — | — | — |
| (13) 13 | (13) 0.5 | (13) V T / BK | (13) 33 9 | (13) I | (13) — | (13) Run/ Crank Ignition 1 Voltage | (13) 13 | (13) 0.5 | (13) V T / BK | (13) 33 9 | (13) IV | (13) — |
| (14) 14 | (14) 2 | (14) B U | (14) 47 | (14) II | (14) — | (14) Trailer Auxiliary Control | (14) 14 | (14) 2 | (14) B U | (14) 47 | (14) III | (14) — |

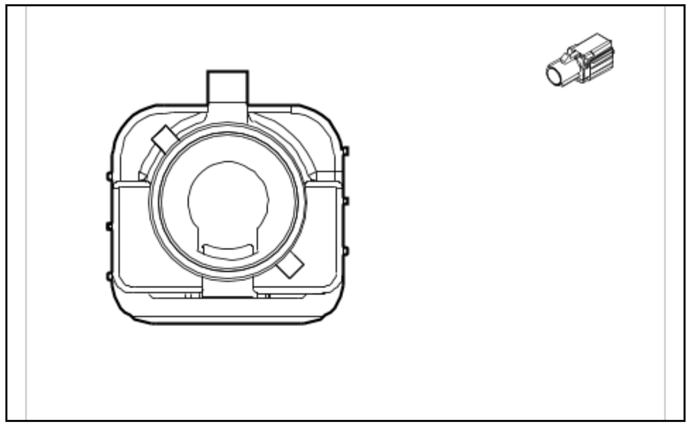
## X217 Body Wiring Harness to Instrument Panel Wiring Harness



6267120

**Connector Part Information**

- Harness Type: Body Wiring Harness COAX
- OEM Connector: 33351013
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type( BU)



5873701

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness COAX
- OEM Connector: 33351038
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way M Coax Type( BU)

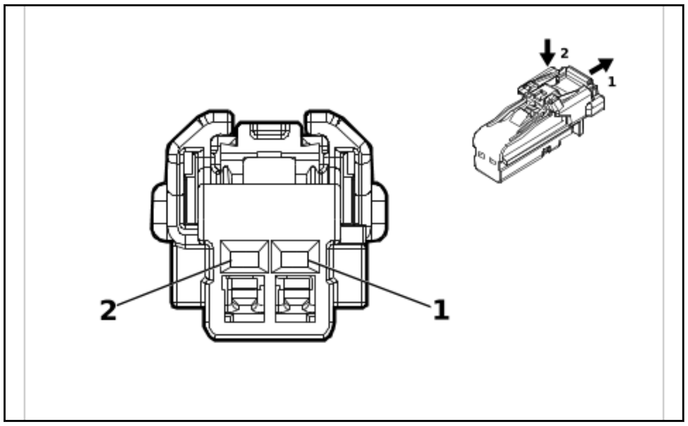
### Terminal Part Information

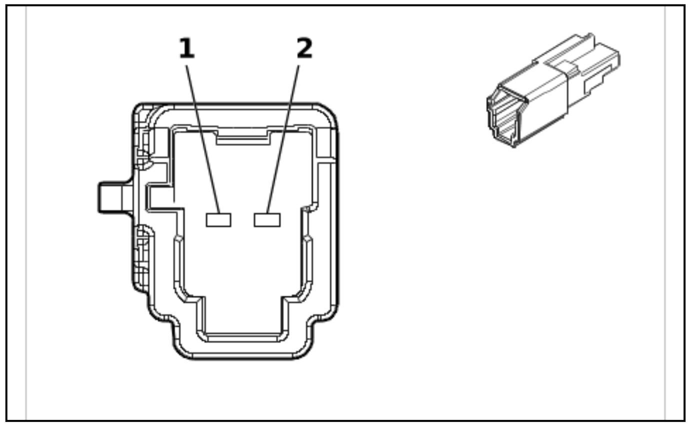
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

### X217 Body Wiring Harness to Instrument Panel Wiring Harness

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| — | — | Coax Cable | — | I | — | Video Processing Module Coaxial Video Signal | — | — | Coax Cable | — | I | — |

### X218 Instrument Panel Wiring Harness to Body Wiring Harness




**Connector Part Information**
- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 6098-8988
- Service Connector: 87816612
- Description: 2-Way F 1.2 MCON Series( BK)

**Connector Part Information**
- Harness Type: Body Wiring Harness
- OEM Connector: 6099-0610
- Service Connector: 85725003
- Description: 2-Way M 1.2 MBS Series( BK)

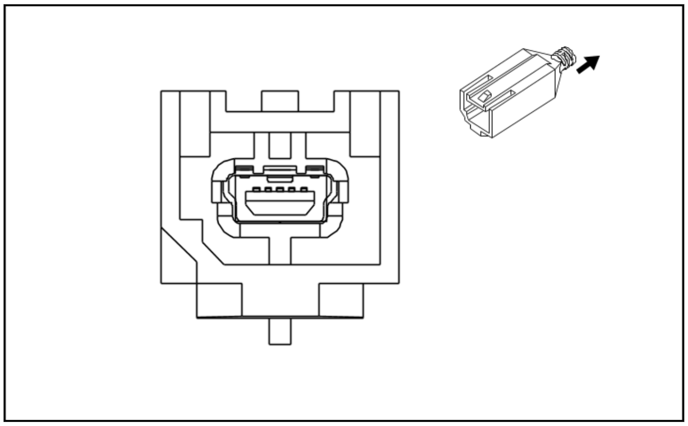
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Service by Cable | J-35616-12 (BU) | J-38125-215A |
| II | Service by Cable | J-35616-13 (BU) | J-38125-215A |

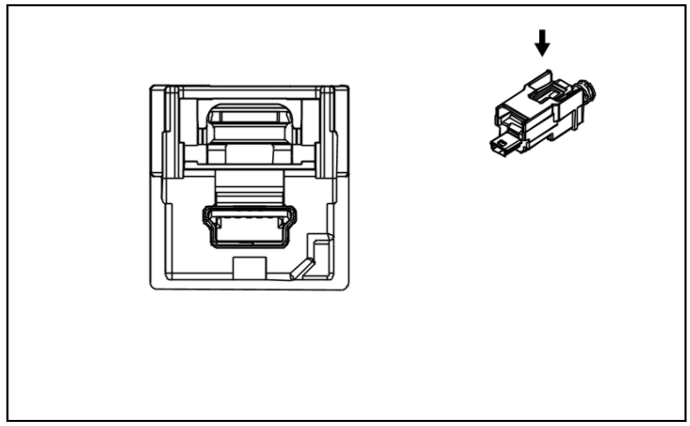
## X218 Instrument Panel Wiring Harness to Body Wiring Harness

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) GN | (1) 7214 | (1) I | (1) — | (1) Ethernet Bus 6 [-] | (1) 1 | (1) 0.35 | (1) GN | (1) 7214 | (1) II | (1) — |
| (2) 2 | (2) 0.35 | (2) YE | (2) 7215 | (2) I | (2) — | (2) Ethernet Bus 6 [+] | (2) 2 | (2) 0.35 | (2) YE | (2) 7215 | (2) II | (2) — |

### X226 Front Floor Console Wiring Harness to Instrument Panel Wiring Harness



3273655



2807425

**Connector Part Information**

- Harness Type: Front Floor Console Wiring Harness
- OEM Connector: 13699757
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 5-Way F 2.0 Mini-B USB Type( BK)

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 13576672
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 5-Way M 2.0 Mini-B USB Type( BK)

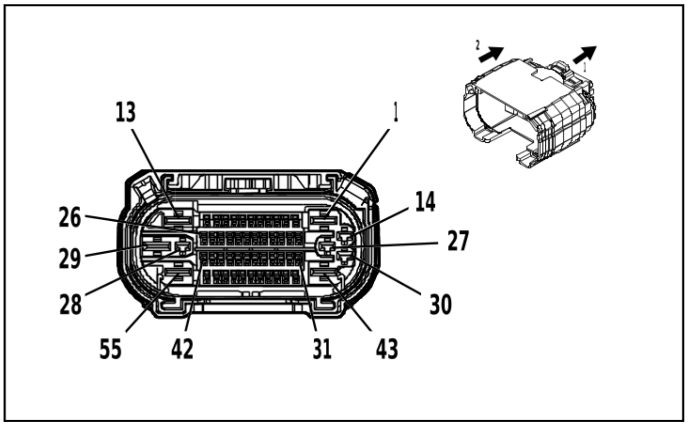
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

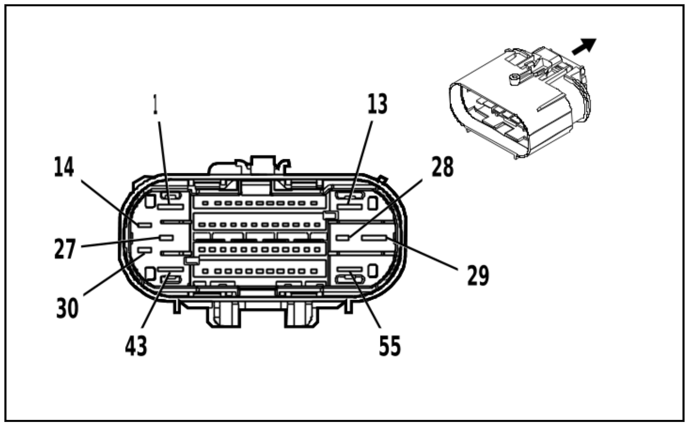
## X226 Front Floor Console Wiring Harness to Instrument Panel Wiring Harness

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BK | — | BK | USB | I | — | USB Serial Data | BK | — | — | — | — | — |
| | — | GN | USB | I | — | USB Serial Data | | — | BARE | USB | II | — |
| | — | RD | USB | I | — | USB Serial Data | | | | | | |
| | — | WH | USB | I | — | USB Serial Data | | | | | | |
| | — | BARE | USB | I | — | USB Serial Data | | | | | | |

### X227 Front Seat Wiring Harness - Center to Body Wiring Harness (AZ3)




4992168




4993301

**Connector Part Information**
- Harness Type: Front Seat Wiring Harness - Center
- OEM Connector: 13522700
- Service Connector: Service by Harness - See Part Catalog
- Description: 55-Way F 1.2 OCS, 2.8, 6.3 CTS Series, Sealed( BK)

**Connector Part Information**
- Harness Type: Body Wiring Harness
- OEM Connector: 35605244
- Service Connector: 84727364
- Description: 55-Way M 1.2 OCS, 2.8, 6.3 CTS Series, Sealed( BK)

## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |
| II | Not required | J-35616-35 (VT) | No Tool Required |
| III | 84867140 | J-35616-13 (BU) | J-38125-553 |
| IV | 84992391 | J-35616-5 (PU) | J-38125-36 |

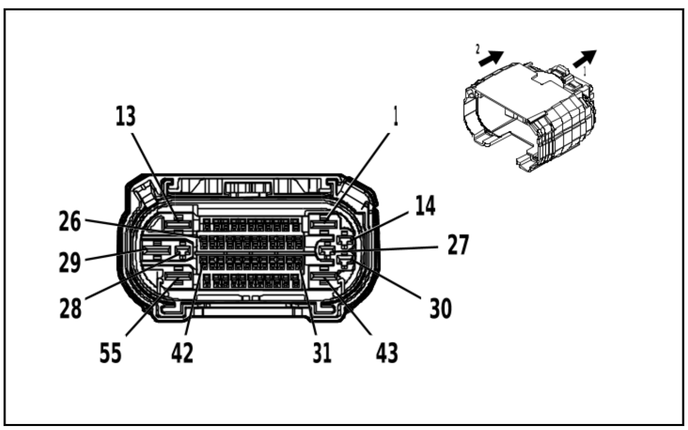
## X227 Front Seat Wiring Harness - Center to Body Wiring Harness (AZ3)

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 - 6 | — | — | — | — | — | Not Occupied | 1 - 6 | — | — | — | — | — |
| (7) 7 | (7) — | (7) — | (7) — | (7) — | (7) — | (7) Brake System Control Module LIN Bus 2 | (7) 7 | (7) 0.5 | (7) GN / BU | (7) 2733 | (7) III | (7) — |
| 8 - 13 | — | — | — | — | — | Not Occupied | 8 - 13 | — | — | — | — | — |
| (14) 14 | (14) 0.75 | (14) BK | (14) 10117 | (14) II | (14) — | (14) AC Outlet Phase A Control | (14) 14 | (14) 0.75 | (14) BK | (14) 10117 | (14) IV | (14) — |
| 15 | — | — | — | — | — | Not Occupied | 15 | — | — | — | — | — |
| (16) 16 | (16) 0.35 | (16) WH | (16) 4976 | (16) I | (16) — | (16) AUTOSAR CAN Bus [-] 3 Serial Data | (16) 16 | (16) — | (16) — | (16) — | (16) — | (16) — |
| (17) 17 | (17) 0.35 | (17) BU / BK | (17) 4977 | (17) I | (17) — | (17) AUTOSAR CAN Bus [+] 3 Serial Data | (17) 17 | (17) — | (17) — | (17) — | (17) — | (17) — |

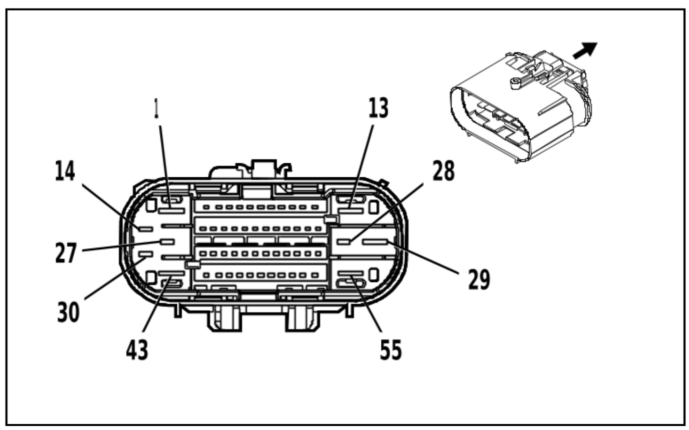
| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (18) 18 | (18) 0.35 | (18) WH | (18) 49 76 | (18) I | (18) — | (18) AUTOSA R CAN Bus [-] 3 Serial Data | (18) 18 | (18) — | (18) — | (18) — | (18) — | (18) — |
| (19) 19 | (19) 0.35 | (19) B U / BK | (19) 49 77 | (19) I | (19) — | (19) AUTOSA R CAN Bus [+] 3 Serial Data | (19) 19 | (19) — | (19) — | (19) — | (19) — | (19) — |
| 20 - 21 | — | — | — | — | — | Not Occupied | 20 - 21 | — | — | — | — | — |
| (22) 22 | (22) 0.5 | (22) B U / YE | (22) 49 84 | (22) I | (22) — | (22) AUTOSA R CAN Bus [-] 5 Serial Data | (22) 22 | (22) — | (22) — | (22) — | (22) — | (22) — |
| (23) 23 | (23) 0.5 | (23) B U / WH | (23) 49 85 | (23) I | (23) — | (23) AUTOSA R CAN Bus [+] 5 Serial Data | (23) 23 | (23) — | (23) — | (23) — | (23) — | (23) — |
| (24) 24 | (24) 0.5 | (24) B U / YE | (24) 49 84 | (24) I | (24) — | (24) AUTOSA R CAN Bus [-] 5 Serial Data | (24) 24 | (24) — | (24) — | (24) — | (24) — | (24) — |
| (25) 25 | (25) 0.5 | (25) B U / WH | (25) 49 85 | (25) I | (25) — | (25) AUTOSA R CAN Bus [+] 5 Serial Data | (25) 25 | (25) — | (25) — | (25) — | (25) — | (25) — |
| (26) 26 | (26) 0.75 | (26) B K | (26) 10 50 | (26) I | (26) — | (26) Ground | (26) 26 | (26) 0.75 | (26) B K | (26) 13 50 | (26) III | (26) — |
| (27) 27 | (27) 0.35 | (27) B K | (27) 10 116 | (27) II | (27) — | (27) AC Outlet Low Reference | (27) 27 | (27) 0.5 | (27) WH | (27) 10 116 | (27) IV | (27) — |
| 28 - 29 | — | — | — | — | — | Not Occupied | 28 - 29 | — | — | — | — | — |
| (30) 30 | (30) 0.75 | (30) R D | (30) 10 118 | (30) II | (30) — | (30) AC Outlet Phase B Control | (30) 30 | (30) 0.75 | (30) R D | (30) 10 118 | (30) IV | (30) — |
| 31 | — | — | — | — | — | Not Occupied | 31 | — | — | — | — | — |
| (32) 32 | (32) 0.5 | (32) B N / BK | (32) 49 96 | (32) I | (32) — | (32) Immobili zer Antenna Signal [+] | (32) 32 | (32) 0.35 | (32) B N / BK | (32) 49 96 | (32) III | (32) — |
| (33) 33 | (33) 0.5 | (33) WH / GY | (33) 49 97 | (33) I | (33) — | (33) Immobili zer Antenna Low Signal | (33) 33 | (33) 0.35 | (33) WH / GY | (33) 49 97 | (33) III | (33) — |
| 34 - 37 | — | — | — | — | — | Not Occupied | 34 - 37 | — | — | — | — | — |
| (38) 38 | (38) 0.75 | (38) V T / RD | (38) 40 49 | (38) I | (38) — | (38) AC Power Outlet Sensor High Reference | (38) 38 | (38) 0.5 | (38) V T / RD | (38) 40 49 | (38) III | (38) — |
| 39 | — | — | — | — | — | Not Occupied | 39 | — | — | — | — | — |
| (40) 40 | (40) 0.35 | (40) WH | (40) 40 55 | (40) I | (40) — | (40) Private Serial Data Powertrain CAN Bus [+] Serial Data | (40) 40 | (40) — | (40) — | (40) — | (40) — | (40) — |
| 41 | — | — | — | — | — | Not Occupied | 41 | — | — | — | — | — |
| (42) 42 | (42) 0.75 | (42) B U / BN | (42) 68 07 | (42) I | (42) — | (42) DC/AC Inverter Control | (42) 42 | (42) 0.5 | (42) B U / BN | (42) 68 07 | (42) III | (42) — |
| 43 | — | — | — | — | — | Not Occupied | 43 | — | — | — | — | — |

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (44) 44 | (44) 0.75 | (44) Y E | (44) 68 17 | (44) I | (44) — | (44) LED Backlight Dimming Control 1 | (44) 44 | (44) 0.75 | (44) Y E | (44) 68 17 | (44) III | (44) — |
| (45) 45 | (45) 0.35 | (45) B U / GY | (45) 40 54 | (45) I | (45) — | (45) Private Serial Data Powertrain CAN Bus [-] Serial Data | (45) 45 | (45) — | (45) — | (45) — | (45) — | (45) — |
| (46) 46 | (46) 0.35 | (46) WH | (46) 40 55 | (46) I | (46) — | (46) Private Serial Data Powertrain CAN Bus [+] Serial Data | (46) 46 | (46) — | (46) — | (46) — | (46) — | (46) — |
| (47) 47 | (47) 0.35 | (47) B K | (47) 13 50 | (47) I | (47) — | (47) Ground | (47) 47 | (47) 0.75 | (47) B K | (47) 13 50 | (47) III | (47) — |
| (48) 48 | (48) 0.35 | (48) V T | (48) 47 01 | (48) I | (48) — | (48) Retained Accessory Power Control | (48) 48 | (48) 0.35 | (48) V T | (48) 47 01 | (48) III | (48) — |
| 49 - 52 | — | — | — | — | — | Not Occupied | 49 - 52 | — | — | — | — | — |
| (53) 53 | (53) 0.35 | (53) B U / GY | (53) 40 54 | (53) I | (53) — | (53) Private Serial Data Powertrain CAN Bus [-] Serial Data | (53) 53 | (53) — | (53) — | (53) — | (53) — | (53) — |
| 54 - 55 | — | — | — | — | — | Not Occupied | 54 - 55 | — | — | — | — | — |

### X227 Front Seat Wiring Harness - Center to Body Wiring Harness (D07)




4992168




4993301

**Connector Part Information**
- Harness Type: Front Floor Console Wiring Harness
- OEM Connector: 13522700
- Service Connector: Service by Harness - See Part Catalog
- Description: 55-Way F 1.2 OCS, 2.8, 6.3 CTS Series, Sealed( BK)

**Connector Part Information**
- Harness Type: Body Wiring Harness
- OEM Connector: 35605244
- Service Connector: 84727364
- Description: 55-Way M 1.2 OCS, 2.8, 6.3 CTS Series, Sealed( BK)

## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |
| II | Not required | J-35616-16 (L-GN) | No Tool Required |
| III | Not required | J-35616-35 (VT) | No Tool Required |
| IV | Not required | J-35616-42 (RD) | No Tool Required |
| V | 84847992 | J-35616-32 (OG) | J-38125-36 |
| VI | 84867140 | J-35616-13 (BU) | J-38125-553 |
| VII | 84992391 | J-35616-5 (PU) | J-38125-36 |

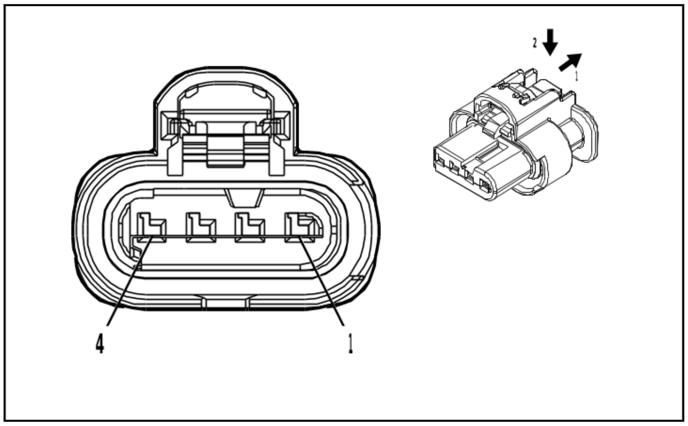
## X227 Front Seat Wiring Harness - Center to Body Wiring Harness (D07)

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 - 5 | — | — | — | — | — | Not Occupied | 1 - 5 | — | — | — | — | — |
| (6) 6 | (6) 0.5 | (6) RD / VT | (6) 2640 | (6) II | (6) — | (6) Battery Positive Voltage | (6) 6 | (6) 0.5 | (6) RD / VT | (6) 2640 | (6) VI | (6) — |
| (7) 7 | (7) 0.35 | (7) GN / BU | (7) 2733 | (7) I | (7) — | (7) Brake System Control Module LIN Bus 2 | (7) 7 | (7) 0.5 | (7) GN / BU | (7) 2733 | (7) VI | (7) — |
| 8 | — | — | — | — | — | Not Occupied | 8 | — | — | — | — | — |
| (9) 9 | (9) 0.5 | (9) RD / BU | (9) 1240 | (9) II | (9) — | (9) Battery Positive Voltage | (9) 9 | (9) 0.5 | (9) RD / BU | (9) 1240 | (9) VI | (9) — |
| (10) 10 | (10) 0.35 | (10) BN / BK | (10) 3552 | (10) I | (10) — | (10) Interior Passive Entry Antenna 1 High Signal | (10) 10 | (10) 0.35 | (10) BN / BK | (10) 3552 | (10) VI | (10) — |
| (11) 11 | (11) 0.35 | (11) WH | (11) 3553 | (11) I | (11) — | (11) Interior Passive Entry Antenna 1 Low Signal | (11) 11 | (11) 0.35 | (11) WH | (11) 3553 | (11) VI | (11) — |
| 12 - 13 | — | — | — | — | — | Not Occupied | 12 - 13 | — | — | — | — | — |
| (14) 14 | (14) 0.75 | (14) BK | (14) 10117 | (14) III | (14) — | (14) AC Outlet Phase A Control | (14) 14 | (14) 0.75 | (14) BK | (14) 10117 | (14) VII | (14) — |
| 15 - 21 | — | — | — | — | — | Not Occupied | 15 - 21 | — | — | — | — | — |
| (22) 22 | (22) 0.5 | (22) BU / YE | (22) 4984 | (22) II | (22) — | (22) AUTOSAR CAN Bus [-] 5 Serial Data | (22) 22 | (22) 0.5 | (22) BU / YE | (22) 4984 | (22) VI | (22) — |
| (23) 23 | (23) 0.5 | (23) BU / WH | (23) 4985 | (23) II | (23) — | (23) AUTOSAR CAN Bus [+] 5 Serial Data | (23) 23 | (23) 0.5 | (23) BU / WH | (23) 4985 | (23) VI | (23) — |
| (24) 24 | (24) 0.5 | (24) BU / YE | (24) 4984 | (24) II | (24) — | (24) AUTOSAR CAN Bus [-] 5 Serial Data | (24) 24 | (24) 0.5 | (24) BU / YE | (24) 4984 | (24) VI | (24) — |
| (25) 25 | (25) 0.5 | (25) BU / WH | (25) 4985 | (25) II | (25) — | (25) AUTOSAR CAN Bus [+] 5 Serial Data | (25) 25 | (25) 0.5 | (25) BU / WH | (25) 4985 | (25) VI | (25) — |

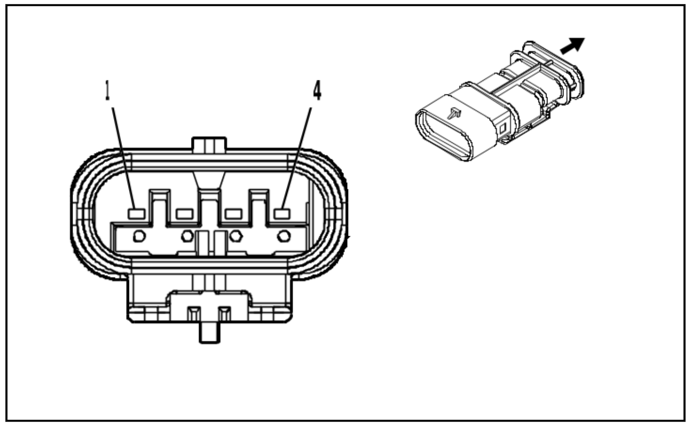
| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (26) 26 | (26) 0.5 | (26) B K | (26) 13 50 | (26) II | (26) — | (26) Ground | (26) 26 | (26) 0.75 | (26) B K | (26) 13 50 | (26) VI | (26) — |
| (27) 27 | (27) 0.5 | (27) WH | (27) 10 116 | (27) III | (27) — | (27) AC Outlet Low Reference | (27) 27 | (27) 0.5 | (27) WH | (27) 10 116 | (27) VII | (27) — |
| 28 - 29 | — | — | — | — | — | Not Occupied | 28 - 29 | — | — | — | — | — |
| (30) 30 | (30) 0.75 | (30) R D | (30) 10 118 | (30) III | (30) — | (30) AC Outlet Phase B Control | (30) 30 | (30) 0.75 | (30) R D | (30) 10 118 | (30) VII | (30) — |
| 31 | — | — | — | — | — | Not Occupied | 31 | — | — | — | — | — |
| (32) 32 | (32) 0.35 | (32) B N / BK | (32) 49 96 | (32) I | (32) — | (32) Immobili zer Antenna Signal [+] | (32) 32 | (32) 0.35 | (32) B N / BK | (32) 49 96 | (32) VI | (32) — |
| (33) 33 | (33) 0.35 | (33) WH / GY | (33) 49 97 | (33) I | (33) — | (33) Immobili zer Antenna Low Signal | (33) 33 | (33) 0.35 | (33) WH / GY | (33) 49 97 | (33) VI | (33) — |
| 34 - 35 | — | — | — | — | — | Not Occupied | 34 - 35 | — | — | — | — | — |
| (36) 36 | (36) 0.5 | (36) R D / YE | (36) 23 40 | (36) II | (36) — | (36) Battery Positive Volt- age | (36) 36 | (36) 0.5 | (36) R D / YE | (36) 23 40 | (36) VI | (36) — |
| (37) 37 | (37) 0.5 | (37) G N / VT | (37) 28 57 | (37) II | (37) — | (37) Body Control Module LIN Bus 11 | (37) 37 | (37) 0.35 | (37) G N / VT | (37) 28 57 | (37) VI | (37) — |
| (38) 38 | (38) 0.5 | (38) V T / RD | (38) 40 49 | (38) II | (38) — | (38) AC Power Outlet Sensor High Reference | (38) 38 | (38) 0.5 | (38) V T / RD | (38) 40 49 | (38) VI | (38) — |
| 39 - 41 | — | — | — | — | — | Not Occupied | 39 - 41 | — | — | — | — | — |
| (42) 42 | (42) 0.5 | (42) B U / BN | (42) 68 07 | (42) II | (42) — | (42) DC/AC Inverter Control | (42) 42 | (42) 0.5 | (42) B U / BN | (42) 68 07 | (42) VI | (42) — |
| (43) 43 | (43) 0.5 | (43) G N / VT | (43) 47 86 | (43) IV | (43) — | (43) Dome/ Reading Lamp Enable Signal | (43) 43 | (43) 0.5 | (43) G N / VT | (43) 47 86 | (43) V | (43) — |
| (44) 44 | (44) 0.75 | (44) Y E | (44) 68 17 | (44) II | (44) — | (44) LED Backlight Dimming Control 1 | (44) 44 | (44) 0.75 | (44) Y E | (44) 68 17 | (44) VI | (44) — |
| 45 - 46 | — | — | — | — | — | Not Occupied | 45 - 46 | — | — | — | — | — |
| (47) 47 | (47) 0.5 | (47) B K | (47) 13 50 | (47) II | (47) — | (47) Ground | (47) 47 | (47) 0.75 | (47) B K | (47) 13 50 | (47) VI | (47) — |
| (48) 48 | (48) 0.35 | (48) V T | (48) 47 01 | (48) I | (48) — | (48) Retained Accessory Power Control | (48) 48 | (48) 0.35 | (48) V T | (48) 47 01 | (48) VI | (48) — |
| 49 - 50 | — | — | — | — | — | Not Occupied | 49 - 50 | — | — | — | — | — |
| (51) 51 | (51) 0.5 | (51) B K / WH | (51) 14 51 | (51) II | (51) — | (51) Signal Ground | (51) 51 | (51) 0.75 | (51) B K / WH | (51) 14 51 | (51) VI | (51) — |

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (52) 52 | (52) 0.5 | (52) BK / WH | (52) 1051 | (52) II | (52) — | (52) Signal Ground<br>(52) Signal Ground | (52) 52 | (52) 0.75<br>(52) 0.5 | (52) BK / WH<br>(52) BK / WH | (52) 1051<br>(52) 1051 | (52) VI<br>(52) VI | (52) —<br>(52) — |
| 53 - 55 | — | — | — | — | — | Not Occupied | 53 - 55 | — | — | — | — | — |

### X237 Instrument Panel Wiring Harness to Instrument Panel Airbag Wiring Harness




4900699




5149228

**Connector Part Information**
- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 2296700-3
- Service Connector: 19371193
- Description: 4-Way F 1.2 MCON-CB Series, Sealed( YE)

**Connector Part Information**
- Harness Type: Instrument Panel Airbag Wiring Harness
- OEM Connector: Not Available
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way M ( YE)

## Terminal Part Information

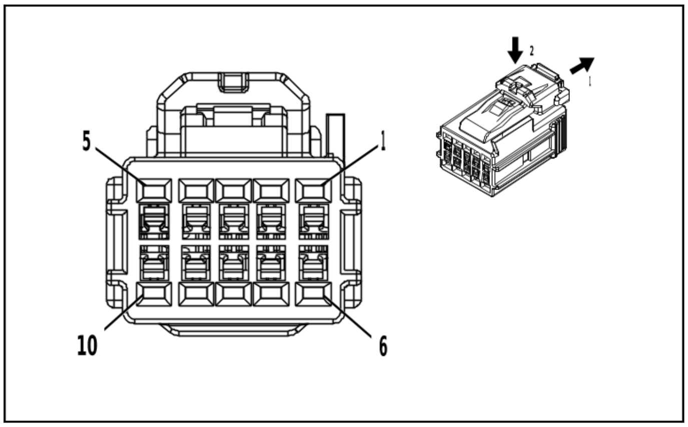
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |
| II | Not required | No Tool Required | No Tool Required |

## X237 Instrument Panel Wiring Harness to Instrument Panel Airbag Wiring Harness

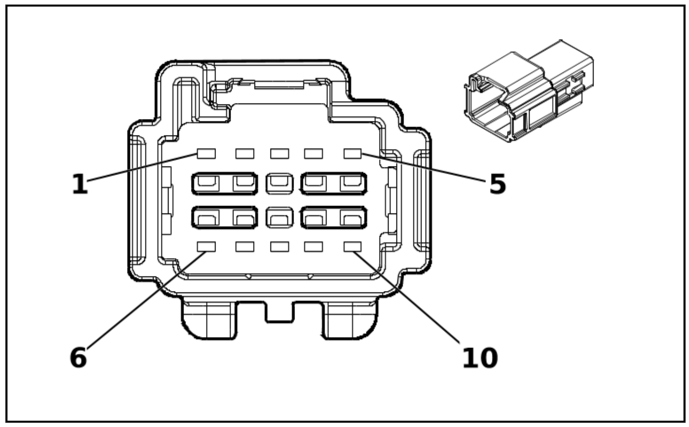
| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) YE / OG | (1) 3025 | (1) I | (1) — | (1) Passenger Instrument Panel Air Bag Stage 1 High Control | (1) 1 | (1) 0.35 | (1) YE / OG | (1) 3025 | (1) II | (1) — |
| (2) 2 | (2) 0.35 | (2) OG / WH | (2) 3024 | (2) I | (2) — | (2) Passenger Instrument Panel Air Bag Stage 1 Low Control | (2) 2 | (2) 0.35 | (2) OG / WH | (2) 3024 | (2) II | (2) — |

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (3) 3 | (3) 0.35 | (3) GY / OG | (3) 3027 | (3) I | (3) — | (3) Passenger Instrument Panel Air Bag Stage 2 High Control | (3) 3 | (3) 0.35 | (3) GY / OG | (3) 3027 | (3) II | (3) — |
| (4) 4 | (4) 0.35 | (4) OG / VT | (4) 3026 | (4) I | (4) — | (4) Passenger Instrument Panel Air Bag Stage 2 Low Control | (4) 4 | (4) 0.35 | (4) OG / VT | (4) 3026 | (4) II | (4) — |

### X250 Instrument Panel Wiring Harness to Heater Wiring Harness




4254030




5355759

**Connector Part Information**
- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 6098-9004
- Service Connector: 13532428
- Description: 10-Way F 1.2 Series( BK)

**Connector Part Information**
- Harness Type: Heater Wiring Harness
- OEM Connector: 6098-9079
- Service Connector: Service by Harness - See Part Catalog
- Description: 10-Way M 1.2 MCON Series( BK)

## Terminal Part Information

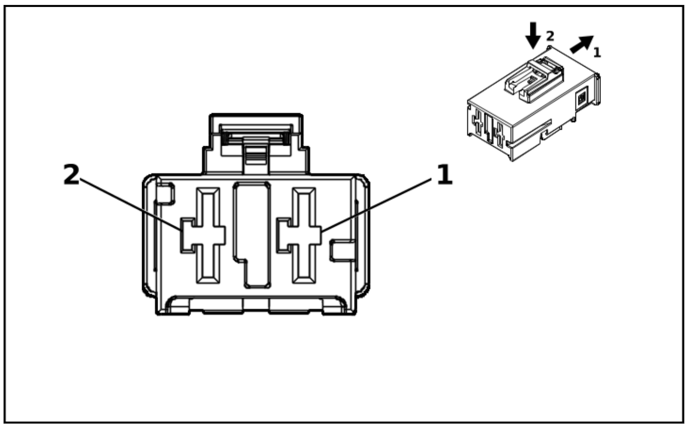
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 84962854 | J-35616-12 (BU) | J-38125-215A |
| II | Not required | J-35616-17 (L-GN) | No Tool Required |

## X250 Instrument Panel Wiring Harness to Heater Wiring Harness

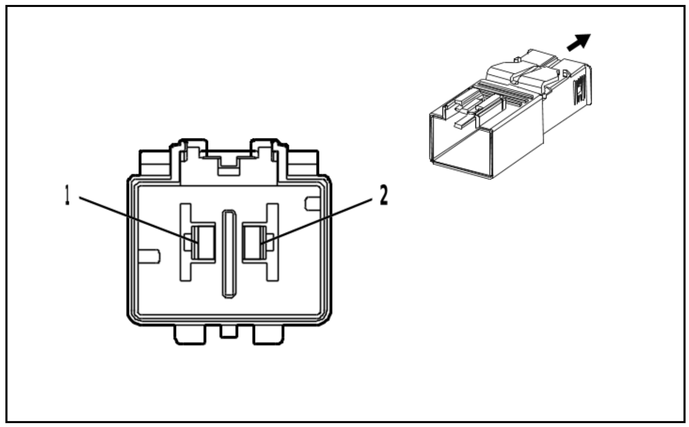
| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | — | — | — | — | — | Not Occupied | 1 | — | — | — | — | — |
| (2) 2 | (2) 0.5 | (2) BK | (2) 1050 | (2) I | (2) — | (2) Ground | (2) 2 | (2) 0.35 | (2) BK | (2) 1050 | (2) II | (2) — |
| 3 - 4 | — | — | — | — | — | Not Occupied | 3 - 4 | — | — | — | — | — |
| (5) 5 | (5) 0.35 | (5) GY | (5) 6137 | (5) I | (5) — | (5) Air Conditioning Evaporator Temperature Sensor Signal | (5) 5 | (5) 0.35 | (5) BN | (5) 6137 | (5) II | (5) — |

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (6) 6 | (6) 0. 35 | (6) G N / VT | (6) 285 2 | (6) I | (6) — | (6) Body Control Module LIN Bus 6 | (6) 6 | (6) 0. 35 | (6) BU | (6) 285 2 | (6) II | (6) — |
| (7) 7 | (7) 0. 35 | (7) BK / YE | (7) 407 | (7) I | (7) — | (7) Sensor Low Reference | (7) 7 | (7) 0. 35 | (7) BK / YE | (7) 407 | (7) II | (7) — |
| (8) 8 | (8) 0. 5 | (8) VT / BK | (8) 339 | (8) I | (8) — | (8) Run/ Crank Ignition 1 Voltage | (8) 8 | (8) 0. 35 | (8) BN / VT | (8) 339 | (8) II | (8) — |
| (9) 9 | (9) 0. 35 | (9) W H / YE | (9) 463 4 | (9) I | (9) — | (9) HVAC Remote Enable Signal | (9) 9 | (9) 0. 35 | (9) RD | (9) 463 4 | (9) II | (9) — |
| 10 | — | — | — | — | — | Not Occupied | 10 | — | — | — | — | — |

**X251 Air Heater Jumper Wiring Harness to Body Wiring Harness**




5187955




4891120

**Connector Part Information**
- Harness Type: Air Heater Jumper Wiring Harness
- OEM Connector: Not Available
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F

**Connector Part Information**
- Harness Type: Body Wiring Harness
- OEM Connector: 2317373-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way M 9.5 MCON-LL Series( BK)

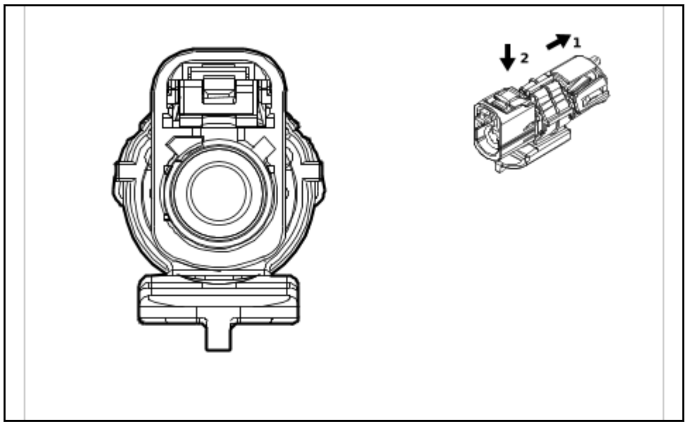
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |
| II | Not required | J-35616-21 (RD) | No Tool Required |

## X251 Air Heater Jumper Wiring Harness to Body Wiring Harness

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | — | — | — | — | — | Not Occupied | 1 | — | — | — | — | — |
| (2) 2 | (2) 1 0 | (2) RD / GY | (2) 642 | (2) I | (2) — | (2) Battery Positive Volt- age | (2) 2 | (2) 1 0 | (2) RD / GY | (2) 642 | (2) II | (2) — |

### X309A Body Wiring Harness to Inside Rearview Mirror Wiring Harness

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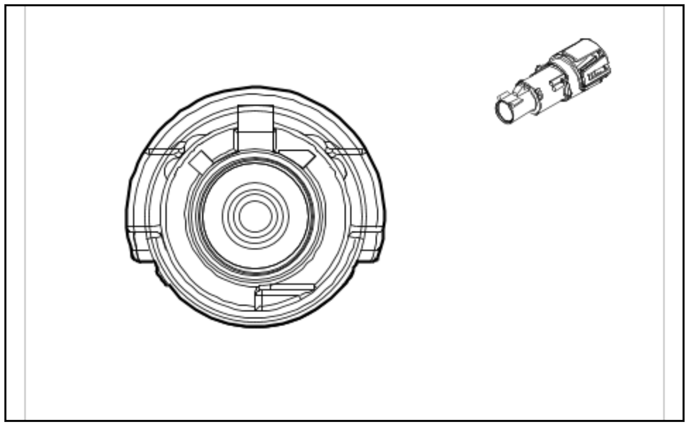


5518522

**Connector Part Information**

- Harness Type: Body Wiring Harness COAX
- OEM Connector: 35187047
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type, Sealed( BK)

**Connector Part Information**

- Harness Type: Inside Rearview Mirror Wiring Harness COAX
- OEM Connector: 33355538
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way M Coax Type( BK)

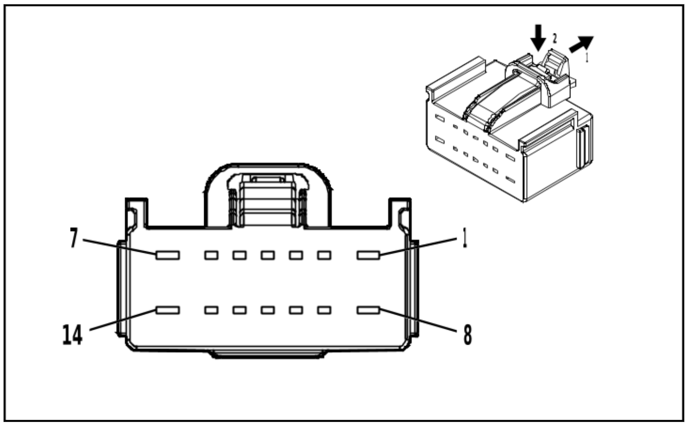
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

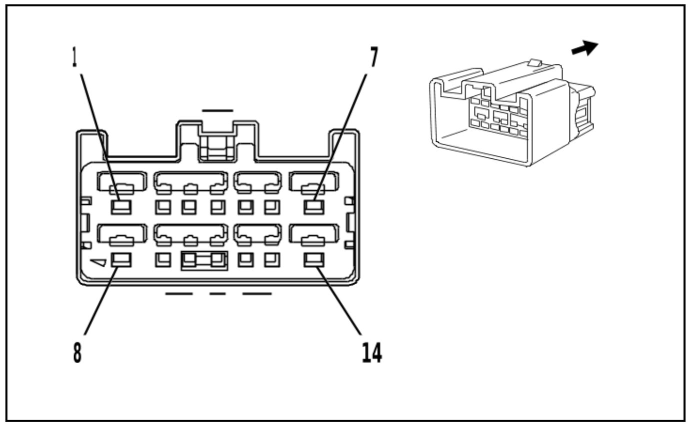
## X309A Body Wiring Harness to Inside Rearview Mirror Wiring Harness

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| — | — | Coax Cable | — | I | — | Cargo Bed Rear Vision Camera Coaxial Video Signal | — | — | Coax Cable | — | I | — |

### X324 Body Wiring Harness to Body Rear Wiring Harness Extension Harness




4934172




1283905

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 7289-7630-30
- Service Connector: 13513604
- Description: 14-Way F 1.5, 2.8 YESC Series( BK)

**Connector Part Information**

- Harness Type: Body Rear Wiring Harness Extension Harness
- OEM Connector: 7282-6447-40
- Service Connector: Service by Harness - See Part Catalog
- Description: 14-Way M 1.5, 2.8 YESC Series( L-GY)

## Terminal Part Information

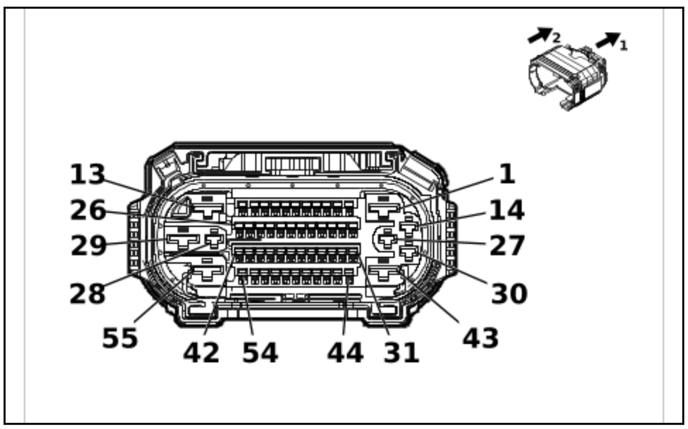
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 13575850 | J-35616-2A (GY) | J-38125-557 |
| II | 84962855 | J-35616-4A (PU) | J-38125-11A |
| III | Not required | J-35616-3 (GY) | No Tool Required |
| IV | Not required | J-35616-5 (PU) | No Tool Required |

## X324 Body Wiring Harness to Body Rear Wiring Harness Extension Harness

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) BK | (1) 10117 | (1) II | (1) — | (1) AC Outlet Phase A Control | (1) 1 | (1) 0.75 | (1) BK | (1) 10117 | (1) IV | (1) — |
| (2) 2 | (2) 0.5 | (2) VT / RD | (2) 4049 | (2) I | (2) — | (2) AC Power Outlet Sensor High Reference | (2) 2 | (2) 0.5 | (2) VT / RD | (2) 4049 | (2) III | (2) — |
| (3) 3 | (3) 0.35 | (3) VT / WH | (3) 239 | (3) I | (3) — | (3) Run/ Crank Ignition 1 Voltage | (3) 3 | (3) 0.35 | (3) VT / WH | (3) 239 | (3) III | (3) — |
| (4) 4 | (4) 0.5 | (4) WH / GN | (4) 4628 | (4) I | (4) — | (4) DC/AC Inverter Relay Control | (4) 4 | (4) 0.5 | (4) WH / GN | (4) 4628 | (4) III | (4) — |
| (5) 5 | (5) 0.5 | (5) BU / BN | (5) 6807 | (5) I | (5) — | (5) DC/AC Inverter Control | (5) 5 | (5) 0.5 | (5) BU / BN | (5) 6807 | (5) III | (5) — |
| 6 | — | — | — | — | — | Not Occupied | 6 | — | — | — | — | — |
| (7) 7 | (7) 0.75 | (7) BK / WH | (7) 10120 | (7) II | (7) — | (7) AC Outlet 2 Phase A Control | (7) 7 | (7) 0.75 | (7) BK / WH | (7) 10120 | (7) IV | (7) — |

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (8) 8 | (8) 0. 75 | (8) RD | (8) 101 18 | (8) II | (8) — | (8) AC Outlet Phase B Control | (8) 8 | (8) 0. 75 | (8) RD | (8) 101 18 | (8) IV | (8) — |
| (9) 9 | (9) 0. 35 | (9) W H | (9) 101 16 | (9) I | (9) — | (9) AC Outlet Low Reference | (9) 9 | (9) 0. 35 | (9) BA RE | (9) 101 16 | (9) III | (9) — |
| (10) 10 | (10) 0.35 | (10) G N / BU | (10) 61 33 | (10) I | (10) — | (10) Body Control Module LIN Bus 2 | (10) 10 | (10) 0.5 | (10) G N / BU | (10) 61 33 | (10) III | (10) — |
| 11 | — | — | — | — | — | Not Occupied | 11 | — | — | — | — | — |
| (12) 12 | (12) 0.5 | (12) G N / BN | (12) 22 66 | (12) I | (12) — | (12) DC/AC Inverter Control 2 | (12) 12 | (12) 0.5 | (12) G N / BN | (12) 22 66 | (12) III | (12) — |
| (13) 13 | (13) 0.35 | (13) B ARE | (13) 10 119 | (13) I | (13) — | (13) AC Outlet 2 Low Reference | (13) 13 | (13) 0.35 | (13) B N | (13) 10 119 | (13) III | (13) — |
| (14) 14 | (14) 0.75 | (14) R D / WH | (14) 10 121 | (14) II | (14) — | (14) AC Outlet 2 Phase B Control | (14) 14 | (14) 0.75 | (14) R D / WH | (14) 10 121 | (14) IV | (14) — |

**X331 Front Seat Wiring Harness - Driver to Body Wiring Harness**

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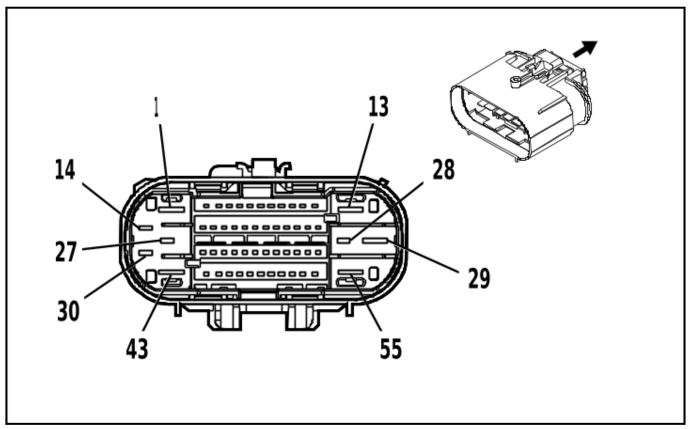



4993301

**Connector Part Information**

- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 35572204
- Service Connector: Service by Harness - See Part Catalog
- Description: 55-Way F 1.2 OCS, 2.8, 6.3 CTS Series, Sealed( BK)

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 35601287
- Service Connector: 84727364
- Description: 55-Way M 1.2 OCS, 2.8, 6.3 CTS Series, Sealed( BK)

## Terminal Part Information

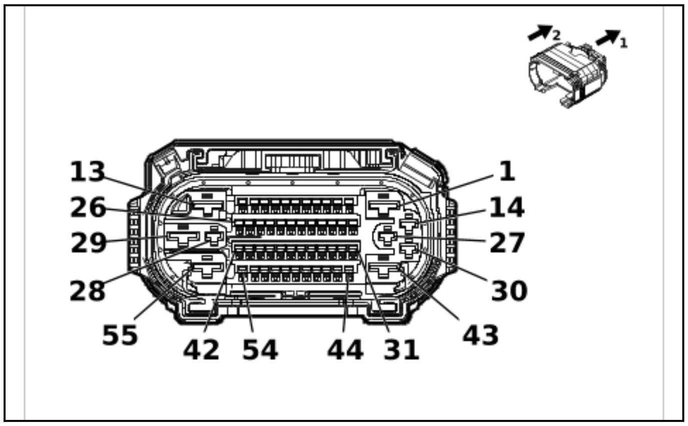
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |
| II | Not required | J-35616-42 (RD) | No Tool Required |
| III | Not required | No Tool Required | No Tool Required |
| IV | 84847992 | J-35616-32 (OG) | J-38125-36 |
| V | 84867140 | J-35616-13 (BU) | J-38125-553 |

## X331 Front Seat Wiring Harness - Driver to Body Wiring Harness

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 2.5 | (1) BK | (1) 1550 | (1) II | (1) — | (1) Ground | (1) 1 | (1) 2.5 | (1) BK | (1) 1550 | (1) IV | (1) — |
| 2 - 3 | — | — | — | — | — | Not Occupied | 2 - 3 | — | — | — | — | — |
| (4) 4 | (4) 0.5<br>(4) 0.75 | (4) RD / BN<br>(4) RD / BN | (4) 2240<br>(4) 2240 | (4) I<br>(4) I | (4) A45<br>(4) - A45 | (4) Battery Positive Voltage<br>(4) Battery Positive Voltage | (4) 4 | (4) 0.5 | (4) RD / BN | (4) 2240 | (4) V | (4) — |
| (5) 5 | (5) 0.35 | (5) GN / WH | (5) 7530 | (5) I | (5) — | (5) Driver Seat Adjuster Memory Module LIN Bus 1 | (5) 5 | (5) — | (5) — | (5) — | (5) — | (5) — |
| 6 | — | — | — | — | — | Not Occupied | 6 | — | — | — | — | — |
| (7) 7 | (7) 0.35 | (7) WH | (7) 615 | (7) I | (7) — | (7) Seat Memory Switch Signal 1 | (7) 7 | (7) 0.35 | (7) WH | (7) 615 | (7) V | (7) — |
| (8) 8 | (8) 0.35 | (8) BU / GN | (8) 614 | (8) I | (8) — | (8) Seat Memory Switch Set Signal | (8) 8 | (8) 0.35 | (8) BU / GN | (8) 614 | (8) V | (8) — |
| 9 - 14 | — | — | — | — | — | Not Occupied | 9 - 14 | — | — | — | — | — |
| (15) 15 | (15) 0.75 | (15) BN / VT | (15) 2077 | (15) I | (15) — | (15) Driver Seat Heating Element Control | (15) 15 | (15) 0.75 | (15) BN / VT | (15) 2077 | (15) V | (15) — |
| (16) 16 | (16) 0.75 | (16) BN / BK | (16) 2078 | (16) I | (16) — | (16) Driver Seat Heating Element Low Reference | (16) 16 | (16) 0.75 | (16) BN / BK | (16) 2078 | (16) V | (16) — |
| (17) 17 | (17) 0.5 | (17) YE / GY | (17) 2079 | (17) I | (17) — | (17) Driver Seat Heating Temperature Sensor Signal | (17) 17 | (17) 0.5 | (17) YE / GY | (17) 2079 | (17) V | (17) — |
| (18) 18 | (18) 0.5 | (18) BK / YE | (18) 2080 | (18) I | (18) — | (18) Driver Heated Seat Thermistor Low Reference | (18) 18 | (18) 0.5 | (18) BK / YE | (18) 2080 | (18) V | (18) — |
| (19) 19 | (19) 0.5 | (19) BU | (19) 2425 | (19) I | (19) — | (19) Driver Seat Back Heating Temperature Sensor Signal | (19) 19 | (19) 0.5 | (19) BU | (19) 2425 | (19) V | (19) — |
| (20) 20 | (20) 0.75 | (20) BN | (20) 2432 | (20) I | (20) — | (20) Driver Seat Back Heating Element Control | (20) 20 | (20) 0.75 | (20) BN | (20) 2432 | (20) V | (20) — |
| 21 - 28 | — | — | — | — | — | Not Occupied | 21 - 28 | — | — | — | — | — |
| (29) 29 | (29) 2.5 | (29) RD / YE | (29) 5040 | (29) II | (29) — | (29) Battery Positive Voltage | (29) 29 | (29) 2.5 | (29) RD / YE | (29) 5040 | (29) IV | (29) — |

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 30 | — | — | — | — | — | Not Occupied | 30 | — | — | — | — | — |
| (31) 31 | (31) 0.5 | (31) O G / GY | (31) 26 52 | (31) I | (31) — | (31) Driver Seat Belt Sensor Signal | (31) 31 | (31) 0.35 | (31) O G / BN | (31) 23 8 | (31) V | (31) — |
| (32) 32 | (32) 0.5 | (32) B K / OG | (32) 13 63 | (32) I | (32) — | (32) Driver Seat Belt Switch Low Reference | (32) 32 | (32) 0.5 | (32) B K / OG | (32) 13 63 | (32) V | (32) — |
| 33 | — | — | — | — | — | Not Occupied | 33 | — | — | — | — | — |
| (34) 34 | (34) 0.5 | (34) B K / OG | (34) 49 63 | (34) III | (34) — | (34) Driver Seat Back Air Bag Low Control | (34) 34 | (34) 0.5 | (34) B K / OG | (34) 49 63 | (34) V | (34) — |
| (35) 35 | (35) 0.5 | (35) O G / BU | (35) 49 62 | (35) III | (35) — | (35) Driver Seat Back Air Bag High Control | (35) 35 | (35) 0.5 | (35) O G / BU | (35) 49 62 | (35) V | (35) — |
| 36 - 40 | — | — | — | — | — | Not Occupied | 36 - 40 | — | — | — | — | — |
| (41) 41 | (41) 0.35 | (41) B U / VT | (41) 41 01 | (41) I | (41) — | (41) AUTOSA R CAN Bus [+] 4 Serial Data | (41) 41 | (41) 0.5 | (41) B U / VT | (41) 41 01 | (41) V | (41) — |
| (42) 42 | (42) 0.35 | (42) WH | (42) 41 00 | (42) I | (42) — | (42) AUTOSA R CAN Bus [-] 4 Serial Data | (42) 42 | (42) 0.5 | (42) WH | (42) 41 00 | (42) V | (42) — |
| 43 - 49 | — | — | — | — | — | Not Occupied | 43 - 49 | — | — | — | — | — |
| (50) 50 | (50) 0.35 | (50) B U / VT | (50) 41 01 | (50) I | (50) — | (50) AUTOSA R CAN Bus [+] 4 Serial Data | (50) 50 | (50) 0.5 | (50) B U / VT | (50) 41 01 | (50) V | (50) — |
| (51) 51 | (51) 0.35 | (51) WH | (51) 41 00 | (51) I | (51) — | (51) AUTOSA R CAN Bus [-] 4 Serial Data | (51) 51 | (51) 0.5 | (51) WH | (51) 41 00 | (51) V | (51) — |
| (52) 52 | (52) 0.5 | (52) G N / VT | (52) 59 06 | (52) I | (52) — | (52) Driver Seat Blower Motor Control 1 | (52) 52 | (52) 0.5 | (52) G N / VT | (52) 59 06 | (52) V | (52) — |
| (53) 53 | (53) 0.75 | (53) V T / WH | (53) 11 39 | (53) I | (53) — | (53) Run/ Crank Ignition 1 Voltage | (53) 53 | (53) 0.75 | (53) V T / WH | (53) 11 39 | (53) V | (53) — |
| 54 - 55 | — | — | — | — | — | Not Occupied | 54 - 55 | — | — | — | — | — |

### X336 Front Seat Wiring Harness - Passenger to Body Wiring Harness

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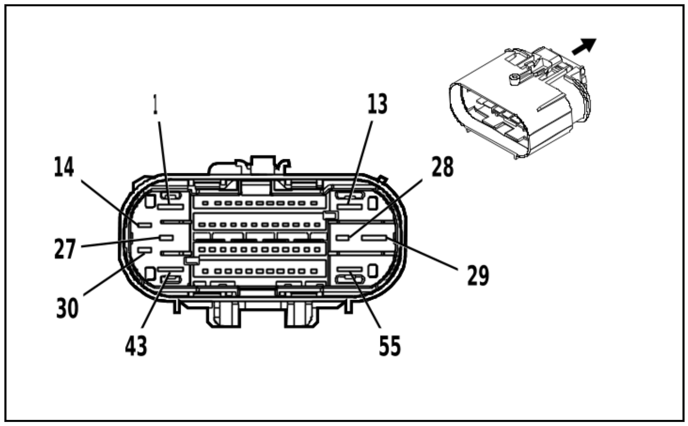



4993301

**Connector Part Information**
- Harness Type: Front Seat Wiring Harness - Passenger
- OEM Connector: 35572205
- Service Connector: Service by Harness - See Part Catalog
- Description: 55-Way F 1.2 OCS, 2.8, 6.3 CTS Series, Sealed( BK)

**Connector Part Information**
- Harness Type: Body Wiring Harness
- OEM Connector: 35592429
- Service Connector: 84727364
- Description: 55-Way M 1.2 OCS, 2.8, 6.3 CTS Series, Sealed( BK)

## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |
| II | Not required | J-35616-42 (RD) | No Tool Required |
| III | Not required | No Tool Required | No Tool Required |
| IV | 84847992 | J-35616-32 (OG) | J-38125-36 |
| V | 84867140 | J-35616-13 (BU) | J-38125-553 |

## X336 Front Seat Wiring Harness - Passenger to Body Wiring Harness

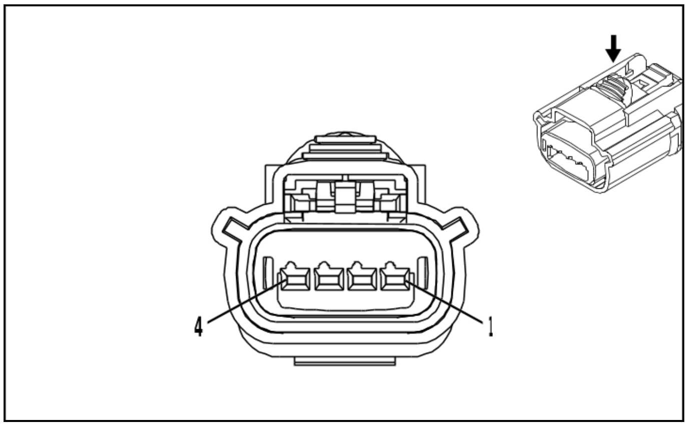
| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75<br>(1) 2.5 | (1) BK<br>(1) BK | (1) 1350<br>(1) 1350 | (1) II<br>(1) II | (1) —<br>(1) — | (1) Ground<br>(1) Ground | (1) 1 | (1) 2.5 | (1) BK | (1) 1350 | (1) IV | (1) — |
| 2 | — | — | — | — | — | Not Occupied | 2 | — | — | — | — | — |
| (3) 3 | (3) 0.75 | (3) RD / GN | (3) 6140 | (3) I | (3) — | (3) Battery Positive Voltage | (3) 3 | (3) 0.75 | (3) RD / GN | (3) 6140 | (3) V | (3) — |
| (4) 4 | (4) 0.5<br>(4) 0.75 | (4) RD / BN<br>(4) RD / BN | (4) 2240<br>(4) 2240 | (4) I<br>(4) I | (4) —<br>(4) — | (4) Battery Positive Voltage<br>(4) Battery Positive Voltage | (4) 4 | (4) 0.5 | (4) RD / BN | (4) 2240 | (4) V | (4) — |
| (5) 5 | (5) 0.75 | (5) RD / BN | (5) 6640 | (5) I | (5) — | (5) Battery Positive Voltage | (5) 5 | (5) 0.75 | (5) RD / BN | (5) 6640 | (5) V | (5) — |
| 6 | — | — | — | — | — | Not Occupied | 6 | — | — | — | — | — |

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (7) 7 | (7) 0.5 | (7) BU | (7) 4987 | (7) I | (7) — | (7) AUTOSAR CAN Bus [+] 1 Serial Data | (7) 7 | (7) 0.5 | (7) BU | (7) 4987 | (7) V | (7) — |
| (8) 8 | (8) 0.5 | (8) WH | (8) 4986 | (8) I | (8) — | (8) AUTOSAR CAN Bus [-] 1 Serial Data | (8) 8 | (8) 0.5 | (8) WH | (8) 4986 | (8) V | (8) — |
| 9 - 14 | — | — | — | — | — | Not Occupied | 9 - 14 | — | — | — | — | — |
| (15) 15 | (15) 0.75 | (15) BN / VT | (15) 2077 | (15) I | (15) — | (15) Driver Seat Heating Element Control | (15) 15 | (15) 0.75 | (15) BN / VT | (15) 2077 | (15) V | (15) — |
| (16) 16 | (16) 0.75 | (16) BN / BK | (16) 2078 | (16) I | (16) — | (16) Driver Seat Heating Element Low Reference | (16) 16 | (16) 0.75 | (16) BN / BK | (16) 2078 | (16) V | (16) — |
| (17) 17 | (17) 0.5 | (17) YE / GY | (17) 2079 | (17) I | (17) — | (17) Driver Seat Heating Temperature Sensor Signal | (17) 17 | (17) 0.5 | (17) YE / GY | (17) 2079 | (17) V | (17) — |
| (18) 18 | (18) 0.5 | (18) BK / YE | (18) 2080 | (18) I | (18) — | (18) Driver Heated Seat Thermistor Low Reference | (18) 18 | (18) 0.5 | (18) BK / YE | (18) 2080 | (18) V | (18) — |
| (19) 19 | (19) 0.5 | (19) BU | (19) 2425 | (19) I | (19) — | (19) Driver Seat Back Heating Temperature Sensor Signal | (19) 19 | (19) 0.5 | (19) BU | (19) 2425 | (19) V | (19) — |
| (20) 20 | (20) 0.75 | (20) BN | (20) 2432 | (20) I | (20) — | (20) Driver Seat Back Heating Element Control | (20) 20 | (20) 0.75 | (20) BN | (20) 2432 | (20) V | (20) — |
| (21) 21 | (21) 0.5 | (21) GN / VT | (21) 2857 | (21) I | (21) — | (21) Body Control Module LIN Bus 11 | (21) 21 | (21) 0.35 | (21) GN / VT | (21) 2857 | (21) V | (21) — |
| 22 | — | — | — | — | — | Not Occupied | 22 | — | — | — | — | — |
| (23) 23 | (23) 0.5 | (23) RD / GN | (23) 4440 | (23) I | (23) — | (23) Battery Positive Voltage | (23) 23 | (23) 0.5 | (23) RD / GN | (23) 4440 | (23) V | (23) — |
| (24) 24 | (24) 0.5<br>(24) 0.5 | (24) GY / OG<br>(24) GY / OG | (24) 3746<br>(24) 3946 | (24) I<br>(24) I | (24) —<br>(24) — | (24) Camshaft Exhaust Lobe Axial Position Signal 1<br>(24) Passenger Automatic Locking Retractor Switch Low Reference | (24) 24 | (24) 0.35 | (24) GY / OG | (24) 3946 | (24) V | (24) — |

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (25) 25 | (25) 0.5<br>(25) 0.5 | (25) O G / BN<br>(25) O G / BN | (25) 37 47<br>(25) 39 47 | (25) I<br>(25) I | (25) —<br>(25) — | (25) Camshaf t Exhaust Lobe Axial Position Signal 2<br>(25) Passeng er Automatic Locking Retractor Switch Signal | (25) 25 | (25) 0.35 | (25) O G / BN | (25) 39 47 | (25) V | (25) — |
| (26) 26 | (26) 0.5 | (26) B K / WH | (26) 12 51 | (26) I | (26) — | (26) Signal Ground | (26) 26 | (26) 0.5 | (26) B K / WH | (26) 12 51 | (26) V | (26) — |
| 27 - 28 | — | — | — | — | — | Not Occupied | 27 - 28 | — | — | — | — | — |
| (29) 29 | (29) 2.5 | (29) R D / YE | (29) 74 40 | (29) II | (29) — | (29) Battery Positive Volt- age | (29) 29 | (29) 2.5 | (29) R D / YE | (29) 74 40 | (29) IV | (29) — |
| 30 | — | — | — | — | — | Not Occupied | 30 | — | — | — | — | — |
| (31) 31 | (31) 0.5 | (31) O G / VT | (31) 13 62 | (31) I | (31) — | (31) Passeng er Seat Belt Switch Signal | (31) 31 | (31) 0.35 | (31) O G / VT | (31) 13 62 | (31) V | (31) — |
| (32) 32 | (32) 0.5 | (32) B K / OG | (32) 13 63 | (32) I | (32) — | (32) Driver Seat Belt Switch Low Reference | (32) 32 | (32) 0.5 | (32) B K / OG | (32) 13 63 | (32) V | (32) — |
| 33 | — | — | — | — | — | Not Occupied | 33 | — | — | — | — | — |
| (34) 34 | (34) 0.5 | (34) B U / OG | (34) 49 57 | (34) III | (34) — | (34) Passeng er Seat Back Air Bag Low Control | (34) 34 | (34) 0.5 | (34) B U / OG | (34) 49 57 | (34) V | (34) — |
| (35) 35 | (35) 0.5 | (35) O G / GY | (35) 49 56 | (35) III | (35) — | (35) Passeng er Seat Back Air Bag High Control | (35) 35 | (35) 0.5 | (35) O G / GY | (35) 49 56 | (35) V | (35) — |
| (36) 36 | (36) 0.5 | (36) G N / VT | (36) 59 06 | (36) I | (36) — | (36) Driver Seat Blower Motor Control 1 | (36) 36 | (36) 0.5 | (36) G N / VT | (36) 59 06 | (36) V | (36) — |
| (37) 37 | (37) 0.75 | (37) V T / WH | (37) 11 39 | (37) I | (37) — | (37) Run/ Crank Ignition 1 Voltage | (37) 37 | (37) 0.75 | (37) V T / WH | (37) 11 39 | (37) V | (37) — |
| 38 - 40 | — | — | — | — | — | Not Occupied | 38 - 40 | — | — | — | — | — |
| (41) 41 | (41) 0.35 | (41) B U / VT | (41) 41 01 | (41) I | (41) — | (41) AUTOSA R CAN Bus [+] 4 Serial Data | (41) 41 | (41) 0.5 | (41) B U / VT | (41) 41 01 | (41) V | (41) — |
| (42) 42 | (42) 0.35 | (42) WH | (42) 41 00 | (42) I | (42) — | (42) AUTOSA R CAN Bus [-] 4 Serial Data | (42) 42 | (42) 0.5 | (42) WH | (42) 41 00 | (42) V | (42) — |
| 43 - 49 | — | — | — | — | — | Not Occupied | 43 - 49 | — | — | — | — | — |
| (50) 50 | (50) 0.35 | (50) B U / VT | (50) 41 01 | (50) I | (50) — | (50) AUTOSA R CAN Bus [+] 4 Serial Data | (50) 50 | (50) 0.5 | (50) B U / VT | (50) 41 01 | (50) V | (50) — |

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (51) 51 | (51) 0.35 | (51) WH | (51) 4100 | (51) I | (51) — | (51) AUTOSAR CAN Bus [-] 4 Serial Data | (51) 51 | (51) 0.5 | (51) WH | (51) 4100 | (51) V | (51) — |
| (52) 52 | (52) 0.5 | (52) BU | (52) 4987 | (52) I | (52) — | (52) AUTOSAR CAN Bus [+] 1 Serial Data | (52) 52 | (52) 0.5 | (52) BU | (52) 4987 | (52) V | (52) — |
| (53) 53 | (53) 0.5 | (53) WH | (53) 4986 | (53) I | (53) — | (53) AUTOSAR CAN Bus [-] 1 Serial Data | (53) 53 | (53) 0.5 | (53) WH | (53) 4986 | (53) V | (53) — |
| 54 - 55 | — | — | — | — | — | Not Occupied | 54 - 55 | — | — | — | — | — |

### X340 Body Wiring Harness to Rear Seat Heater Control Wiring Harness (KA6)

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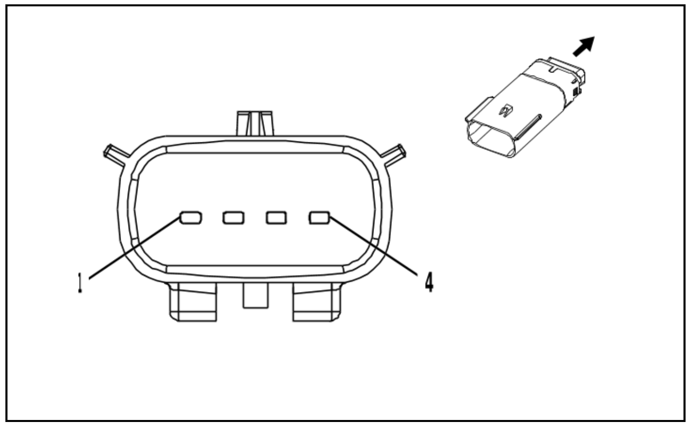



2917338

**Connector Part Information**
- Harness Type: Body Wiring Harness
- OEM Connector: 15514524
- Service Connector: 19355605
- Description: 4-Way F 1.5 OCS Series, Sealed( BK)

**Connector Part Information**
- Harness Type: Rear Seat Heater Control Wiring Harness
- OEM Connector: 33481-4401
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way M 1.5 Series, Sealed( BK)

## Terminal Part Information

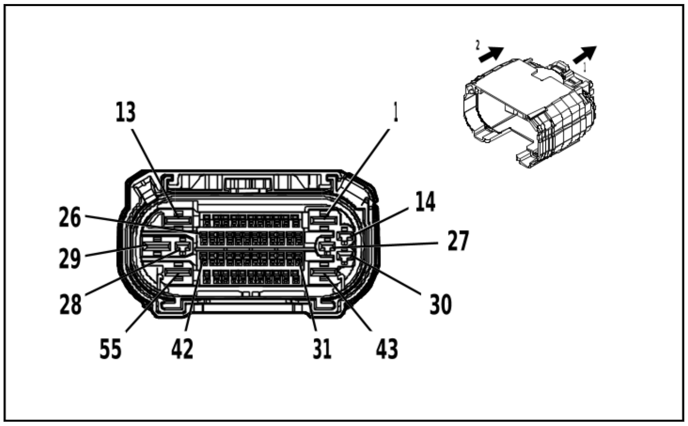
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-2A (GY) | No Tool Required |
| II | Not required | J-35616-3 (GY) | No Tool Required |

## X340 Body Wiring Harness to Rear Seat Heater Control Wiring Harness (KA6)

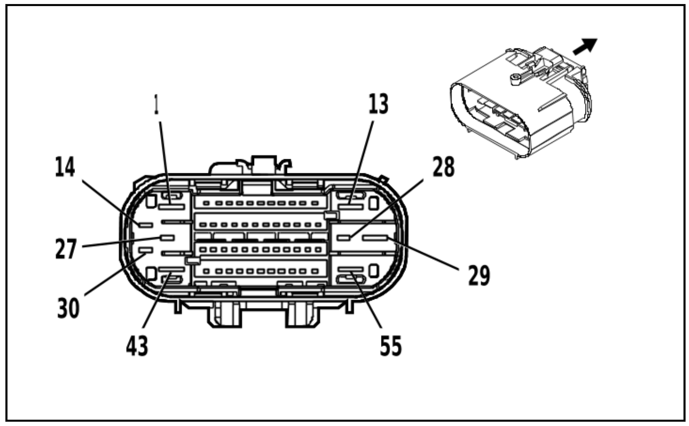
| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) RD / WH | (1) 5740 | (1) I | (1) — | (1) Battery Positive Voltage | (1) 1 | (1) 0.75 | (1) RD / WH | (1) 5740 | (1) II | (1) — |
| (2) 2 | (2) 0.75 | (2) RD / BU | (2) 6740 | (2) I | (2) — | (2) Battery Positive Voltage | (2) 2 | (2) 0.75 | (2) RD / BU | (2) 6740 | (2) II | (2) — |

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (3) 3 | (3) 0.35 | (3) GN / VT | (3) 2857 | (3) I | (3) — | (3) Body Control Module LIN Bus 11 | (3) 3 | (3) 0.5 | (3) GN / VT | (3) 2857 | (3) II | (3) — |
| (4) 4 | (4) 1 | (4) BK | (4) 1550 | (4) I | (4) — | (4) Ground | (4) 4 | (4) 1 | (4) BK | (4) 1550 | (4) II | (4) — |

### X360 Chassis Wiring Harness to Fuel Pump Power Control Module Harness




4992168




4993301

**Connector Part Information**
- Harness Type: Chassis Wiring Harness
- OEM Connector: 35016652
- Service Connector: 19371185
- Description: 55-Way F 1.2 OCS, 2.8, 6.3 CTS Series, Sealed( BK)

**Connector Part Information**
- Harness Type: Fuel Pump Power Control Module Harness
- OEM Connector: 35205173
- Service Connector: Service by Harness - See Part Catalog
- Description: 55-Way M 1.2 OCS, 2.8, 6.3 CTS Series, Sealed( BK)

## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 19332901 | J-35616-35 (VT) | J-38125-212 |
| II | 19370818 | J-35616-12 (BU) | J-38125-553 |
| III | 84634921 | J-35616-42 (RD) | J-38125-212 |
| IV | Not required | J-35616-13 (BU) | No Tool Required |
| V | Not required | J-35616-32 (OG) | No Tool Required |
| VI | Not required | J-35616-34 (YE) | No Tool Required |
| VII | Not required | J-35616-5 (PU) | No Tool Required |

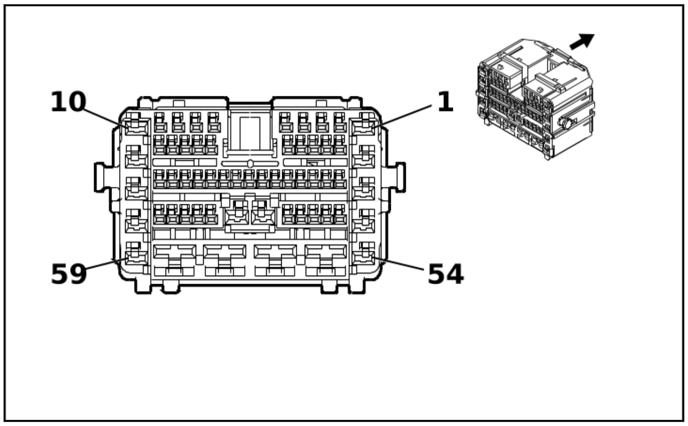
## X360 Chassis Wiring Harness to Fuel Pump Power Control Module Harness

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 2.5 | (1) GY | (1) 120 | (1) III | (1) — | (1) Fuel Pump Control | (1) 1 | (1) 2.5 | (1) GY | (1) 120 | (1) V | (1) — |
| (2) 2 | (2) 0.75 | (2) BU / GN | (2) 11437 | (2) II | (2) — | (2) Secondary Fuel Pump Disable Signal | (2) 2 | (2) 0.75 | (2) BU / GN | (2) 11437 | (2) VI | (2) — |
| 3 | — | — | — | — | — | Not Occupied | 3 | — | — | — | — | — |

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (4) 4 | (4) 0.5 | (4) BN / WH | (4) 7073 | (4) II | (4) — | (4) Fuel Temperature Sensor 1 Low Reference | (4) 4 | (4) 0.5 | (4) BN / WH | (4) 7073 | (4) IV | (4) — |
| 5 | — | — | — | — | — | Not Occupied | 5 | — | — | — | — | — |
| (6) 6 | (6) 0.5 | (6) VT / WH | (6) 639 | (6) II | (6) — | (6) Run/ Crank Ignition 1 Voltage | (6) 6 | (6) 0.5 | (6) VT / WH | (6) 639 | (6) IV | (6) — |
| 7 | — | — | — | — | — | Not Occupied | 7 | — | — | — | — | — |
| (8) 8 | (8) 0.5 | (8) BN / GY | (8) 7072 | (8) II | (8) — | (8) Fuel Temperature Sensor 1 Signal | (8) 8 | (8) 0.5 | (8) BN / GY | (8) 7072 | (8) IV | (8) — |
| 9 | — | — | — | — | — | Not Occupied | 9 | — | — | — | — | — |
| (10) 10 | (10) 0.5 | (10) GN / GY | (10) 465 | (10) II | (10) — | (10) Fuel Pump Primary Relay Control | (10) 10 | (10) 0.5 | (10) GN / GY | (10) 465 | (10) IV | (10) — |
| 11 | — | — | — | — | — | Not Occupied | 11 | — | — | — | — | — |
| (12) 12 | (12) 0.75 | (12) BU / GN | (12) 1936 | (12) II | (12) — | (12) Primary Fuel Level Sensor Signal | (12) 12 | (12) 0.75 | (12) BU / GN | (12) 1936 | (12) VI | (12) — |
| (13) 13 | (13) 1 | (13) BK / GN | (13) 1580 | (13) III | (13) — | (13) Fuel Pump Low Reference | (13) 13 | (13) 0.75 | (13) BK / GN | (13) 1580 | (13) V | (13) — |
| (14) 14 | (14) 2.5 | (14) RD / VT | (14) 1940 | (14) I | (14) — | (14) Battery Positive Voltage | (14) 14 | (14) 2.5 | (14) RD / VT | (14) 1940 | (14) VII | (14) — |
| 15 | — | — | — | — | — | Not Occupied | 15 | — | — | — | — | — |
| (16) 16 | (16) 0.5 | (16) BU / WH | (16) 1937 | (16) II | (16) — | (16) Secondary Fuel Level Sensor Signal | (16) 16 | (16) 0.5 | (16) BU / WH | (16) 1937 | (16) IV | (16) — |
| 17 | — | — | — | — | — | Not Occupied | 17 | — | — | — | — | — |
| (18) 18 | (18) 0.5 | (18) BK / GN | (18) 6281 | (18) II | (18) — | (18) Fuel Level Sensor Low Reference | (18) 18 | (18) 0.5 | (18) BK / GN | (18) 6281 | (18) IV | (18) — |
| 19 | — | — | — | — | — | Not Occupied | 19 | — | — | — | — | — |
| (20) 20 | (20) 0.5 | (20) BK / BU | (20) 6282 | (20) II | (20) — | (20) Fuel Level Sensor 2 Low Reference | (20) 20 | (20) 0.5 | (20) BK / BU | (20) 6282 | (20) IV | (20) — |
| 21 | — | — | — | — | — | Not Occupied | 21 | — | — | — | — | — |
| (22) 22 | (22) 0.5 | (22) BU / YE | (22) 6861 | (22) II | (22) — | (22) Water In Fuel Sensor Signal | (22) 22 | (22) 0.5 | (22) BU / YE | (22) 6861 | (22) IV | (22) — |
| 23 | — | — | — | — | — | Not Occupied | 23 | — | — | — | — | — |
| (24) 24 | (24) 0.5 | (24) BK / BU | (24) 6863 | (24) II | (24) — | (24) Water In Fuel Sensor Low Reference | (24) 24 | (24) 0.5 | (24) BK / BU | (24) 6863 | (24) IV | (24) — |
| 25 | — | — | — | — | — | Not Occupied | 25 | — | — | — | — | — |

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (26) 26 | (26) 0.5 | (26) B N / RD | (26) 74 45 | (26) II | (26) — | (26) Fuel Line Pressure Sensor 5V Reference | (26) 26 | (26) 0.5 | (26) B N / RD | (26) 74 45 | (26) IV | (26) — |
| (27) 27 | (27) 1 | (27) B U / GN | (27) 21 20 | (27) I | (27) — | (27) Seconda ry Fuel Pump Control | (27) 27 | (27) 1 | (27) B U / GN | (27) 21 20 | (27) VII | (27) — |
| (28) 28 | (28) 2.5 | (28) Y E / GY | (28) 41 37 | (28) I | (28) — | (28) Fuel Pump Sup-ply Voltage Phase 2 | (28) 28 | (28) 2.5 | (28) Y E / GY | (28) 41 37 | (28) VII | (28) — |
| (29) 29 | (29) 0.75 | (29) V T / GN | (29) 43 20 | (29) III | (29) — | (29) Powertra in Sensor Bus Enable | (29) 29 | (29) 0.75 | (29) V T / GN | (29) 43 20 | (29) V | (29) — |
| (30) 30 | (30) 2.5 | (30) WH / BN | (30) 41 38 | (30) I | (30) — | (30) Fuel Pump Sup-ply Voltage Phase 3 | (30) 30 | (30) 2.5 | (30) WH / BN | (30) 41 38 | (30) VII | (30) — |
| 31 - 42 | — | — | — | — | — | Not Occupied | 31 - 42 | — | — | — | — | — |
| (43) 43 | (43) 2.5 | (43) B K / WH | (43) 19 51 | (43) III | (43) — | (43) Signal Ground | (43) 43 | (43) 2.5 | (43) B K / WH | (43) 19 51 | (43) V | (43) — |
| (44) 44 | (44) 0.75 | (44) B U / WH | (44) 74 46 | (44) II | (44) — | (44) Fuel Pressure Sensor Signal | (44) 44 | (44) 0.75 | (44) B U / WH | (44) 74 46 | (44) VI | (44) — |
| 45 | — | — | — | — | — | Not Occupied | 45 | — | — | — | — | — |
| (46) 46 | (46) 0.5 | (46) B K / YE | (46) 74 47 | (46) II | (46) — | (46) Fuel Pressure Sensor Low Reference | (46) 46 | (46) 0.5 | (46) B K / YE | (46) 74 47 | (46) IV | (46) — |
| 47 - 49 | — | — | — | — | — | Not Occupied | 47 - 49 | — | — | — | — | — |
| (50) 50 | (50) 0.5 | (50) WH | (50) 40 55 | (50) II | (50) — | (50) Private Serial Data Powertrain CAN Bus [+] Serial Data | (50) 50 | (50) 0.5 | (50) WH | (50) 40 55 | (50) IV | (50) — |
| 51 | — | — | — | — | — | Not Occupied | 51 | — | — | — | — | — |
| (52) 52 | (52) 0.5 | (52) B U / GY | (52) 40 54 | (52) II | (52) — | (52) Private Serial Data Powertrain CAN Bus [-] Serial Data | (52) 52 | (52) 0.5 | (52) B U / GY | (52) 40 54 | (52) IV | (52) — |
| 53 | — | — | — | — | — | Not Occupied | 53 | — | — | — | — | — |
| (54) 54 | (54) 0.75 | (54) WH | (54) 74 44 | (54) II | (54) — | (54) Fuel Pump Assembly Shield Ground | (54) 54 | (54) 0.75 | (54) WH | (54) 74 44 | (54) VI | (54) — |
| 55 | — | — | — | — | — | Not Occupied | 55 | — | — | — | — | — |

### X370A Dome Lamp Wiring Harness to Instrument Panel Wiring Harness

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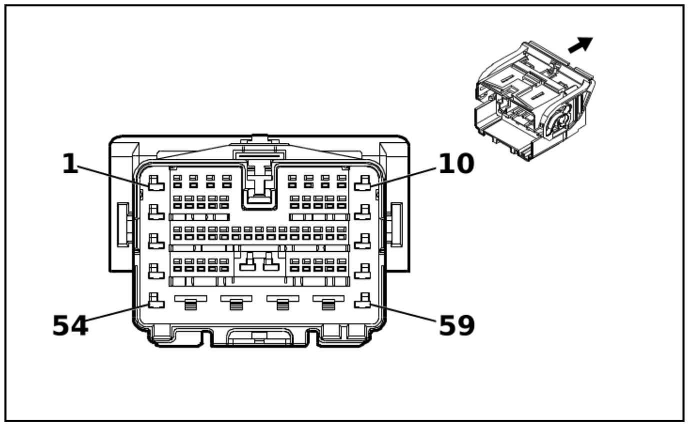



5278741

**Connector Part Information**
- Harness Type: Dome Lamp Wiring Harness
- OEM Connector: 7289-7293-30
- Service Connector: 13528126
- Description: 59-Way F 1.2 MCON, 2.8, 6.3 YESC Series( BK)

**Connector Part Information**
- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 7288-7295-30
- Service Connector: 84766292
- Description: 59-Way M 1.2 MCON, 2.8, 6.3 YESC Series( BK)

## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 19331733 | J-35616-12 (BU) | J-38125-553 |
| II | 85544080 | J-35616-4A (PU) | J-38125-11A |
| III | 13578908 | J-35616-5 (PU) | J-38125-11A |
| IV | 19330704 | J-35616-13 (BU) | J-38125-215A |

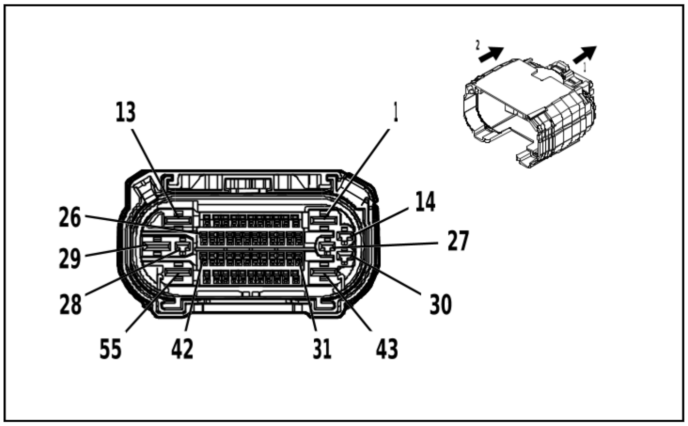
## X370A Dome Lamp Wiring Harness to Instrument Panel Wiring Harness

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) RD / YE | (1) 240 | (1) II | (1) — | (1) Battery Positive Voltage | (1) 1 | (1) 0.5 | (1) RD / YE | (1) 240 | (1) III | (1) — |
| (2) 2 | (2) 0.5 | (2) VT / BK | (2) 339 | (2) I | (2) — | (2) Run/ Crank Ignition 1 Voltage | (2) 2 | (2) 0.5 | (2) VT / BK | (2) 339 | (2) IV | (2) — |
| 3 | — | — | — | — | — | Not Occupied | 3 | — | — | — | — | — |
| (4) 4 | (4) 0.35 | (4) GN / BN | (4) 3005 | (4) I | (4) — | (4) Active Noise Cancellation Microphone 1 Signal | (4) 4 | (4) 0.35 | (4) GN / BN | (4) 3005 | (4) IV | (4) — |
| (5) 5 | (5) 0.35 | (5) GN / BK | (5) 3008 | (5) I | (5) — | (5) Active Noise Cancellation Microphone 1 Feedback Signal | (5) 5 | (5) 0.35 | (5) GN / BK | (5) 3008 | (5) IV | (5) — |
| 6 - 9 | — | — | — | — | — | Not Occupied | 6 - 9 | — | — | — | — | — |
| (10) 10 | (10) 0.35 | (10) WH | (10) 4978 | (10) II | (10) — | (10) AUTOSAR CAN Bus [-] 2 Serial Data | (10) 10 | (10) 0.35 | (10) WH | (10) 4978 | (10) III | (10) — |

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (11) 11 | (11) 0.35 | (11) B U / YE | (11) 49 79 | (11) II | (11) — | (11) AUTOSA R CAN Bus [+] 2 Serial Data | (11) 11 | (11) 0.35 | (11) B U / YE | (11) 49 79 | (11) III | (11) — |
| (12) 12 | (12) 0.35 | (12) WH | (12) 49 78 | (12) I | (12) — | (12) AUTOSA R CAN Bus [-] 2 Serial Data | (12) 12 | (12) 0.5 | (12) WH | (12) 49 78 | (12) IV | (12) — |
| (13) 13 | (13) 0.35 | (13) B U / YE | (13) 49 79 | (13) I | (13) — | (13) AUTOSA R CAN Bus [+] 2 Serial Data | (13) 13 | (13) 0.5 | (13) B U / YE | (13) 49 79 | (13) IV | (13) — |
| (14) 14 | (14) 0.35 | (14) B K / BN | (14) 65 4 | (14) I | (14) — | (14) Cellular Telephone Microphone Low Reference | (14) 14 | (14) 0.35 | (14) B K / BN | (14) 65 4 | (14) IV | (14) — |
| (15) 15 | (15) 0.35 | (15) B U | (15) 65 5 | (15) I | (15) — | (15) Cellular Telephone Microphone Signal | (15) 15 | (15) 0.35 | (15) B U | (15) 65 5 | (15) IV | (15) — |
| (16) 16 | (16) 0.35 | (16) V T / YE | (16) 70 43 | (16) I | (16) — | (16) Micropho ne [+] Signal | (16) 16 | (16) 0.35 | (16) V T / YE | (16) 70 43 | (16) IV | (16) — |
| (17) 17 | (17) 0.35 | (17) B U / BK | (17) 70 44 | (17) I | (17) — | (17) Micropho ne [-] Signal | (17) 17 | (17) 0.35 | (17) B U / BK | (17) 70 44 | (17) IV | (17) — |
| (18) 18 | (18) 0.5 | (18) B U / BK | (18) 10 53 | (18) I | (18) — | (18) Center High Mounted Stop Lamp Control 3 | (18) 18 | (18) 0.5 | (18) B U / BK | (18) 10 53 | (18) IV | (18) — |
| (19) 19 | (19) 0.5 | (19) WH / VT | (19) 14 30 | (19) I | (19) — | (19) Exterior Courtesy Lamp Control | (19) 19 | (19) 0.5 | (19) WH / VT | (19) 14 30 | (19) IV | (19) — |
| (20) 20 | (20) 0.35 | (20) Y E / WH | (20) 16 90 | (20) I | (20) — | (20) Mirror Dimming Signal | (20) 20 | (20) 0.35 | (20) Y E / WH | (20) 16 90 | (20) IV | (20) — |
| (21) 21 | (21) 0.35 | (21) B K / YE | (21) 16 91 | (21) I | (21) — | (21) Automati c Day/Night Mirror Low Reference | (21) 21 | (21) 0.35 | (21) B K / YE | (21) 16 91 | (21) IV | (21) — |
| (22) 22 | (22) 0.35 | (22) G N / WH | (22) 24 | (22) II | (22) — | (22) Backup Lamp Control | (22) 22 | (22) 0.35 | (22) G N / WH | (22) 24 | (22) III | (22) — |
| (23) 23 | (23) 0.35 | (23) G N / WH | (23) 25 14 | (23) II | (23) — | (23) Telemati cs Switch Signal | (23) 23 | (23) 0.35 | (23) G N / WH | (23) 25 14 | (23) III | (23) — |
| (24) 24 | (24) 0.35 | (24) G N / BK | (24) 25 15 | (24) I | (24) — | (24) Telemati cs Switch Supply Volt- age | (24) 24 | (24) 0.35 | (24) G N / BK | (24) 25 15 | (24) IV | (24) — |
| (25) 25 | (25) 0.35 | (25) Y E / VT | (25) 25 16 | (25) I | (25) — | (25) Telemati cs Switch Green LED Indicator Control | (25) 25 | (25) 0.35 | (25) Y E / VT | (25) 25 16 | (25) IV | (25) — |
| (26) 26 | (26) 0.35 | (26) B N / WH | (26) 25 17 | (26) I | (26) — | (26) Telemati cs Switch Red LED Indicator Control | (26) 26 | (26) 0.35 | (26) B N / WH | (26) 25 17 | (26) IV | (26) — |

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (27) 27 | (27) 0.5 | (27) G N / WH | (27) 28 54 | (27) I | (27) — | (27) Body Control Module LIN Bus 8 | (27) 27 | (27) 0.5 | (27) G N / WH | (27) 28 54 | (27) IV | (27) — |
| (28) 28 | (28) 0.35 | (28) G N / WH | (28) 41 15 | (28) I | (28) — | (28) Body Control Module LIN Bus 5 | (28) 28 | (28) 0.35 | (28) G N / WH | (28) 41 15 | (28) IV | (28) — |
| (29) 29 | (29) 0.35 | (29) Y E / VT | (29) 61 91 | (29) I | (29) — | (29) Power Rear Window Switch Open Signal | (29) 29 | (29) 0.5 | (29) Y E / VT | (29) 61 91 | (29) IV | (29) — |
| (30) 30 | (30) 0.35 | (30) WH | (30) 61 92 | (30) I | (30) — | (30) Sliding Rear Window Switch Close Signal | (30) 30 | (30) 0.5 | (30) WH | (30) 61 92 | (30) IV | (30) — |
| (31) 31 | (31) 0.35 | (31) Y E | (31) 68 17 | (31) I | (31) — | (31) LED Backlight Dimming Control 1 | (31) 31 | (31) 0.35 | (31) Y E | (31) 68 17 | (31) IV | (31) — |
| (32) 32 | (32) 0.5 | (32) V T | (32) 80 1 | (32) I | (32) — | (32) Retained Accessory Power Control | (32) 32 | (32) 0.5 | (32) V T | (32) 80 1 | (32) IV | (32) — |
| (33) 33 | (33) 0.5 | (33) B N / YE | (33) 82 0 | (33) I | (33) — | (33) Center High Mounted Stop Lamp Supply Volt-age | (33) 33 | (33) 0.5 | (33) B N / YE | (33) 82 0 | (33) IV | (33) — |
| (34) 34 | (34) 0.35 | (34) R D / WH | (34) 13 40 | (34) I | (34) — | (34) Battery Positive Volt-age | (34) 34 | (34) 0.35 | (34) R D / WH | (34) 13 40 | (34) IV | (34) — |
| 35 | — | — | — | — | — | Not Occupied | 35 | — | — | — | — | — |
| (36) 36 | (36) 0.35 | (36) B K / WH | (36) 85 1 | (36) I | (36) — | (36) Signal Ground | (36) 36 | (36) 0.5 | (36) B K / WH | (36) 85 1 | (36) IV | (36) — |
| 37 - 38 | — | — | — | — | — | Not Occupied | 37 - 38 | — | — | — | — | — |
| (39) 39 | (39) 2.5 | (39) V T / BU | (39) 10 735 | (39) II | (39) — | (39) Upfitter Accessory 5 Supply Volt-age | (39) 39 | (39) 2.5 | (39) V T / BU | (39) 10 735 | (39) III | (39) — |
| (40) 40 | (40) 2.5 | (40) B K | (40) 10 50 | (40) II | (40) — | (40) Ground | (40) 40 | (40) 2.5 | (40) B K | (40) 10 50 | (40) III | (40) — |
| 41 - 52 | — | — | — | — | — | Not Occupied | 41 - 52 | — | — | — | — | — |
| (53) 53 | (53) 2.5 | (53) R D / BU | (53) 45 40 | (53) II | (53) — | (53) Battery Positive Volt-age | (53) 53 | (53) 2.5 | (53) R D / BU | (53) 45 40 | (53) III | (53) — |
| 54 - 59 | — | — | — | — | — | Not Occupied | 54 - 59 | — | — | — | — | — |

### X370B Dome Lamp Wiring Harness to Instrument Panel Wiring Harness

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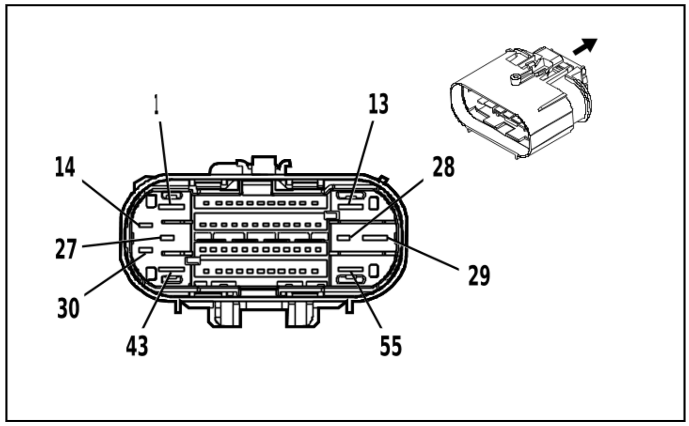



4993301

**Connector Part Information**

- Harness Type: Dome Lamp Wiring Harness
- OEM Connector: 35605245
- Service Connector: 19371185
- Description: 55-Way F 1.2 OCS, 2.8, 6.3 CTS Series, Sealed( BK)

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 35664005
- Service Connector: 84727364
- Description: 55-Way M 1.2 OCS, 2.8, 6.3 CTS Series, Sealed( BK)

## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 19332901 | J-35616-35 (VT) | J-38125-212 |
| II | 19370818 | J-35616-12 (BU) | J-38125-553 |
| III | 84634921 | J-35616-42 (RD) | J-38125-212 |
| IV | 84847992 | J-35616-32 (OG) | J-38125-36 |
| V | 84867140 | J-35616-13 (BU) | J-38125-553 |
| VI | 84992391 | J-35616-5 (PU) | J-38125-36 |

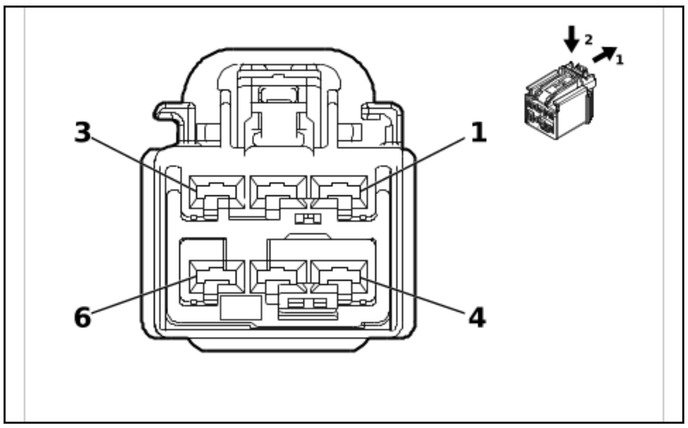
## X370B Dome Lamp Wiring Harness to Instrument Panel Wiring Harness

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) RD / YE | (1) 240 | (1) III | (1) — | (1) Battery Positive Voltage | (1) 1 | (1) 0.5 | (1) RD / YE | (1) 240 | (1) IV | (1) — |
| 2 | — | — | — | — | — | Not Occupied | 2 | — | — | — | — | — |
| (3) 3 | (3) 0.5 | (3) VT / BK | (3) 339 | (3) II | (3) — | (3) Run/ Crank Ignition 1 Voltage | (3) 3 | (3) 0.5 | (3) VT / BK | (3) 339 | (3) V | (3) — |
| (4) 4 | (4) 0.35 | (4) WH | (4) 4978 | (4) II | (4) — | (4) AUTOSAR CAN Bus [-] 2 Serial Data | (4) 4 | (4) 0.35 | (4) WH | (4) 4978 | (4) V | (4) — |
| (5) 5 | (5) 0.35 | (5) BU / YE | (5) 4979 | (5) II | (5) — | (5) AUTOSAR CAN Bus [+] 2 Serial Data | (5) 5 | (5) 0.35 | (5) BU / YE | (5) 4979 | (5) V | (5) — |
| (6) 6 | (6) 0.35 | (6) BK / BN | (6) 654 | (6) II | (6) — | (6) Cellular Telephone Microphone Low Reference | (6) 6 | (6) 0.35 | (6) BK / BN | (6) 654 | (6) V | (6) — |

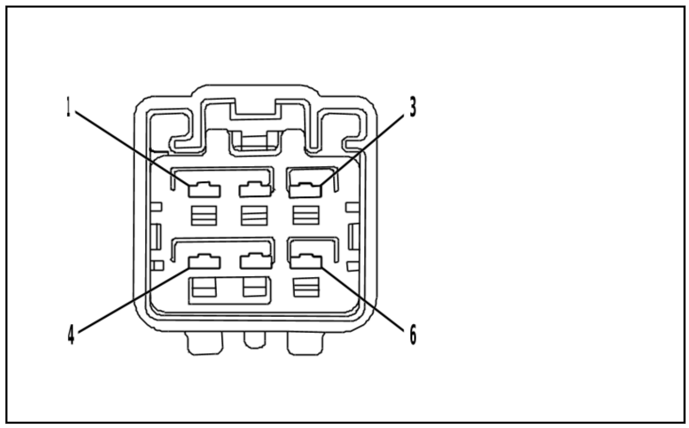
| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (7) 7 | (7) 0.35 | (7) BU | (7) 655 | (7) II | (7) — | (7) Cellular Telephone Microphone Signal | (7) 7 | (7) 0.35 | (7) BU | (7) 655 | (7) V | (7) — |
| (8) 8 | (8) 0.5 | (8) BU / BK | (8) 1053 | (8) II | (8) — | (8) Center High Mounted Stop Lamp Control 3 | (8) 8 | (8) 0.5 | (8) BU / BK | (8) 1053 | (8) V | (8) — |
| (9) 9 | (9) 0.5 | (9) WH / VT | (9) 1430 | (9) II | (9) — | (9) Exterior Courtesy Lamp Control | (9) 9 | (9) 0.5 | (9) WH / VT | (9) 1430 | (9) V | (9) — |
| 10 - 14 | — | — | — | — | — | Not Occupied | 10 - 14 | — | — | — | — | — |
| (15) 15 | (15) 0.5 | (15) GN / WH | (15) 2854 | (15) II | (15) — | (15) Body Control Module LIN Bus 8 | (15) 15 | (15) 0.5 | (15) GN / WH | (15) 2854 | (15) V | (15) — |
| 16 | — | — | — | — | — | Not Occupied | 16 | — | — | — | — | — |
| (17) 17 | (17) 0.5 | (17) BN / YE | (17) 820 | (17) II | (17) — | (17) Center High Mounted Stop Lamp Supply Voltage | (17) 17 | (17) 0.5 | (17) BN / YE | (17) 820 | (17) V | (17) — |
| 18 - 19 | — | — | — | — | — | Not Occupied | 18 - 19 | — | — | — | — | — |
| (20) 20 | (20) 0.35 | (20) YE / WH | (20) 1690 | (20) II | (20) — | (20) Mirror Dimming Signal | (20) 20 | (20) 0.35 | (20) YE / WH | (20) 1690 | (20) V | (20) — |
| (21) 21 | (21) 0.35 | (21) BK / YE | (21) 1691 | (21) II | (21) — | (21) Automatic Day/Night Mirror Low Reference | (21) 21 | (21) 0.35 | (21) BK / YE | (21) 1691 | (21) V | (21) — |
| (22) 22 | (22) 0.35 | (22) GN / WH | (22) 24 | (22) II | (22) — | (22) Backup Lamp Control | (22) 22 | (22) 0.35 | (22) GN / WH | (22) 24 | (22) V | (22) — |
| (23) 23 | (23) 0.35 | (23) GN / WH | (23) 2514 | (23) II | (23) — | (23) Telematics Switch Signal | (23) 23 | (23) 0.35 | (23) GN / WH | (23) 2514 | (23) V | (23) — |
| (24) 24 | (24) 0.35 | (24) GN / BK | (24) 2515 | (24) II | (24) — | (24) Telematics Switch Supply Voltage | (24) 24 | (24) 0.35 | (24) GN / BK | (24) 2515 | (24) V | (24) — |
| (25) 25 | (25) 0.35 | (25) YE / VT | (25) 2516 | (25) II | (25) — | (25) Telematics Switch Green LED Indicator Control | (25) 25 | (25) 0.35 | (25) YE / VT | (25) 2516 | (25) V | (25) — |
| (26) 26 | (26) 0.35 | (26) BN / WH | (26) 2517 | (26) II | (26) — | (26) Telematics Switch Red LED Indicator Control | (26) 26 | (26) 0.35 | (26) BN / WH | (26) 2517 | (26) V | (26) — |
| (27) 27 | (27) 2.5 | (27) BK | (27) 1050 | (27) I | (27) — | (27) Ground | (27) 27 | (27) 2.5 | (27) BK | (27) 1050 | (27) VI | (27) — |
| (28) 28 | (28) 2.5 | (28) VT / BU | (28) 10735 | (28) I | (28) — | (28) Upfitter Accessory 5 Supply Voltage | (28) 28 | (28) 2.5 | (28) VT / BU | (28) 10735 | (28) VI | (28) — |

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 29 - 35 | — | — | — | — | — | Not Occupied | 29 - 35 | — | — | — | — | — |
| (36) 36 | (36) 0.35 | (36) BK / WH | (36) 851 | (36) II | (36) — | (36) Signal Ground | (36) 36 | (36) 0.5 | (36) BK / WH | (36) 851 | (36) V | (36) — |
| 37 - 45 | — | — | — | — | — | Not Occupied | 37 - 45 | — | — | — | — | — |
| (46) 46 | (46) 0.35 | (46) WH | (46) 4978 | (46) II | (46) — | (46) AUTOSAR CAN Bus [-] 2 Serial Data | (46) 46 | (46) 0.35 | (46) WH | (46) 4978 | (46) V | (46) — |
| (47) 47 | (47) 0.35 | (47) BU / YE | (47) 4979 | (47) II | (47) — | (47) AUTOSAR CAN Bus [+] 2 Serial Data | (47) 47 | (47) 0.35 | (47) BU / YE | (47) 4979 | (47) V | (47) — |
| 48 - 55 | — | — | — | — | — | Not Occupied | 48 - 55 | — | — | — | — | — |

**X371A Inside Rearview Mirror Wiring Harness to Dome Lamp Wiring Harness (- UVO)**




5757440




1849802

**Connector Part Information**
- Harness Type: Inside Rearview Mirror Wiring Harness
- OEM Connector: 7289-7238-40
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 2.8 YESC Series( GY)

**Connector Part Information**
- Harness Type: Dome Lamp Wiring Harness
- OEM Connector: 7282-6466-40
- Service Connector: 84727361
- Description: 6-Way M Kaizen Series( L-GY)

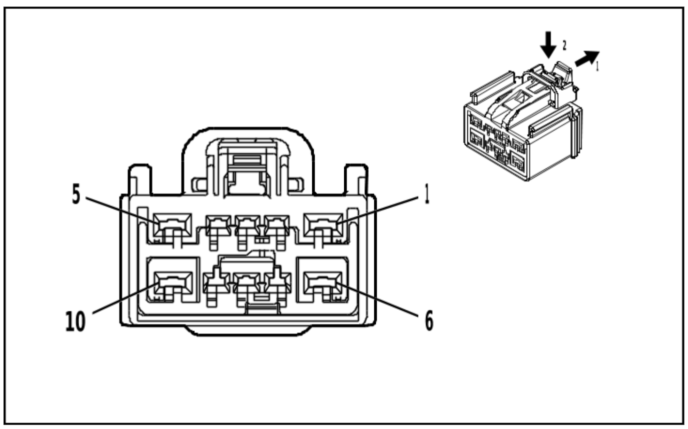
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-4A (PU) | No Tool Required |
| II | Not required | J-35616-5 (PU) | No Tool Required |

## X371A Inside Rearview Mirror Wiring Harness to Dome Lamp Wiring Harness (- UVO)

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) WH / VT | (1) 1430 | (1) I | (1) — | (1) Exterior Courtesy Lamp Control | (1) 1 | (1) 0.5 | (1) WH / VT | (1) 1430 | (1) II | (1) — |
| (2) 2 | (2) 0.5 | (2) BN / YE | (2) 820 | (2) I | (2) — | (2) Center High Mounted Stop Lamp Supply Voltage | (2) 2 | (2) 0.5 | (2) BN / YE | (2) 820 | (2) II | (2) — |
| (3) 3 | (3) 0.5 | (3) BK | (3) 1050 | (3) I | (3) — | (3) Ground | (3) 3 | (3) 1 | (3) BK | (3) 1050 | (3) II | (3) — |
| (4) 4 | (4) 2.5 | (4) BK | (4) 1050 | (4) I | (4) — | (4) Ground | (4) 4 | (4) 2.5 | (4) BK | (4) 1050 | (4) II | (4) — |
| (5) 5 | (5) 2.5 | (5) VT / BU | (5) 10735 | (5) I | (5) — | (5) Upfitter Accessory 5 Supply Voltage | (5) 5 | (5) 2.5 | (5) VT / BU | (5) 10735 | (5) II | (5) — |
| 6 | — | — | — | — | — | Not Occupied | 6 | — | — | — | — | — |

### X371A Inside Rearview Mirror Wiring Harness to Dome Lamp Wiring Harness (UVO)

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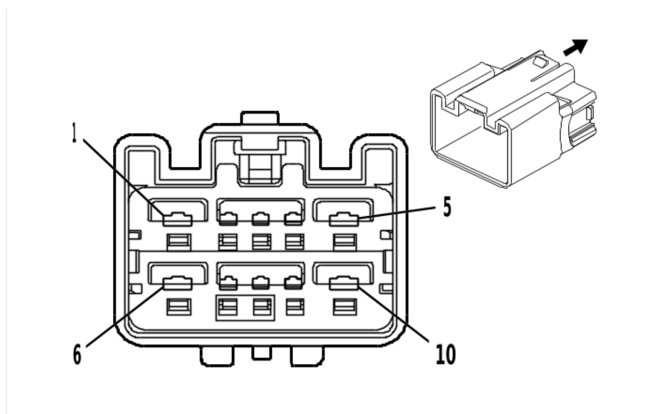



1851890

**Connector Part Information**
- Harness Type: Inside Rearview Mirror Wiring Harness
- OEM Connector: 7289-9153-40
- Service Connector: Service by Harness - See Part Catalog
- Description: 10-Way F 1.5, 2.8 Kaizen Series( L-GY)

**Connector Part Information**
- Harness Type: Dome Lamp Wiring Harness
- OEM Connector: 7282-6459-40
- Service Connector: 89047070
- Description: 10-Way M 1.5, 2.8 Kaizen Series( L-GY)

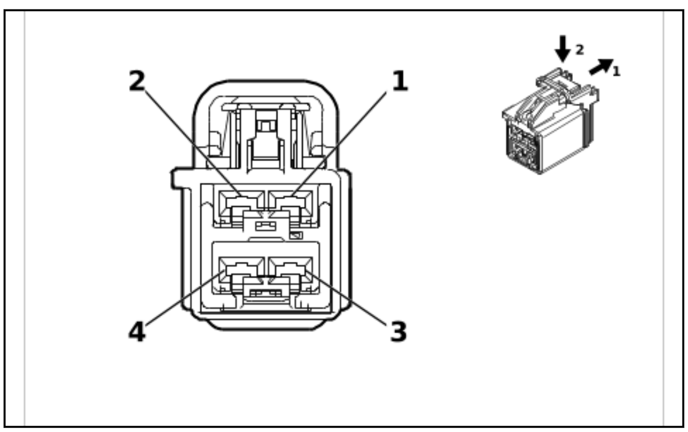
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-14 (GN) | No Tool Required |
| II | Not required | J-35616-4A (PU) | No Tool Required |
| III | 13578907 | J-35616-3 (GY) | J-38125-215A |
| IV | 13578908 | J-35616-5 (PU) | J-38125-11A |

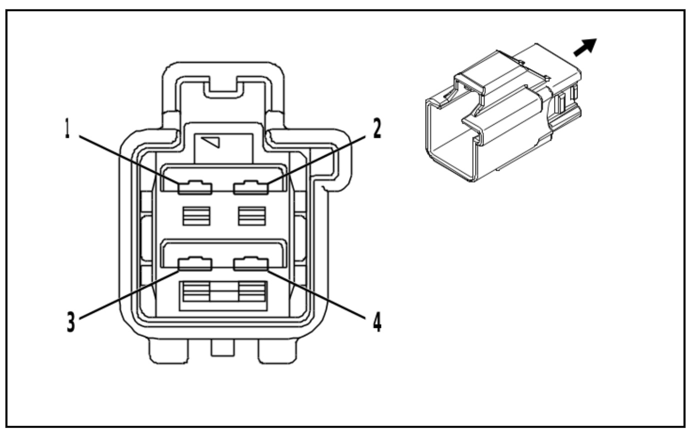
## X371A Inside Rearview Mirror Wiring Harness to Dome Lamp Wiring Harness (UVO)

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 2.5 | (1) GN / BU | (1) 10735 | (1) II | (1) — | (1) Upfitter Accessory 5 Supply Voltage | (1) 1 | (1) 2.5 | (1) VT / BU | (1) 10735 | (1) IV | (1) — |
| (2) 2 | (2) 0.35 | (2) VT / WH | (2) 820 | (2) I | (2) — | (2) Center High Mounted Stop Lamp Supply Voltage | (2) 2 | (2) 0.5 | (2) BN / YE | (2) 820 | (2) III | (2) — |
| (3) 3 | (3) 0.35 | (3) BK | (3) 1050 | (3) I | (3) — | (3) Ground | (3) 3 | (3) 1 | (3) BK | (3) 1050 | (3) III | (3) — |
| (4) 4 | (4) 0.35 | (4) WH / VT | (4) 1430 | (4) I | (4) — | (4) Exterior Courtesy Lamp Control | (4) 4 | (4) 0.5 | (4) WH / VT | (4) 1430 | (4) III | (4) — |
| (5) 5 | (5) 2.5 | (5) BK | (5) 1050 | (5) II | (5) — | (5) Ground | (5) 5 | (5) 2.5 | (5) BK | (5) 1050 | (5) IV | (5) — |
| (6) 6 | (6) 0.35 | (6) VT / GN | (6) 339 | (6) II | (6) — | (6) Run/ Crank Ignition 1 Voltage | (6) 6 | (6) 0.35 | (6) VT / BK | (6) 339 | (6) IV | (6) — |
| (7) 7 | (7) 0.35 | (7) WH / BU | (7) 6973 | (7) I | (7) — | (7) Rearview Camera Signal [-] | (7) 7 | (7) 0.35 | (7) WH / BU | (7) 6973 | (7) III | (7) — |
| (8) 8 | (8) 0.35 | (8) GY / YE | (8) 6972 | (8) I | (8) — | (8) Rearview Camera Signal [+] | (8) 8 | (8) 0.35 | (8) GY / YE | (8) 6972 | (8) III | (8) — |
| (9) 9 | (9) 0.35 | (9) BARE | (9) 6974 | (9) I | (9) — | (9) Rearview Camera Low Reference | (9) 9 | (9) 0.35 | (9) BARE | (9) 6974 | (9) III | (9) — |
| (10) 10 | (10) 0.35 | (10) BK / WH | (10) 851 | (10) II | (10) — | (10) Signal Ground | (10) 10 | (10) 0.35 | (10) BK / WH | (10) 851 | (10) IV | (10) — |

### X375 Sunroof Wiring Harness to Dome Lamp Wiring Harness




5515744




4257143

**Connector Part Information**
- Harness Type: Sunroof Wiring Harness
- OEM Connector: 7289-7224-40
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 2.8 YESC Series( GY)

**Connector Part Information**
- Harness Type: Dome Lamp Wiring Harness
- OEM Connector: 7282-6446-40
- Service Connector: 89046843
- Description: 4-Way M 2.8 YESC Series( GY)

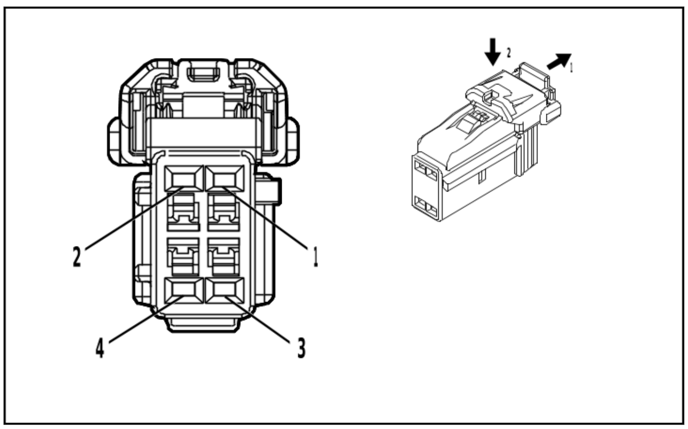
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-4A (PU) | No Tool Required |
| II | Not required | J-35616-5 (PU) | No Tool Required |

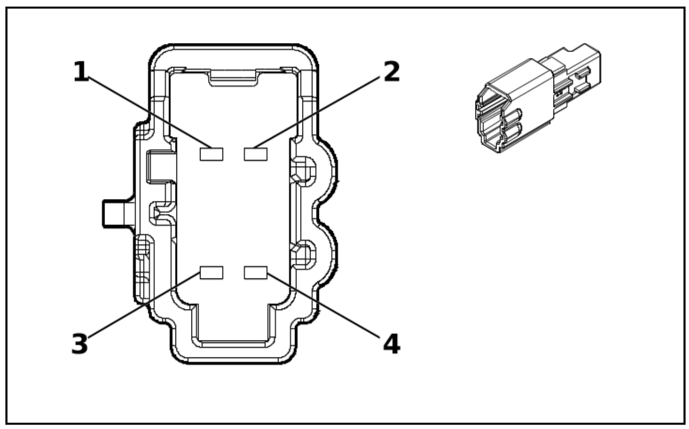
## X375 Sunroof Wiring Harness to Dome Lamp Wiring Harness

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 1.5 | (1) BK | (1) 1050 | (1) I | (1) — | (1) Ground | (1) 1 | (1) 2.5 | (1) BK | (1) 1050 | (1) II | (1) — |
| (2) 2 | (2) 0.35 | (2) GN / BN | (2) 2854 | (2) I | (2) — | (2) Body Control Module LIN Bus 8 | (2) 2 | (2) 0.5 | (2) GN / WH | (2) 2854 | (2) II | (2) — |
| 3 | — | — | — | — | — | Not Occupied | 3 | — | — | — | — | — |
| (4) 4 | (4) 1.5 | (4) RD / GY | (4) 4540 | (4) I | (4) — | (4) Battery Positive Voltage | (4) 4 | (4) 2.5 | (4) RD / BU | (4) 4540 | (4) II | (4) — |

### X382 Windshield Outside Moisture_Ambient Light and Humidity Sensor to Dome Lamp Wiring Harness




4872683




5360963

**Connector Part Information**
- Harness Type: Windshield Outside Moisture_Ambient Light and Humidity Sensor
- OEM Connector: 6098-8435
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 1.2 Series( BK)

**Connector Part Information**
- Harness Type: Dome Lamp Wiring Harness
- OEM Connector: 6098-9046
- Service Connector: 84847258
- Description: 4-Way M 1.2 MCON Series( BK)

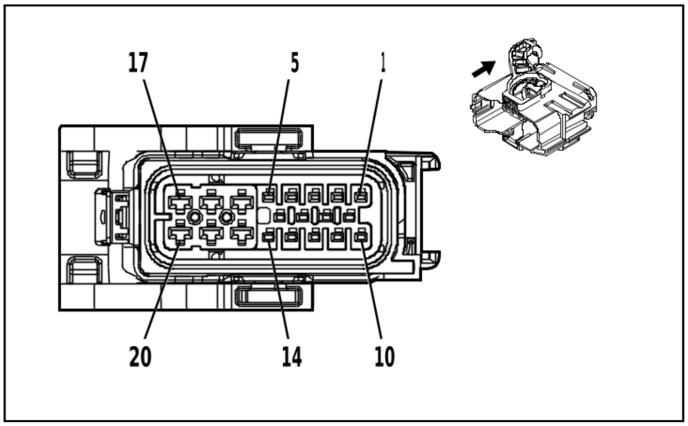
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |
| II | Not required | J-35616-13 (BU) | No Tool Required |

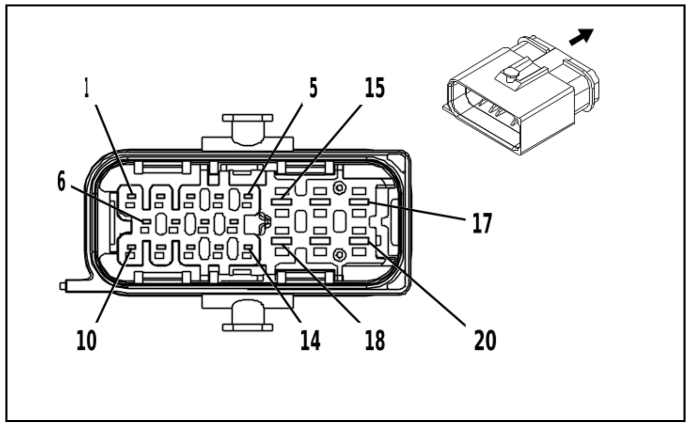
## X382 Windshield Outside Moisture_Ambient Light and Humidity Sensor to Dome Lamp Wiring Harness

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) RD / VT | (1) 1340 | (1) I | (1) — | (1) Battery Positive Voltage | (1) 1 | (1) 0.35 | (1) RD / WH | (1) 1340 | (1) II | (1) — |
| (2) 2 | (2) 0.35 | (2) GN / BN | (2) 4115 | (2) I | (2) — | (2) Body Control Module LIN Bus 5 | (2) 2 | (2) 0.35 | (2) GN / WH | (2) 4115 | (2) II | (2) — |
| (3) 3 | (3) 0.35 | (3) BK | (3) 1050 | (3) I | (3) — | (3) Ground | (3) 3 | (3) 0.35 | (3) BK | (3) 1050 | (3) II | (3) — |
| 4 | — | — | — | — | — | Not Occupied | 4 | — | — | — | — | — |

### X401 Chassis Wiring Harness to Engine Wiring Harness



4994285



4500420

**Connector Part Information**
- Harness Type: Chassis Wiring Harness
- OEM Connector: 13974124
- Service Connector: 19371189
- Description: 20-Way F 1.2 MCON, 2.8 MCP Series, Sealed( BK)

**Connector Part Information**
- Harness Type: Engine Wiring Harness
- OEM Connector: 33156041
- Service Connector: 19333031
- Description: 20-Way M 1.2, 2.8 MCP Series, Sealed( BK)

## Terminal Part Information

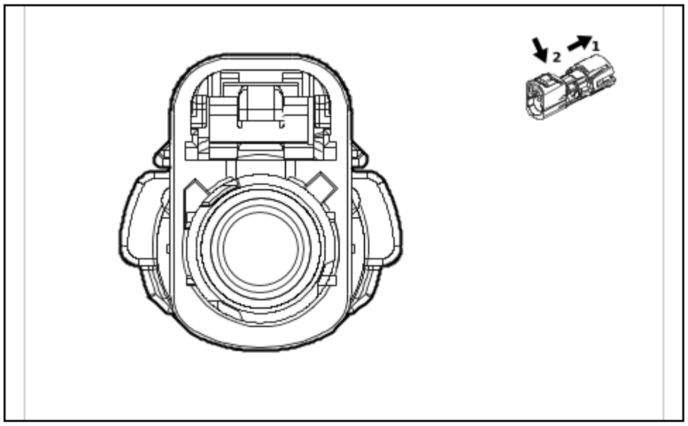
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 19368624 | J-35616-35 (VT) | J-38125-556 |
| II | 85669160 | J-35616-12 (BU) | J-38125-215A |
| III | 13575364 | J-35616-5 (PU) | J-38125-36 |
| IV | 19356519 | J-35616-13 (BU) | J-38125-215A |

## X401 Chassis Wiring Harness to Engine Wiring Harness

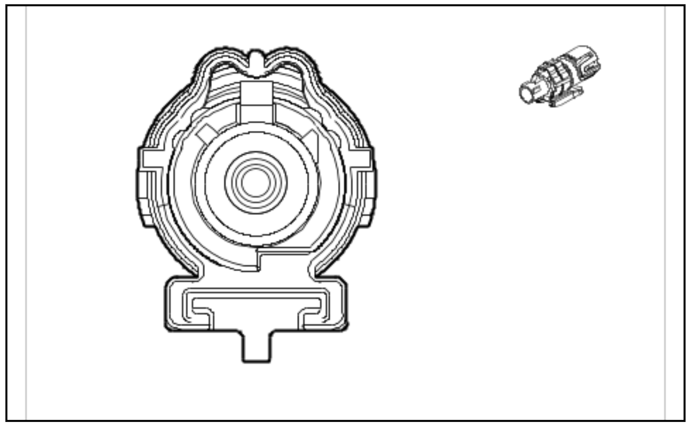
| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) WH | (1) 4055 | (1) II | (1) — | (1) Private Serial Data Powertrain CAN Bus [+] Serial Data | (1) 1 | (1) 0.5 | (1) WH | (1) 4055 | (1) IV | (1) — |
| (2) 2 | (2) 0.5 | (2) BU / GY | (2) 4054 | (2) II | (2) — | (2) Private Serial Data Powertrain CAN Bus [-] Serial Data | (2) 2 | (2) 0.5 | (2) BU / GY | (2) 4054 | (2) IV | (2) — |
| (3) 3 | (3) 0.5 | (3) GN / GY | (3) 465 | (3) II | (3) — | (3) Fuel Pump Primary Relay Control | (3) 3 | (3) 0.5 | (3) GN / GY | (3) 465 | (3) IV | (3) — |
| (4) 4 | (4) 0.5<br>(4) 1 | (4) WH / RD<br>(4) BK / WH | (4) 11031<br>(4) 1151 | (4) II<br>(4) II | (4) —<br>(4) — | (4) Fuel Tank Isolation Valve Supply Voltage<br>(4) Signal Ground | (4) 4 | (4) 0.5<br>(4) 0.75 | (4) WH / RD<br>(4) BK / WH | (4) 11031<br>(4) 1151 | (4) IV<br>(4) IV | (4) —<br>(4) — |
| (5) 5 | (5) 0.5<br>(5) 0.5 | (5) BU<br>(5) VT / BU | (5) 10290<br>(5) 5294 | (5) II<br>(5) II | (5) —<br>(5) — | (5) Exhaust Gas Temperature Sensor SENT 2 Signal<br>(5) Powertrain Main Relay Fused Supply Voltage 5 | (5) 5 | (5) 0.5<br>(5) 0.5 | (5) BU<br>(5) VT / BU | (5) 10290<br>(5) 5294 | (5) IV<br>(5) IV | (5) —<br>(5) — |
| (6) 6 | (6) 0.5<br>(6) 0.75 | (6) BU / GN<br>(6) BU / GN | (6) 11437<br>(6) 11437 | (6) II<br>(6) II | (6) —<br>(6) — | (6) Secondary Fuel Pump Disable Signal<br>(6) Secondary Fuel Pump Disable Signal | (6) 6 | (6) 0.5 | (6) BU / GN | (6) 11437 | (6) IV | (6) — |
| (7) 7 | (7) 0.5<br>(7) 1 | (7) BK / GY<br>(7) WH / RD | (7) 626<br>(7) 480 | (7) II<br>(7) II | (7) —<br>(7) — | (7) Engine Control Vehicle Sensors Low Reference 1<br>(7) Engine Control Vehicle Sensors 5 Volt Reference 1 | (7) 7 | (7) 0.5<br>(7) 0.5 | (7) BK / GY<br>(7) WH / RD | (7) 626<br>(7) 480 | (7) IV<br>(7) IV | (7) —<br>(7) — |
| (8) 8 | (8) 0.5<br>(8) 1 | (8) YE / GY<br>(8) WH / BN | (8) 11029<br>(8) 2363 | (8) II<br>(8) II | (8) —<br>(8) — | (8) Canister Vapor Pressure Sensor Signal<br>(8) Exhaust Pressure Sensor SENT 1 Signal | (8) 8 | (8) 0.5<br>(8) 0.5 | (8) YE / GY<br>(8) WH / BN | (8) 11029<br>(8) 2363 | (8) IV<br>(8) IV | (8) —<br>(8) — |

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (9) 9 | (9) 0.5<br>(9) 1 | (9) WH / RD<br>(9) BK / GY | (9) 480<br>(9) 626 | (9) II<br>(9) II | (9) —<br>(9) — | (9) Engine Control Vehicle Sensors 5 Volt Reference 1<br>(9) Engine Control Vehicle Sensors Low Reference 1 | (9) 9 | (9) 0.5<br>(9) 0.5 | (9) WH / RD<br>(9) BK / GY | (9) 480<br>(9) 626 | (9) IV<br>(9) IV | (9) —<br>(9) — |
| (10) 10 | (10) 0.5 | (10) YE | (10) 10291 | (10) II | (10) — | (10) Exhaust Gas Temperature Sensor SENT 3 Signal | (10) 10 | (10) 0.5 | (10) YE | (10) 10291 | (10) IV | (10) — |
| (11) 11 | (11) 0.5 | (11) BN / BU | (11) 2926 | (11) II | (11) — | (11) Exhaust Aftertreatment Fuel Injector High Control | (11) 11 | (11) 0.5 | (11) BN / BU | (11) 2926 | (11) IV | (11) — |
| (12) 12 | (12) 0.5 | (12) VT / BN | (12) 2927 | (12) II | (12) — | (12) Exhaust Aftertreatment Fuel Injector Low Control | (12) 12 | (12) 0.5 | (12) VT / BN | (12) 2927 | (12) IV | (12) — |
| (13) 13 | (13) 0.5 | (13) YE / RD | (13) 10595 | (13) II | (13) — | (13) Engine Control Vehicle Sensors 5 Volt Reference 2 | (13) 13 | (13) 0.5 | (13) YE / RD | (13) 10595 | (13) IV | (13) — |
| (14) 14 | (14) — | (14) — | (14) — | (14) — | (14) — | (14) Powertrain Main Relay Fused Supply Voltage 4 | (14) 14 | (14) 0.75 | (14) VT / BU | (14) 5293 | (14) IV | (14) — |
| (15) 15 | (15) 0.5<br>(15) 1.5 | (15) VT / GN<br>(15) VT / GN | (15) 4320<br>(15) 4320 | (15) I<br>(15) I | (15) —<br>(15) — | (15) Powertrain Sensor Bus Enable<br>(15) Powertrain Sensor Bus Enable | (15) 15 | (15) 0.5<br>(15) 1.5 | (15) VT / GN<br>(15) VT / GN | (15) 4320<br>(15) 4320 | (15) III<br>(15) III | (15) —<br>(15) — |
| (16) 16 | (16) 0.5 | (16) BU / BK | (16) 4977 | (16) I | (16) — | (16) AUTOSAR CAN Bus [+] 3 Serial Data | (16) 16 | (16) 0.5 | (16) BU / BK | (16) 4977 | (16) III | (16) — |
| (17) 17 | (17) 0.5 | (17) WH | (17) 4976 | (17) I | (17) — | (17) AUTOSAR CAN Bus [-] 3 Serial Data | (17) 17 | (17) 0.5 | (17) WH | (17) 4976 | (17) III | (17) — |
| 18 | — | — | — | — | — | Not Occupied | 18 | — | — | — | — | — |
| (19) 19 | (19) 0.5 | (19) BU / YE | (19) 4979 | (19) I | (19) — | (19) AUTOSAR CAN Bus [+] 2 Serial Data | (19) 19 | (19) 0.5 | (19) BU / YE | (19) 4979 | (19) III | (19) — |
| (20) 20 | (20) 0.5 | (20) WH | (20) 4978 | (20) I | (20) — | (20) AUTOSAR CAN Bus [-] 2 Serial Data | (20) 20 | (20) 0.5 | (20) WH | (20) 4978 | (20) III | (20) — |

### X402A Body Wiring Harness to Chassis Wiring Harness




5810829



5757466

**Connector Part Information**
- Harness Type: Body Wiring Harness COAX
- OEM Connector: 35187033
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type( WH)

**Connector Part Information**
- Harness Type: Chassis Wiring Harness COAX
- OEM Connector: 33338240
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way M Coax Type, Sealed( WH)

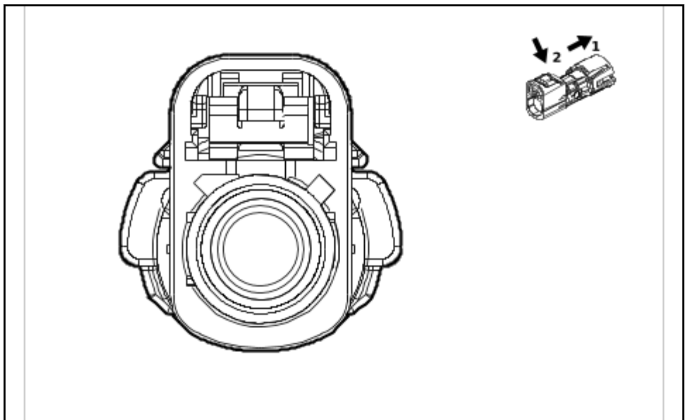
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

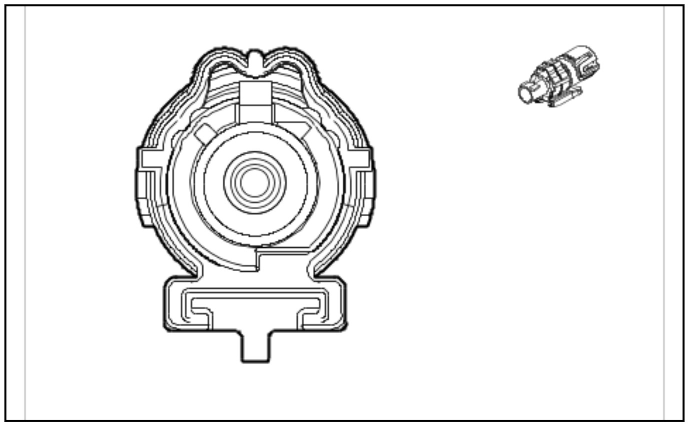
## X402A Body Wiring Harness to Chassis Wiring Harness

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| — | — | Coax Cable | — | I | — | Trailer 2 Rear Vision Camera Coaxial Video Signal | — | — | Coax Cable | — | I | — |

### X402B Body Wiring Harness to Chassis Wiring Harness




5758030



5758019

**Connector Part Information**
- Harness Type: Body Wiring Harness COAX
- OEM Connector: 35187032
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type( BK)

**Connector Part Information**
- Harness Type: Chassis Wiring Harness COAX
- OEM Connector: 33338239
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way M Coax Type, Sealed( BK)

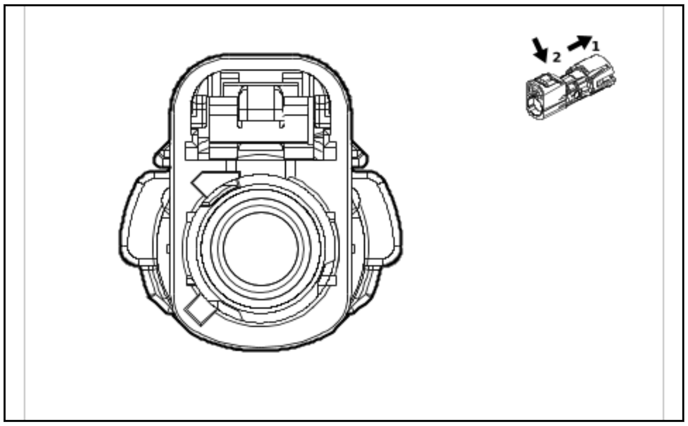
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

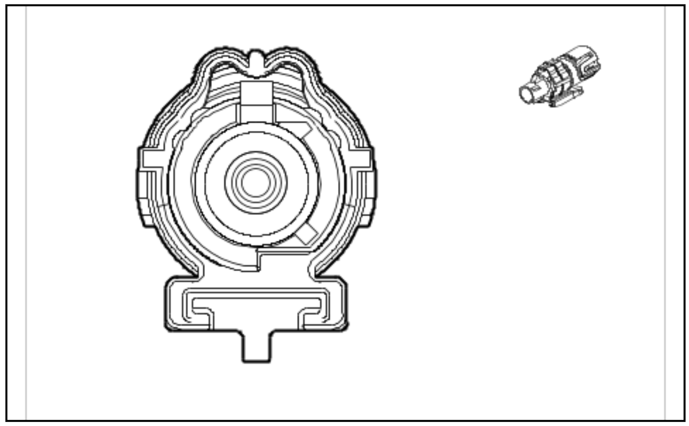
## X402B Body Wiring Harness to Chassis Wiring Harness

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| — | — | Coax Cable | — | I | — | Trailer Rear Vision Camera Coaxial Video Signal | — | — | Coax Cable | — | I | — |

## X402C Body Wiring Harness to Chassis Wiring Harness



5810838



5758017

**Connector Part Information**
- Harness Type: Body Wiring Harness COAX
- OEM Connector: 35187037
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type( BN)

**Connector Part Information**
- Harness Type: Chassis Wiring Harness COAX
- OEM Connector: 33338245
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way M Coax Type, Sealed( BN)

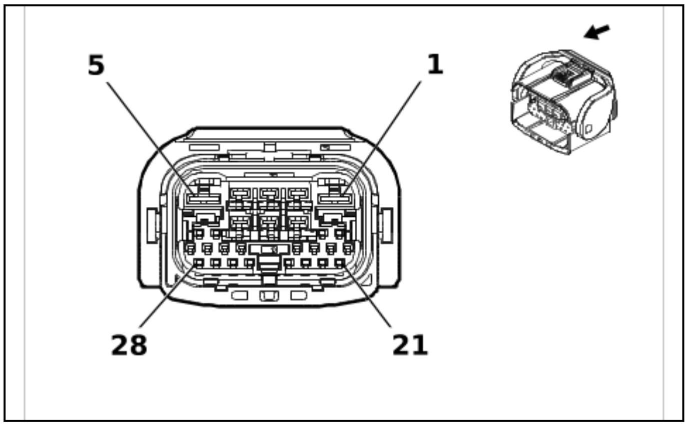
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

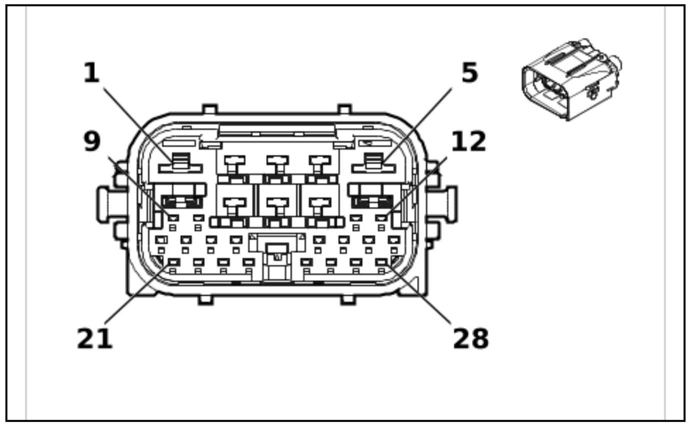
### X402C Body Wiring Harness to Chassis Wiring Harness

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| — | — | Coax Cable | — | I | — | Rear Vision Camera Coaxial Video Signal | — | — | Coax Cable | — | I | — |

### X404 Chassis Wiring Harness to Emission Reduction Fluid Tank Reservoir Wire Harness




6572042




6757546

**Connector Part Information**
- Harness Type: Chassis Wiring Harness
- OEM Connector: 7298-4827-30
- Service Connector: 85761013
- Description: 28-Way F 1.2 MLK, 2.8, 6.3 YESC Series( BK)

**Connector Part Information**
- Harness Type: Emission Reduction Fluid Tank Reservoir Wire Harness
- OEM Connector: 7297-4839-30
- Service Connector: Service by Harness - See Part Catalog
- Description: 28-Way M 1.2 MLK, 2.8, 6.3 YESC Series( BK)

## Terminal Part Information

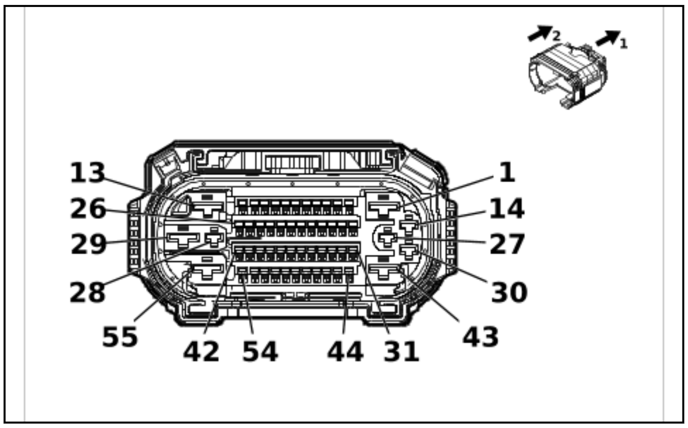
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 13575383 | J-35616-42 (RD) | J-38125-11A |
| II | 19368324 | J-35616-35 (VT) | J-38125-11A |
| III | 85669160 | J-35616-12 (BU) | J-38125-215A |
| IV | Not required | J-35616-17 (L-GN) | No Tool Required |
| V | Not required | J-35616-5 (PU) | No Tool Required |

## X404 Chassis Wiring Harness to Emission Reduction Fluid Tank Reservoir Wire Harness

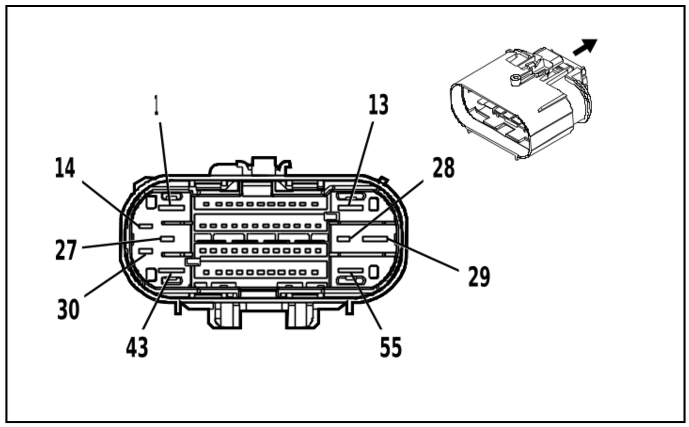
| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 2.5 | (1) RD / WH | (1) 2040 | (1) I | (1) — | (1) Battery Positive Voltage | (1) 1 | (1) 3 | (1) RD / WH | (1) 2040 | (1) V | (1) — |
| 2 - 4 | — | — | — | — | — | Not Occupied | 2 - 4 | — | — | — | — | — |
| (5) 5 | (5) 3 | (5) BK / WH | (5) 1151 | (5) I | (5) — | (5) Signal Ground | (5) 5 | (5) 3 | (5) BK / WH | (5) 1151 | (5) V | (5) — |
| 6 | — | — | — | — | — | Not Occupied | 6 | — | — | — | — | — |
| (7) 7 | (7) 1.5 | (7) RD / GN | (7) 2440 | (7) II | (7) — | (7) Battery Positive Voltage | (7) 7 | (7) 2 | (7) RD / GN | (7) 2440 | (7) V | (7) — |
| 8 - 14 | — | — | — | — | — | Not Occupied | 8 - 14 | — | — | — | — | — |
| (15) 15 | (15) 0.5 | (15) VT / WH | (15) 639 | (15) III | (15) — | (15) Run/ Crank Ignition 1 Voltage | (15) 15 | (15) 0.5 | (15) VT / WH | (15) 639 | (15) IV | (15) — |
| (16) 16 | (16) 0.5 | (16) BU / BK | (16) 4977 | (16) III | (16) — | (16) AUTOSAR CAN Bus [+] 3 Serial Data | (16) 16 | (16) 0.5 | (16) BU / BK | (16) 4977 | (16) IV | (16) — |

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (17) 17 | (17) 0.5 | (17) B U / BK | (17) 49 77 | (17) III | (17) — | (17) AUTOSA R CAN Bus [+] 3 Serial Data | (17) 17 | (17) 0.5 | (17) B U / BK | (17) 49 77 | (17) IV | (17) — |
| 18 - 23 | — | — | — | — | — | Not Occupied | 18 - 23 | — | — | — | — | — |
| (24) 24 | (24) 0.5 | (24) WH | (24) 49 76 | (24) III | (24) — | (24) AUTOSA R CAN Bus [-] 3 Serial Data | (24) 24 | (24) 0.5 | (24) WH | (24) 49 76 | (24) IV | (24) — |
| (25) 25 | (25) 0.5 | (25) WH | (25) 49 76 | (25) III | (25) — | (25) AUTOSA R CAN Bus [-] 3 Serial Data | (25) 25 | (25) 0.5 | (25) WH | (25) 49 76 | (25) IV | (25) — |
| 26 - 28 | — | — | — | — | — | Not Occupied | 26 - 28 | — | — | — | — | — |

### X410 Body Wiring Harness to Chassis Wiring Harness




5823852




4993301

**Connector Part Information**
- Harness Type: Body Wiring Harness
- OEM Connector: 35588033
- Service Connector: 19371185
- Description: 55-Way F 1.2 OCS, 2.8, 6.3 CTS Series, Sealed( BK)

**Connector Part Information**
- Harness Type: Chassis Wiring Harness
- OEM Connector: 35588063
- Service Connector: 84727364
- Description: 55-Way M 1.2 OCS, 2.8, 6.3 CTS Series, Sealed( BK)

## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 19332901 | J-35616-35 (VT) | J-38125-212 |
| II | 19370818 | J-35616-12 (BU) | J-38125-553 |
| III | 19371217 | J-35616-12 (BU) | J-38125-553 |
| IV | 84634921 | J-35616-42 (RD) | J-38125-212 |
| V | 84847992 | J-35616-32 (OG) | J-38125-36 |
| VI | 84867140 | J-35616-13 (BU) | J-38125-553 |
| VII | 84867141 | J-35616-13 (BU) | J-38125-215A |
| VIII | 84992391 | J-35616-5 (PU) | J-38125-36 |

## X410 Body Wiring Harness to Chassis Wiring Harness

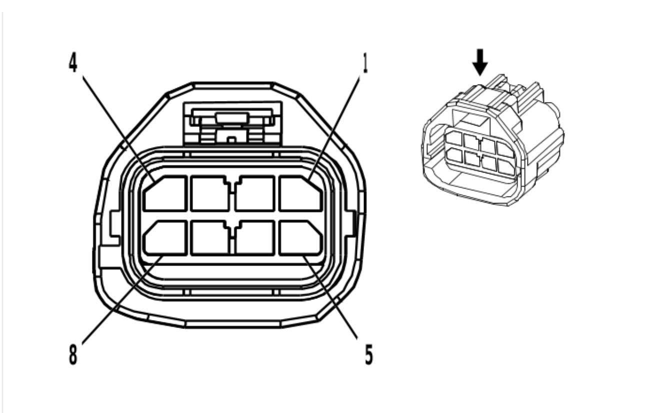
| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 2. 5 | (1) GY | (1) 436 8 | (1) IV | (1) — | (1) Right Park Brake Motor Low Reference | (1) 1 | (1) 4 | (1) GY | (1) 436 8 | (1) V | (1) — |
| (2) 2 | (2) 0. 75 | (2) BU / VT | (2) 133 5 | (2) II | (2) — | (2) Right Rear Turn Signal Lamp Control 2 | (2) 2 | (2) 0. 75 | (2) BU / VT | (2) 133 5 | (2) VI | (2) — |
| (3) 3 | (3) 0. 5 | (3) BN / YE | (3) 820 | (3) II | (3) — | (3) Center High Mounted Stop Lamp Supply Volt-age | (3) 3 | (3) 0. 5 | (3) BN / YE | (3) 820 | (3) VI | (3) — |
| (4) 4 | (4) 0. 5 | (4) G N / BU | (4) 273 3 | (4) II | (4) — | (4) Brake System Control Module LIN Bus 2 | (4) 4 | (4) 0. 5 | (4) G N / BU | (4) 273 3 | (4) VI | (4) — |
| (5) 5 | (5) 0. 35 | (5) BN / GN | (5) 356 8 | (5) II | (5) — | (5) Rear Closure Passive Entry Antenna High Signal | (5) 5 | (5) 0. 5 | (5) BN / GN | (5) 356 8 | (5) VI | (5) — |
| (6) 6 | (6) 0. 35 | (6) G N / GY | (6) 356 9 | (6) II | (6) — | (6) Rear Closure Passive Entry Antenna Low Signal | (6) 6 | (6) 0. 5 | (6) G N / GY | (6) 356 9 | (6) VI | (6) — |
| (7) 7 | (7) 0. 75 | (7) BU / WH | (7) 133 4 | (7) II | (7) — | (7) Left Rear Turn Signal Lamp Control 2 | (7) 7 | (7) 0. 75 | (7) BU / WH | (7) 133 4 | (7) VI | (7) — |
| (8) 8 | (8) 0. 5 | (8) W H / VT | (8) 143 0 | (8) II | (8) — | (8) Exterior Courtesy Lamp Control | (8) 8 | (8) 0. 5 | (8) W H / VT | (8) 143 0 | (8) VI | (8) — |
| (9) 9 | (9) 0. 5 | (9) G N / YE | (9) 161 6 | (9) II | (9) — | (9) Rear Brake Pad Wear Sensor Signal | (9) 9 | (9) 0. 5 | (9) G N / YE | (9) 161 6 | (9) VI | (9) — |
| (10) 10 | (10) 0.5 | (10) WH / BK | (10) 22 23 | (10) II | (10) — | (10) Trailer Brake Apply Signal | (10) 10 | (10) 0.5 | (10) WH / BK | (10) 22 23 | (10) VI | (10) — |
| (11) 11 | (11) 0.35 | (11) G N / YE | (11) 28 62 | (11) II | (11) — | (11) Body Control Module LIN Bus 16 | (11) 11 | (11) 0.5 | (11) G N / YE | (11) 28 62 | (11) VI | (11) — |
| 12 | — | — | — | — | — | Not Occupied | 12 | — | — | — | — | — |
| (13) 13 | (13) 2.5 | (13) G N / VT | (13) 19 88 | (13) IV | (13) — | (13) Right Park Brake Motor Apply Control | (13) 13 | (13) 4 | (13) G N / VT | (13) 19 88 | (13) V | (13) — |
| (14) 14 | (14) 2.5 | (14) R D / VT | (14) 44 42 | (14) I | (14) — | (14) Primary Fused Battery Positive Volt-age | (14) 14 | (14) 2.5 | (14) R D / VT | (14) 44 42 | (14) VIII | (14) — |
| (15) 15 | (15) 0.5 | (15) B U / YE | (15) 49 79 | (15) II | (15) — | (15) AUTOSA R CAN Bus [+] 2 Serial Data | (15) 15 | (15) 0.5 | (15) B U / YE | (15) 49 79 | (15) VI | (15) — |

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (16) 16 | (16) 0.5 | (16) WH | (16) 4978 | (16) II | (16) — | (16) AUTOSAR CAN Bus [-] 2 Serial Data | (16) 16 | (16) 0.5 | (16) WH | (16) 4978 | (16) VI | (16) — |
| (17) 17 | (17) 0.5 | (17) WH | (17) 4976 | (17) II | (17) — | (17) AUTOSAR CAN Bus [-] 3 Serial Data | (17) 17 | (17) 0.5 | (17) WH | (17) 4976 | (17) VI | (17) — |
| (18) 18 | (18) 0.5 | (18) BU / BK | (18) 4977 | (18) II | (18) — | (18) AUTOSAR CAN Bus [+] 3 Serial Data | (18) 18 | (18) 0.5 | (18) BU / BK | (18) 4977 | (18) VI | (18) — |
| (19) 19 | (19) 0.35 | (19) WH / BK | (19) 7544 | (19) II | (19) — | (19) Right Rear Turn Signal Lamp Feedback Signal | (19) 19 | (19) 0.75 | (19) WH / BK | (19) 7544 | (19) VI | (19) — |
| (20) 20 | (20) 0.5 | (20) BN / BU | (20) 1602 | (20) II | (20) — | (20) Front Brake Pad Wear Sensor Signal | (20) 20 | (20) 0.5 | (20) BN / BU | (20) 1602 | (20) VI | (20) — |
| (21) 21 | (21) 0.5 | (21) VT | (21) 882 | (21) II | (21) — | (21) Right Rear Wheel Speed Sensor Signal | (21) 21 | (21) 0.5 | (21) VT | (21) 882 | (21) VI | (21) — |
| (22) 22 | (22) 0.5 | (22) GY / YE | (22) 7128 | (22) II | (22) — | (22) Right Rear Wheel Speed Sensor Control | (22) 22 | (22) 0.5 | (22) GY / YE | (22) 7128 | (22) VI | (22) — |
| (23) 23 | (23) 0.5 | (23) BU | (23) 884 | (23) II | (23) — | (23) Left Rear Wheel Speed Sensor Signal | (23) 23 | (23) 0.5 | (23) BU | (23) 884 | (23) VI | (23) — |
| (24) 24 | (24) 0.5 | (24) GY / BK | (24) 7127 | (24) II | (24) — | (24) Left Rear Wheel Speed Sensor Control | (24) 24 | (24) 0.5 | (24) GY / BK | (24) 7127 | (24) VI | (24) — |
| (25) 25 | (25) 0.5 | (25) GY | (25) 830 | (25) II | (25) — | (25) Left Front Wheel Speed Sensor Signal | (25) 25 | (25) 0.5 | (25) GY | (25) 830 | (25) VI | (25) — |
| (26) 26 | (26) 0.5 | (26) GY / WH | (26) 7064 | (26) II | (26) — | (26) Left Front Wheel Speed Sensor Control | (26) 26 | (26) 0.5 | (26) GY / WH | (26) 7064 | (26) VI | (26) — |
| (27) 27 | (27) 0.5 | (27) BU | (27) 47 | (27) I | (27) — | (27) Trailer Auxiliary Control | (27) 27 | (27) 0.5 | (27) BU | (27) 47 | (27) VIII | (27) - JL1 |
| (28) 28 | (28) 0.5 | (28) BN / GN | (28) 4246 | (28) I | (28) — | (28) Identification Lamp Control | (28) 28 | (28) 0.5 | (28) BN / GN | (28) 4246 | (28) VIII | (28) — |
| (29) 29 | (29) 2.5 | (29) WH | (29) 2001 | (29) IV | (29) — | (29) Left Park Brake Motor Apply Control | (29) 29 | (29) 4 | (29) WH | (29) 2001 | (29) V | (29) — |
| (30) 30 | (30) 0.35 | (30) GY | (30) 7292 | (30) I | (30) — | (30) Major Endgate Release Switch Signal Exterior | (30) 30 | (30) 0.5 | (30) GY | (30) 7292 | (30) VIII | (30) — |

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (31) 31 | (31) 0.35 | (31) B N | (31) 10 119 | (31) II | (31) — | (31) AC Outlet 2 Low Reference | (31) 31 | (31) 0.5 | (31) B N | (31) 10 119 | (31) VI | (31) — |
| (32) 32 | (32) 0.75 | (32) R D / WH | (32) 10 121 | (32) II | (32) — | (32) AC Outlet 2 Phase B Control | (32) 32 | (32) 0.75 | (32) R D / WH | (32) 10 121 | (32) VI | (32) — |
| (33) 33 | (33) 0.5 | (33) G Y / BU | (33) 77 62 | (33) II | (33) — | (33) Cargo Lamp Control | (33) 33 | (33) 0.5 | (33) G Y / BU | (33) 77 62 | (33) VI | (33) — |
| (34) 34 | (34) 0.5 | (34) Y E / BK | (34) 22 24 | (34) II | (34) — | (34) Trailer Brake Enable Signal | (34) 34 | (34) 0.5 | (34) Y E / BK | (34) 22 24 | (34) VI | (34) — |
| (35) 35 | (35) 0.5 | (35) G N / BN | (35) 22 66 | (35) II | (35) — | (35) DC/AC Inverter Control 2 | (35) 35 | (35) 0.5 | (35) G N / BN | (35) 22 66 | (35) VI | (35) — |
| (36) 36 | (36) 0.5 | (36) B N / WH | (36) 23 74 | (36) II | (36) — | (36) Object Sensor Volt-age Reference | (36) 36 | (36) 0.5 | (36) B N / WH | (36) 23 74 | (36) VI | (36) — |
| (37) 37 | (37) 0.5 | (37) Y E | (37) 23 75 | (37) II | (37) — | (37) Left Rear Outer Parking Assist Sensor Signal | (37) 37 | (37) 0.5 | (37) Y E | (37) 23 75 | (37) VI | (37) — |
| (38) 38 | (38) 0.5 | (38) Y E / BU | (38) 23 76 | (38) II | (38) — | (38) Left Rear Middle Parking Assist Sensor Signal | (38) 38 | (38) 0.5 | (38) Y E / BU | (38) 23 76 | (38) VI | (38) — |
| (39) 39 | (39) 0.5 | (39) Y E / WH | (39) 23 77 | (39) II | (39) — | (39) Right Rear Middle Parking Assist Sensor Signal | (39) 39 | (39) 0.5 | (39) Y E / WH | (39) 23 77 | (39) VI | (39) — |
| (40) 40 | (40) 0.5 | (40) Y E / VT | (40) 23 78 | (40) II | (40) — | (40) Right Rear Outer Parking Assist Sensor Signal | (40) 40 | (40) 0.5 | (40) Y E / VT | (40) 23 78 | (40) VI | (40) — |
| (41) 41 | (41) 0.5 | (41) B K / GY | (41) 23 79 | (41) II | (41) — | (41) Object Sensor Low Reference | (41) 41 | (41) 0.5 | (41) B K / GY | (41) 23 79 | (41) VI | (41) — |
| (42) 42 | (42) 0.5 | (42) G N / WH | (42) 24 | (42) II | (42) — | (42) Backup Lamp Control | (42) 42 | (42) 0.5 | (42) G N / WH | (42) 24 | (42) VI | (42) — |
| (43) 43 | (43) 2.5 | (43) G Y / BK | (43) 43 69 | (43) IV | (43) — | (43) Left Park Brake Motor Low Reference | (43) 43 | (43) 4 | (43) G Y / BK | (43) 43 69 | (43) V | (43) — |
| (44) 44 | (44) 0.75<br>(44) 1 | (44) B K / WH<br>(44) B K | (44) 10 120<br>(44) 90 03 | (44) II<br>(44) III | (44) —<br>(44) — | (44) AC Outlet 2 Phase A Control<br>(44) — | (44) 44 | (44) 0.75<br>(44) 1 | (44) B K / WH<br>(44) B K | (44) 10 120<br>(44) 90 00 | (44) VI<br>(44) VII | (44) —<br>(44) — |
| (45) 45 | (45) 0.35 | (45) Y E | (45) 72 94 | (45) II | (45) — | (45) Minor Endgate Release Switch Discrete Signal Exterior | (45) 45 | (45) 0.5 | (45) Y E | (45) 72 94 | (45) VI | (45) — |

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (46) 46 | (46) 0.5 | (46) V T / RD | (46) 40 49 | (46) II | (46) — | (46) AC Power Outlet Sensor High Reference | (46) 46 | (46) 0.5 | (46) V T / RD | (46) 40 49 | (46) VI | (46) — |
| (47) 47 | (47) 0.5 | (47) Y E / GN | (47) 20 24 | (47) II | (47) — | (47) Animatio n Lighting Control | (47) 47 | (47) 0.5 | (47) Y E / GN | (47) 20 24 | (47) VI | (47) — |
| (48) 48 | (48) 0.35 | (48) WH / YE | (48) 75 41 | (48) II | (48) — | (48) Right Rear Stop Lamp Control | (48) 48 | (48) 0.75 | (48) WH / YE | (48) 75 41 | (48) VI | (48) — |
| (49) 49 | (49) 0.75 | (49) G Y / YE | (49) 75 42 | (49) II | (49) — | (49) Left Rear Stop Lamp Control | (49) 49 | (49) 0.75 | (49) G Y / YE | (49) 75 42 | (49) VI | (49) — |
| (50) 50 | (50) 0.5 | (50) V T / BK | (50) 73 9 | (50) II | (50) — | (50) Run/ Crank Ignition 1 Voltage | (50) 50 | (50) 0.5 | (50) V T / BK | (50) 73 9 | (50) VI | (50) — |
| (51) 51 | (51) 0.35 | (51) WH / VT | (51) 65 67 | (51) II | (51) — | (51) Rear Turn Signal Lamp Feedback Signal | (51) 51 | (51) 0.75 | (51) WH / VT | (51) 65 67 | (51) VI | (51) — |
| (52) 52 | (52) 0.5 | (52) G N / YE | (52) 68 46 | (52) II | (52) — | (52) Rear License Plate Lamp Control | (52) 52 | (52) 0.5 | (52) G N / YE | (52) 68 46 | (52) VI | (52) — |
| (53) 53 | (53) 0.75 | (53) B N / BU | (53) 69 93 | (53) II | (53) — | (53) Left Rear Park Lamp Control | (53) 53 | (53) 0.75 | (53) B N / BU | (53) 69 93 | (53) VI | (53) — |
| (54) 54 | (54) 0.75 | (54) B N / GY | (54) 69 95 | (54) II | (54) — | (54) Right Rear Park Lamp Control | (54) 54 | (54) 0.75 | (54) B N / GY | (54) 69 95 | (54) VI | (54) — |
| (55) 55 | (55) 2.5 | (55) R D / BN | (55) 36 40 | (55) IV | (55) — | (55) Battery Positive Volt- age | (55) 55 | (55) 2.5 | (55) R D / BN | (55) 41 42 | (55) V | (55) — |

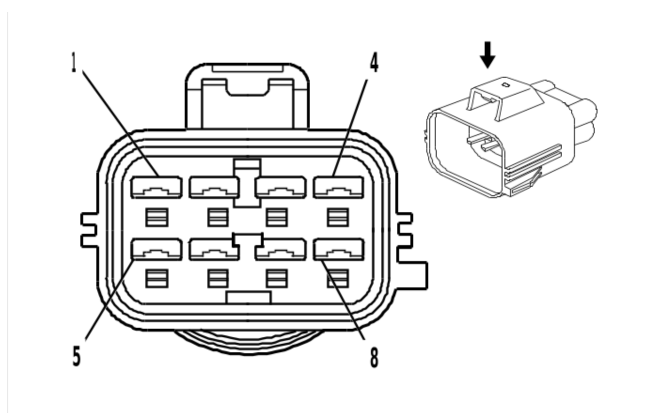
## X412 Assist Step Motor jumper to Chassis Wiring Harness




1401778

**Connector Part Information**

- Harness Type: Assist Step M
- OEM Connector: Not Available
- Service Connector: Service by Harness - See Part Catalog
- Description: 8-Way F




1856785

**Connector Part Information**

- Harness Type: Chassis Wiring Harness
- OEM Connector: 7282-5574-10
- Service Connector: 19367561
- Description: 8-Way M 2.8 YESC Series, Sealed( D-GY)

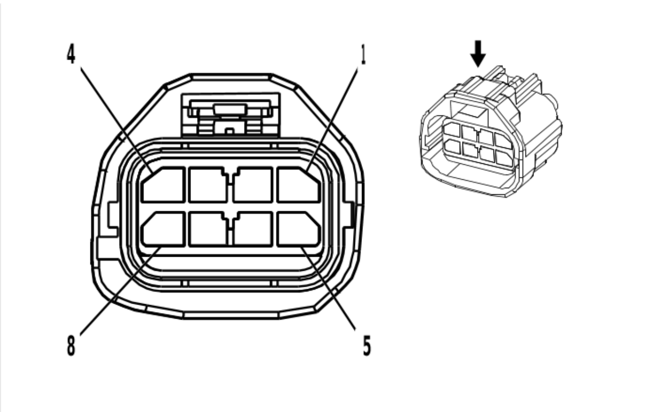
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |
| II | Not required | J-35616-5 (PU) | No Tool Required |

## X412 Assist Step Motor jumper to Chassis Wiring Harness

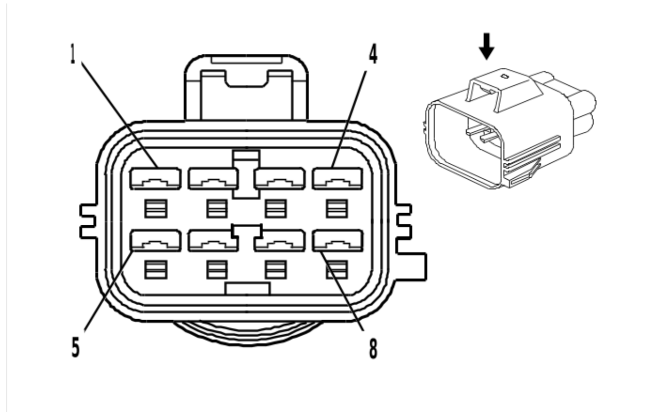
| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 2 | (1) WH / BN | (1) 7471 | (1) I | (1) — | (1) Left Running Board Step Motor Control Extend | (1) 1 | (1) 2 | (1) WH / BN | (1) 7471 | (1) II | (1) — |
| (2) 2 | (2) 0.5 | (2) VT / RD | (2) 7468 | (2) I | (2) — | (2) Left Running Board Step Motor Hall Sensor 5V Reference | (2) 2 | (2) 0.5 | (2) VT / RD | (2) 7468 | (2) II | (2) — |
| (3) 3 | (3) 0.5 | (3) YE | (3) 7467 | (3) I | (3) — | (3) Left Running Board Step Motor Hall Sensor Signal | (3) 3 | (3) 0.5 | (3) YE | (3) 7467 | (3) II | (3) — |
| (4) 4 | (4) 0.5 | (4) YE / BN | (4) 7466 | (4) I | (4) — | (4) Left Running Board Step Motor Hall Sensor Low Reference | (4) 4 | (4) 0.5 | (4) YE / BN | (4) 7466 | (4) II | (4) — |
| (5) 5 | (5) 2 | (5) GY | (5) 7472 | (5) I | (5) — | (5) Left Running Board Step Motor Control Retract | (5) 5 | (5) 2 | (5) GY | (5) 7472 | (5) II | (5) — |
| 6 | — | — | — | — | — | Not Occupied | 6 | — | — | — | — | — |
| (7) 7 | (7) 0.5 | (7) BN | (7) 4748 | (7) I | (7) — | (7) Left Running Board Step Courtesy Lamp Control | (7) 7 | (7) 0.5 | (7) BN | (7) 4748 | (7) II | (7) — |
| (8) 8 | (8) 0.5 | (8) BK | (8) 1850 | (8) I | (8) — | (8) Ground | (8) 8 | (8) 0.5 | (8) BK | (8) 1850 | (8) II | (8) — |

### X413 Assist Step Motor jumper to Chassis Wiring Harness




1401778

**Connector Part Information**
- Harness Type: Assist Step M
- OEM Connector: Not Available
- Service Connector: Service by Harness - See Part Catalog
- Description: 8-Way F




1856785

**Connector Part Information**
- Harness Type: Chassis Wiring Harness
- OEM Connector: 7282-5574-10
- Service Connector: 19367561
- Description: 8-Way M 2.8 YESC Series, Sealed( D-GY)

## Terminal Part Information

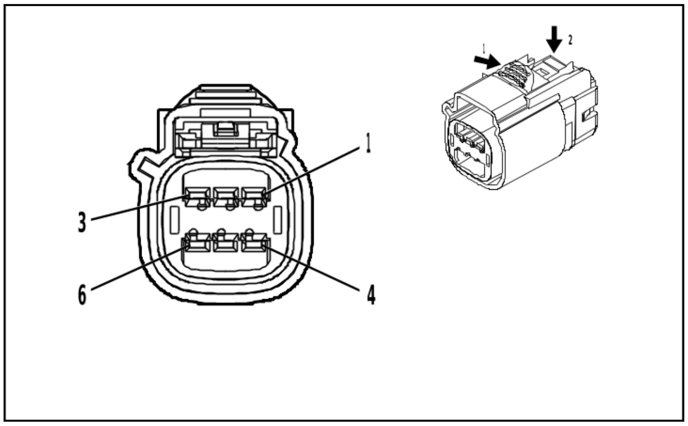
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |
| II | Not required | J-35616-5 (PU) | No Tool Required |

## X413 Assist Step Motor jumper to Chassis Wiring Harness

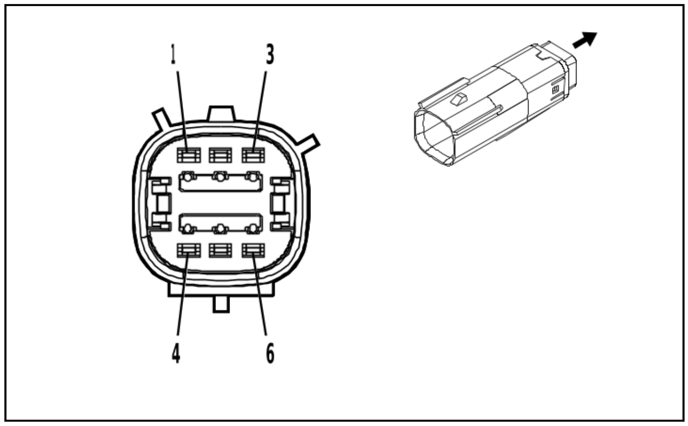
| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 2 | (1) BU | (1) 7470 | (1) I | (1) — | (1) Right Running Board Step Motor Control Extend | (1) 1 | (1) 2 | (1) BU | (1) 7470 | (1) II | (1) — |
| (2) 2 | (2) 0.5 | (2) GN / RD | (2) 7464 | (2) I | (2) — | (2) Right Running Board Step Motor Hall Sensor 5V Reference | (2) 2 | (2) 0.5 | (2) GN / RD | (2) 7464 | (2) II | (2) — |
| (3) 3 | (3) 0.5 | (3) VT | (3) 7465 | (3) I | (3) — | (3) Right Running Board Step Motor Hall Sensor Signal | (3) 3 | (3) 0.5 | (3) VT | (3) 7465 | (3) II | (3) — |
| (4) 4 | (4) 0.5 | (4) YE / BK | (4) 7463 | (4) I | (4) — | (4) Right Running Board Step Motor Hall Sensor Low Reference | (4) 4 | (4) 0.5 | (4) YE / BK | (4) 7463 | (4) II | (4) — |
| (5) 5 | (5) 2 | (5) GN | (5) 7469 | (5) I | (5) — | (5) Right Left Running Board Step Motor Control Retract | (5) 5 | (5) 2 | (5) GN | (5) 7469 | (5) II | (5) — |
| 6 | — | — | — | — | — | Not Occupied | 6 | — | — | — | — | — |

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (7) 7 | (7) 0.5 | (7) GY / VT | (7) 4749 | (7) I | (7) — | (7) Right Running Board Step Courtesy Lamp Control | (7) 7 | (7) 0.5 | (7) GY / VT | (7) 4749 | (7) II | (7) — |
| (8) 8 | (8) 0.5 | (8) BK | (8) 1850 | (8) I | (8) — | (8) Ground | (8) 8 | (8) 0.5 | (8) BK | (8) 1850 | (8) II | (8) — |

### X414 Chassis Rear Wiring Harness to Chassis Wiring Harness



4996962



4992963

**Connector Part Information**
- Harness Type: Chassis Rear Wiring Harness
- OEM Connector: 15513505
- Service Connector: 85669156
- Description: 6-Way F 1.5 OCS Series, Sealed( GY)

**Connector Part Information**
- Harness Type: Chassis Wiring Harness
- OEM Connector: 15513475
- Service Connector: 19371205
- Description: 6-Way M 1.5 OCS Series, Sealed( GY)

## Terminal Part Information

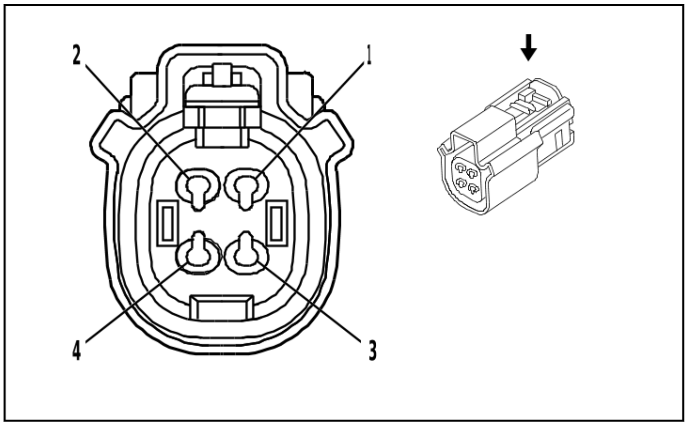
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-2A (GY) | No Tool Required |
| II | Not required | J-35616-3 (GY) | No Tool Required |

## X414 Chassis Rear Wiring Harness to Chassis Wiring Harness

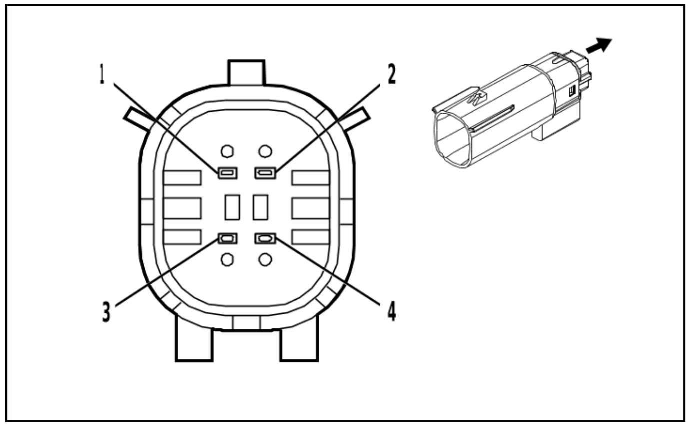
| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) BK / WH | (1) 10120 | (1) I | (1) — | (1) AC Outlet 2 Phase A Control | (1) 1 | (1) 0.75 | (1) BK / WH | (1) 10120 | (1) II | (1) — |
| (2) 2 | (2) 0.5 | (2) BN | (2) 10119 | (2) I | (2) — | (2) AC Outlet 2 Low Reference | (2) 2 | (2) 0.5 | (2) BN | (2) 10119 | (2) II | (2) — |
| (3) 3 | (3) 0.5 | (3) VT / RD | (3) 4049 | (3) I | (3) — | (3) AC Power Outlet Sensor High Reference | (3) 3 | (3) 0.5 | (3) VT / RD | (3) 4049 | (3) II | (3) — |
| (4) 4 | (4) 0.75 | (4) RD / WH | (4) 10121 | (4) I | (4) — | (4) AC Outlet 2 Phase B Control | (4) 4 | (4) 0.75 | (4) RD / WH | (4) 10121 | (4) II | (4) — |

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (5) 5 | (5) 0.5 | (5) GN / BN | (5) 2266 | (5) I | (5) — | (5) DC/AC Inverter Control 2 | (5) 5 | (5) 0.5 | (5) GN / BN | (5) 2266 | (5) II | (5) — |
| (6) 6 | (6) 0.5 | (6) BK | (6) 1750 | (6) I | (6) — | (6) Ground | (6) 6 | (6) 1.5 | (6) BK | (6) 1750 | (6) II | (6) — |

### X415 Engine Wiring Harness to Transfer Case Selector Shift Control Switch Wiring Harness Extension Harness




1960031




2368875

**Connector Part Information**
- Harness Type: Engine Wiring Harness
- OEM Connector: 33472-4006
- Service Connector: 19368217
- Description: 4-Way F 1.5 MX Series, Sealed( BK)

**Connector Part Information**
- Harness Type: Transfer Case Selector Shift Control Switch Wiring Harness Extension Harness
- OEM Connector: 33482-4001
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way M 1.5 MX Series, Sealed( BK)

## Terminal Part Information

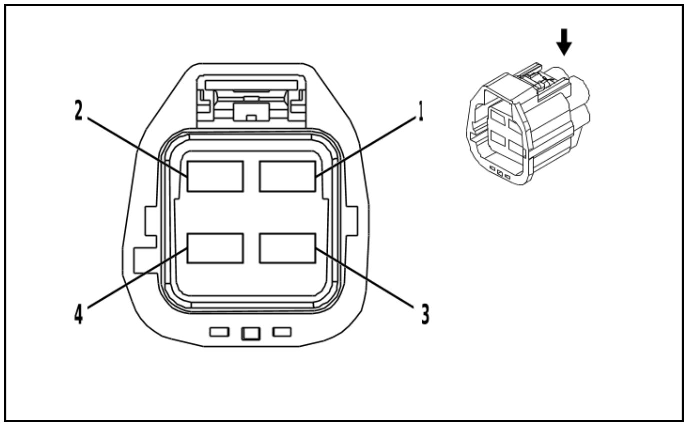
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-14 (GN) | No Tool Required |
| II | Not required | J-35616-2A (GY) | No Tool Required |
| III | Not required | J-35616-3 (GY) | No Tool Required |

## X415 Engine Wiring Harness to Transfer Case Selector Shift Control Switch Wiring Harness Extension Harness

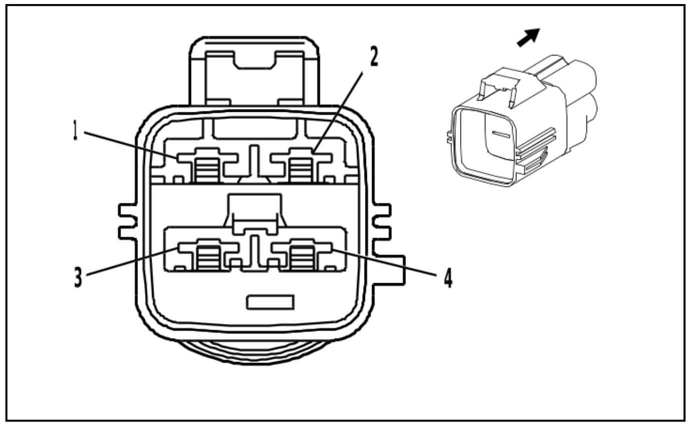
| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) GY / BK | (1) 1570 | (1) II | (1) — | (1) Front Axle Actuator Control | (1) 1 | (1) 0.5 | (1) GY / BK | (1) 1570 | (1) III | (1) — |
| (2) 2 | (2) 0.5 | (2) YE / WH | (2) 1695 | (2) II | (2) — | (2) 4WD Locked Range Indicator Control | (2) 2 | (2) 0.5 | (2) YE / WH | (2) 1695 | (2) III | (2) — |

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (3) 3 | (3) 0.5 | (3) GN | (3) 8016 | (3) II | (3) — | (3) Secondary Axle Motor Control | (3) 3 | (3) 0.5 | (3) GN | (3) 8016 | (3) III | (3) — |
| (4) 4 | (4) 1.5 | (4) BK | (4) 450 | (4) I | (4) — | (4) Ground | (4) 4 | (4) 0.5 | (4) BK | (4) 450 | (4) III | (4) — |

## X420A Chassis Rear Wiring Harness Extension Harness to Chassis Wiring Harness



2852121



1853524

**Connector Part Information**
- Harness Type: Chassis Rear Wiring Harness Extension Harness
- OEM Connector: 7283-3601-10
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 6.3 Series, Sealed( GY)

**Connector Part Information**
- Harness Type: Chassis Wiring Harness
- OEM Connector: 7288-3029-10
- Service Connector: 19371198
- Description: 4-Way M 6.3 Series, Sealed( GY)

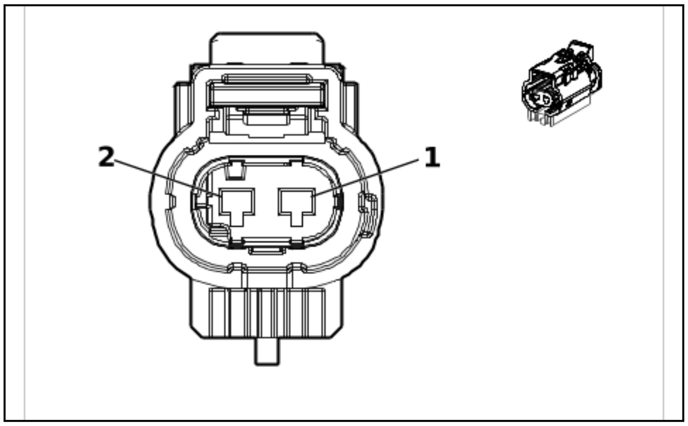
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-42 (RD) | No Tool Required |
| II | Not required | J-35616-43 (RD) | No Tool Required |

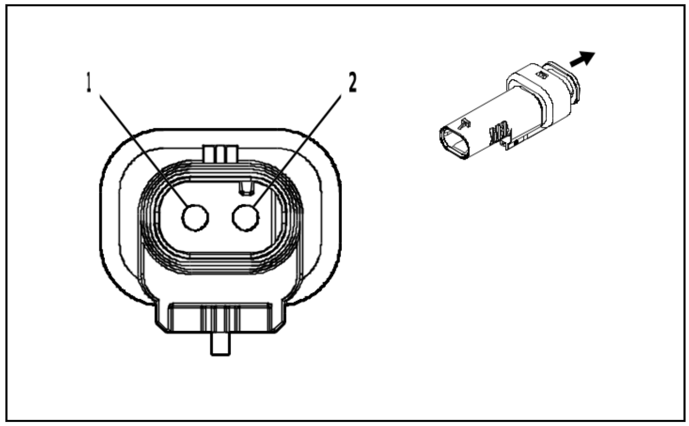
## X420A Chassis Rear Wiring Harness Extension Harness to Chassis Wiring Harness

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 2.5 | (1) WH | (1) 2001 | (1) I | (1) — | (1) Left Park Brake Motor Apply Control | (1) 1 | (1) 4 | (1) WH | (1) 2001 | (1) II | (1) — |
| (2) 2 | (2) 2.5 | (2) GY / BK | (2) 4369 | (2) I | (2) — | (2) Left Park Brake Motor Low Reference | (2) 2 | (2) 4 | (2) GY / BK | (2) 4369 | (2) II | (2) — |
| (3) 3 | (3) 2.5 | (3) GN / VT | (3) 1988 | (3) I | (3) — | (3) Right Park Brake Motor Apply Control | (3) 3 | (3) 4 | (3) GN / VT | (3) 1988 | (3) II | (3) — |
| (4) 4 | (4) 2.5 | (4) GY | (4) 4368 | (4) I | (4) — | (4) Right Park Brake Motor Low Reference | (4) 4 | (4) 4 | (4) GY | (4) 4368 | (4) II | (4) — |

## X420B Chassis Rear Wiring Harness Extension Harness to Chassis Wiring Harness (- G94)




6819416




4992757

**Connector Part Information**
- Harness Type: Chassis Rear Wiring Harness Extension Harness
- OEM Connector: 10530494
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MLK Series, Sealed( GY)

**Connector Part Information**
- Harness Type: Chassis Wiring Harness
- OEM Connector: 10094251
- Service Connector: 19371200
- Description: 2-Way M 1.2 MLK Series, Sealed( GY)

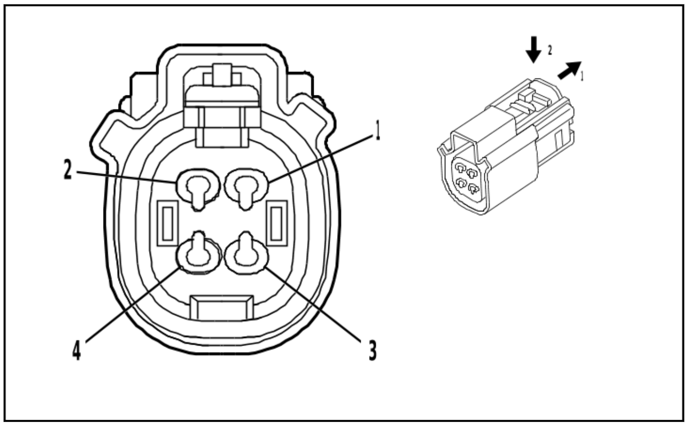
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |
| II | Not required | J-35616-13 (BU) | No Tool Required |
| III | Not required | J-35616-17 (L-GN) | No Tool Required |

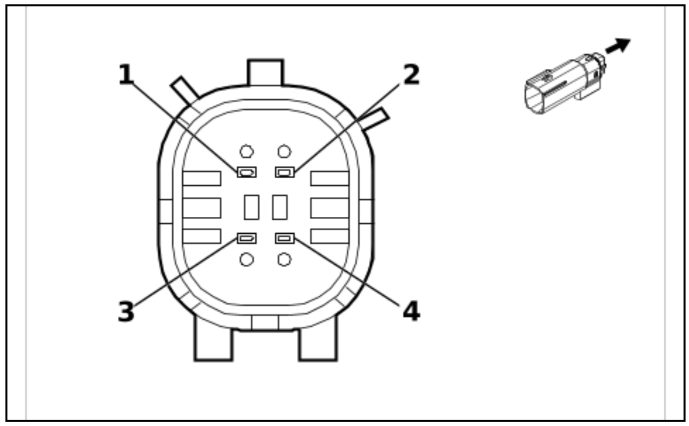
## X420B Chassis Rear Wiring Harness Extension Harness to Chassis Wiring Harness (- G94)

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) GN / YE | (1) 1616 | (1) I | (1) — | (1) Rear Brake Pad Wear Sensor Signal | (1) 1 | (1) 0.5 | (1) GN / YE | (1) 1616 | (1) III | (1) — |
| (2) 2 | (2) 0.75 | (2) BK / WH | (2) 1751 | (2) I | (2) — | (2) Signal Ground<br>(2) Signal Ground | (2) 2 | (2) 1<br>(2) 1 | (2) BK / WH<br>(2) BK / WH | (2) 1951<br>(2) 1151 | (2) II<br>(2) II | (2) ( NV8/ BRS/ L5P)<br>(2) - ( NV8/ BRS/ L5P) |

### X420B Chassis Wiring Harness to Chassis Rear Wiring Harness Extension Harness (G94)




3960090




5604894

**Connector Part Information**
- Harness Type: Chassis Wiring Harness
- OEM Connector: 33472-4007
- Service Connector: 19368970
- Description: 4-Way F 1.5 MX Series, Sealed( GY)

**Connector Part Information**
- Harness Type: Chassis Rear Wiring Harness Extension Harness
- OEM Connector: 33482-4002
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way M 1.5 MX Series, Sealed( GY)

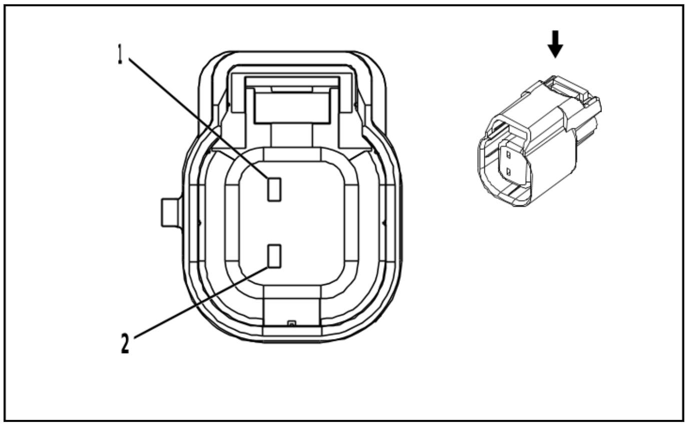
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-14 (GN) | No Tool Required |
| II | Not required | J-35616-3 (GY) | No Tool Required |

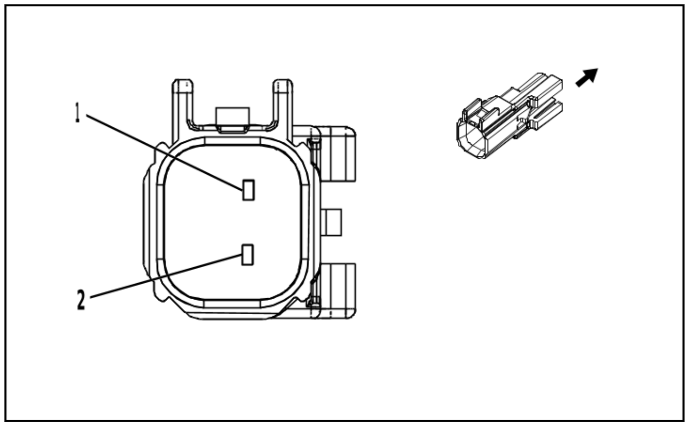
## X420B Chassis Wiring Harness to Chassis Rear Wiring Harness Extension Harness (G94)

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) GN / YE | (1) 1616 | (1) I | (1) — | (1) Rear Brake Pad Wear Sensor Signal | (1) 1 | (1) 0.75 | (1) GN / YE | (1) 1616 | (1) II | (1) — |
| (2) 2 | (2) 1 | (2) BK / WH | (2) 1951 | (2) I | (2) — | (2) Signal Ground | (2) 2 | (2) 0.75 | (2) BK / WH | (2) 1751 | (2) II | (2) — |
| (3) 3 | (3) 0.75 | (3) GY / BK | (3) 7253 | (3) I | (3) — | (3) Rear Differential Lock Actuator Low Control | (3) 3 | (3) 0.75 | (3) GY / BK | (3) 7253 | (3) II | (3) — |
| (4) 4 | (4) 0.75 | (4) VT / BN | (4) 7258 | (4) I | (4) — | (4) Rear Differential Lock Actuator Control | (4) 4 | (4) 0.75 | (4) VT / BN | (4) 7258 | (4) II | (4) — |

### X421A Chassis Wiring Harness to Chassis Rear Wiring Harness Extension Harness




4115616




3271068

**Connector Part Information**

- Harness Type: Chassis Wiring Harness
- OEM Connector: 34062-0046
- Service Connector: 19366860
- Description: 2-Way F 1.5 Series, Sealed( BK)

**Connector Part Information**

- Harness Type: Chassis Rear Wiring Harness Extension Harness
- OEM Connector: 85016387
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way M ( BK)

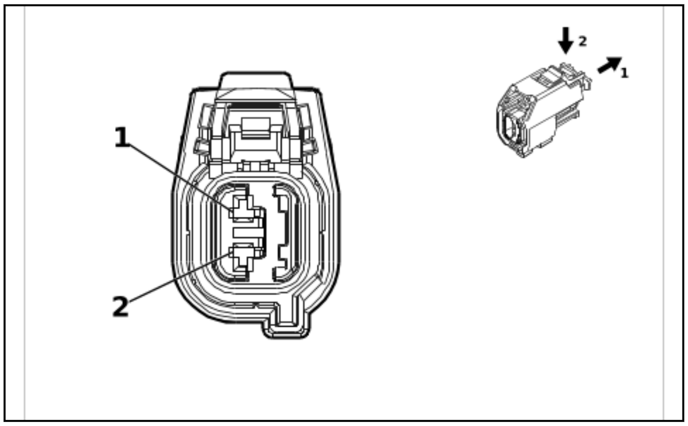
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-14 (GN) | No Tool Required |
| II | Not required | No Tool Required | No Tool Required |

## X421A Chassis Wiring Harness to Chassis Rear Wiring Harness Extension Harness

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) GY / YE | (1) 7128 | (1) I | (1) — | (1) Right Rear Wheel Speed Sensor Control | (1) 1 | (1) 0.75 | (1) TN | (1) 7128 | (1) II | (1) — |
| (2) 2 | (2) 0.5 | (2) VT | (2) 882 | (2) I | (2) — | (2) Right Rear Wheel Speed Sensor Signal | (2) 2 | (2) 0.75 | (2) OG | (2) 882 | (2) II | (2) — |

### X421B Chassis Wiring Harness to Chassis Rear Wiring Harness Extension Harness




5666214

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**Connector Part Information**

- Harness Type: Chassis Wiring Harness
- OEM Connector: 33189092
- Service Connector: 85526683
- Description: 2-Way F 1.5 OCS Series, Sealed( GY)

**Connector Part Information**

- Harness Type: Chassis Rear Wiring Harness Extension Harness
- OEM Connector: 85016386
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way M ( BK)

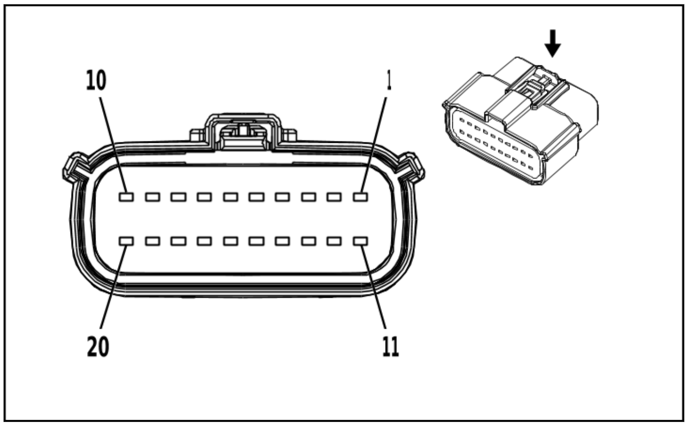
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-2A (GY) | No Tool Required |
| II | Not required | No Tool Required | No Tool Required |

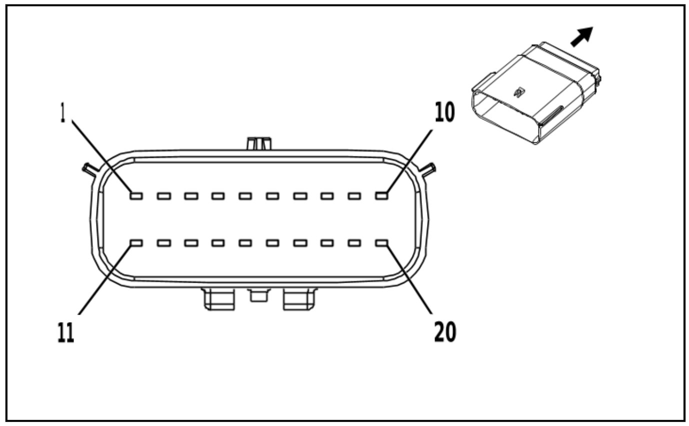
## X421B Chassis Wiring Harness to Chassis Rear Wiring Harness Extension Harness

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) GY / BK | (1) 7127 | (1) I | (1) — | (1) Left Rear Wheel Speed Sensor Control | (1) 1 | (1) 0.75 | (1) TN | (1) 7127 | (1) II | (1) — |
| (2) 2 | (2) 0.5 | (2) BU | (2) 884 | (2) I | (2) — | (2) Left Rear Wheel Speed Sensor Signal | (2) 2 | (2) 0.75 | (2) OG | (2) 884 | (2) II | (2) — |

### X424 Body Wiring Harness to Chassis Wiring Harness




2871898




2871861

**Connector Part Information**
- Harness Type: Body Wiring Harness
- OEM Connector: 13504367
- Service Connector: 19300557
- Description: 20-Way F 1.5 MX Series, Sealed( BK)

**Connector Part Information**
- Harness Type: Chassis Wiring Harness
- OEM Connector: 13598210
- Service Connector: 19351705
- Description: 20-Way M 1.5 MX Series, Sealed( BK)

## Terminal Part Information

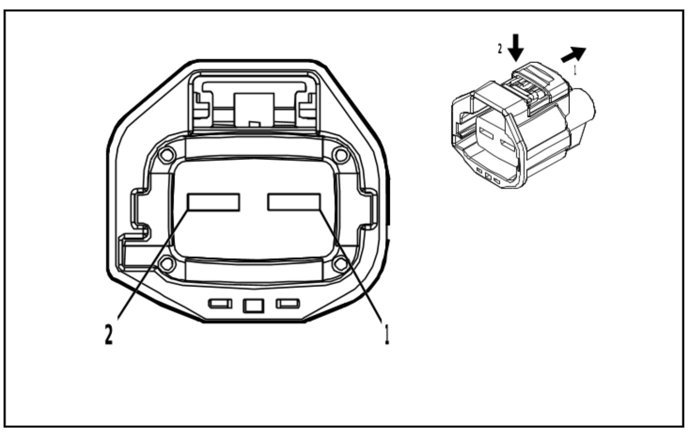
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 85528055 | J-35616-2A (GY) | J-38125-217 |
| II | 86800300 | J-35616-3 (GY) | J-38125-217 |

## X424 Body Wiring Harness to Chassis Wiring Harness

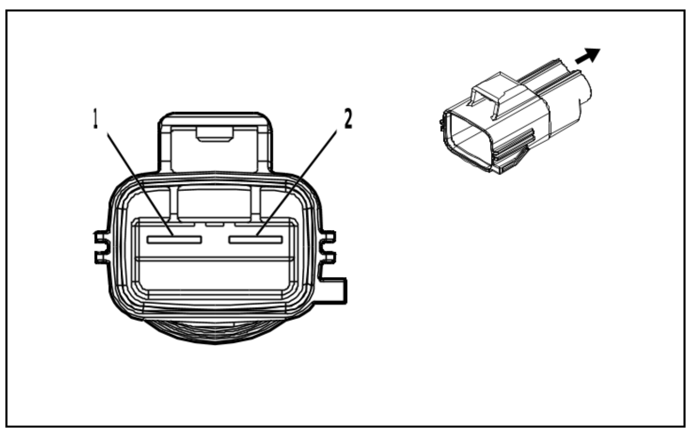
| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) YE | (1) 7115 | (1) I | (1) — | (1) Rear Axle Differential Lock Indicator Control | (1) 1 | (1) 0.5 | (1) YE | (1) 7115 | (1) II | (1) — |
| (2) 2 | (2) 0.35 | (2) YE / GN | (2) 7122 | (2) I | (2) — | (2) Axle Differential Lock Switch Signal | (2) 2 | (2) 0.5 | (2) YE / GN | (2) 7122 | (2) II | (2) — |
| (3) 3 | (3) 0.5 | (3) WH | (3) 4100 | (3) I | (3) — | (3) AUTOSAR CAN Bus [-] 4 Serial Data | (3) 3 | (3) 0.5 | (3) WH | (3) 4100 | (3) II | (3) — |
| (4) 4 | (4) 0.5 | (4) BU / VT | (4) 4101 | (4) I | (4) — | (4) AUTOSAR CAN Bus [+] 4 Serial Data | (4) 4 | (4) 0.5 | (4) BU / VT | (4) 4101 | (4) II | (4) — |
| 5 - 8 | — | — | — | — | — | Not Occupied | 5 - 8 | — | — | — | — | — |
| (9) 9 | (9) 0.35 | (9) YE | (9) 1144 | (9) I | (9) — | (9) Endgate Release Switch Discrete Signal Exterior | (9) 9 | (9) 0.5 | (9) YE | (9) 1144 | (9) II | (9) — |
| (10) 10 | (10) 1 | (10) GN | (10) 1299 | (10) I | (10) — | (10) Major Endgate Motor Control | (10) 10 | (10) 1 | (10) GN | (10) 1299 | (10) II | (10) — |

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (11) 11 | (11) 0.5 | (11) WH | (11) 4986 | (11) I | (11) — | (11) AUTOSAR CAN Bus [-] 1 Serial Data | (11) 11 | (11) 0.5 | (11) WH | (11) 4986 | (11) II | (11) — |
| (12) 12 | (12) 0.5 | (12) BU | (12) 4987 | (12) I | (12) — | (12) AUTOSAR CAN Bus [+] 1 Serial Data | (12) 12 | (12) 0.5 | (12) BU | (12) 4987 | (12) II | (12) — |
| (13) 13 | (13) 0.35 | (13) YE / BU | (13) 7295 | (13) I | (13) — | (13) Left Minor Endgate Ajar Signal | (13) 13 | (13) 0.75 | (13) YE / BU | (13) 7295 | (13) II | (13) — |
| 14 | — | — | — | — | — | Not Occupied | 14 | — | — | — | — | — |
| (15) 15 | (15) 1 | (15) VT | (15) 7725 | (15) I | (15) — | (15) Minor Endgate Motor Control | (15) 15 | (15) 1 | (15) VT | (15) 7725 | (15) II | (15) — |
| (16) 16 | (16) 1 | (16) YE / BK | (16) 7730 | (16) I | (16) — | (16) Major Endgate Motor Low Reference | (16) 16 | (16) 1 | (16) YE / BK | (16) 7730 | (16) II | (16) — |
| (17) 17 | (17) 0.5 | (17) WH | (17) 4986 | (17) I | (17) — | (17) AUTOSAR CAN Bus [-] 1 Serial Data | (17) 17 | (17) 0.5 | (17) WH | (17) 4986 | (17) II | (17) — |
| (18) 18 | (18) 0.5 | (18) BU | (18) 4987 | (18) I | (18) — | (18) AUTOSAR CAN Bus [+] 1 Serial Data | (18) 18 | (18) 0.5 | (18) BU | (18) 4987 | (18) II | (18) — |
| 19 - 20 | — | — | — | — | — | Not Occupied | 19 - 20 | — | — | — | — | — |

### X426 Battery Positive Cable to Chassis Wiring Harness (K4Z)




4584202




4789729

**Connector Part Information**
- Harness Type: Battery Positive Cable
- OEM Connector: 13596768
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 6.3 Series, Sealed( D-GY)

**Connector Part Information**
- Harness Type: Chassis Wiring Harness
- OEM Connector: 7286-9860-10
- Service Connector: 19368221
- Description: 2-Way M 6.3 YESC Series, Sealed( GY)

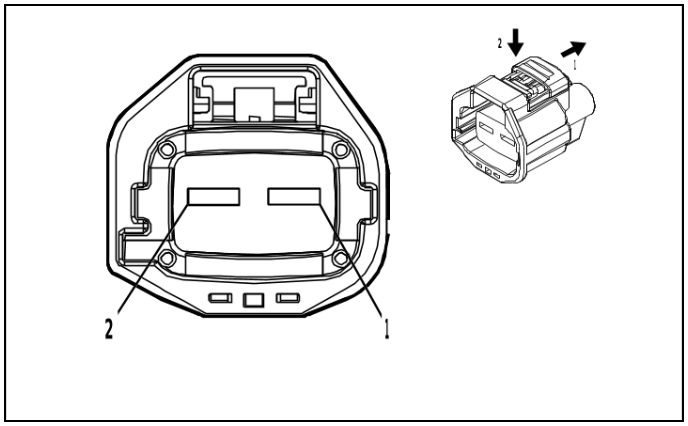
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-42 (RD) | No Tool Required |
| II | Not required | J-35616-43 (RD) | No Tool Required |

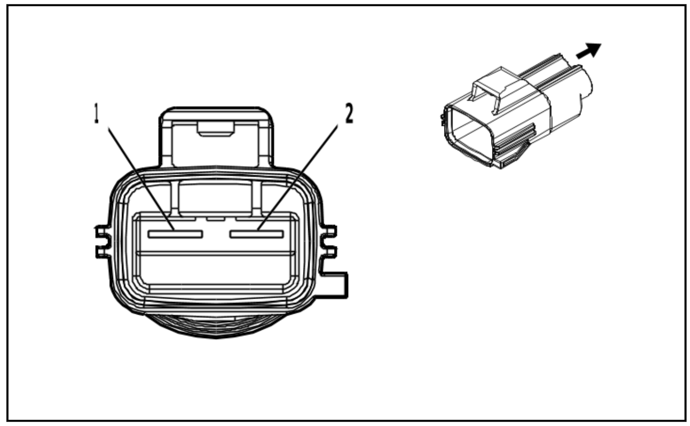
## X426 Battery Positive Cable to Chassis Wiring Harness (K4Z)

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 4 | (1) RD / GN | (1) 842 | (1) I | (1) K4Z | (1) Battery Positive Voltage | (1) 1 | (1) 4 | (1) OG | (1) 3940 | (1) II | (1) — |
| 2 | — | — | — | — | — | Not Occupied | 2 | — | — | — | — | — |

### X426 Chassis Wiring Harness to Chassis Wiring Harness (- K4Z)




4584202




4789729

**Connector Part Information**
- Harness Type: Chassis Wiring Harness
- OEM Connector: 7287-6196-10
- Service Connector: 19368222
- Description: 2-Way F 6.3 Series, Sealed( D-GY)

**Connector Part Information**
- Harness Type: Chassis Wiring Harness
- OEM Connector: 7286-9860-10
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way M 6.3 YESC Series, Sealed( GY)

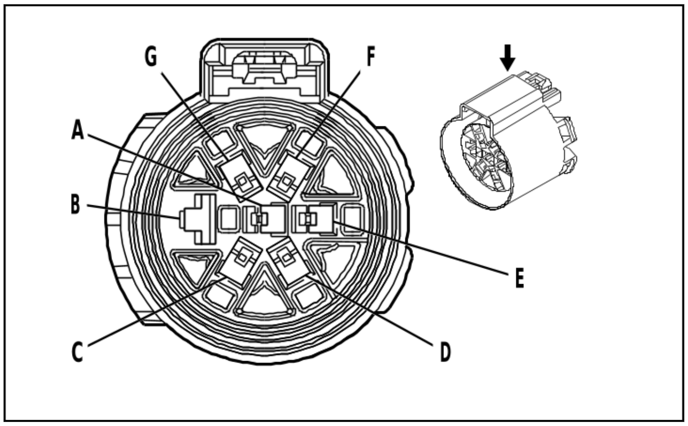
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-42 (RD) | No Tool Required |
| II | Not required | J-35616-43 (RD) | No Tool Required |

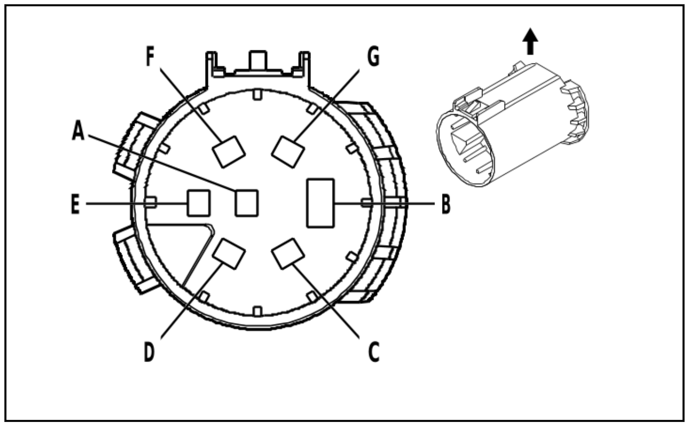
## X426 Chassis Wiring Harness to Chassis Wiring Harness (- K4Z)

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 4 | (1) RD / BU | (1) 3940 | (1) I | (1) — | (1) Battery Positive Voltage | (1) 1 | (1) 4 | (1) OG | (1) 3640 | (1) II | (1) — |
| 2 | — | — | — | — | — | Not Occupied | 2 | — | — | — | — | — |

### X480 Chassis Wiring Harness to Trailer Rear Wiring Harness




2056936




366087

**Connector Part Information**
- Harness Type: Chassis Wiring Harness
- OEM Connector: 13857223
- Service Connector: 86816072
- Description: 7-Way F 280, 630 Metri-Pack Series, Sealed( BK)

**Connector Part Information**
- Harness Type: Trailer Rear Wiring Harness
- OEM Connector: 15317327
- Service Connector: Service by Harness - See Part Catalog
- Description: 7-Way M 280 Metri-Pack Series, Sealed( BK)

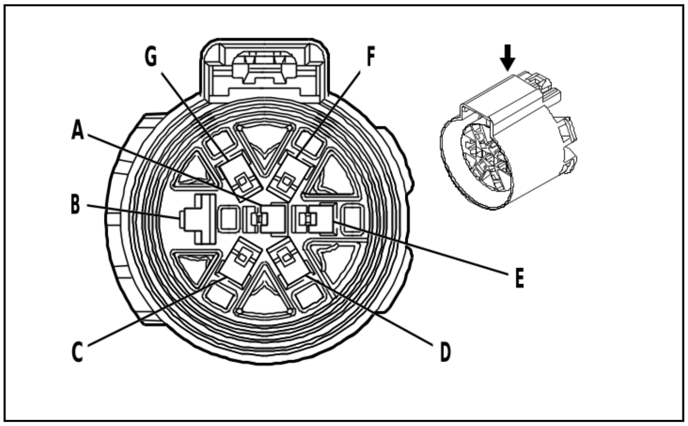
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-42 (RD) | No Tool Required |
| II | Not required | J-35616-4A (PU) | No Tool Required |
| III | Not required | J-35616-43 (RD) | No Tool Required |
| IV | Not required | J-35616-5 (PU) | No Tool Required |

## X480 Chassis Wiring Harness to Trailer Rear Wiring Harness

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | 1 | GY | 1624 | II | — | Trailer Backup Lamp Control | A | 1 | GY | 1624 | IV | — |
| B | 5 | WH | 22 | I | — | Trailer Ground | B | 5 | WH | 22 | III | — |
| C | 4 | BU | 47 | II | — | Trailer Auxiliary Control | C | 4 | BU | 47 | IV | — |
| D | 1 | GN | 1619 | II | — | Right Rear Trailer Stop/ Turn Lamp Control | D | 1 | GN | 1619 | IV | — |
| E | 4 | OG | 3640 | II | — | Battery Posi-tive Voltage | E | 4 | OG | 3640 | IV | — |
| F | 1.5 | BN | 2109 | II | — | Trailer Park Lamp Control | F | 2 | BN | 2109 | IV | — |
| G | 1 | YE | 1618 | II | — | Left Rear Trailer Stop/ Turn Lamp Control | G | 1 | YE | 1618 | IV | — |

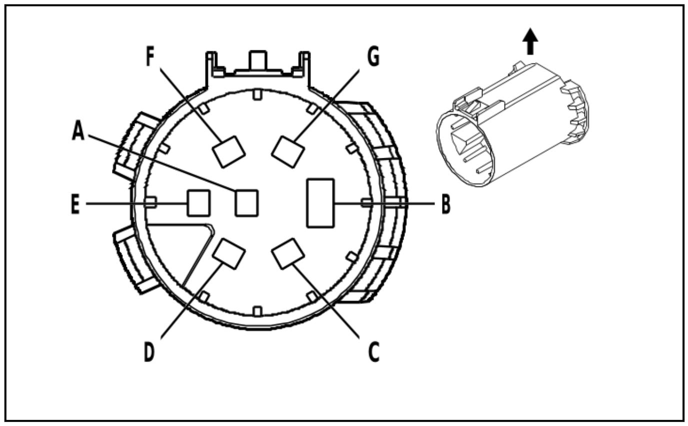
### X481 Trailer Rear Wiring Harness to Trailer Rear Wiring Harness




2056936

**Connector Part Information**

- Harness Type: Trailer Rear Wiring Harness
- OEM Connector: 13857223
- Service Connector: Service by Harness - See Part Catalog
- Description: 7-Way F 280, 630 Metri-Pack Series, Sealed( BK)




366087

**Connector Part Information**

- Harness Type: Trailer Rear Wiring Harness
- OEM Connector: 15317327
- Service Connector: Service by Harness - See Part Catalog
- Description: 7-Way M 280 Metri-Pack Series, Sealed( BK)

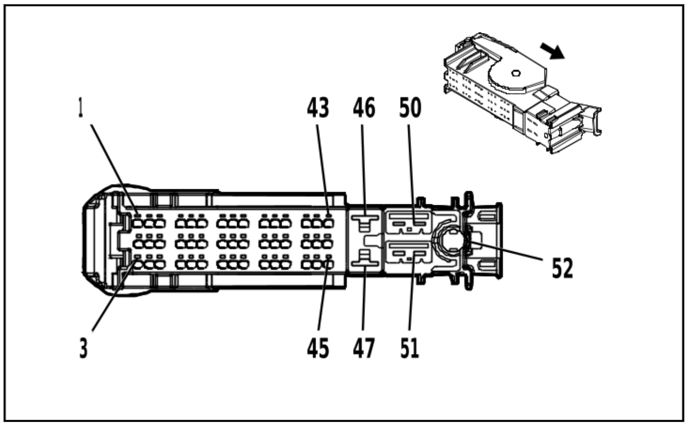
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-42 (RD) | No Tool Required |
| II | Not required | J-35616-4A (PU) | No Tool Required |
| III | Not required | J-35616-43 (RD) | No Tool Required |
| IV | Not required | J-35616-5 (PU) | No Tool Required |

## X481 Trailer Rear Wiring Harness to Trailer Rear Wiring Harness

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | 1 | GY | 1624 | II | — | Trailer Backup Lamp Control | A | 1 | GY | 1624 | IV | — |
| B | 5 | WH | 22 | I | — | Trailer Ground | B | 5 | WH | 22 | III | — |
| C | 4 | BU | 47 | II | — | Trailer Auxiliary Control | C | 4 | BU | 47 | IV | — |
| D | 1 | GN | 1619 | II | — | Right Rear Trailer Stop/ Turn Lamp Control | D | 1 | GN | 1619 | IV | — |
| E | 4 | OG | 3640 | II | — | Battery Posi-tive Voltage | E | 4 | OG | 3640 | IV | — |
| F | 1.5 | BN | 2109 | II | — | Trailer Park Lamp Control | F | 2 | BN | 2109 | IV | — |
| G | 1 | YE | 1618 | II | — | Left Rear Trailer Stop/ Turn Lamp Control | G | 1 | YE | 1618 | IV | — |

### X500 Front Side Door Door Wiring Harness - Left to Body Wiring Harness

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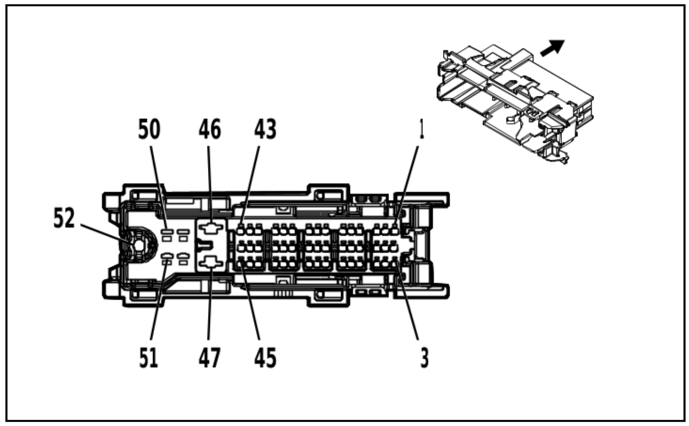



4993484

**Connector Part Information**
- Harness Type: Front Side Door Door Wiring Harness - Left
- OEM Connector: 6098-8365
- Service Connector: Service by Harness - See Part Catalog
- Description: 52-Way F 1.2, 2.8, 6.3, Coaxial Series( BK)

**Connector Part Information**
- Harness Type: Body Wiring Harness
- OEM Connector: 13527236
- Service Connector: 13527236
- Description: 52-Way M 1.2, 2.8, 6.3, Coaxial Series( BK)

## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |
| II | Not required | J-35616-16 (L-GN) | No Tool Required |
| III | Not required | J-35616-42 (RD) | No Tool Required |
| IV | Service by Cable | No Tool Required | No Tool Required |
| V | 19301536 | J-35616-43 (RD) | J-38125-11A |
| VI | 84616651 | J-35616-13 (BU) | J-38125-215A |
| VII | Service by Cable | No Tool Required | No Tool Required |

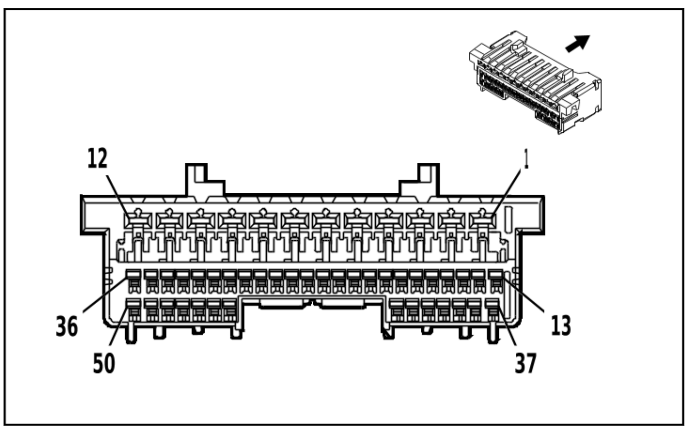
## X500 Front Side Door Door Wiring Harness - Left to Body Wiring Harness

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | — | — | — | — | — | Not Occupied | 1 | — | — | — | — | — |
| (2) 2 | (2) 0.5 | (2) RD / BU | (2) 1240 | (2) II | (2) — | (2) Battery Positive Voltage | (2) 2 | (2) 0.5 | (2) RD / BU | (2) 1240 | (2) VI | (2) — |
| 3 - 6 | — | — | — | — | — | Not Occupied | 3 - 6 | — | — | — | — | — |
| (7) 7 | (7) 0.75 | (7) BN / BU | (7) 118 | (7) II | (7) — | (7) Left Front Speaker [-] Control 1 | (7) 7 | (7) 0.75 | (7) BN / BU | (7) 118 | (7) VI | (7) — |
| (8) 8 | (8) 0.75 | (8) BU | (8) 201 | (8) II | (8) — | (8) Left Front Speaker 1 [+] Control | (8) 8 | (8) 0.75 | (8) BU | (8) 201 | (8) VI | (8) — |
| (9) 9 | (9) 0.5 | (9) OG / GN | (9) 2132 | (9) II | (9) — | (9) Left Front Side Impact Sensor Signal | (9) 9 | (9) 0.5 | (9) OG / GN | (9) 2132 | (9) VI | (9) — |

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (10) 10 | (10) 0.5 | (10) B K / OG | (10) 66 28 | (10) II | (10) — | (10) Left Front Side Impact Sensor Low Reference | (10) 10 | (10) 0.5 | (10) B K / OG | (10) 66 28 | (10) VI | (10) — |
| (11) 11 | (11) 0.5 | (11) V T | (11) 43 01 | (11) II | (11) — | (11) Passive Entry Left Antenna Signal High | (11) 11 | (11) 0.35 | (11) V T | (11) 43 01 | (11) VI | (11) — |
| (12) 12 | (12) 0.5 | (12) V T / GY | (12) 43 02 | (12) II | (12) — | (12) Passive Entry Left Antenna Signal Low | (12) 12 | (12) 0.35 | (12) V T / GY | (12) 43 02 | (12) VI | (12) — |
| (13) 13 | (13) 0.5 | (13) V T / GY | (13) 12 6 | (13) II | (13) — | (13) Left Front Door Open Switch Signal | (13) 13 | (13) 0.35 | (13) V T / GY | (13) 12 6 | (13) VI | (13) — |
| (14) 14 | (14) 0.5 | (14) Y E / WH | (14) 16 90 | (14) II | (14) — | (14) Mirror Dimming Signal | (14) 14 | (14) 0.35 | (14) Y E / WH | (14) 16 90 | (14) VI | (14) — |
| (15) 15 | (15) 0.5 | (15) B K / YE | (15) 16 91 | (15) II | (15) — | (15) Automati c Day/Night Mirror Low Reference | (15) 15 | (15) 0.35 | (15) B K / YE | (15) 16 91 | (15) VI | (15) — |
| (16) 16 | (16) 0.5 | (16) WH / GY | (16) 21 14 | (16) II | (16) — | (16) Left Turn Signal Lamp Control 2 | (16) 16 | (16) 0.35 | (16) WH / GY | (16) 21 14 | (16) VI | (16) — |
| (17) 17 | (17) 0.5 | (17) B U | (17) 26 75 | (17) II | (17) — | (17) Left Front Exterior Door Handle Switch Unlock Signal | (17) 17 | (17) 0.35 | (17) B U | (17) 26 75 | (17) VI | (17) — |
| (18) 18 | (18) 0.75 | (18) WH | (18) 26 79 | (18) II | (18) — | (18) Lock Actuators Unlock Control 1 | (18) 18 | (18) 0.75 | (18) WH | (18) 26 79 | (18) VI | (18) — |
| (19) 19 | (19) 0.75 | (19) G Y | (19) 26 81 | (19) II | (19) — | (19) Left Front Door Lock Actuator Lock Control | (19) 19 | (19) 0.75 | (19) G Y | (19) 26 81 | (19) VI | (19) — |
| 20 - 22 | — | — | — | — | — | Not Occupied | 20 - 22 | — | — | — | — | — |
| (23) 23 | (23) 0.5 | (23) WH / GN | (23) 59 66 | (23) II | (23) — | (23) Approac h Lamp Control | (23) 23 | (23) 0.5 | (23) WH / GN | (23) 59 66 | (23) VI | (23) — |
| 24 | — | — | — | — | — | Not Occupied | 24 | — | — | — | — | — |
| (25) 25 | (25) 0.5 | (25) B U / GN | (25) 61 4 | (25) II | (25) — | (25) Seat Memory Switch Set Signal | (25) 25 | (25) 0.35 | (25) B U / GN | (25) 61 4 | (25) VI | (25) — |
| (26) 26 | (26) 0.5 | (26) B U / YE | (26) 77 61 | (26) II | (26) — | (26) Backup Illumination Lamp Control | (26) 26 | (26) 0.35 | (26) B U / YE | (26) 77 61 | (26) VI | (26) — |
| (27) 27 | (27) 0.35 | (27) Y E | (27) 68 17 | (27) I | (27) — | (27) LED Backlight Dimming Control 1 | (27) 27 | (27) 0.5 | (27) Y E | (27) 68 17 | (27) VI | (27) — |
| 28 | — | — | — | — | — | Not Occupied | 28 | — | — | — | — | — |

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (29) 29 | (29) 0.5 | (29) GN / YE | (29) 6134 | (29) II | (29) — | (29) Body Control Module LIN Bus 3 | (29) 29 | (29) 0.35 | (29) GN / YE | (29) 6134 | (29) VI | (29) — |
| (30) 30 | (30) 0.5 | (30) BN / GN | (30) 4246 | (30) II | (30) — | (30) Identification Lamp Control | (30) 30 | (30) 0.5 | (30) BN / GN | (30) 4246 | (30) VI | (30) — |
| (31) 31 | (31) 0.5 | (31) BK / WH | (31) 1551 | (31) II | (31) — | (31) Signal Ground | (31) 31 | (31) 0.5 | (31) BK / WH | (31) 1551 | (31) VI | (31) — |
| (32) 32 | (32) 0.35 | (32) YE / GY | (32) 2933 | (32) I | (32) — | (32) Task Lamp Control Left | (32) 32 | (32) 0.35 | (32) YE / GY | (32) 2933 | (32) VI | (32) — |
| (33) 33 | (33) 0.5 | (33) WH | (33) 615 | (33) II | (33) — | (33) Seat Memory Switch Signal 1 | (33) 33 | (33) 0.35 | (33) WH | (33) 615 | (33) VI | (33) — |
| 34 - 45 | — | — | — | — | — | Not Occupied | 34 - 45 | — | — | — | — | — |
| (46) 46 | (46) 2.5 | (46) RD / GY | (46) 3540 | (46) III | (46) — | (46) Battery Positive Voltage | (46) 46 | (46) 2.5 | (46) RD / GY | (46) 3540 | (46) V | (46) — |
| (47) 47 | (47) 2.5 | (47) BK | (47) 1550 | (47) III | (47) — | (47) Ground | (47) 47 | (47) 2.5 | (47) BK | (47) 1550 | (47) V | (47) — |
| 48 - 51 | — | — | — | — | — | Not Occupied | 48 - 51 | — | — | — | — | — |
| (52) 52 | (52) — | (52) Coax Cable | (52) 4725 | (52) IV | (52) — | (52) Left Sideview Camera LVDS (Low Voltage Differential Signaling) Coaxial Signal | (52) 52 | (52) — | (52) Coax Cable | (52) 4725 | (52) VII | (52) — |

**X505 Front Side Door Door Wiring Harness - Left to Front Side Door Door Lock Door Wiring Harness - Left**

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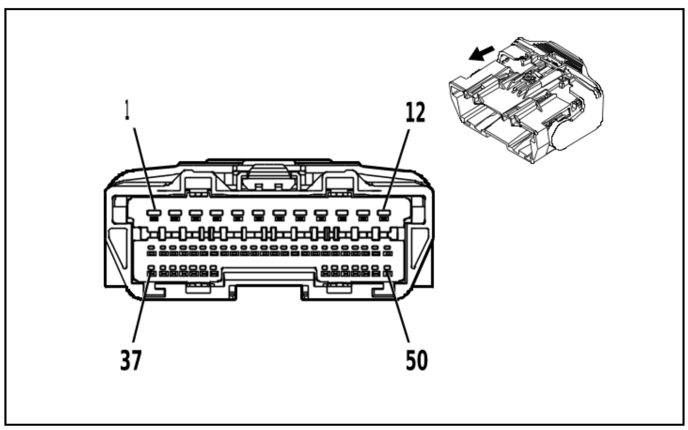



5022037

**Connector Part Information**
- Harness Type: Front Side Door Door Wiring Harness - Left
- OEM Connector: 35283943
- Service Connector: Service by Harness - See Part Catalog
- Description: 50-Way F 1.2, 2.8 OCS Series( BK)

**Connector Part Information**
- Harness Type: Front Side Door Door Lock Door Wiring Harness - Left
- OEM Connector: 33390111
- Service Connector: Service by Harness - See Part Catalog
- Description: 50-Way M 1.2, 2.8 OCS Series( BK)

## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |
| II | Not required | J-35616-16 (L-GN) | No Tool Required |
| III | Not required | J-35616-4A (PU) | No Tool Required |
| IV | Not required | J-35616-17 (L-GN) | No Tool Required |
| V | Not required | J-35616-5 (PU) | No Tool Required |

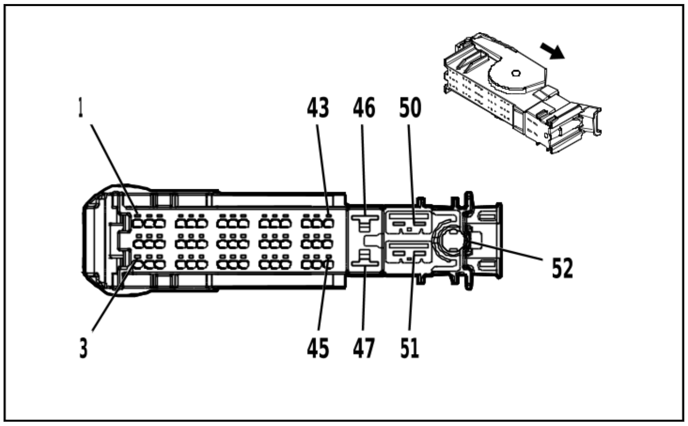
## X505 Front Side Door Door Wiring Harness - Left to Front Side Door Door Lock Door Wiring Harness - Left

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) RD / BU | (1) 1240 | (1) III | (1) — | (1) Battery Positive Voltage | (1) 1 | (1) 0.5 | (1) RD / BU | (1) 1240 | (1) V | (1) — |
| (2) 2 | (2) 0.5 | (2) GY / YE | (2) 1760 | (2) III | (2) — | (2) Left Side Object Detection LED Control | (2) 2 | (2) 0.35 | (2) GY / YE | (2) 1760 | (2) V | (2) — |
| 3 | — | — | — | — | — | Not Occupied | 3 | — | — | — | — | — |
| (4) 4 | (4) 0.5 | (4) GY / GN | (4) 2763 | (4) III | (4) — | (4) Window Switch Left Front Up Signal | (4) 4 | (4) 0.5 | (4) GY / GN | (4) 2763 | (4) V | (4) — |
| (5) 5 | (5) 0.5 | (5) BN | (5) 10201 | (5) III | (5) — | (5) Left Front Mirror Motor Extend Control | (5) 5 | (5) 0.5 | (5) BN | (5) 10201 | (5) V | (5) — |
| (6) 6 | (6) 0.5 | (6) WH / BN | (6) 2764 | (6) III | (6) — | (6) Window Switch Left Front Down Signal | (6) 6 | (6) 0.5 | (6) WH / BN | (6) 2764 | (6) V | (6) — |
| 7 | — | — | — | — | — | Not Occupied | 7 | — | — | — | — | — |
| (8) 8 | (8) 0.5 | (8) GN | (8) 2766 | (8) III | (8) — | (8) Power Window Switch Left Front Express Signal | (8) 8 | (8) 0.5 | (8) GN | (8) 2766 | (8) V | (8) — |
| (9) 9 | (9) 0.5 | (9) WH / BK | (9) 10202 | (9) III | (9) — | (9) Left Front Mirror Motor Retract Control | (9) 9 | (9) 0.5 | (9) WH / BK | (9) 10202 | (9) V | (9) — |
| 10 - 11 | — | — | — | — | — | Not Occupied | 10 - 11 | — | — | — | — | — |
| (12) 12 | (12) 0.5 | (12) GY / WH | (12) 2785 | (12) III | (12) — | (12) Left Front Mirror Motor Fold Out Control | (12) 12 | (12) 0.5 | (12) GY / WH | (12) 2785 | (12) V | (12) — |
| (13) 13 | (13) 0.5 | (13) WH / GN | (13) 2786 | (13) II | (13) — | (13) Left Front Mirror Motor Fold In Control | (13) 13 | (13) 0.5 | (13) WH / GN | (13) 2786 | (13) IV | (13) — |
| (14) 14 | (14) 0.5 | (14) GY / BN | (14) 2787 | (14) II | (14) — | (14) Left Front Mirror Position Sensor Up [+] Down [-] Signal | (14) 14 | (14) 0.5 | (14) GY / BN | (14) 2787 | (14) IV | (14) — |

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (15) 15 | (15) 0.5 | (15) V T / BU | (15) 27 88 | (15) II | (15) — | (15) Left Front Mirror Motor Up [+] Down [-] Control | (15) 15 | (15) 0.5 | (15) V T / BU | (15) 27 88 | (15) IV | (15) — |
| (16) 16 | (16) 0.5 | (16) Y E / BN | (16) 27 89 | (16) II | (16) — | (16) Left Front Mirror Motor Common Control | (16) 16 | (16) 0.5 | (16) Y E / BN | (16) 27 89 | (16) IV | (16) — |
| (17) 17 | (17) 0.5 | (17) B N / BK | (17) 27 90 | (17) II | (17) — | (17) Left Front Mirror Motor Right [+] Left [-] Control | (17) 17 | (17) 0.5 | (17) B N / BK | (17) 27 90 | (17) IV | (17) — |
| (18) 18 | (18) 0.5 | (18) V T / RD | (18) 27 91 | (18) II | (18) — | (18) Left Front Mirror Position Sensor High Reference | (18) 18 | (18) 0.5 | (18) V T / RD | (18) 27 91 | (18) IV | (18) — |
| (19) 19 | (19) 0.5 | (19) WH / YE | (19) 27 92 | (19) II | (19) — | (19) Left Front Mirror Position Sensor Left [-] Right [+] Signal | (19) 19 | (19) 0.5 | (19) WH / YE | (19) 27 92 | (19) IV | (19) — |
| (20) 20 | (20) 0.5 | (20) WH | (20) 60 6 | (20) II | (20) — | (20) Left Outside Rearview Mirror Heater Control | (20) 20 | (20) 0.5 | (20) WH | (20) 60 6 | (20) IV | (20) — |
| (21) 21 | (21) 0.5 | (21) G N / YE | (21) 61 34 | (21) II | (21) — | (21) Body Control Module LIN Bus 3 | (21) 21 | (21) 0.5 | (21) G N / YE | (21) 61 34 | (21) IV | (21) — |
| (22) 22 | (22) 0.5 | (22) B U / GN | (22) 61 4 | (22) II | (22) — | (22) Seat Memory Switch Set Signal | (22) 22 | (22) 0.5 | (22) B U / GN | (22) 61 4 | (22) IV | (22) — |
| (23) 23 | (23) 0.5 | (23) WH | (23) 61 5 | (23) II | (23) — | (23) Seat Memory Switch Signal 1 | (23) 23 | (23) 0.5 | (23) WH | (23) 61 5 | (23) IV | (23) — |
| (24) 24 | (24) 0.5 | (24) B K / BN | (24) 67 3 | (24) II | (24) — | (24) Left Outside Rearview Mirror Position Sensor Low Reference | (24) 24 | (24) 0.5 | (24) B K / BN | (24) 67 3 | (24) IV | (24) — |
| (25) 25 | (25) 0.35 | (25) Y E | (25) 68 17 | (25) I | (25) — | (25) LED Backlight Dimming Control 1 | (25) 25 | (25) 0.5 | (25) Y E | (25) 68 17 | (25) IV | (25) — |
| 26 | — | — | — | — | — | Not Occupied | 26 | — | — | — | — | — |
| (27) 27 | (27) 0.5 | (27) B K | (27) 15 50 | (27) II | (27) — | (27) Ground | (27) 27 | (27) 0.5 | (27) B K | (27) 15 50 | (27) IV | (27) — |
| (28) 28 | (28) 0.5 | (28) B K / WH | (28) 15 51 | (28) II | (28) — | (28) Signal Ground | (28) 28 | (28) 0.5 | (28) B K / WH | (28) 15 51 | (28) IV | (28) — |

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (29) 29 | (29) 0.5 | (29) WH / VT | (29) 42 58 | (29) II | (29) — | (29) Left Front Door Lock Status Signal | (29) 29 | (29) 0.5 | (29) WH / VT | (29) 42 58 | (29) IV | (29) — |
| 30 - 50 | — | — | — | — | — | Not Occupied | 30 - 50 | — | — | — | — | — |

**X600 Front Side Door Door Wiring Harness - Right to Body Wiring Harness**

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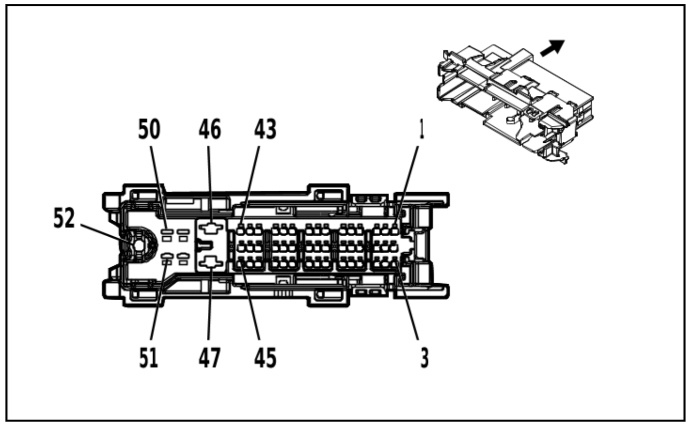



4993484

**Connector Part Information**
- Harness Type: Front Side Door Door Wiring Harness - Right
- OEM Connector: 6098-8365
- Service Connector: Service by Harness - See Part Catalog
- Description: 52-Way F 1.2, 2.8, 6.3, Coaxial Series( BK)

**Connector Part Information**
- Harness Type: Body Wiring Harness
- OEM Connector: 13527236
- Service Connector: 13527236
- Description: 52-Way M 1.2, 2.8, 6.3, Coaxial Series( BK)

## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |
| II | Not required | J-35616-16 (L-GN) | No Tool Required |
| III | Not required | J-35616-42 (RD) | No Tool Required |
| IV | Service by Cable | No Tool Required | No Tool Required |
| V | 19301536 | J-35616-43 (RD) | J-38125-11A |
| VI | 84616651 | J-35616-13 (BU) | J-38125-215A |
| VII | Service by Cable | No Tool Required | No Tool Required |

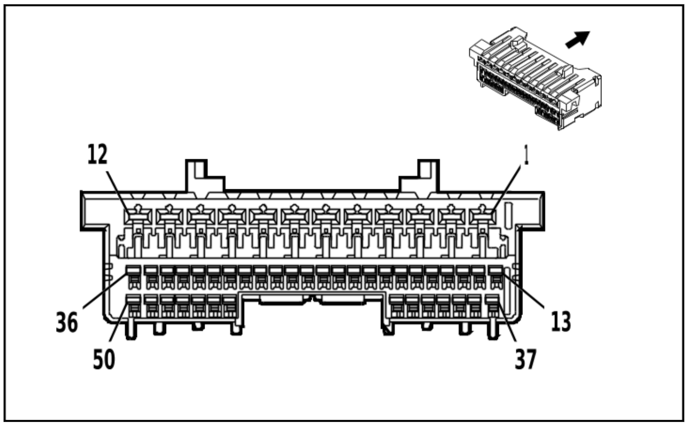
## X600 Front Side Door Door Wiring Harness - Right to Body Wiring Harness

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 - 4 | — | — | — | — | — | Not Occupied | 1 - 4 | — | — | — | — | — |
| (5) 5 | (5) 0. 75 | (5) YE | (5) 200 | (5) II | (5) — | (5) Right Front Speaker 1 [+] Control | (5) 5 | (5) 0. 75 | (5) YE | (5) 200 | (5) VI | (5) — |

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (6) 6 | (6) 0.75 | (6) YE / BK | (6) 117 | (6) II | (6) — | (6) Right Front Speaker [-] Control 1 | (6) 6 | (6) 0.75 | (6) YE / BK | (6) 117 | (6) VI | (6) — |
| 7 | — | — | — | — | — | Not Occupied | 7 | — | — | — | — | — |
| (8) 8 | (8) 0.5 | (8) BN / OG | (8) 2134 | (8) II | (8) — | (8) Right Front Side Impact Sensor Signal | (8) 8 | (8) 0.5 | (8) BN / OG | (8) 2134 | (8) VI | (8) — |
| (9) 9 | (9) 0.5 | (9) BK / OG | (9) 6629 | (9) II | (9) — | (9) Right Front Side Impact Sensor Low Reference | (9) 9 | (9) 0.5 | (9) BK / OG | (9) 6629 | (9) VI | (9) — |
| (10) 10 | (10) 0.5 | (10) GN / YE | (10) 4303 | (10) II | (10) — | (10) Passive Entry Right Antenna Signal High | (10) 10 | (10) 0.35 | (10) GN / YE | (10) 4303 | (10) VI | (10) — |
| (11) 11 | (11) 0.5 | (11) GN / BK | (11) 4304 | (11) II | (11) — | (11) Passive Entry Right Antenna Signal Low | (11) 11 | (11) 0.35 | (11) GN / BK | (11) 4304 | (11) VI | (11) — |
| 12 | — | — | — | — | — | Not Occupied | 12 | — | — | — | — | — |
| (13) 13 | (13) 0.5 | (13) GN / GY | (13) 2115 | (13) II | (13) — | (13) Right Turn Signal Lamp Control 2 | (13) 13 | (13) 0.35 | (13) GN / GY | (13) 2115 | (13) VI | (13) — |
| (14) 14 | (14) 0.5 | (14) GY / VT | (14) 2676 | (14) II | (14) — | (14) Right Front Door Exterior Switch Unlock Signal | (14) 14 | (14) 0.35 | (14) GY / VT | (14) 2676 | (14) VI | (14) — |
| (15) 15 | (15) 0.75 | (15) GY / BK | (15) 2680 | (15) II | (15) — | (15) Lock Actuators Unlock Control 2 | (15) 15 | (15) 0.75 | (15) GY / BK | (15) 2680 | (15) VI | (15) — |
| (16) 16 | (16) 0.75 | (16) YE / GN | (16) 2682 | (16) II | (16) — | (16) Right Front Door Lock Actuator Lock Control | (16) 16 | (16) 0.75 | (16) YE / GN | (16) 2682 | (16) VI | (16) — |
| 17 - 19 | — | — | — | — | — | Not Occupied | 17 - 19 | — | — | — | — | — |
| (20) 20 | (20) 0.5 | (20) WH / GN | (20) 5966 | (20) II | (20) — | (20) Approach Lamp Control | (20) 20 | (20) 0.5 | (20) WH / GN | (20) 5966 | (20) VI | (20) — |
| 21 | — | — | — | — | — | Not Occupied | 21 | — | — | — | — | — |
| (22) 22 | (22) 0.5 | (22) BK / GY | (22) 626 | (22) II | (22) — | (22) Engine Control Vehicle Sensors Low Reference 1 | (22) 22 | (22) 0.5 | (22) BK / GY | (22) 626 | (22) VI | (22) — |
| (23) 23 | (23) 0.5 | (23) BU / GY | (23) 636 | (23) II | (23) — | (23) Ambient Air Temperature Sensor Signal | (23) 23 | (23) 0.5 | (23) BU / GY | (23) 636 | (23) VI | (23) — |
| (24) 24 | (24) 0.35 | (24) YE | (24) 6817 | (24) I | (24) — | (24) LED Backlight Dimming Control 1 | (24) 24 | (24) 0.5 | (24) YE | (24) 6817 | (24) VI | (24) — |

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 25 | — | — | — | — | — | Not Occupied | 25 | — | — | — | — | — |
| (26) 26 | (26) 0.5 | (26) B U / YE | (26) 77 61 | (26) II | (26) — | (26) Backup Illumination Lamp Control | (26) 26 | (26) 0.35 | (26) B U / YE | (26) 77 61 | (26) VI | (26) — |
| 27 | — | — | — | — | — | Not Occupied | 27 | — | — | — | — | — |
| (28) 28 | (28) 0.5 | (28) B K / WH | (28) 14 51 | (28) II | (28) — | (28) Signal Ground | (28) 28 | (28) 0.75 | (28) B K / WH | (28) 14 51 | (28) VI | (28) — |
| (29) 29 | (29) 0.5 | (29) G N / YE | (29) 61 34 | (29) II | (29) — | (29) Body Control Module LIN Bus 3 | (29) 29 | (29) 0.35 | (29) G N / YE | (29) 61 34 | (29) VI | (29) — |
| (30) 30 | (30) 0.35 | (30) Y E / WH | (30) 29 34 | (30) I | (30) — | (30) Task Lamp Control Right | (30) 30 | (30) 0.35 | (30) Y E / WH | (30) 29 34 | (30) VI | (30) — |
| (31) 31 | (31) 0.5 | (31) B N / GN | (31) 42 46 | (31) II | (31) — | (31) Identifi-cation Lamp Control | (31) 31 | (31) 0.5 | (31) B N / GN | (31) 42 46 | (31) VI | (31) — |
| 32 - 43 | — | — | — | — | — | Not Occupied | 32 - 43 | — | — | — | — | — |
| (44) 44 | (44) 0.5 | (44) B K / YE | (44) 16 91 | (44) II | (44) — | (44) Automati c Day/Night Mirror Low Reference | (44) 44 | (44) 0.35 | (44) B K / YE | (44) 16 91 | (44) VI | (44) — |
| (45) 45 | (45) 0.5 | (45) Y E / WH | (45) 16 90 | (45) II | (45) — | (45) Mirror Dimming Signal | (45) 45 | (45) 0.35 | (45) Y E / WH | (45) 16 90 | (45) VI | (45) — |
| (46) 46 | (46) 2.5 | (46) R D / BN | (46) 42 40 | (46) III | (46) — | (46) Battery Positive Volt-age | (46) 46 | (46) 2.5 | (46) R D / BN | (46) 42 40 | (46) V | (46) — |
| (47) 47 | (47) 2.5 | (47) B K | (47) 13 50 | (47) III | (47) — | (47) Ground | (47) 47 | (47) 2.5 | (47) B K | (47) 13 50 | (47) V | (47) — |
| 48 - 51 | — | — | — | — | — | Not Occupied | 48 - 51 | — | — | — | — | — |
| (52) 52 | (52) — | (52) C oax Cable | (52) 47 24 | (52) IV | (52) UV2 | (52) Right Sideview Camera LVDS (Low Voltage Differential Signaling) Coaxial Signal | (52) 52 | (52) — | (52) C oax Cable | (52) 47 24 | (52) VII | (52) UV2 |

**X605 Front Side Door Door Wiring Harness - Right to Front Side Door Door Lock Door Wiring Harness - Right**

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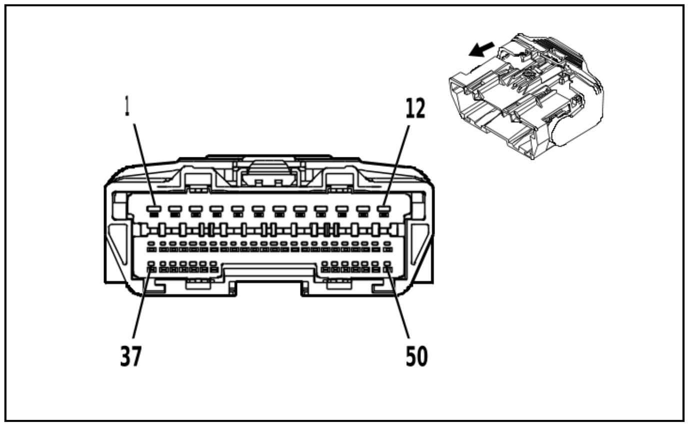



5022037

**Connector Part Information**
- Harness Type: Front Side Door Door Wiring Harness - Right
- OEM Connector: 35283943
- Service Connector: Service by Harness - See Part Catalog
- Description: 50-Way F 1.2, 2.8 OCS Series( BK)

**Connector Part Information**
- Harness Type: Front Side Door Door Lock Door Wiring Harness - Right
- OEM Connector: 33390111
- Service Connector: Service by Harness - See Part Catalog
- Description: 50-Way M 1.2, 2.8 OCS Series( BK)

## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |
| II | Not required | J-35616-16 (L-GN) | No Tool Required |
| III | Not required | J-35616-4A (PU) | No Tool Required |
| IV | Not required | J-35616-17 (L-GN) | No Tool Required |
| V | Not required | J-35616-5 (PU) | No Tool Required |

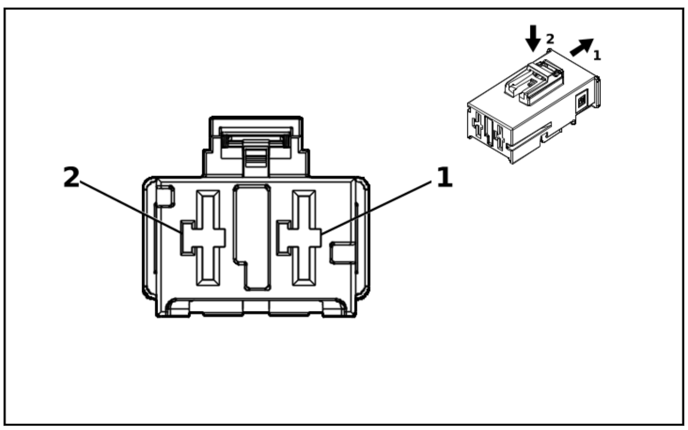
## X605 Front Side Door Door Wiring Harness - Right to Front Side Door Door Lock Door Wiring Harness - Right

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 2.5 | (1) RD / BN | (1) 4240 | (1) III | (1) — | (1) Battery Positive Voltage | (1) 1 | (1) 2.5 | (1) RD / BN | (1) 4240 | (1) V | (1) — |
| (2) 2 | (2) 0.5 | (2) GN | (2) 1184 | (2) III | (2) — | (2) Window Switch Right Front Up Signal | (2) 2 | (2) 0.5 | (2) GN | (2) 1184 | (2) V | (2) — |
| (3) 3 | (3) 0.5 | (3) GY | (3) 1761 | (3) III | (3) — | (3) Right Side Object Detection LED Control | (3) 3 | (3) 0.35 | (3) GY | (3) 1761 | (3) V | (3) — |
| 4 | — | — | — | — | — | Not Occupied | 4 | — | — | — | — | — |
| (5) 5 | (5) 0.5 | (5) VT / GY | (5) 2765 | (5) III | (5) — | (5) Window Switch Right Front Express Signal | (5) 5 | (5) 0.5 | (5) VT / GY | (5) 2765 | (5) V | (5) — |
| 6 - 7 | — | — | — | — | — | Not Occupied | 6 - 7 | — | — | — | — | — |

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (8) 8 | (8) 0.5 | (8) YE / WH | (8) 2793 | (8) III | (8) — | (8) Right Front Mirror Motor Fold Out Control | (8) 8 | (8) 0.5 | (8) YE / WH | (8) 2793 | (8) V | (8) — |
| (9) 9 | (9) 0.5 | (9) BU / GY | (9) 2794 | (9) III | (9) — | (9) Right Front Mirror Motor Fold In Control | (9) 9 | (9) 0.5 | (9) BU / GY | (9) 2794 | (9) V | (9) — |
| (10) 10 | (10) 2.5 | (10) BK | (10) 1350 | (10) III | (10) — | (10) Ground | (10) 10 | (10) 2.5 | (10) BK | (10) 1350 | (10) V | (10) — |
| (11) 11 | (11) 2 | (11) GN / GY | (11) 666 | (11) III | (11) — | (11) Right Front Window Motor Up Control | (11) 11 | (11) 2.5 | (11) GN / GY | (11) 666 | (11) V | (11) — |
| (12) 12 | (12) 2 | (12) YE / BU | (12) 667 | (12) III | (12) — | (12) Right Front Window Motor Down Control | (12) 12 | (12) 2.5 | (12) YE / BU | (12) 667 | (12) V | (12) — |
| (13) 13 | (13) 0.5 | (13) GN / BK | (13) 2798 | (13) II | (13) — | (13) Right Front Mirror Motor Right [+] Left [-] Control | (13) 13 | (13) 0.5 | (13) GN / BK | (13) 2798 | (13) IV | (13) — |
| (14) 14 | (14) 0.5 | (14) YE / RD | (14) 2799 | (14) II | (14) — | (14) Right Front Mirror Position Sensor High Reference | (14) 14 | (14) 0.5 | (14) YE / RD | (14) 2799 | (14) IV | (14) — |
| (15) 15 | (15) 0.5 | (15) VT / WH | (15) 2800 | (15) II | (15) — | (15) Right Front Mirror Position Sensor Left [-] Right [+] Signal | (15) 15 | (15) 0.5 | (15) VT / WH | (15) 2800 | (15) IV | (15) — |
| (16) 16 | (16) 0.5 | (16) BN | (16) 5295 | (16) II | (16) — | (16) Window Switch Right Front Down Signal | (16) 16 | (16) 0.5 | (16) BN | (16) 5295 | (16) IV | (16) — |
| (17) 17 | (17) 0.5 | (17) BN / VT | (17) 607 | (17) II | (17) — | (17) Right Outside Rearview Mirror Heater Control | (17) 17 | (17) 0.5 | (17) BN / VT | (17) 607 | (17) IV | (17) — |
| (18) 18 | (18) 0.5 | (18) GN / YE | (18) 6134 | (18) II | (18) — | (18) Body Control Module LIN Bus 3 | (18) 18 | (18) 0.5 | (18) GN / YE | (18) 6134 | (18) IV | (18) — |
| (19) 19 | (19) 0.5 | (19) BN / GN | (19) 10203 | (19) II | (19) — | (19) Right Front Mirror Motor Extend Control | (19) 19 | (19) 0.5 | (19) BN / GN | (19) 10203 | (19) IV | (19) — |
| (20) 20 | (20) 0.5 | (20) VT | (20) 10204 | (20) II | (20) — | (20) Right Front Mirror Motor Retract Control | (20) 20 | (20) 0.5 | (20) VT | (20) 10204 | (20) IV | (20) — |
| (21) 21 | (21) 0.5 | (21) BK / GN | (21) 675 | (21) II | (21) — | (21) Right Outside Rearview Mirror Position Sensor Low Reference | (21) 21 | (21) 0.5 | (21) BK / GN | (21) 675 | (21) IV | (21) — |

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (22) 22 | (22) 0.35 | (22) Y E | (22) 68 17 | (22) I | (22) — | (22) LED Backlight Dimming Control 1 | (22) 22 | (22) 0.5 | (22) Y E | (22) 68 17 | (22) IV | (22) — |
| 23 - 46 | — | — | — | — | — | Not Occupied | 23 - 46 | — | — | — | — | — |
| (47) 47 | (47) 0.5 | (47) G Y | (47) 74 6 | (47) II | (47) — | (47) Right Front Door Ajar Switch Signal | (47) 47 | (47) 0.5 | (47) G Y | (47) 74 6 | (47) IV | (47) — |
| (48) 48 | (48) 0.5 | (48) B U / YE | (48) 27 95 | (48) II | (48) — | (48) Right Front Mirror Position Sensor Up [+] Down [-] Signal | (48) 48 | (48) 0.5 | (48) B U / YE | (48) 27 95 | (48) IV | (48) — |
| (49) 49 | (49) 0.5 | (49) Y E / VT | (49) 27 96 | (49) II | (49) — | (49) Right Front Mirror Motor Up [+] Down [-] Control | (49) 49 | (49) 0.5 | (49) Y E / VT | (49) 27 96 | (49) IV | (49) — |
| (50) 50 | (50) 0.5 | (50) WH | (50) 27 97 | (50) II | (50) — | (50) Right Front Mirror Motor Common Control | (50) 50 | (50) 0.5 | (50) WH | (50) 27 97 | (50) IV | (50) — |

### X630 Battery Positive Cable Extension Cable to Auxiliary Fuse Block Wiring Harness



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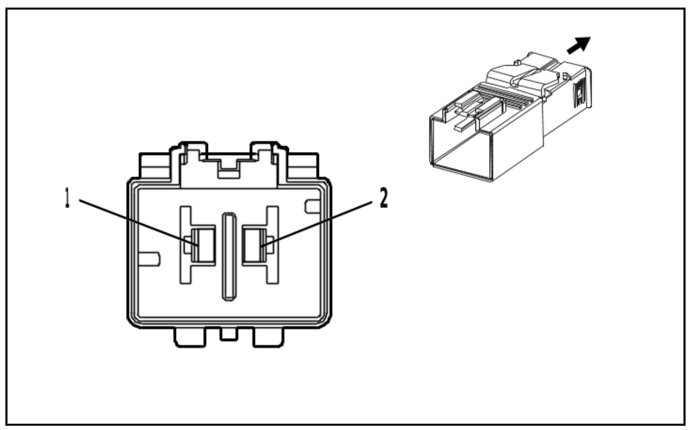


4891120

**Connector Part Information**
- Harness Type: Battery Positive Cable Extension Cable
- OEM Connector: Not Available
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F

**Connector Part Information**
- Harness Type: Auxiliary Fuse Block Wiring Harness
- OEM Connector: 2317373-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way M 9.5 MCON-LL Series( BK)

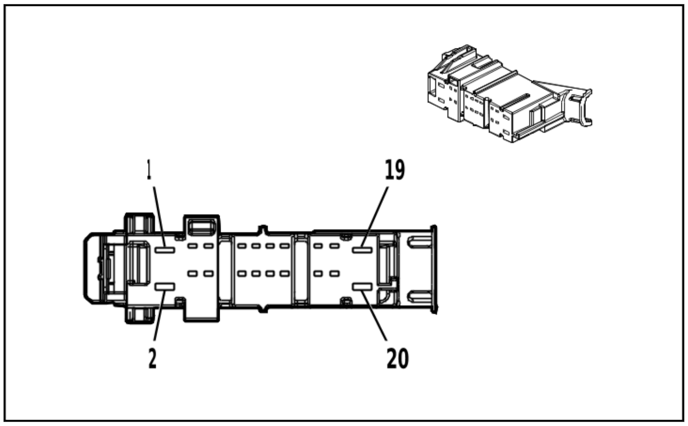
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |
| II | Not required | J-35616-21 (RD) | No Tool Required |

## X630 Battery Positive Cable Extension Cable to Auxiliary Fuse Block Wiring Harness

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 1 0 | (1) RD / VT | (1) 542 | (1) I | (1) — | (1) Battery Positive Volt-age | (1) 1 | (1) 1 0 | (1) RD / VT | (1) 542 | (1) II | (1) — |
| 2 | — | — | — | — | — | Not Occupied | 2 | — | — | — | — | — |

### X700 Rear Side Door Door Wiring Harness - Left to Body Wiring Harness

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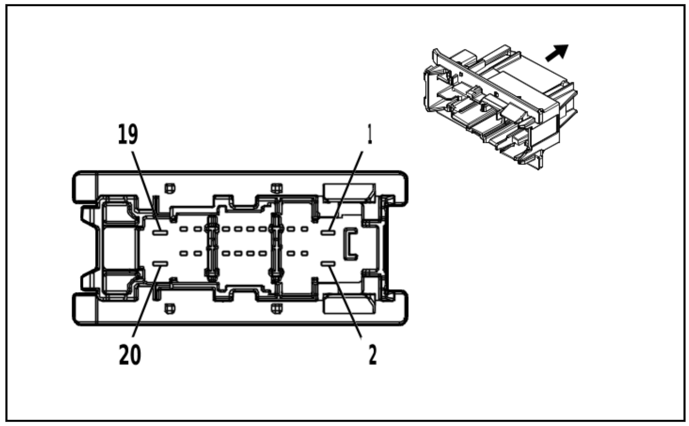



4663657

**Connector Part Information**
- Harness Type: Rear Side Door Door Wiring Harness - Left
- OEM Connector: 6098-8196
- Service Connector: Service by Harness - See Part Catalog
- Description: 20-Way F 1.2 MCON, 2.8 MCP Series( BK)

**Connector Part Information**
- Harness Type: Body Wiring Harness
- OEM Connector: 6098-8887
- Service Connector: 13527239
- Description: 20-Way M 1.2 MCON, 2.8 MCP Series( BK)

## Terminal Part Information

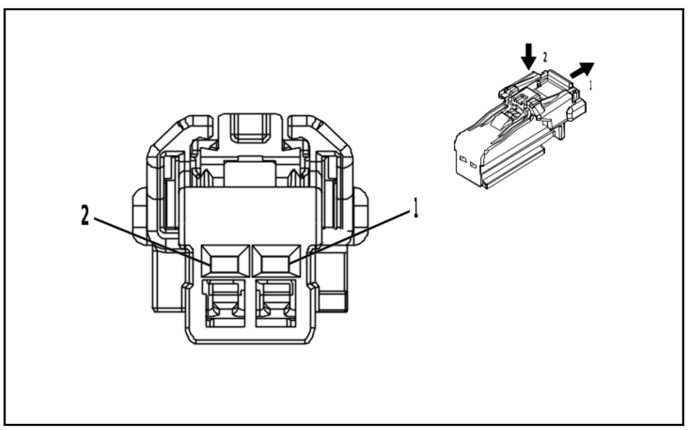
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |
| II | Not required | J-35616-35 (VT) | No Tool Required |
| III | 13586064 | J-35616-5 (PU) | J-38125-212 |
| IV | 84616651 | J-35616-13 (BU) | J-38125-215A |

## X700 Rear Side Door Door Wiring Harness - Left to Body Wiring Harness

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 2. 5 | (1) RD / BU | (1) 324 0 | (1) II | (1) — | (1) Battery Positive Volt-age | (1) 1 | (1) 2. 5 | (1) RD / BU | (1) 324 0 | (1) III | (1) — |
| 2 - 5 | — | — | — | — | — | Not Occupied | 2 - 5 | — | — | — | — | — |
| (6) 6 | (6) 0. 75 | (6) W H | (6) 267 9 | (6) I | (6) — | (6) Lock Actuators Unlock Control 1 | (6) 6 | (6) 0. 75 | (6) W H | (6) 267 9 | (6) IV | (6) — |
| (7) 7 | (7) 0. 75 | (7) BU / YE | (7) 109 1 | (7) I | (7) — | (7) Left Rear Door Lock Actuator Lock Control | (7) 7 | (7) 0. 75 | (7) BU / YE | (7) 109 1 | (7) IV | (7) — |

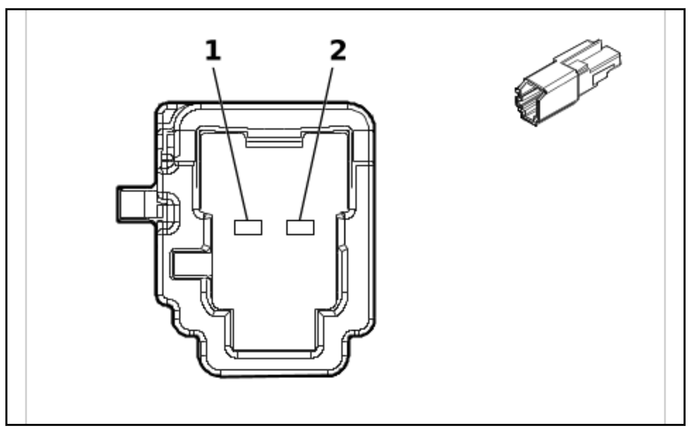
| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8 | — | — | — | — | — | Not Occupied | 8 | — | — | — | — | — |
| (9) 9 | (9) 0.5 | (9) BK / OG | (9) 6623 | (9) I | (9) — | (9) Left Rear Side Impact Sensor Low Reference | (9) 9 | (9) 0.5 | (9) BK / OG | (9) 6623 | (9) IV | (9) — |
| 10 | — | — | — | — | — | Not Occupied | 10 | — | — | — | — | — |
| (11) 11 | (11) 0.5 | (11) OG / BU | (11) 6622 | (11) I | (11) — | (11) Left Rear Side Impact Sensor Signal | (11) 11 | (11) 0.5 | (11) OG / BU | (11) 6622 | (11) IV | (11) — |
| (12) 12 | (12) 0.5 | (12) GN / GY | (12) 6135 | (12) I | (12) — | (12) Body Control Module LIN Bus 4 | (12) 12 | (12) 0.35 | (12) GN / GY | (12) 6135 | (12) IV | (12) — |
| 13 - 16 | — | — | — | — | — | Not Occupied | 13 - 16 | — | — | — | — | — |
| (17) 17 | (17) 0.75 | (17) GN | (17) 199 | (17) I | (17) — | (17) Left Rear Speaker [+] Control<br>(17) Left Rear Speaker [+] Control | (17) 17 | (17) 1.5<br>(17) 0.75 | (17) GN<br>(17) GN | (17) 199<br>(17) 199 | (17) IV<br>(17) IV | (17) —<br>(17) — |
| (18) 18 | (18) 0.75 | (18) GN / BK | (18) 116 | (18) I | (18) — | (18) Left Rear Speaker [-] Control<br>(18) Left Rear Speaker [-] Control | (18) 18 | (18) 1.5<br>(18) 0.75 | (18) GN / BK<br>(18) GN / BK | (18) 116<br>(18) 116 | (18) IV<br>(18) IV | (18) —<br>(18) — |
| 19 | — | — | — | — | — | Not Occupied | 19 | — | — | — | — | — |
| (20) 20 | (20) 2.5 | (20) BK | (20) 1550 | (20) II | (20) — | (20) Ground | (20) 20 | (20) 2.5 | (20) BK | (20) 1550 | (20) III | (20) — |

**X701 Rear Side Door Door Wiring Harness - Left to Rear Side Door Wiring Harness (UQS)**




4373379

**Connector Part Information**
- Harness Type: Rear Side Door Door Wiring Harness - Left
- OEM Connector: 6098-8989
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series( GY)




6529127

**Connector Part Information**
- Harness Type: Rear Side Door Wiring Harness
- OEM Connector: 6099-0611
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way M 1.2 MBS Series( GY)

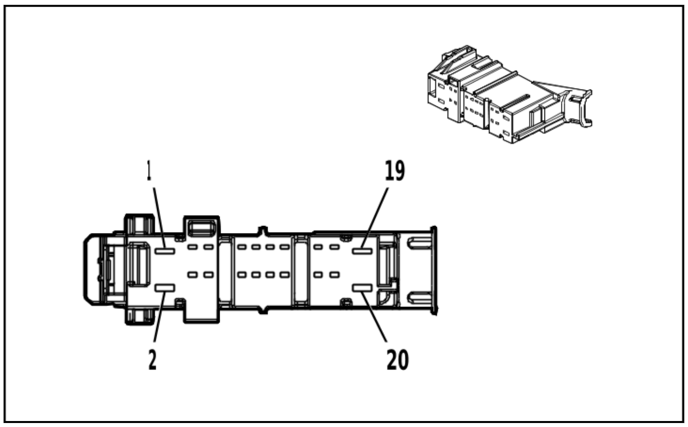
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |
| II | Not required | J-35616-13 (BU) | No Tool Required |

## X701 Rear Side Door Door Wiring Harness - Left to Rear Side Door Wiring Harness (UQS)

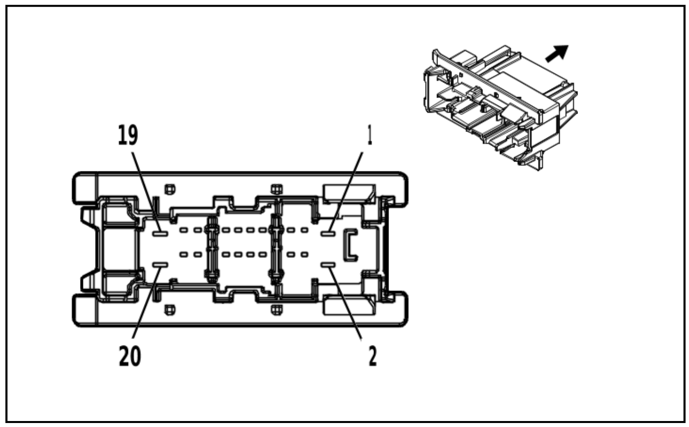
| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 0. 75 | (1) G N / BK | (1) 116 | (1) I | (1) — | (1) Left Rear Speaker [-] Control | (1) 1 | (1) 0. 75 | (1) G N / BK | (1) 116 | (1) II | (1) — |
| (2) 2 | (2) 0. 75 | (2) G N | (2) 199 | (2) I | (2) — | (2) Left Rear Speaker [+] Control | (2) 2 | (2) 0. 75 | (2) G N | (2) 199 | (2) II | (2) — |

### X800 Rear Side Door Door Wiring Harness - Right to Body Wiring Harness




4650257

**Connector Part Information**
- Harness Type: Rear Side Door Door Wiring Harness - Right
- OEM Connector: 6098-8196
- Service Connector: Service by Harness - See Part Catalog
- Description: 20-Way F 1.2 MCON, 2.8 MCP Series( BK)




4663657

**Connector Part Information**
- Harness Type: Body Wiring Harness
- OEM Connector: 6098-8887
- Service Connector: 13527239
- Description: 20-Way M 1.2 MCON, 2.8 MCP Series( BK)

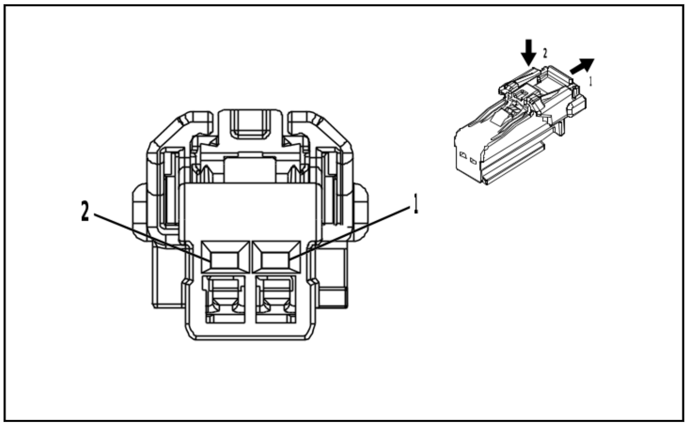
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |
| II | Not required | J-35616-35 (VT) | No Tool Required |
| III | 13586064 | J-35616-5 (PU) | J-38125-212 |
| IV | 84616651 | J-35616-13 (BU) | J-38125-215A |

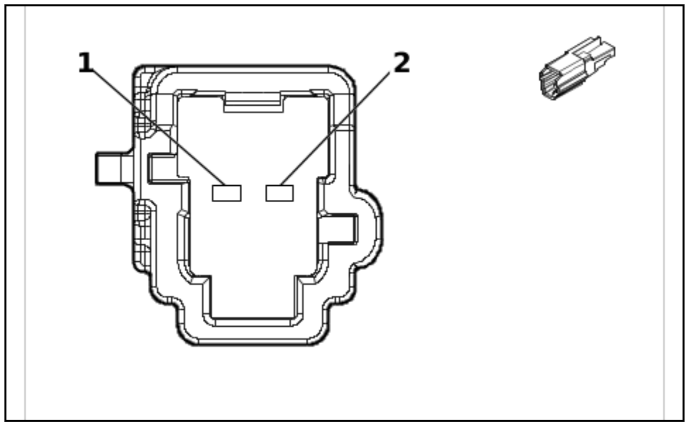
### X800 Rear Side Door Door Wiring Harness - Right to Body Wiring Harness

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 2.5 | (1) YE / BK | (1) 4840 | (1) II | (1) — | (1) Battery Positive Voltage | (1) 1 | (1) 2.5 | (1) RD / GY | (1) 4840 | (1) III | (1) — |
| 2 - 5 | — | — | — | — | — | Not Occupied | 2 - 5 | — | — | — | — | — |
| (6) 6 | (6) 0.75 | (6) GY / BK | (6) 2680 | (6) I | (6) — | (6) Lock Actuators Unlock Control 2 | (6) 6 | (6) 0.75 | (6) GY / BK | (6) 2680 | (6) IV | (6) — |
| (7) 7 | (7) 0.75 | (7) VT / WH | (7) 1094 | (7) I | (7) — | (7) Right Rear Door Lock Actuator Lock Control | (7) 7 | (7) 0.75 | (7) VT / WH | (7) 1094 | (7) IV | (7) — |
| 8 | — | — | — | — | — | Not Occupied | 8 | — | — | — | — | — |
| (9) 9 | (9) 0.5 | (9) BK / OG | (9) 6627 | (9) I | (9) — | (9) Right Rear Side Impact Sensor Low Reference | (9) 9 | (9) 0.5 | (9) BK / OG | (9) 6627 | (9) IV | (9) — |
| 10 | — | — | — | — | — | Not Occupied | 10 | — | — | — | — | — |
| (11) 11 | (11) 0.5 | (11) OG / WH | (11) 6626 | (11) I | (11) — | (11) Right Rear Side Impact Sensor Signal | (11) 11 | (11) 0.5 | (11) OG / WH | (11) 6626 | (11) IV | (11) — |
| (12) 12 | (12) 0.5 | (12) GN / GY | (12) 6135 | (12) I | (12) — | (12) Body Control Module LIN Bus 4 | (12) 12 | (12) 0.35 | (12) GN / GY | (12) 6135 | (12) IV | (12) — |
| 13 - 16 | — | — | — | — | — | Not Occupied | 13 - 16 | — | — | — | — | — |
| (17) 17 | (17) 0.75 | (17) WH | (17) 46 | (17) I | (17) — | (17) Right Rear Speaker [+] Control<br>(17) Right Rear Speaker [+] Control | (17) 17 | (17) 1.5<br>(17) 0.75 | (17) WH<br>(17) WH | (17) 46<br>(17) 46 | (17) IV<br>(17) IV | (17) —<br>(17) — |
| (18) 18 | (18) 0.75 | (18) BU / BK | (18) 115 | (18) I | (18) — | (18) Right Rear Speaker [-] Control<br>(18) Right Rear Speaker [-] Control | (18) 18 | (18) 1.5<br>(18) 0.75 | (18) BU / BK<br>(18) BU / BK | (18) 115<br>(18) 115 | (18) IV<br>(18) IV | (18) —<br>(18) — |
| 19 | — | — | — | — | — | Not Occupied | 19 | — | — | — | — | — |
| (20) 20 | (20) 2.5 | (20) BK | (20) 1350 | (20) II | (20) — | (20) Ground | (20) 20 | (20) 2.5 | (20) BK | (20) 1350 | (20) III | (20) — |

### X801 Rear Side Door Door Wiring Harness - Right to Rear Side Door Wiring Harness (UQS)




4373379




5873743

**Connector Part Information**
- Harness Type: Rear Side Door Door Wiring Harness - Right
- OEM Connector: 6098-8989
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series( GY)

**Connector Part Information**
- Harness Type: Rear Side Door Wiring Harness
- OEM Connector: Not Available
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way M ( GY)

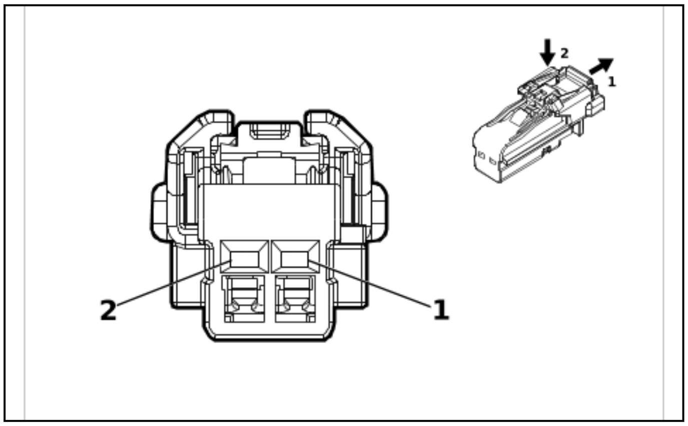
## Terminal Part Information

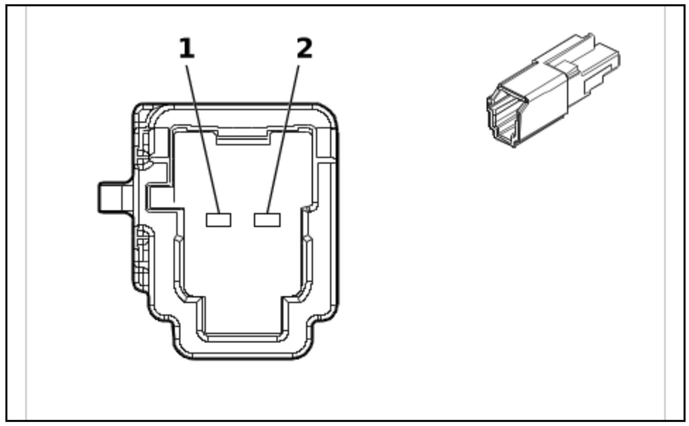
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |
| II | Not required | No Tool Required | No Tool Required |

## X801 Rear Side Door Door Wiring Harness - Right to Rear Side Door Wiring Harness (UQS)

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 0. 75 | (1) BU / BK | (1) 115 | (1) I | (1) — | (1) Right Rear Speaker [-] Control | (1) 1 | (1) 0. 75 | (1) BU / BK | (1) 115 | (1) II | (1) — |
| (2) 2 | (2) 0. 75 | (2) W H | (2) 46 | (2) I | (2) — | (2) Right Rear Speaker [+] Control | (2) 2 | (2) 0. 75 | (2) W H | (2) 46 | (2) II | (2) — |

### X850 Roof Wiring Harness to Instrument Panel Wiring Harness




**Connector Part Information**
- Harness Type: Roof Wiring Harness
- OEM Connector: 6098-8988
- Service Connector: 87816612
- Description: 2-Way F 1.2 MCON Series( BK)

**Connector Part Information**
- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 6099-0610
- Service Connector: 85725003
- Description: 2-Way M 1.2 MBS Series( BK)

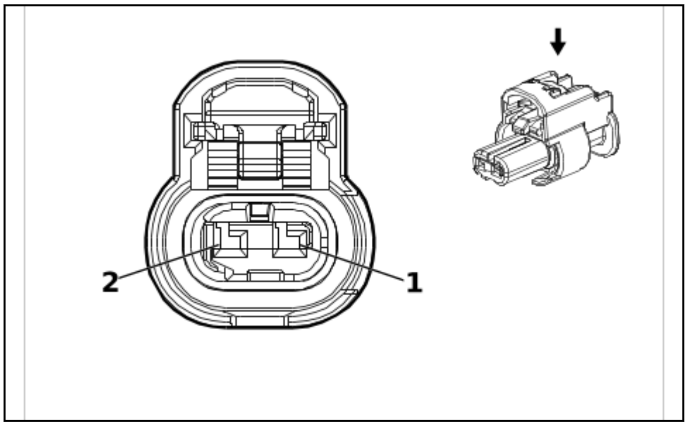
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |
| II | Not required | J-35616-17 (L-GN) | No Tool Required |

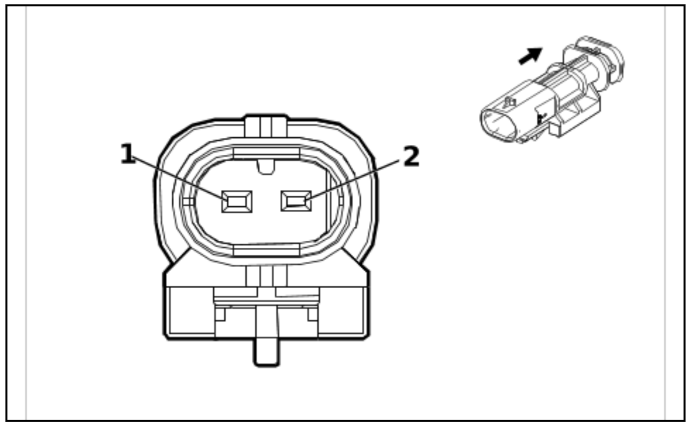
## X850 Roof Wiring Harness to Instrument Panel Wiring Harness

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 0. 5 | (1) BK | (1) 105 0 | (1) I | (1) — | (1) Ground | (1) 1 | (1) 0. 5 | (1) BK | (1) 105 0 | (1) II | (1) — |
| (2) 2 | (2) 0. 5 | (2) BN / GN | (2) 424 6 | (2) I | (2) — | (2) Identifica- tion Lamp Control | (2) 2 | (2) 0. 5 | (2) BN / GN | (2) 424 6 | (2) II | (2) — |

### X853 Rear Lamp Wiring Harness to Rear License Plate Lamp Wiring Harness Extension Harness - Left




4335931




5200722

**Connector Part Information**

- Harness Type: Rear Lamp Wiring Harness
- OEM Connector: 13512366
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON-CB Series, Sealed( BK)

**Connector Part Information**

- Harness Type: Rear License Plate Lamp Wiring Harness Extension Harness - Left
- OEM Connector: 2203314-2
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way M 1.2 MCON Series, Sealed( BK)

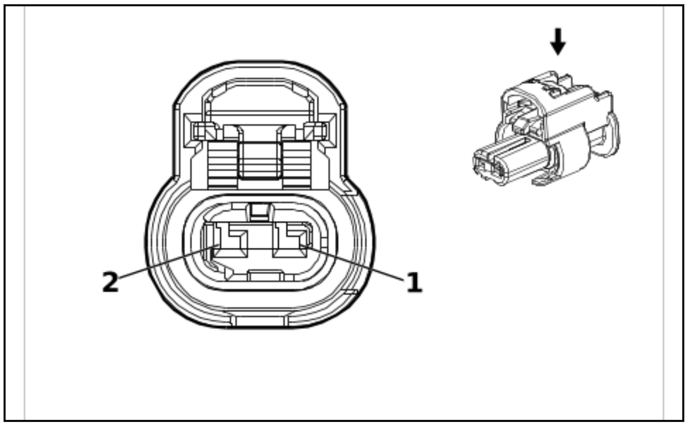
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |
| II | Not required | J-35616-17 (L-GN) | No Tool Required |

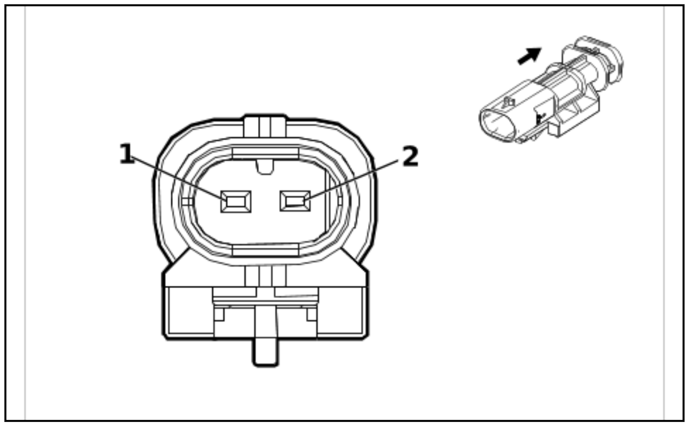
## X853 Rear Lamp Wiring Harness to Rear License Plate Lamp Wiring Harness Extension Harness - Left

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BK | (1) 1850 | (1) I | (1) — | (1) Ground | (1) 1 | (1) 0.5 | (1) BK | (1) 1850 | (1) II | (1) — |
| (2) 2 | (2) 0.5 | (2) WH / GN | (2) 4246 | (2) I | (2) — | (2) Identification Lamp Control | (2) 2 | (2) 0.5 | (2) BN / GN | (2) 4246 | (2) II | (2) — |

### X856 Rear Lamp Wiring Harness to Rear License Plate Lamp Wiring Harness Extension Harness - Right




4335931




5200722

**Connector Part Information**
- Harness Type: Rear Lamp Wiring Harness
- OEM Connector: 13512366
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON-CB Series, Sealed( BK)

**Connector Part Information**
- Harness Type: Rear License Plate Lamp Wiring Harness Extension Harness - Right
- OEM Connector: 2203314-2
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way M 1.2 MCON Series, Sealed( BK)

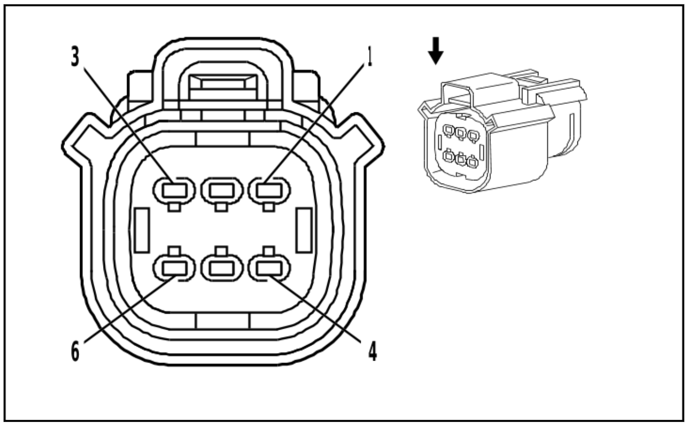
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |
| II | Not required | J-35616-17 (L-GN) | No Tool Required |

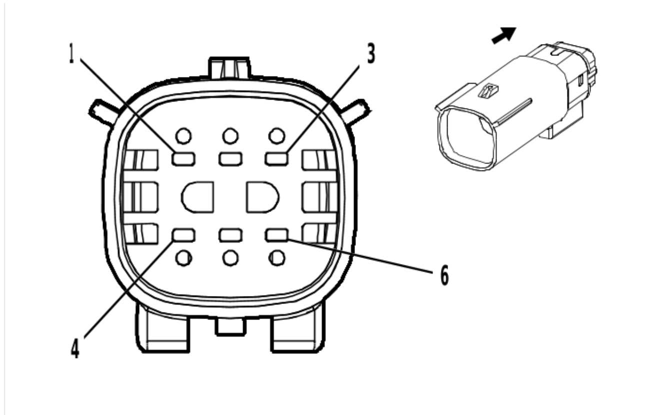
## X856 Rear Lamp Wiring Harness to Rear License Plate Lamp Wiring Harness Extension Harness - Right

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BK | (1) 1850 | (1) I | (1) — | (1) Ground | (1) 1 | (1) 0.5 | (1) BK | (1) 1850 | (1) II | (1) — |
| (2) 2 | (2) 0.5 | (2) WH / GN | (2) 4246 | (2) I | (2) — | (2) Identification Lamp Control | (2) 2 | (2) 0.5 | (2) GY / GN | (2) 4246 | (2) II | (2) — |

### X910A Tail Lamp Wiring Harness to Chassis Wiring Harness - Chassis Cab




1664625




1986159

**Connector Part Information**

- Harness Type: Tail Lamp Wiring Harness
- OEM Connector: Not Available
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F

**Connector Part Information**

- Harness Type: Chassis Wiring Harness
- OEM Connector: 33482-3646
- Service Connector: 19367742
- Description: 6-Way M 1.5 MX Series, Sealed( BK)

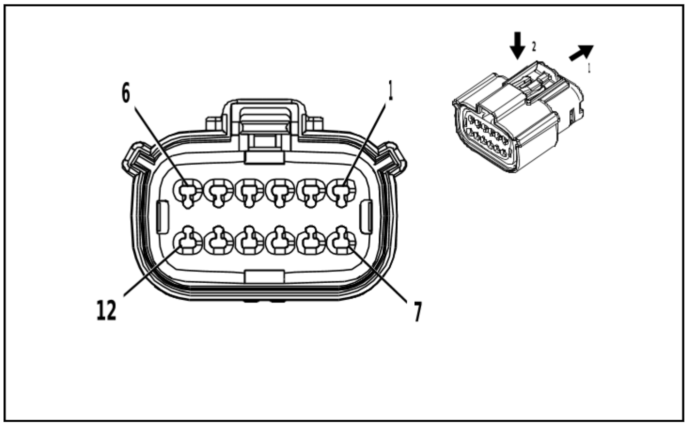
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |
| II | Not required | J-35616-3 (GY) | No Tool Required |

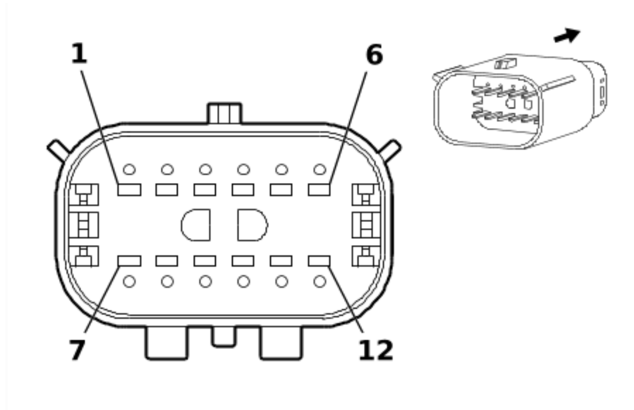
## X910A Tail Lamp Wiring Harness to Chassis Wiring Harness - Chassis Cab

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 0. 75 | (1) BN / BU | (1) 699 3 | (1) I | (1) — | (1) Left Rear Park Lamp Control | (1) 1 | (1) 0. 75 | (1) BN / BU | (1) 699 3 | (1) II | (1) — |
| 2 - 3 | — | — | — | — | — | Not Occupied | 2 - 3 | — | — | — | — | — |
| (4) 4 | (4) 0. 5 | (4) G N / WH | (4) 24 | (4) I | (4) — | (4) Backup Lamp Control | (4) 4 | (4) 0. 5 | (4) G N / WH | (4) 24 | (4) II | (4) — |
| (5) 5 | (5) 0. 75 | (5) BU / WH | (5) 133 4 | (5) I | (5) — | (5) Left Rear Turn Signal Lamp Control 2 | (5) 5 | (5) 0. 75 | (5) BU / WH | (5) 133 4 | (5) II | (5) — |
| (6) 6 | (6) 1 | (6) BK / WH | (6) 195 1 | (6) I | (6) — | (6) Signal Ground | (6) 6 | (6) 1 | (6) BK / WH | (6) 195 1 | (6) II | (6) — |

### X910A Tail Lamp Wiring Harness to Chassis Wiring Harness - Pickup




2871860




1825167

**Connector Part Information**
- Harness Type: Tail Lamp Wiring Harness
- OEM Connector: 13503526
- Service Connector: Service by Harness - See Part Catalog
- Description: 12-Way F 1.5 MX Series, Sealed( BK)

**Connector Part Information**
- Harness Type: Chassis Wiring Harness
- OEM Connector: 33482-6201
- Service Connector: 19369242
- Description: 12-Way M 1.5 MX Series, Sealed( BK)

## Terminal Part Information

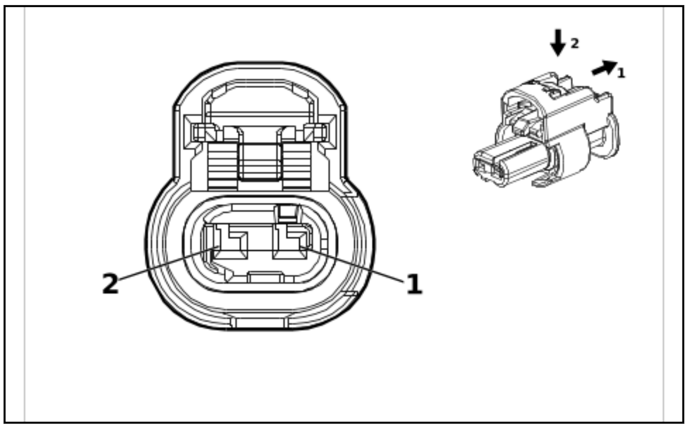
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-2A (GY) | No Tool Required |
| II | 86800300 | J-35616-3 (GY) | J-38125-217 |

## X910A Tail Lamp Wiring Harness to Chassis Wiring Harness - Pickup

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75<br>(1) 18 | (1) BK<br>(1) BK | (1) 0<br>(1) 0 | (1) I<br>(1) I | (1) —<br>(1) — | (1) —<br>(1) — | (1) 1 | (1) 1 | (1) BK / WH | (1) 1951 | (1) II | (1) — |
| (2) 2 | (2) 0.75 | (2) BU | (2) 0 | (2) I | (2) — | (2) — | (2) 2 | (2) 0.5 | (2) RD / WH | (2) 640 | (2) II | (2) — |
| (3) 3 | (3) 0.75 | (3) GN | (3) 0 | (3) I | (3) — | (3) — | (3) 3 | (3) 0.75 | (3) GY / YE | (3) 7542 | (3) II | (3) — |
| (4) 4 | (4) 0.75<br>(4) 18 | (4) BN<br>(4) BN | (4) 0<br>(4) 0 | (4) I<br>(4) I | (4) —<br>(4) — | (4) —<br>(4) — | (4) 4 | (4) 0.75 | (4) BN / BU | (4) 6993 | (4) II | (4) — |
| (5) 5 | (5) 0.75<br>(5) 18 | (5) GY<br>(5) GN | (5) 0<br>(5) 0 | (5) I<br>(5) I | (5) —<br>(5) — | (5) —<br>(5) — | (5) 5 | (5) 0.75 | (5) BU / WH | (5) 1334 | (5) II | (5) — |
| (6) 6 | (6) 0.75<br>(6) 18 | (6) GN<br>(6) RD | (6) 0<br>(6) 0 | (6) I<br>(6) I | (6) —<br>(6) — | (6) —<br>(6) — | (6) 6 | (6) 0.75 | (6) WH / VT | (6) 6567 | (6) II | (6) — |
| (7) 7 | (7) 0.75<br>(7) 18 | (7) RD<br>(7) GN | (7) 0<br>(7) 0 | (7) I<br>(7) I | (7) —<br>(7) — | (7) —<br>(7) — | (7) 7 | (7) 0.5 | (7) GN / WH | (7) 24 | (7) II | (7) — |

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (8) 8 | (8) 0.75 | (8) PU | (8) 0 | (8) I | (8) — | (8) — | (8) 8 | (8) 0.5 | (8) YE / GN | (8) 2024 | (8) II | (8) — |
| (9) 9 | (9) 0.75<br>(9) 18 | (9) YE<br>(9) BU | (9) 0<br>(9) 0 | (9) I<br>(9) I | (9) —<br>(9) — | (9) —<br>(9) — | (9) 9 | (9) 0.5 | (9) GY / BU | (9) 7762 | (9) II | (9) — |
| (10) 10 | (10) 0.75 | (10) WH | (10) 0 | (10) I | (10) — | (10) — | (10) 10 | (10) 0.75 | (10) BU / VT | (10) 1335 | (10) II | (10) — |
| (11) 11 | (11) 0.75<br>(11) 18 | (11) BN / GN<br>(11) BN | (11) 0<br>(11) 0 | (11) I<br>(11) I | (11) —<br>(11) — | (11) —<br>(11) — | (11) 11 | (11) 0.5 | (11) BN / GN | (11) 4246 | (11) II | (11) — |
| 12 | — | — | — | — | — | Not Occupied | 12 | — | — | — | — | — |

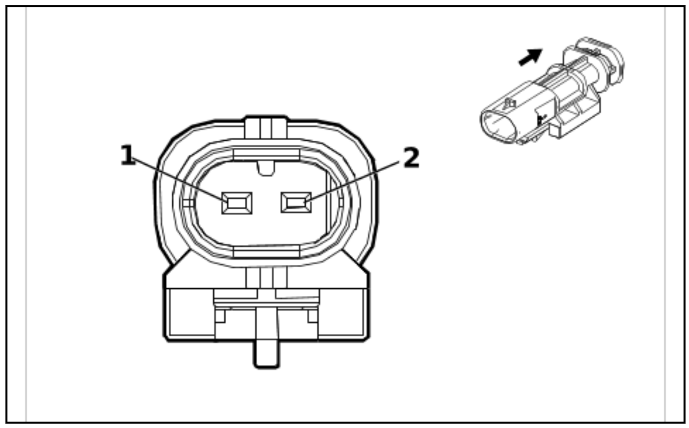
**X910C Rear License Plate Lamp Wiring Harness Extension Harness - Left to Tail Lamp Wiring Harness**




4649903

**Connector Part Information**

- Harness Type: Rear License Plate Lamp Wiring Harness Extension Harness - Left
- OEM Connector: 1-2296694-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series, Sealed( BK)




5200722

**Connector Part Information**

- Harness Type: Tail Lamp Wiring Harness
- OEM Connector: 2203314-2
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way M 1.2 MCON Series, Sealed( BK)

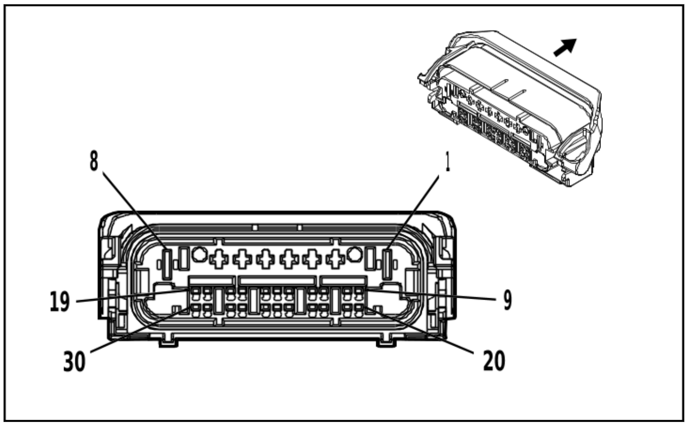
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |
| II | Not required | J-35616-13 (BU) | No Tool Required |

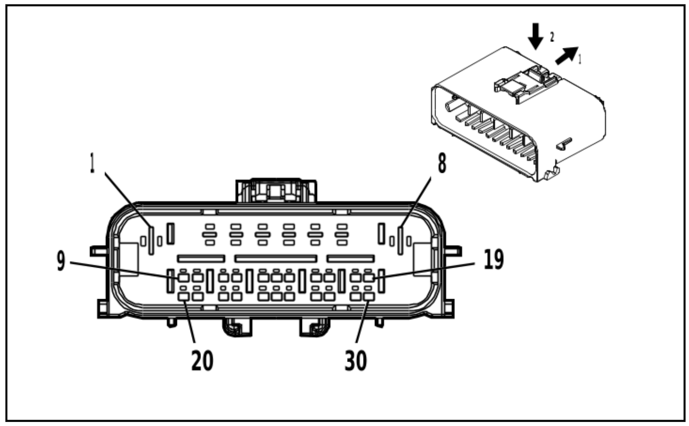
## X910C Rear License Plate Lamp Wiring Harness Extension Harness - Left to Tail Lamp Wiring Harness

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) VT / GY | (1) 709 | (1) I | (1) — | (1) Left Park Lamp Control | (1) 1 | (1) 18 | (1) BK | (1) 709 | (1) II | (1) — |
| (2) 2 | (2) 0.5 | (2) BK | (2) 1450 | (2) I | (2) — | (2) Ground | (2) 2 | (2) 18 | (2) BN | (2) 1450 | (2) II | (2) — |

### X918 Endgate Wiring Harness to Chassis Wiring Harness




4650150




4817393

**Connector Part Information**
- Harness Type: Endgate Wiring Harness
- OEM Connector: 35573111
- Service Connector: Service by Harness - See Part Catalog
- Description: 30-Way F 1.2 MCON, 2.8, 6.3 MCP Series, Sealed( BK)

**Connector Part Information**
- Harness Type: Chassis Wiring Harness
- OEM Connector: 13515618
- Service Connector: 19371177
- Description: 30-Way M 1.2 MCON, 2.8, 6.3 MCP Series, Sealed( BK)

## Terminal Part Information

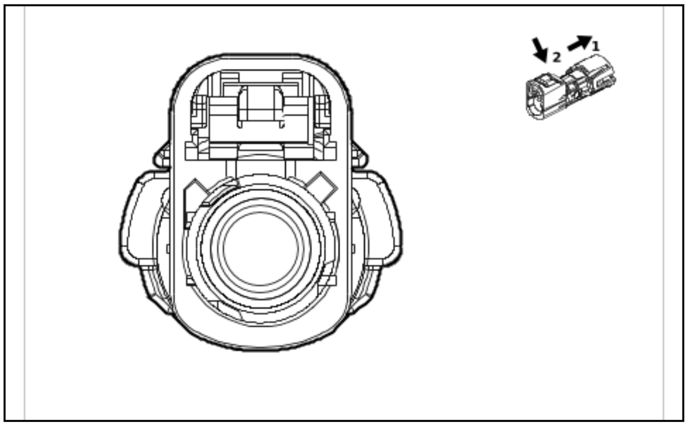
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |
| II | Not required | J-35616-35 (VT) | No Tool Required |
| III | Not required | J-35616-4A (PU) | No Tool Required |
| IV | 13578827 | J-35616-5 (PU) | J-38125-36 |
| V | 19330704 | J-35616-13 (BU) | J-38125-215A |

## X918 Endgate Wiring Harness to Chassis Wiring Harness

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | — | — | — | — | — | Not Occupied | 1 | — | — | — | — | — |
| (2) 2 | (2) 2.5 | (2) RD / VT | (2) 4442 | (2) II | (2) — | (2) Primary Fused Battery Positive Voltage | (2) 2 | (2) 2.5 | (2) RD / VT | (2) 4442 | (2) IV | (2) — |
| (3) 3 | (3) 2.5 | (3) BK | (3) 1850 | (3) II | (3) — | (3) Ground | (3) 3 | (3) 2.5 | (3) BK | (3) 1850 | (3) IV | (3) — |
| (4) 4 | (4) 1 | (4) VT | (4) 7725 | (4) III | (4) — | (4) Minor Endgate Motor Control | (4) 4 | (4) 1 | (4) VT | (4) 7725 | (4) IV | (4) — |
| (5) 5 | (5) 1 | (5) YE / BK | (5) 7730 | (5) III | (5) — | (5) Major Endgate Motor Low Reference | (5) 5 | (5) 1 | (5) YE / BK | (5) 7730 | (5) IV | (5) — |
| (6) 6 | (6) 1 | (6) GN | (6) 1299 | (6) III | (6) — | (6) Major Endgate Motor Control | (6) 6 | (6) 1 | (6) GN | (6) 1299 | (6) IV | (6) — |
| 7 - 8 | — | — | — | — | — | Not Occupied | 7 - 8 | — | — | — | — | — |

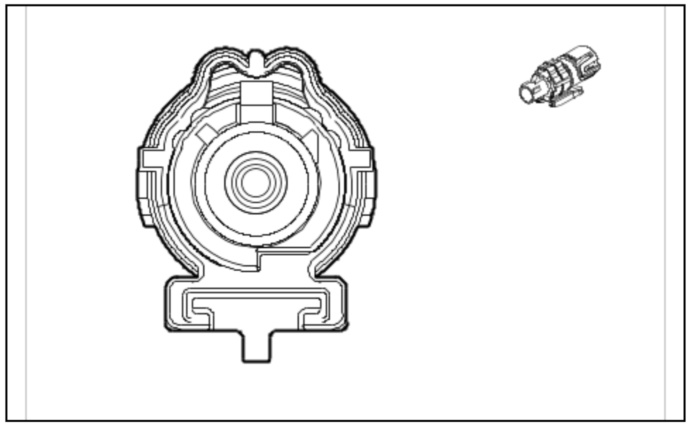
| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (9) 9 | (9) 0.5 | (9) WH / VT | (9) 1430 | (9) I | (9) — | (9) Exterior Courtesy Lamp Control | (9) 9 | (9) 0.5 | (9) WH / VT | (9) 1430 | (9) V | (9) — |
| (10) 10 | (10) 0.5 | (10) YE | (10) 7294 | (10) I | (10) — | (10) Minor Endgate Release Switch Discrete Signal Exterior | (10) 10 | (10) 0.5 | (10) YE | (10) 7294 | (10) V | (10) — |
| (11) 11 | (11) 0.75 | (11) YE / BU | (11) 7295 | (11) I | (11) — | (11) Left Minor Endgate Ajar Signal | (11) 11 | (11) 0.75 | (11) YE / BU | (11) 7295 | (11) V | (11) — |
| 12 - 17 | — | — | — | — | — | Not Occupied | 12 - 17 | — | — | — | — | — |
| (18) 18 | (18) 0.5 | (18) BU / VT | (18) 4101 | (18) I | (18) — | (18) AUTOSAR CAN Bus [+] 4 Serial Data | (18) 18 | (18) 0.5 | (18) BU / VT | (18) 4101 | (18) V | (18) — |
| (19) 19 | (19) 0.5 | (19) WH | (19) 4100 | (19) I | (19) — | (19) AUTOSAR CAN Bus [-] 4 Serial Data | (19) 19 | (19) 0.5 | (19) WH | (19) 4100 | (19) V | (19) — |
| (20) 20 | (20) 0.5 | (20) YE | (20) 1144 | (20) I | (20) — | (20) Endgate Release Switch Discrete Signal Exterior | (20) 20 | (20) 0.5 | (20) YE | (20) 1144 | (20) V | (20) — |
| (21) 21 | (21) 0.5 | (21) GY | (21) 7292 | (21) I | (21) — | (21) Major Endgate Release Switch Signal Exterior | (21) 21 | (21) 0.5 | (21) GY | (21) 7292 | (21) V | (21) — |
| (22) 22 | (22) 0.5 | (22) WH | (22) 4100 | (22) I | (22) — | (22) AUTOSAR CAN Bus [-] 4 Serial Data | (22) 22 | (22) — | (22) — | (22) — | (22) — | (22) — |
| (23) 23 | (23) 0.5 | (23) BU / VT | (23) 4101 | (23) I | (23) — | (23) AUTOSAR CAN Bus [+] 4 Serial Data | (23) 23 | (23) — | (23) — | (23) — | (23) — | (23) — |
| 24 - 28 | — | — | — | — | — | Not Occupied | 24 - 28 | — | — | — | — | — |
| (29) 29 | (29) 0.5 | (29) WH | (29) 4100 | (29) I | (29) — | (29) AUTOSAR CAN Bus [-] 4 Serial Data | (29) 29 | (29) 0.5 | (29) WH | (29) 4100 | (29) V | (29) — |
| (30) 30 | (30) 0.5 | (30) BU / VT | (30) 4101 | (30) I | (30) — | (30) AUTOSAR CAN Bus [+] 4 Serial Data | (30) 30 | (30) 0.5 | (30) BU / VT | (30) 4101 | (30) V | (30) — |

## X919 Endgate Wiring Harness to Chassis Wiring Harness




5810829

**Connector Part Information**
- Harness Type: Endgate Wiring Harness COAX
- OEM Connector: 35187033
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type( WH)



5757466

**Connector Part Information**
- Harness Type: Chassis Wiring Harness COAX
- OEM Connector: 33338240
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way M Coax Type, Sealed( WH)

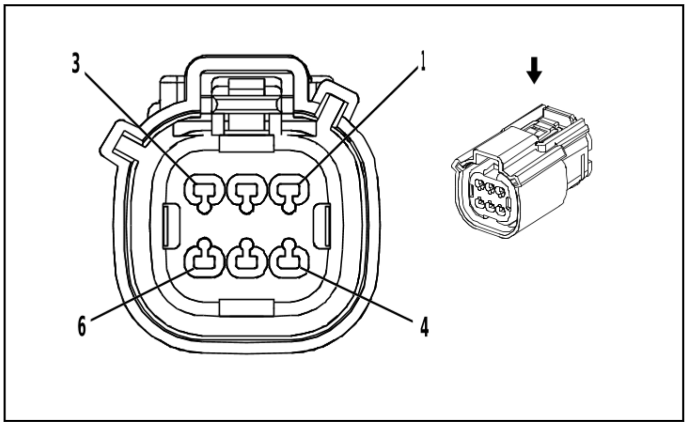
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

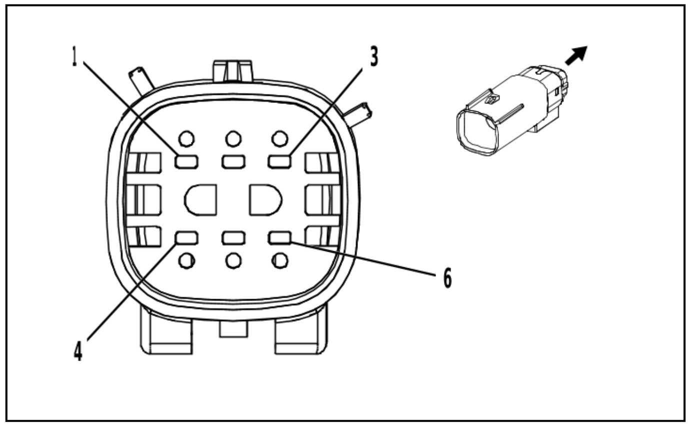
### X919 Endgate Wiring Harness to Chassis Wiring Harness

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| — | — | Coax Cable | — | I | — | Rear Vision Camera Coaxial Video Signal | — | — | Coax Cable | — | I | — |

### X920A Tail Lamp Wiring Harness to Chassis Wiring Harness - Chassis Cab




3225042




3225221

**Connector Part Information**
- Harness Type: Tail Lamp Wiring Harness
- OEM Connector: Not Available
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F

**Connector Part Information**
- Harness Type: Chassis Wiring Harness
- OEM Connector: 33482-3647
- Service Connector: 19370461
- Description: 6-Way M 1.5 MX Series, Sealed( GY)

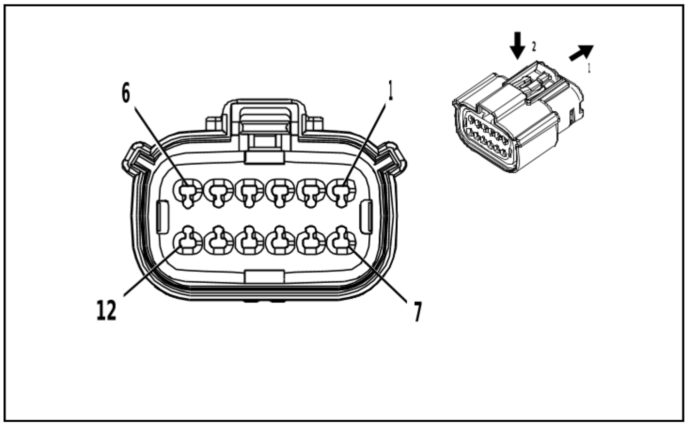
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |
| II | Not required | J-35616-3 (GY) | No Tool Required |

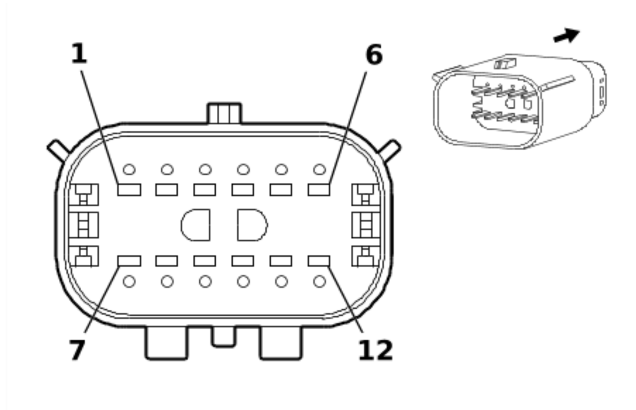
## X920A Tail Lamp Wiring Harness to Chassis Wiring Harness - Chassis Cab

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) BN / GY | (1) 6995 | (1) I | (1) — | (1) Right Rear Park Lamp Control | (1) 1 | (1) 0.75 | (1) BN / GY | (1) 6995 | (1) II | (1) — |
| 2 - 3 | — | — | — | — | — | Not Occupied | 2 - 3 | — | — | — | — | — |
| (4) 4 | (4) 0.5 | (4) GN / WH | (4) 24 | (4) I | (4) — | (4) Backup Lamp Control | (4) 4 | (4) 0.5 | (4) GN / WH | (4) 24 | (4) II | (4) — |
| (5) 5 | (5) 0.75 | (5) BU / VT | (5) 1335 | (5) I | (5) — | (5) Right Rear Turn Signal Lamp Control 2 | (5) 5 | (5) 0.75 | (5) BU / VT | (5) 1335 | (5) II | (5) — |
| (6) 6 | (6) 1 | (6) BK | (6) 1850 | (6) I | (6) — | (6) Ground | (6) 6 | (6) 1 | (6) BK | (6) 1850 | (6) II | (6) — |

### X920A Tail Lamp Wiring Harness to Chassis Wiring Harness - Pickup




2871860




1825167

**Connector Part Information**
- Harness Type: Tail Lamp Wiring Harness
- OEM Connector: 13503526
- Service Connector: Service by Harness - See Part Catalog
- Description: 12-Way F 1.5 MX Series, Sealed( BK)

**Connector Part Information**
- Harness Type: Chassis Wiring Harness
- OEM Connector: 33482-6201
- Service Connector: 19369242
- Description: 12-Way M 1.5 MX Series, Sealed( BK)

## Terminal Part Information

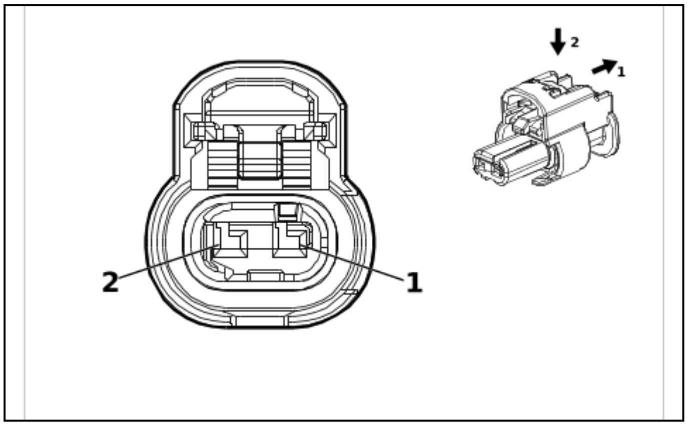
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-2A (GY) | No Tool Required |
| II | 86800300 | J-35616-3 (GY) | J-38125-217 |

## X920A Tail Lamp Wiring Harness to Chassis Wiring Harness - Pickup

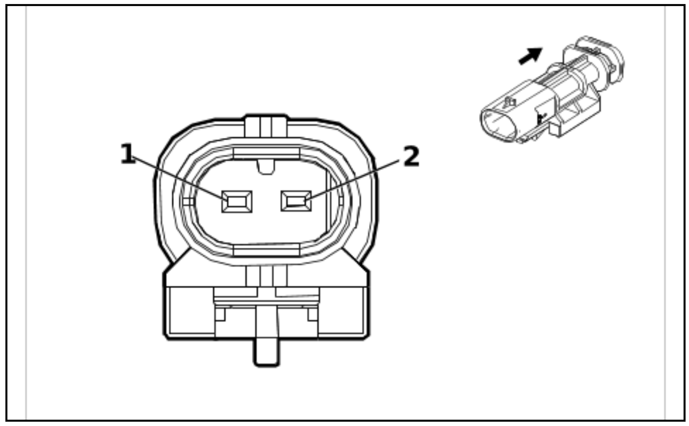
| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 18 | (1) BK | (1) 1850 | (1) I | (1) — | (1) Ground | (1) 1 | (1) 1 | (1) BK | (1) 1850 | (1) II | (1) — |
| (2) 2 | (2) 0.75 | (2) BU | (2) 0 | (2) I | (2) — | (2) — | (2) 2 | (2) 0.5 | (2) RD / WH | (2) 6440 | (2) II | (2) — |
| (3) 3 | (3) 0.75 | (3) GN | (3) 0 | (3) I | (3) — | (3) — | (3) 3 | (3) 0.75 | (3) WH / YE | (3) 7541 | (3) II | (3) — |
| (4) 4 | (4) 18 | (4) BN | (4) 0 | (4) I | (4) — | (4) — | (4) 4 | (4) 0.75 | (4) BN / GY | (4) 6995 | (4) II | (4) — |
| (5) 5 | (5) 18 | (5) GN | (5) 0 | (5) I | (5) — | (5) — | (5) 5 | (5) 0.75 | (5) BU / VT | (5) 1335 | (5) II | (5) — |
| (6) 6 | (6) 18 | (6) RD | (6) 0 | (6) I | (6) — | (6) — | (6) 6 | (6) 0.75 | (6) WH / BK | (6) 7544 | (6) II | (6) — |
| (7) 7 | (7) 18 | (7) GN | (7) 0 | (7) I | (7) — | (7) — | (7) 7 | (7) 0.5 | (7) GN / WH | (7) 24 | (7) II | (7) — |
| (8) 8 | (8) 0.75 | (8) PU | (8) 2024 | (8) I | (8) — | (8) Animation Lighting Control | (8) 8 | (8) 0.5 | (8) YE / GN | (8) 2024 | (8) II | (8) — |
| (9) 9 | (9) 18 | (9) BU | (9) 7762 | (9) I | (9) — | (9) Cargo Lamp Control | (9) 9 | (9) 0.5 | (9) GY / BU | (9) 7762 | (9) II | (9) — |
| (10) 10 | (10) 0.75 | (10) WH | (10) 1334 | (10) I | (10) — | (10) Left Rear Turn Signal Lamp Control 2 | (10) 10 | (10) 0.75 | (10) BU / WH | (10) 1334 | (10) II | (10) — |

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (11) 11 | (11) 18 | (11) B N | (11) 42 46 | (11) I | (11) — | (11) Identifi- cation Lamp Control | (11) 11 | (11) 0.5 | (11) B N / GN | (11) 42 46 | (11) II | (11) — |
| 12 | — | — | — | — | — | Not Occupied | 12 | — | — | — | — | — |

**X920C Rear License Plate Lamp Wiring Harness Extension Harness - Right to Tail Lamp Wiring Harness**




4649903




5200722

**Connector Part Information**
- Harness Type: Rear License Plate Lamp Wiring Harness Extension Harness - Right
- OEM Connector: 1-2296694-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series, Sealed( BK)

**Connector Part Information**
- Harness Type: Tail Lamp Wiring Harness
- OEM Connector: 2203314-2
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way M 1.2 MCON Series, Sealed( BK)

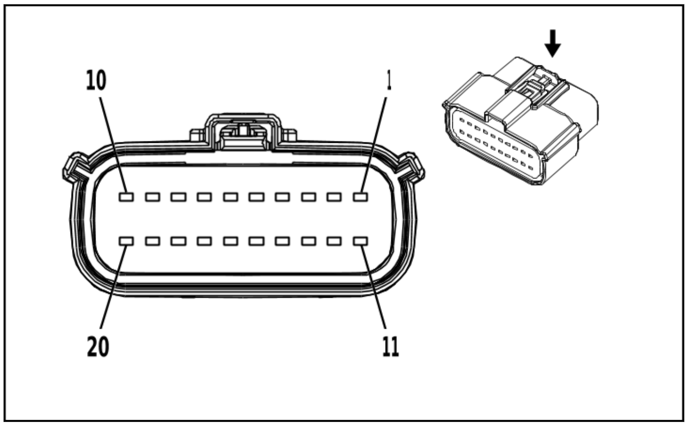
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |
| II | Not required | J-35616-17 (L-GN) | No Tool Required |

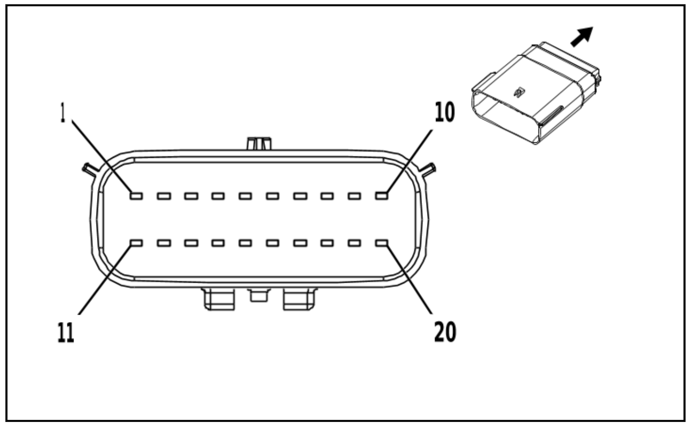
## X920C Rear License Plate Lamp Wiring Harness Extension Harness - Right to Tail Lamp Wiring Harness

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 0. 5 | (1) GY / BN | (1) 309 | (1) I | (1) — | (1) Right Park Lamp Control | (1) 1 | (1) 0. 5 | (1) BK | (1) 185 0 | (1) II | (1) — |
| (2) 2 | (2) 0. 5 | (2) BK | (2) 175 0 | (2) I | (2) — | (2) Ground | (2) 2 | (2) 0. 5 | (2) BN / GN | (2) 424 6 | (2) II | (2) — |

### X950 Rear Object Alarm Sensor Wiring Harness to Chassis Wiring Harness




2871898




2871861

**Connector Part Information**
- Harness Type: Rear Object Alarm Sensor Wiring Harness
- OEM Connector: 33472-2006
- Service Connector: Service by Harness - See Part Catalog
- Description: 20-Way F 1.5 MX Series, Sealed( BK)

**Connector Part Information**
- Harness Type: Chassis Wiring Harness
- OEM Connector: 13598210
- Service Connector: 19351705
- Description: 20-Way M 1.5 MX Series, Sealed( BK)

## Terminal Part Information

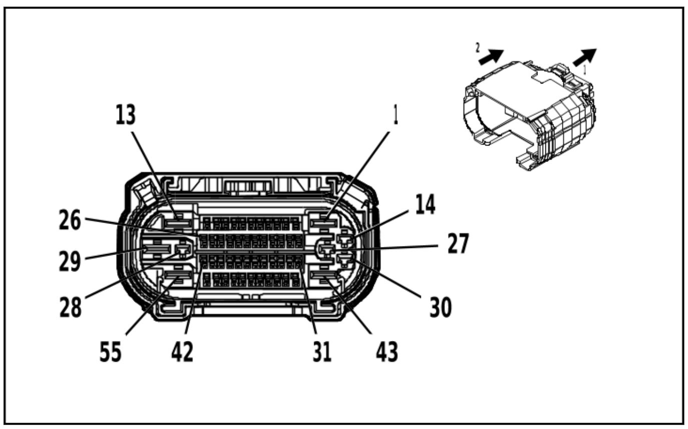
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-2A (GY) | No Tool Required |
| II | 86800300 | J-35616-3 (GY) | J-38125-217 |

## X950 Rear Object Alarm Sensor Wiring Harness to Chassis Wiring Harness

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) RD / GN | (1) 6940 | (1) I | (1) — | (1) Battery Positive Voltage | (1) 1 | (1) 0.5 | (1) RD / GN | (1) 6940 | (1) II | (1) — |
| 2 | — | — | — | — | — | Not Occupied | 2 | — | — | — | — | — |
| (3) 3 | (3) 0.5 | (3) WH | (3) 4100 | (3) I | (3) — | (3) AUTOSAR CAN Bus [-] 4 Serial Data | (3) 3 | (3) 0.5 | (3) WH | (3) 4100 | (3) II | (3) — |
| (4) 4 | (4) 0.5 | (4) BU / VT | (4) 4101 | (4) I | (4) — | (4) AUTOSAR CAN Bus [+] 4 Serial Data | (4) 4 | (4) 0.5 | (4) BU / VT | (4) 4101 | (4) II | (4) — |
| 5 - 8 | — | — | — | — | — | Not Occupied | 5 - 8 | — | — | — | — | — |
| (9) 9 | (9) 0.5 | (9) BN / WH | (9) 2374 | (9) I | (9) — | (9) Object Sensor Voltage Reference | (9) 9 | (9) 0.5 | (9) BN / WH | (9) 2374 | (9) II | (9) — |
| (10) 10 | (10) 0.5 | (10) YE | (10) 2375 | (10) I | (10) — | (10) Left Rear Outer Parking Assist Sensor Signal | (10) 10 | (10) 0.5 | (10) YE | (10) 2375 | (10) II | (10) — |
| (11) 11 | (11) 0.5 | (11) YE / BU | (11) 2376 | (11) I | (11) — | (11) Left Rear Middle Parking Assist Sensor Signal | (11) 11 | (11) 0.5 | (11) YE / BU | (11) 2376 | (11) II | (11) — |

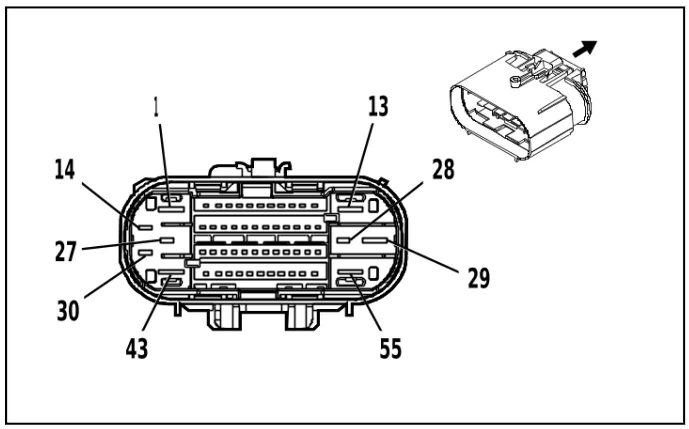
| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (12) 12 | (12) 0.5 | (12) Y E / WH | (12) 23 77 | (12) I | (12) — | (12) Right Rear Middle Parking Assist Sensor Signal | (12) 12 | (12) 0.5 | (12) Y E / WH | (12) 23 77 | (12) II | (12) — |
| (13) 13 | (13) 0.5 | (13) Y E / VT | (13) 23 78 | (13) I | (13) — | (13) Right Rear Outer Parking Assist Sensor Signal | (13) 13 | (13) 0.5 | (13) Y E / VT | (13) 23 78 | (13) II | (13) — |
| (14) 14 | (14) 0.5 | (14) B K / GY | (14) 23 79 | (14) I | (14) — | (14) Object Sensor Low Reference | (14) 14 | (14) 0.5 | (14) B K / GY | (14) 23 79 | (14) II | (14) — |
| (15) 15 | (15) 0.5 | (15) G N / YE | (15) 68 46 | (15) I | (15) — | (15) Rear License Plate Lamp Control | (15) 15 | (15) 0.5 | (15) G N / YE | (15) 68 46 | (15) II | (15) — |
| (16) 16 | (16) 0.75 | (16) B K | (16) 18 50 | (16) I | (16) — | (16) Ground | (16) 16 | (16) 1 | (16) B K | (16) 18 50 | (16) II | (16) — |
| (17) 17 | (17) 0.5 | (17) B K / WH | (17) 19 51 | (17) I | (17) — | (17) Signal Ground | (17) 17 | (17) 1 | (17) B K | (17) 18 50 | (17) II | (17) — |
| 18 - 20 | — | — | — | — | — | Not Occupied | 18 - 20 | — | — | — | — | — |

### X950D Engine Wiring Harness to Engine Wiring Harness




4992168

**Connector Part Information**
- Harness Type: Engine Wiring Harness
- OEM Connector: 35253720
- Service Connector: 19371185
- Description: 55-Way F 1.2 OCS, 2.8, 6.3 CTS Series, Sealed( BK)




4993301

**Connector Part Information**
- Harness Type: Engine Wiring Harness
- OEM Connector: 35205187
- Service Connector: 84727364
- Description: 55-Way M 1.2 OCS, 2.8, 6.3 CTS Series, Sealed( BK)

## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 19332901 | J-35616-35 (VT) | J-38125-212 |
| II | 19370818 | J-35616-12 (BU) | J-38125-553 |
| III | 84634921 | J-35616-42 (RD) | J-38125-212 |
| IV | 84847992 | J-35616-32 (OG) | J-38125-36 |

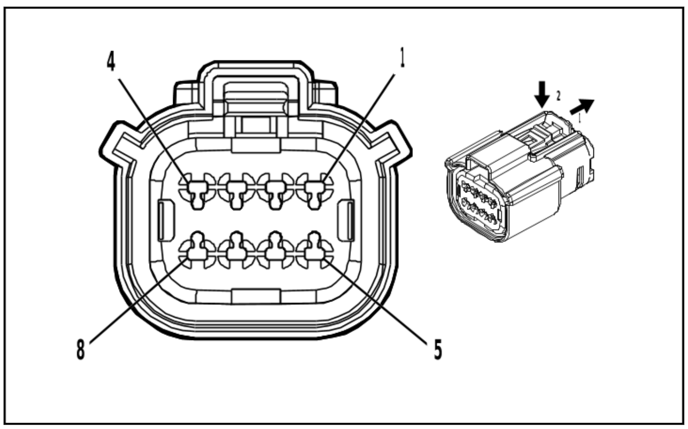
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| V | 84867140 | J-35616-13 (BU) | J-38125-553 |
| VI | 84992391 | J-35616-5 (PU) | J-38125-36 |

## X950D Engine Wiring Harness to Engine Wiring Harness

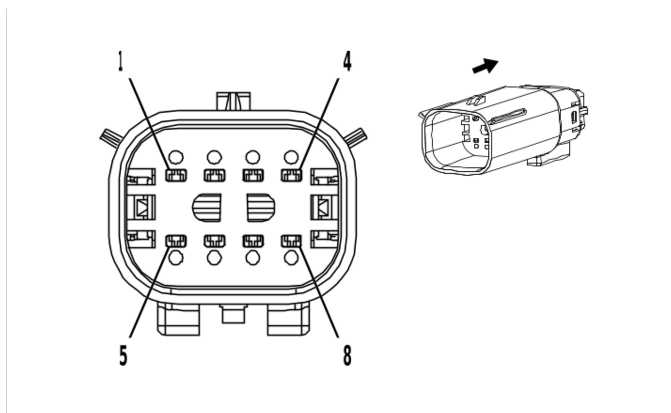
| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 2.5 | (1) GY / BU | (1) 1581 | (1) III | (1) — | (1) Glow Plug 1 Control | (1) 1 | (1) 2.5 | (1) GY / BU | (1) 1581 | (1) IV | (1) — |
| 2 - 12 | — | — | — | — | — | Not Occupied | 2 - 12 | — | — | — | — | — |
| (13) 13 | (13) 2.5 | (13) GY / VT | (13) 1586 | (13) III | (13) — | (13) Glow Plug 6 Control | (13) 13 | (13) 2.5 | (13) GY / VT | (13) 1586 | (13) IV | (13) — |
| (14) 14 | (14) 2.5 | (14) GY / BN | (14) 1582 | (14) I | (14) — | (14) Glow Plug 2 Control | (14) 14 | (14) 2.5 | (14) GY / BN | (14) 1582 | (14) VI | (14) — |
| (15) 15 | (15) 0.5 | (15) WH | (15) 4055 | (15) II | (15) — | (15) Private Serial Data Powertrain CAN Bus [+] Serial Data | (15) 15 | (15) 0.5 | (15) WH | (15) 4055 | (15) V | (15) — |
| (16) 16 | (16) 0.5 | (16) BU / GY | (16) 4054 | (16) II | (16) — | (16) Private Serial Data Powertrain CAN Bus [-] Serial Data | (16) 16 | (16) 0.5 | (16) BU / GY | (16) 4054 | (16) V | (16) — |
| (17) 17 | (17) 0.5 | (17) BK / WH | (17) 6151 | (17) II | (17) — | (17) Engine Control Module Ground | (17) 17 | (17) 0.5 | (17) BK / WH | (17) 6151 | (17) V | (17) — |
| (18) 18 | (18) 0.5 | (18) BK / BU | (18) 10597 | (18) II | (18) — | (18) Engine Control Sensors Low Reference 3 | (18) 18 | (18) 0.5 | (18) BK / BU | (18) 10597 | (18) V | (18) — |
| (19) 19 | (19) 0.5 | (19) BN | (19) 3681 | (19) II | (19) — | (19) Charge Air Cooler Outlet Temperature Sensor Signal | (19) 19 | (19) 0.5 | (19) BN | (19) 3681 | (19) V | (19) — |
| (20) 20 | (20) 0.75 | (20) VT / GN | (20) 4320 | (20) II | (20) — | (20) Powertrain Sensor Bus Enable | (20) 20 | (20) 0.5 | (20) VT / GN | (20) 4320 | (20) V | (20) — |
| (21) 21 | (21) 0.5 | (21) WH | (21) 4055 | (21) II | (21) — | (21) Private Serial Data Powertrain CAN Bus [+] Serial Data | (21) 21 | (21) 0.5 | (21) WH | (21) 4055 | (21) V | (21) — |
| (22) 22 | (22) 0.5 | (22) BU / GY | (22) 4054 | (22) II | (22) — | (22) Private Serial Data Powertrain CAN Bus [-] Serial Data | (22) 22 | (22) 0.5 | (22) BU / GY | (22) 4054 | (22) V | (22) — |
| 23 - 26 | — | — | — | — | — | Not Occupied | 23 - 26 | — | — | — | — | — |
| (27) 27 | (27) 2.5 | (27) GY / GN | (27) 1583 | (27) I | (27) — | (27) Glow Plug 3 Control | (27) 27 | (27) 2.5 | (27) GY / GN | (27) 1583 | (27) VI | (27) — |

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (28) 28 | (28) 2.5 | (28) WH / BK | (28) 15 87 | (28) I | (28) — | (28) Glow Plug 7 Control | (28) 28 | (28) 2.5 | (28) WH / BK | (28) 15 87 | (28) VI | (28) — |
| 29 | — | — | — | — | — | Not Occupied | 29 | — | — | — | — | — |
| (30) 30 | (30) 2.5 | (30) G Y / YE | (30) 15 84 | (30) I | (30) — | (30) Glow Plug 4 Control | (30) 30 | (30) 2.5 | (30) G Y / YE | (30) 15 84 | (30) VI | (30) — |
| 31 - 42 | — | — | — | — | — | Not Occupied | 31 - 42 | — | — | — | — | — |
| (43) 43 | (43) 2.5 | (43) G Y / WH | (43) 15 85 | (43) III | (43) — | (43) Glow Plug 5 Control | (43) 43 | (43) 2.5 | (43) G Y / WH | (43) 15 85 | (43) IV | (43) — |
| 44 - 54 | — | — | — | — | — | Not Occupied | 44 - 54 | — | — | — | — | — |
| (55) 55 | (55) 2.5 | (55) WH / BU | (55) 15 88 | (55) III | (55) — | (55) Glow Plug 8 Control | (55) 55 | (55) 2.5 | (55) WH / BU | (55) 15 88 | (55) IV | (55) — |

### X960A Engine Wiring Harness to Engine Wiring Harness



4846407



2667653

**Connector Part Information**
- Harness Type: Engine Wiring Harness
- OEM Connector: 13520069
- Service Connector: 84928314
- Description: 8-Way F 1.5 MX Series, Sealed( BK)

**Connector Part Information**
- Harness Type: Engine Wiring Harness
- OEM Connector: 13520577
- Service Connector: 19370460
- Description: 8-Way M 1.5 MX Series, Sealed( BK)

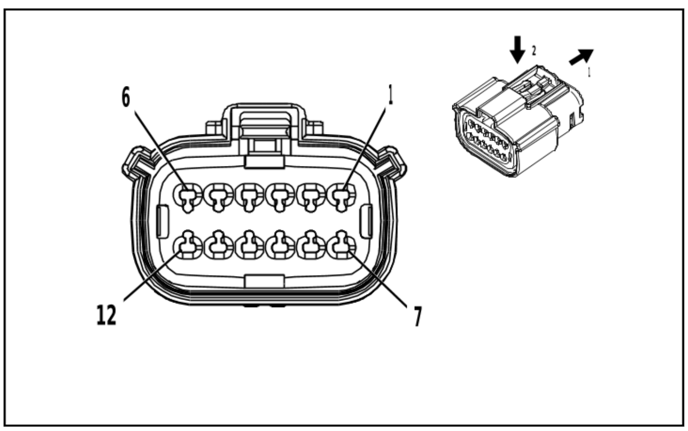
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-14 (GN) | No Tool Required |
| II | Not required | J-35616-3 (GY) | No Tool Required |

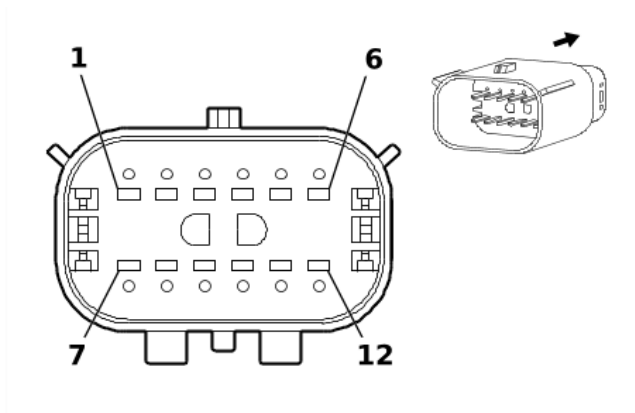
## X960A Engine Wiring Harness to Engine Wiring Harness

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) VT / BU | (1) 6270 | (1) I | (1) — | (1) Crankshaft Position Sensor Voltage | (1) 1 | (1) 0.5 | (1) VT / BU | (1) 6270 | (1) II | (1) — |
| (2) 2 | (2) 0.5 | (2) BK / VT | (2) 6272 | (2) I | (2) — | (2) Crankshaft Position Sensor Low Reference | (2) 2 | (2) 0.5 | (2) BK / VT | (2) 6272 | (2) II | (2) — |
| (3) 3 | (3) 0.5 | (3) GN | (3) 6271 | (3) I | (3) — | (3) Crankshaft Position Sensor Signal | (3) 3 | (3) 0.5 | (3) GN | (3) 6271 | (3) II | (3) — |
| (4) 4 | (4) 0.5 | (4) BN / RD | (4) 2917 | (4) I | (4) — | (4) Fuel Rail Pressure Sensor 5V Reference | (4) 4 | (4) 0.5 | (4) BN / RD | (4) 2917 | (4) II | (4) — |
| (5) 5 | (5) 0.5 | (5) BK / GN | (5) 2919 | (5) I | (5) — | (5) Fuel Rail Pressure Sensor Low Reference | (5) 5 | (5) 0.5 | (5) BK / GN | (5) 2919 | (5) II | (5) — |
| (6) 6 | (6) 0.5 | (6) BU / WH | (6) 2918 | (6) I | (6) — | (6) Fuel Rail Pressure Sensor Signal | (6) 6 | (6) 0.5 | (6) BU / WH | (6) 2918 | (6) II | (6) — |
| (7) 7 | (7) 0.5 | (7) BN / YE | (7) 2161 | (7) I | (7) — | (7) Fuel Rail Pressure Sensor 2 Signal | (7) 7 | (7) 0.5 | (7) BN / YE | (7) 2161 | (7) II | (7) — |
| 8 | — | — | — | — | — | Not Occupied | 8 | — | — | — | — | — |

### X960B Engine Wiring Harness to Engine Wiring Harness




2871860




1825167

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 13503526
- Service Connector: 19352907
- Description: 12-Way F 1.5 MX Series, Sealed( BK)

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 13520579
- Service Connector: 19369242
- Description: 12-Way M 1.5 MX Series, Sealed( BK)

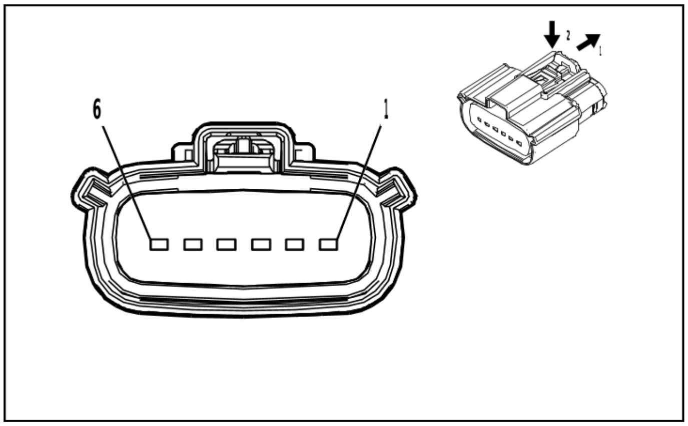
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 85528055 | J-35616-2A (GY) | J-38125-217 |
| II | 86800300 | J-35616-3 (GY) | J-38125-217 |

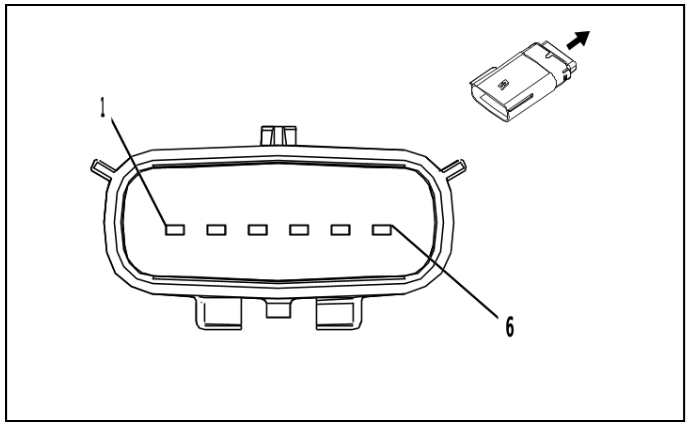
## X960B Engine Wiring Harness to Engine Wiring Harness

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 0. 5 | (1) BU / RD | (1) 460 | (1) I | (1) — | (1) Engine Control Sensors 5 Volt Reference 1 | (1) 1 | (1) 0. 5 | (1) BU / RD | (1) 460 | (1) II | (1) — |
| (2) 2 | (2) 0. 5 | (2) BK / YE | (2) 548 | (2) I | (2) — | (2) Engine Control Sensors Low Reference 1 | (2) 2 | (2) 0. 5 | (2) BK / YE | (2) 548 | (2) II | (2) — |
| (3) 3 | (3) 0. 5 | (3) YE / BN | (3) 331 | (3) I | (3) — | (3) Oil Pressure Sensor Signal | (3) 3 | (3) 0. 5 | (3) YE / BN | (3) 331 | (3) II | (3) — |
| (4) 4 | (4) 0. 5 | (4) BU | (4) 410 | (4) I | (4) — | (4) Engine Coolant Temperature Sensor Signal | (4) 4 | (4) 0. 5 | (4) BU | (4) 410 | (4) II | (4) — |
| (5) 5 | (5) 0. 5 | (5) BK / YE | (5) 548 | (5) I | (5) — | (5) Engine Control Sensors Low Reference 1 | (5) 5 | (5) 0. 5 | (5) BK / YE | (5) 548 | (5) II | (5) — |
| (6) 6 | (6) 0. 5 | (6) BK / WH | (6) 615 1 | (6) I | (6) — | (6) Engine Control Module Ground | (6) 6 | (6) 0. 5 | (6) BK / WH | (6) 615 1 | (6) II | (6) — |
| (7) 7 | (7) 0. 5 | (7) BN / GN | (7) 117 4 | (7) I | (7) — | (7) Oil Level Switch Signal | (7) 7 | (7) 0. 5 | (7) BN / GN | (7) 117 4 | (7) II | (7) — |
| 8 - 9 | — | — | — | — | — | Not Occupied | 8 - 9 | — | — | — | — | — |
| (10) 10 | (10) 0.5 | (10) Y E | (10) 29 28 | (10) I | (10) — | (10) Fuel Met ering Solenoid Valve High Control | (10) 10 | (10) 0.5 | (10) Y E | (10) 29 28 | (10) II | (10) — |
| (11) 11 | (11) 0.5 | (11) B N / BK | (11) 29 29 | (11) I | (11) — | (11) Fuel Met ering Solenoid Valve Low Control | (11) 11 | (11) 0.5 | (11) B N / BK | (11) 29 29 | (11) II | (11) — |
| 12 | — | — | — | — | — | Not Occupied | 12 | — | — | — | — | — |

### X962 Engine Wiring Harness to Engine Coolant Temperature Sensor Harness




5126816




3277908

**Connector Part Information**
- Harness Type: Engine Wiring Harness
- OEM Connector: 13544241
- Service Connector: 86801953
- Description: 6-Way F 1.5 Series, Sealed( BK)

**Connector Part Information**
- Harness Type: Engine Coolant Temperature Sensor Harness
- OEM Connector: 13526225
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way M 1.5 MX Series, Sealed( BK)

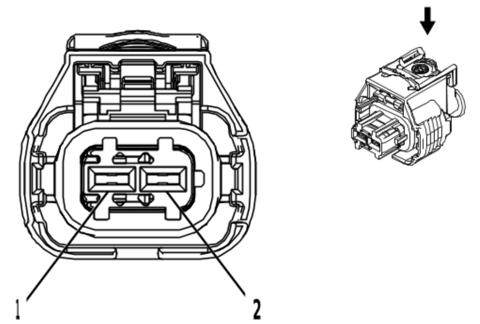
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-14 (GN) | No Tool Required |
| II | Not required | J-35616-3 (GY) | No Tool Required |

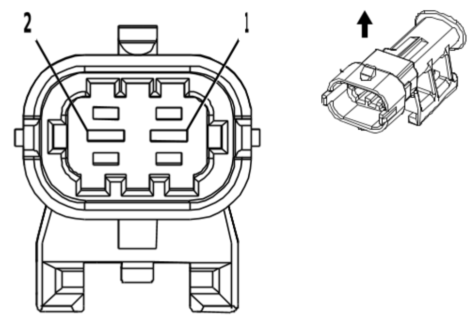
## X962 Engine Wiring Harness to Engine Coolant Temperature Sensor Harness

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BU | (1) 410 | (1) I | (1) — | (1) Engine Coolant Temperature Sensor Signal | (1) 1 | (1) 0.5 | (1) BU | (1) 410 | (1) II | (1) — |
| (2) 2 | (2) 0.5 | (2) BK / YE | (2) 548 | (2) I | (2) — | (2) Engine Control Sensors Low Reference 1 | (2) 2 | (2) 0.5 | (2) BK / YE | (2) 548 | (2) II | (2) — |
| (3) 3 | (3) 0.5 | (3) YE / BN | (3) 331 | (3) I | (3) — | (3) Oil Pressure Sensor Signal | (3) 3 | (3) 0.5 | (3) YE / BN | (3) 331 | (3) II | (3) — |
| (4) 4 | (4) 0.5 | (4) BK / YE | (4) 548 | (4) I | (4) — | (4) Engine Control Sensors Low Reference 1 | (4) 4 | (4) 0.5 | (4) BK / YE | (4) 548 | (4) II | (4) — |
| (5) 5 | (5) 0.5 | (5) WH / RD | (5) 480 | (5) I | (5) — | (5) Engine Control Vehicle Sensors 5 Volt Reference 1 | (5) 5 | (5) 0.5 | (5) WH / RD | (5) 480 | (5) II | (5) — |
| 6 | — | — | — | — | — | Not Occupied | 6 | — | — | — | — | — |

### X977 Engine Wiring Harness to Accessory Wiring Harness (VYU)




2577394




2667643

**Connector Part Information**
- Harness Type: Engine Wiring Harness
- OEM Connector: 1 928 405 714
- Service Connector: 13384371
- Description: 2-Way F 2.8 Series, Sealed( BK)

**Connector Part Information**
- Harness Type: Accessory Wiring Harness
- OEM Connector: 1 928 404 226
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way M 2.8 Timer Series, Sealed( BK)

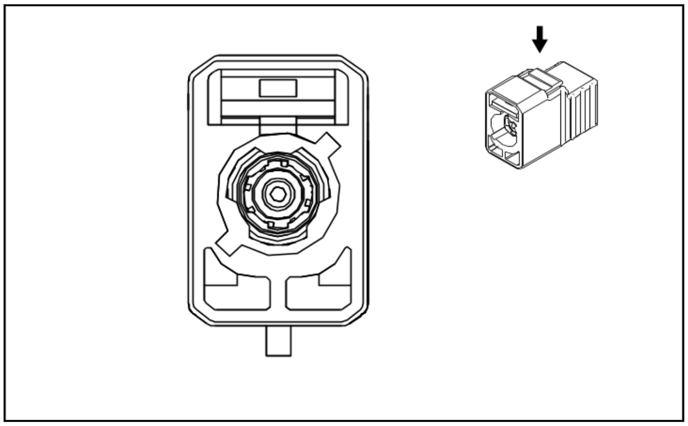
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-35 (VT) | No Tool Required |
| II | Not required | J-35616-5 (PU) | No Tool Required |

## X977 Engine Wiring Harness to Accessory Wiring Harness (VYU)

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BN | (1) 25 | (1) I | (1) — | (1) Charge Indicator Control | (1) 1 | (1) 0.5 | (1) BN | (1) 25 | (1) II | (1) — |
| (2) 2 | (2) 0.5 | (2) GY | (2) 23 | (2) I | (2) — | (2) Generator Field Duty Cycle Signal | (2) 2 | (2) 0.5 | (2) GY | (2) 23 | (2) II | (2) — |

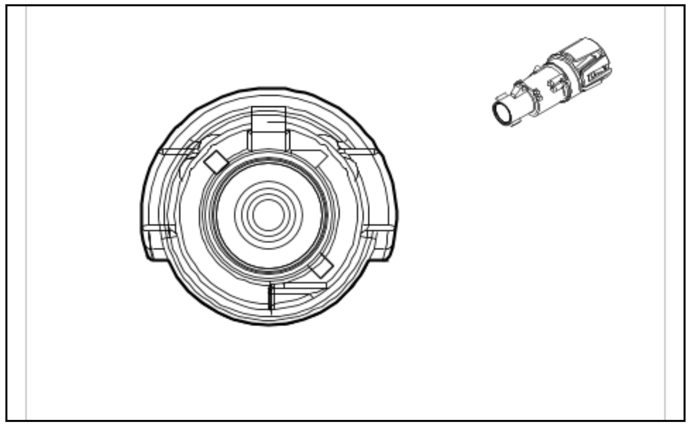
### X985A Rearview Driver Information Camera Rear Closure Coaxial Cable to Inside Rearview Mirror Wiring Harness (DRZ)



3293625

**Connector Part Information**

- Harness Type: Rearview Driver Information Camera Rear Closure Coaxial Cable COAX
- OEM Connector: 13583914
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type( BU)



5633901

**Connector Part Information**

- Harness Type: Inside Rearview Mirror Wiring Harness COAX
- OEM Connector: 33355540
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way M Coax Type, Sealed( BU)

## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

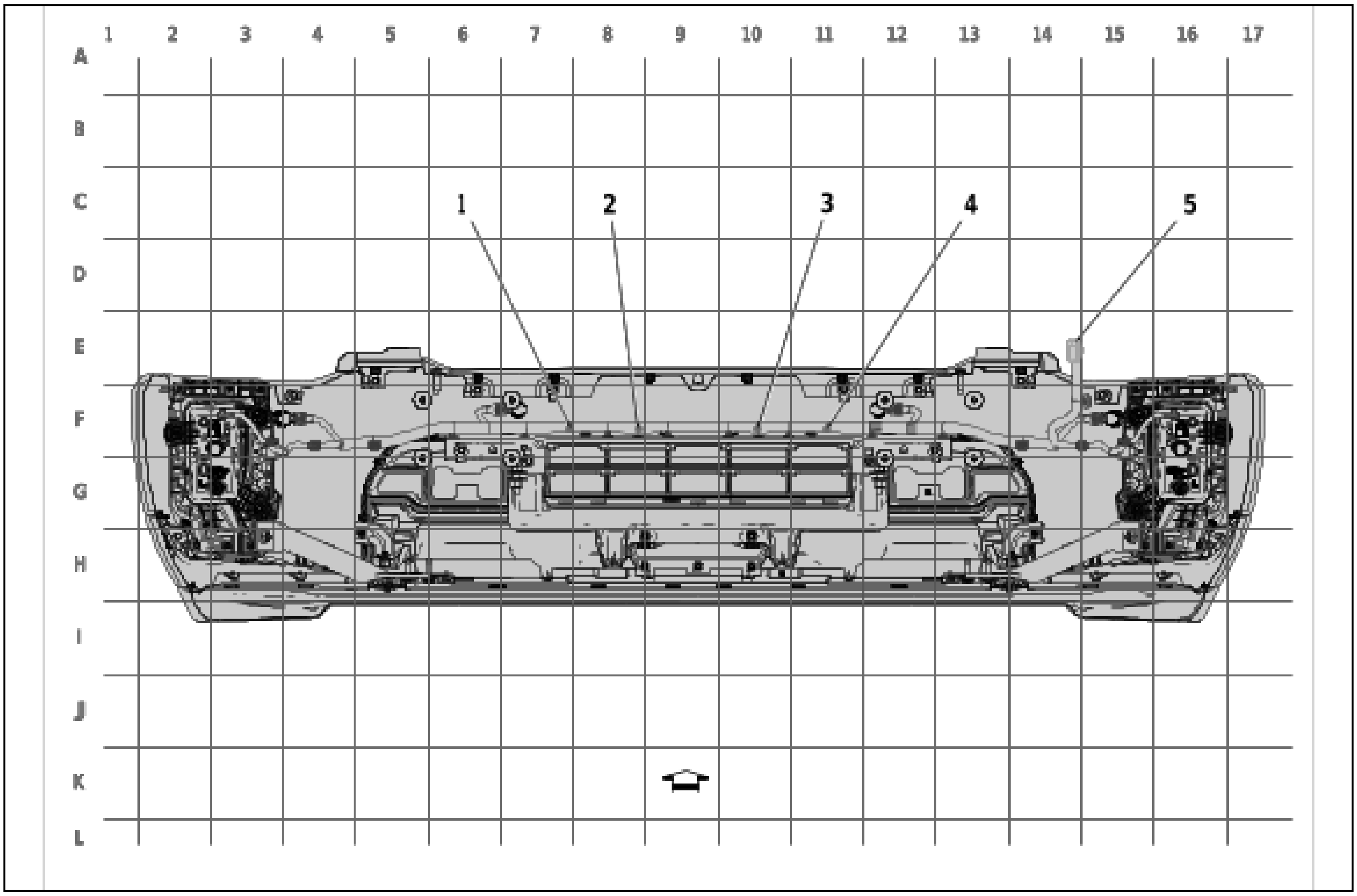
## X985A Rearview Driver Information Camera Rear Closure Coaxial Cable to Inside Rearview Mirror Wiring Harness (DRZ)

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| — | — | Coax Cable | — | I | — | Rear Vision Camera Coaxial Video Signal | — | — | Coax Cable | — | I | — |

# Electrical Component Locator and Harness Routing Views

## Schematic and Routing Diagrams

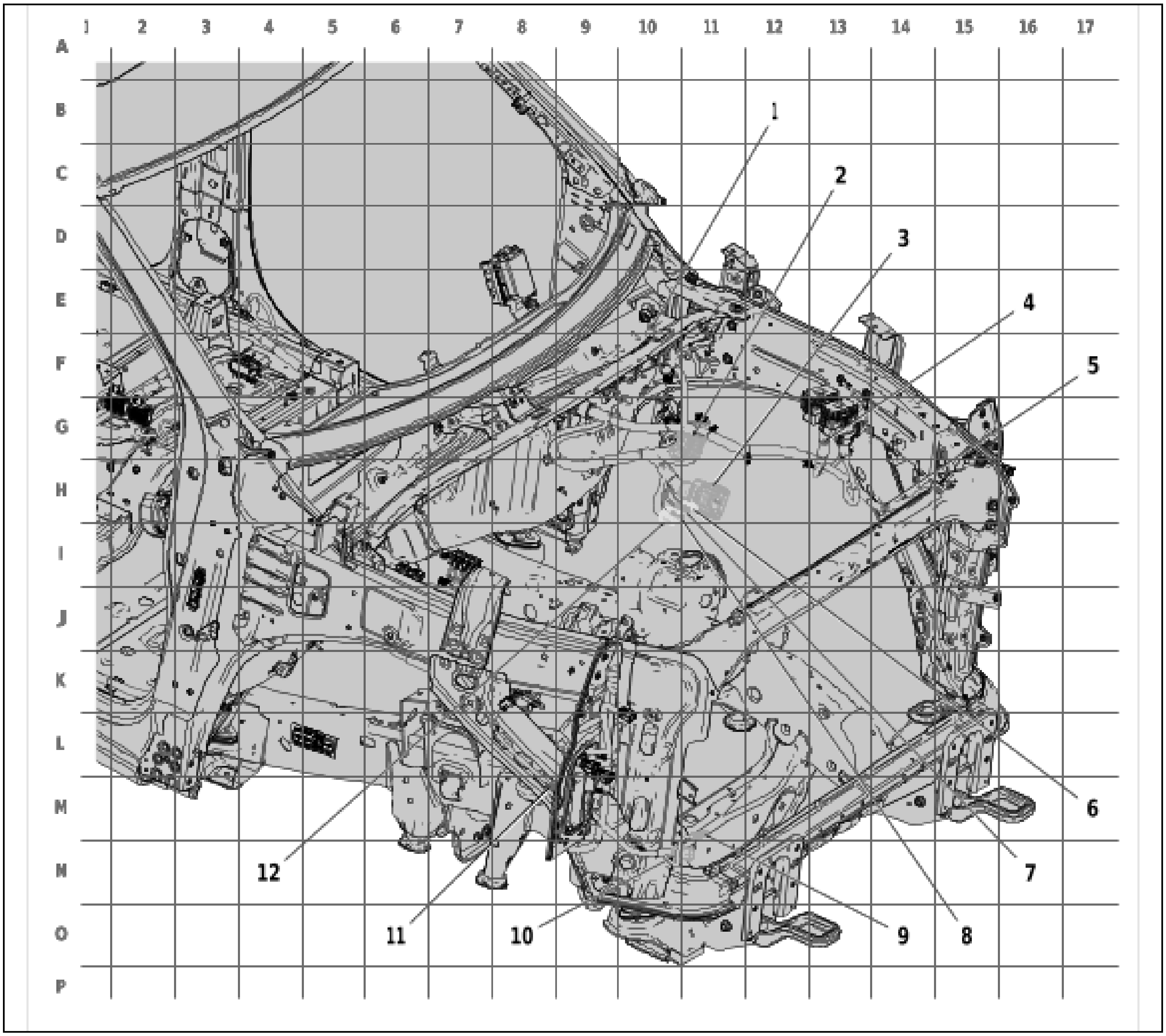
### Front of Vehicle - Front Object Alarm Sensor Wiring Harness




6215706

| Items |
|---|
| (1) J132 Front Object Alarm Sensor Wiring Harness |
| (2) J127 Front Object Alarm Sensor Wiring Harness |
| (3) J129 Front Object Alarm Sensor Wiring Harness |
| (4) J126 Front Object Alarm Sensor Wiring Harness |
| (5) X150 Front Object Alarm Sensor Wiring Harness to Body Wiring Harness (UKL) |

**Engine Compartment - Body Wiring Harness - Front**

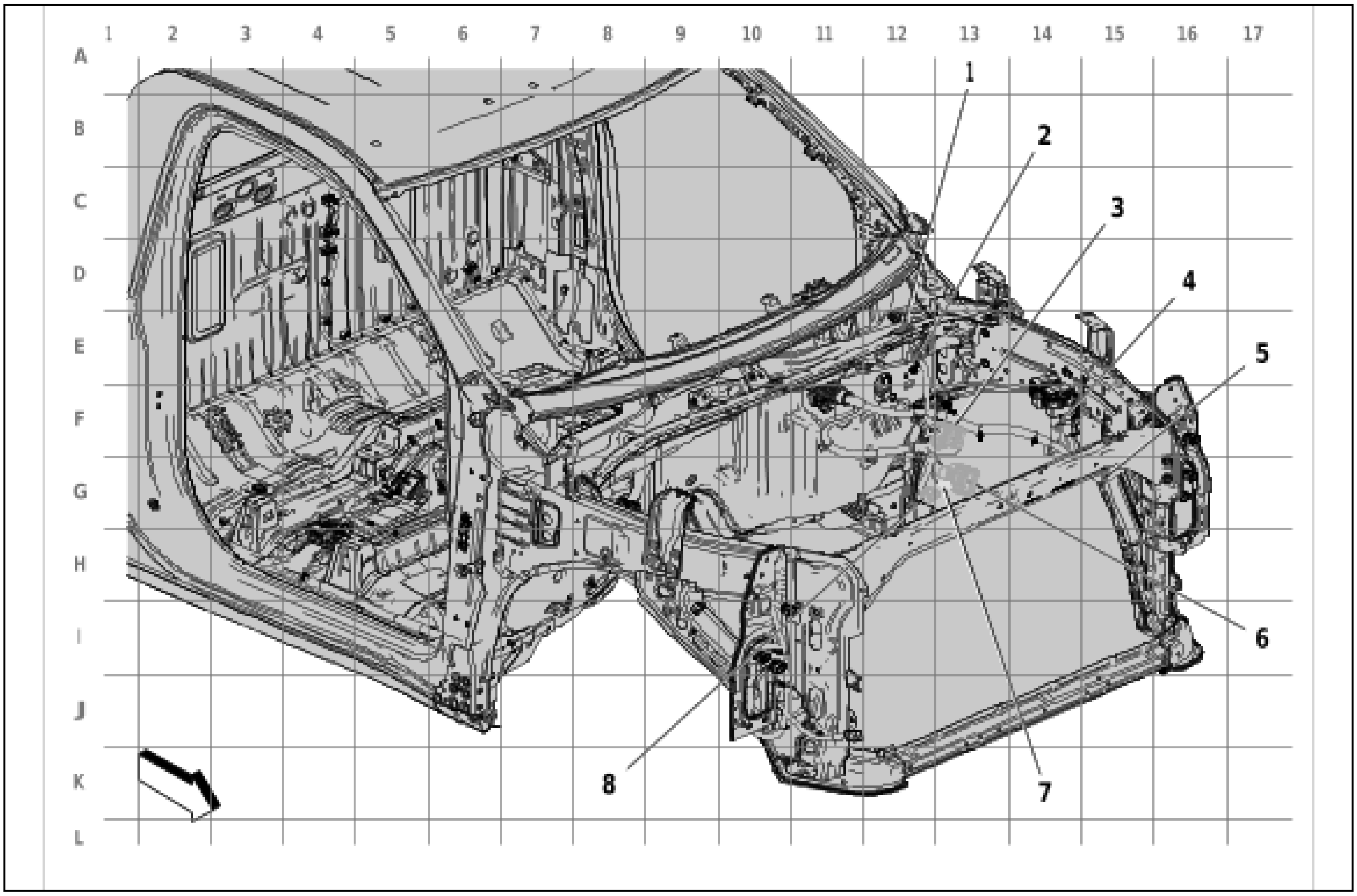



6215710

| Items |
|---|
| (1) J326 Body Wiring Harness |
| (2) X125 Body Wiring Harness to Engine Wiring Harness |
| (3) X410 Body Wiring Harness to Chassis Wiring Harness |
| (4) J301 Body Wiring Harness |
| (5) J300 Body Wiring Harness |
| (6) X402C Body Wiring Harness to Chassis Wiring Harness (UV2) |
| (7) X402A Body Wiring Harness to Chassis Wiring Harness (UV2) |
| (8) X402B Body Wiring Harness to Chassis Wiring Harness (UV2) |
| (9) X122 Front View Camera Switch Wiring Harness to Body Wiring Harness (UV2) |

| Items |
|---|
| (10) X150 Front Object Alarm Sensor Wiring Harness to Body Wiring Harness (UKL) |
| (11) J318 Body Wiring Harness |
| (12) X424 Body Wiring Harness to Chassis Wiring Harness (FHS) |

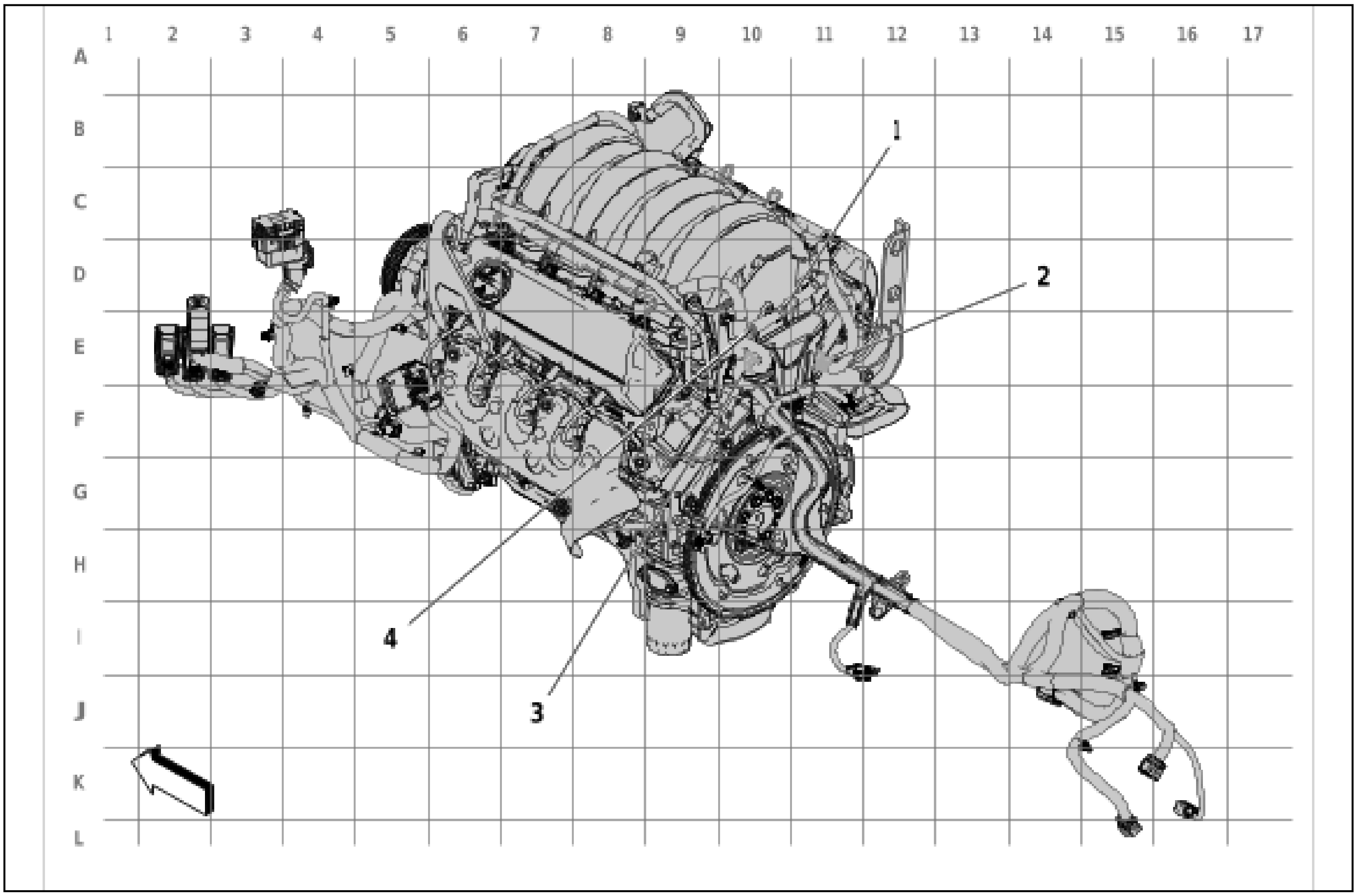
**Engine Compartment - Body Wiring Harness - Left**




6215711

| Items |
|---|
| (1) J326 Body Wiring Harness |
| (2) J308 Body Wiring Harness |
| (3) X125 Body Wiring Harness to Engine Wiring Harness |
| (4) J301 Body Wiring Harness |
| (5) J300 Body Wiring Harness |
| (6) X410 Body Wiring Harness to Chassis Wiring Harness |
| (7) X402C Body Wiring Harness to Chassis Wiring Harness (UV2) |
| (8) X424 Body Wiring Harness to Chassis Wiring Harness (FHS) |

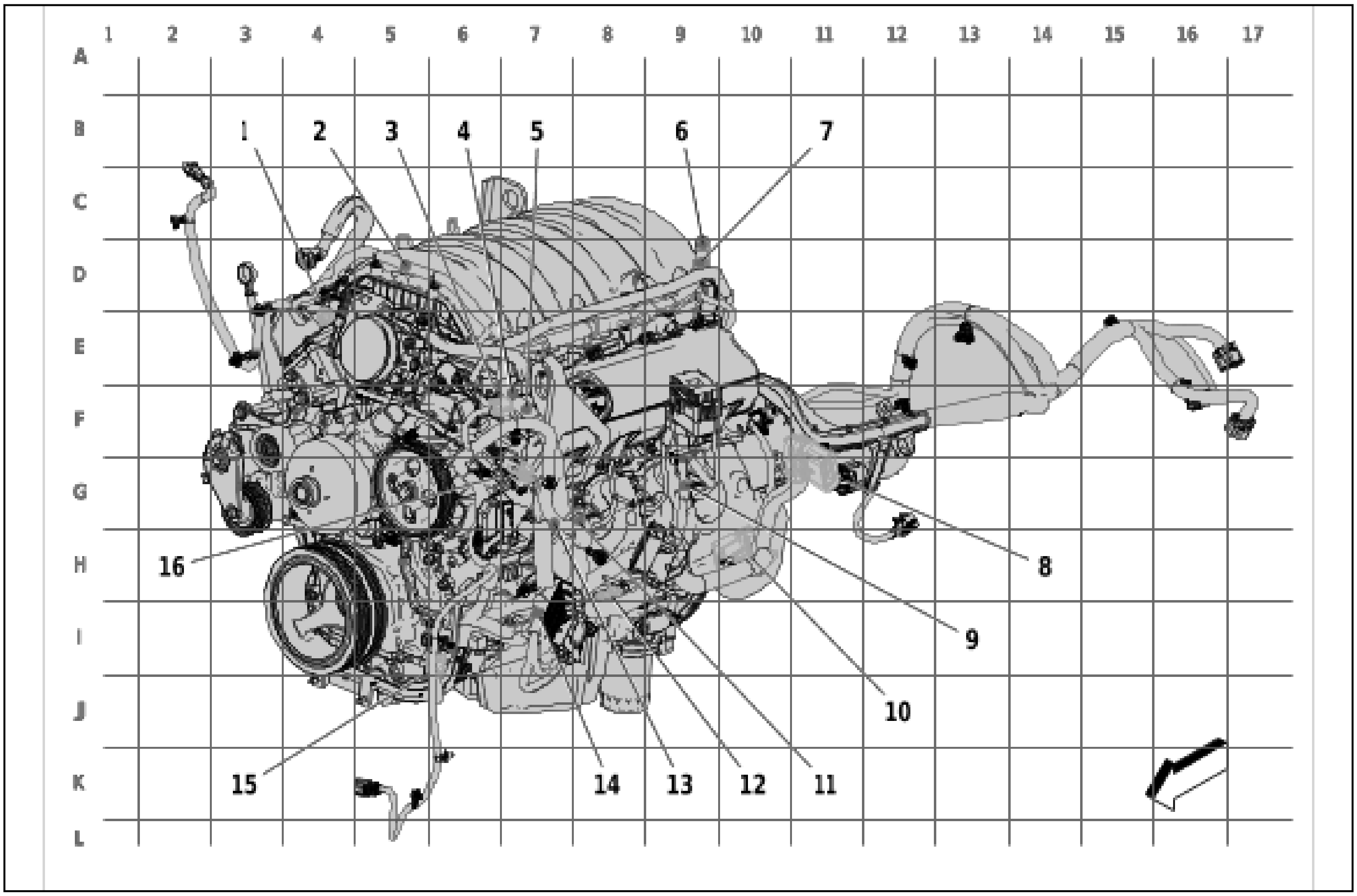
## Engine Compartment - Engine Wiring Harness - Left Rear (L8T)




6215712

| Items |
|---|
| (1) J107 Engine Wiring Harness (L8T) |
| (2) X161 Engine Wiring Harness to Fuel Injector Wiring Harness - Right (L8T) |
| (3) X160 Engine Wiring Harness to Fuel Injector Wiring Harness - Left (L8T) |
| (4) J106 Engine Wiring Harness (L8T) |

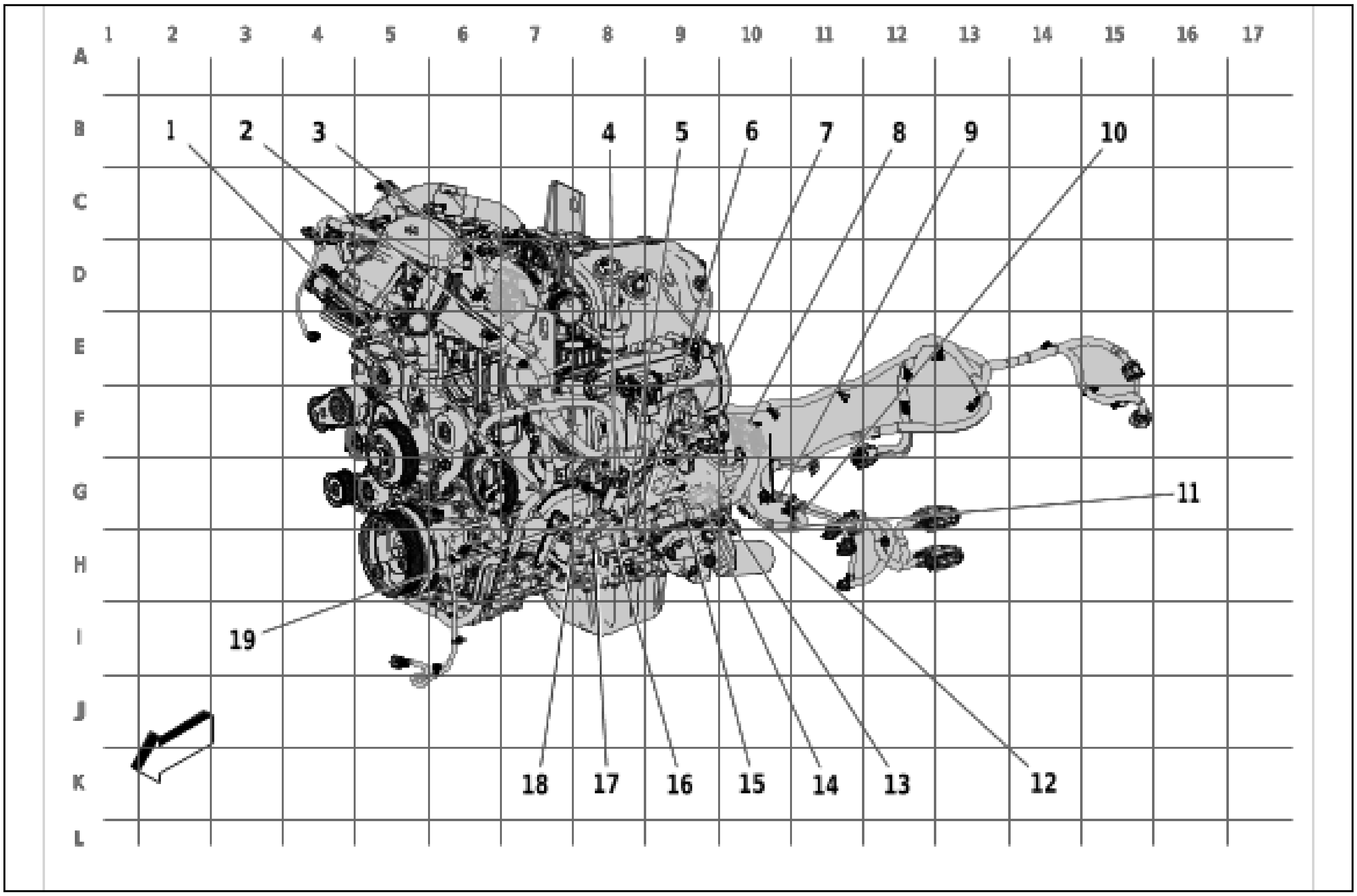
### Engine Compartment - Engine Wiring Harness - Left Front (L8T)




6215713

| Items |
|---|
| (1) X977 Engine Wiring Harness to Accessory Wiring Harness (VYU) |
| (2) J105 Engine Wiring Harness (L8T) |
| (3) X135 Engine Wiring Harness to Battery Positive Cable |
| (4) J104 Engine Wiring Harness (L8T) |
| (5) J103 Engine Wiring Harness (L8T) |
| (6) J109 Engine Wiring Harness (L8T) |
| (7) J108 Engine Wiring Harness (L8T) |
| (8) X125 Body Wiring Harness to Engine Wiring Harness |
| (9) J112 Engine Wiring Harness |
| (10) X401 Chassis Wiring Harness to Engine Wiring Harness (L5P) |
| (11) J100 Engine Wiring Harness (L8T) |
| (12) X415 Engine Wiring Harness to Transfer Case Selector Shift Control Switch Wiring Harness Extension Harness (NQF / NQH) |
| (13) J101 Engine Wiring Harness (L8T) |
| (14) J111 Engine Wiring Harness |
| (15) X128 Engine Wiring Harness to Camshaft Position Sensor Wiring harness (L8T) |
| (16) X962 Engine Wiring Harness to Engine Coolant Temperature Sensor Harness (L8T) |

**Engine Compartment - Engine Wiring Harness - Left Front (L5P)**

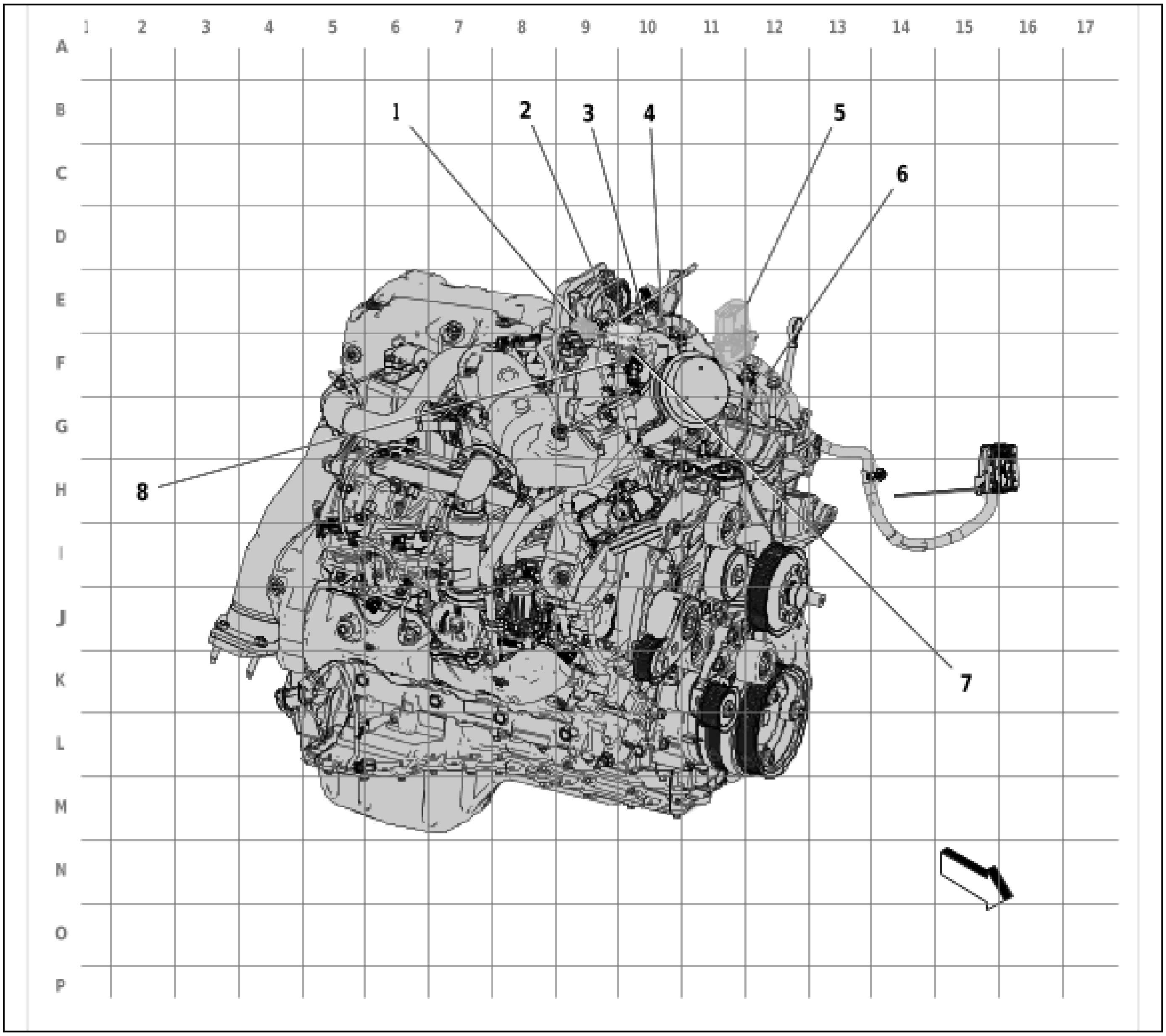



6215718

| Items |
|---|
| (1) J110 Engine Wiring Harness |
| (2) J105 Engine Wiring Harness (L8T) |
| (3) X950D Engine Wiring Harness Chassis to Engine Wiring Harness |
| (4) J123 Engine Wiring Harness (L5P) |
| (5) J122 Engine Wiring Harness (L5P) |
| (6) J121 Engine Wiring Harness (L5P) |
| (7) J120 Engine Wiring Harness (L5P) |
| (8) X125 Body Wiring Harness to Engine Wiring Harness |
| (9) J124 Engine Wiring Harness (L5P) |
| (10) J117 PTO Wiring Harness |
| (11) J118 Engine Wiring Harness (L5P) |
| (12) J119 Engine Wiring Harness Chassis (PTO) |
| (13) J101 Engine Wiring Harness (L8T) |
| (14) X401 Chassis Wiring Harness to Engine Wiring Harness (L5P) |
| (15) J112 Engine Wiring Harness |
| (16) X415 Engine Wiring Harness to Transfer Case Selector Shift Control Switch Wiring Harness Extension Harness (NQF / NQH) |
| (17) J100 Engine Wiring Harness (L8T) |

| Items |
| --- |
| (18) J108 Engine Wiring Harness (L8T) |
| (19) J102 Engine Wiring Harness (L8T) |

**Engine Compartment - Engine Wiring Harness - Right Front (L5P)**

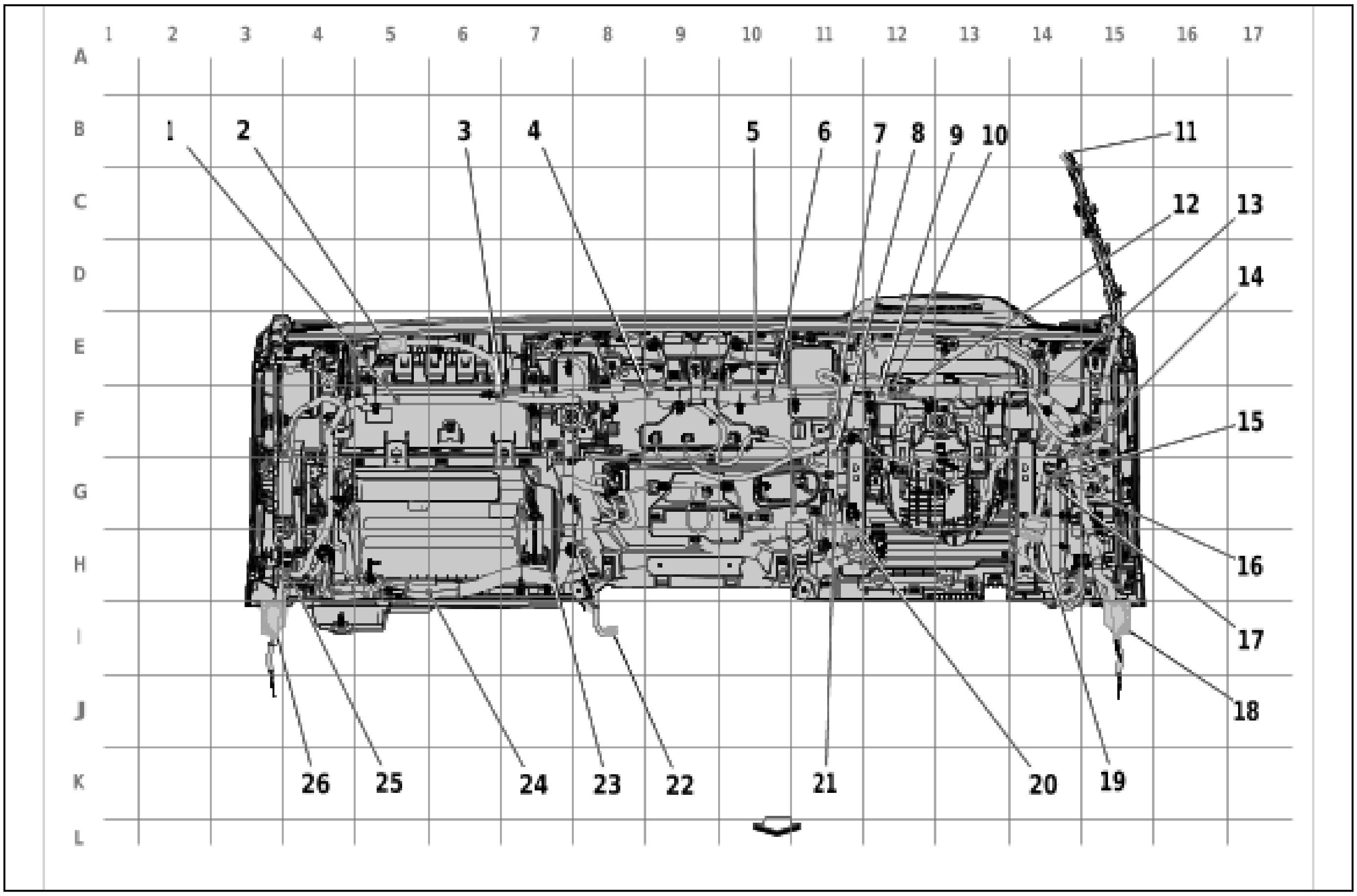



6215719

| Items |
| --- |
| (1) X960A Engine Wiring Harness to Engine Wiring Harness Extension (L5P) |
| (2) X960B Engine Wiring Harness to Engine Wiring Harness Extension (L5P) |
| (3) J114 Engine Wiring Harness (L5P) |
| (4) J111 Engine Wiring Harness |
| (5) X950D Engine Wiring Harness Chassis to Engine Wiring Harness |
| (6) J113 Engine Wiring Harness (L5P) |

| Items |
|---|
| (7) J115 Engine Wiring Harness (L5P) |
| (8) J116 Engine Wiring Harness (L5P) |

### Instrument Panel Wiring Harness

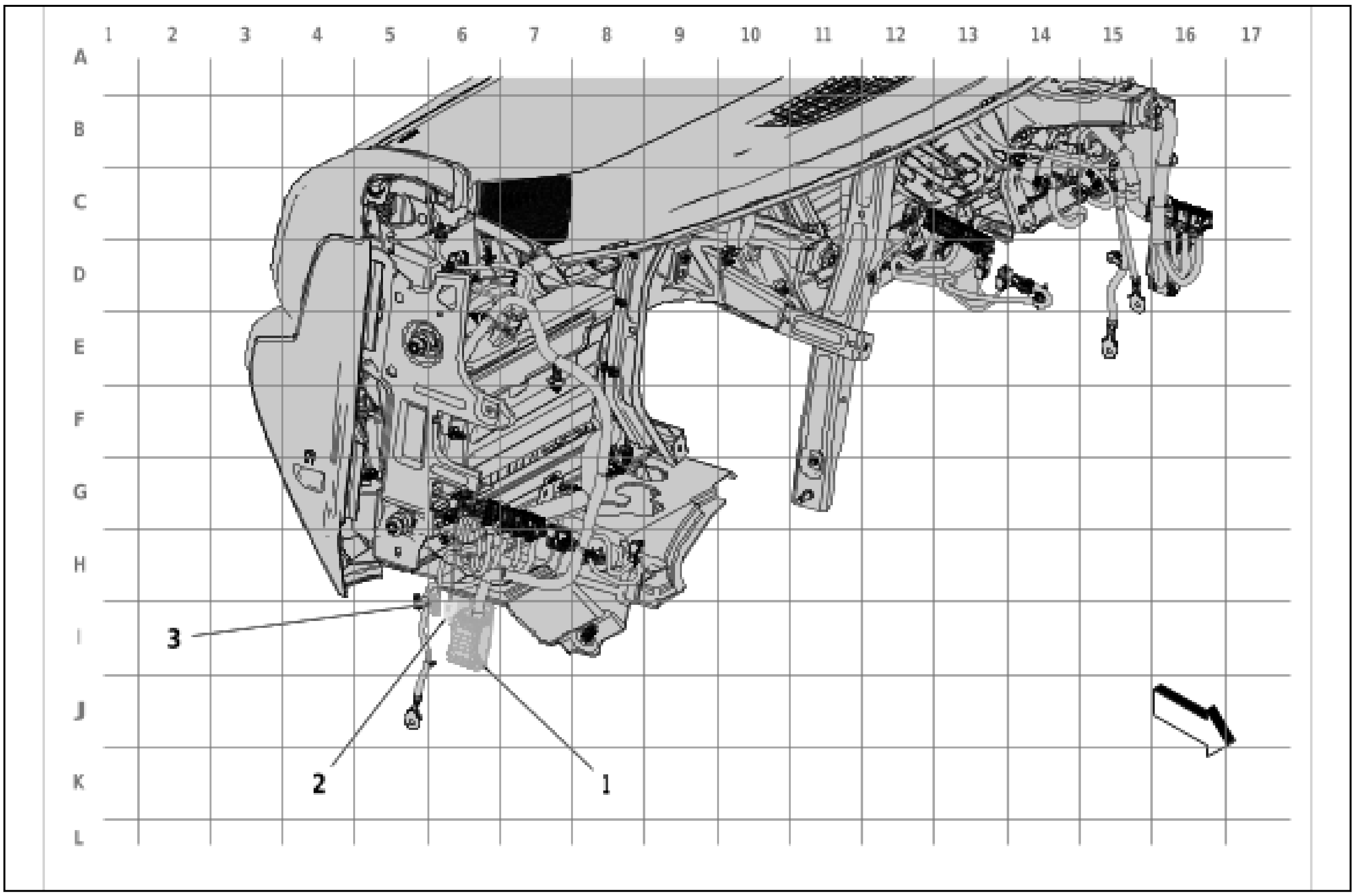



6215721

| Items |
|---|
| (1) J213 Instrument Panel Wiring Harness |
| (2) X370A Dome Lamp Wiring Harness to Instrument Panel Wiring Harness (-GFF / GFI) |
| (3) J212 Instrument Panel Wiring Harness |
| (4) J211 Instrument Panel Wiring Harness |
| (5) J210 Instrument Panel Wiring Harness |
| (6) J209 Instrument Panel Wiring Harness |
| (7) J208 Instrument Panel Wiring Harness |
| (8) J209 Instrument Panel Wiring Harness |
| (9) J206 Instrument Panel Wiring Harness |
| (10) J207 Instrument Panel Wiring Harness |
| (11) X850 Roof Wiring Harness to Instrument Panel Wiring Harness |
| (12) J205 Instrument Panel Wiring Harness |
| (13) J205 Instrument Panel Wiring Harness |
| (14) J204 Instrument Panel Wiring Harness |
| (15) J201 Instrument Panel Wiring Harness |

| Items |
| --- |
| (16) J200 Instrument Panel Wiring Harness |
| (17) J202 Instrument Panel Wiring Harness |
| (18) X210 Instrument Panel Wiring Harness to Body Wiring Harness |
| (19) X213 Auxiliary Fuse Block Wiring Harness to Instrument Panel Wiring Harness |
| (20) X250 Instrument Panel Wiring Harness to Heater Wiring Harness |
| (21) J209 Instrument Panel Wiring Harness |
| (22) X226 Front Floor Console Wiring Harness to Instrument Panel Wiring Harness (D07) |
| (23) J210 Instrument Panel Wiring Harness |
| (24) J207 Instrument Panel Wiring Harness |
| (25) J215 Instrument Panel Wiring Harness |
| (26) X211 Instrument Panel Wiring Harness to Body Wiring Harness |

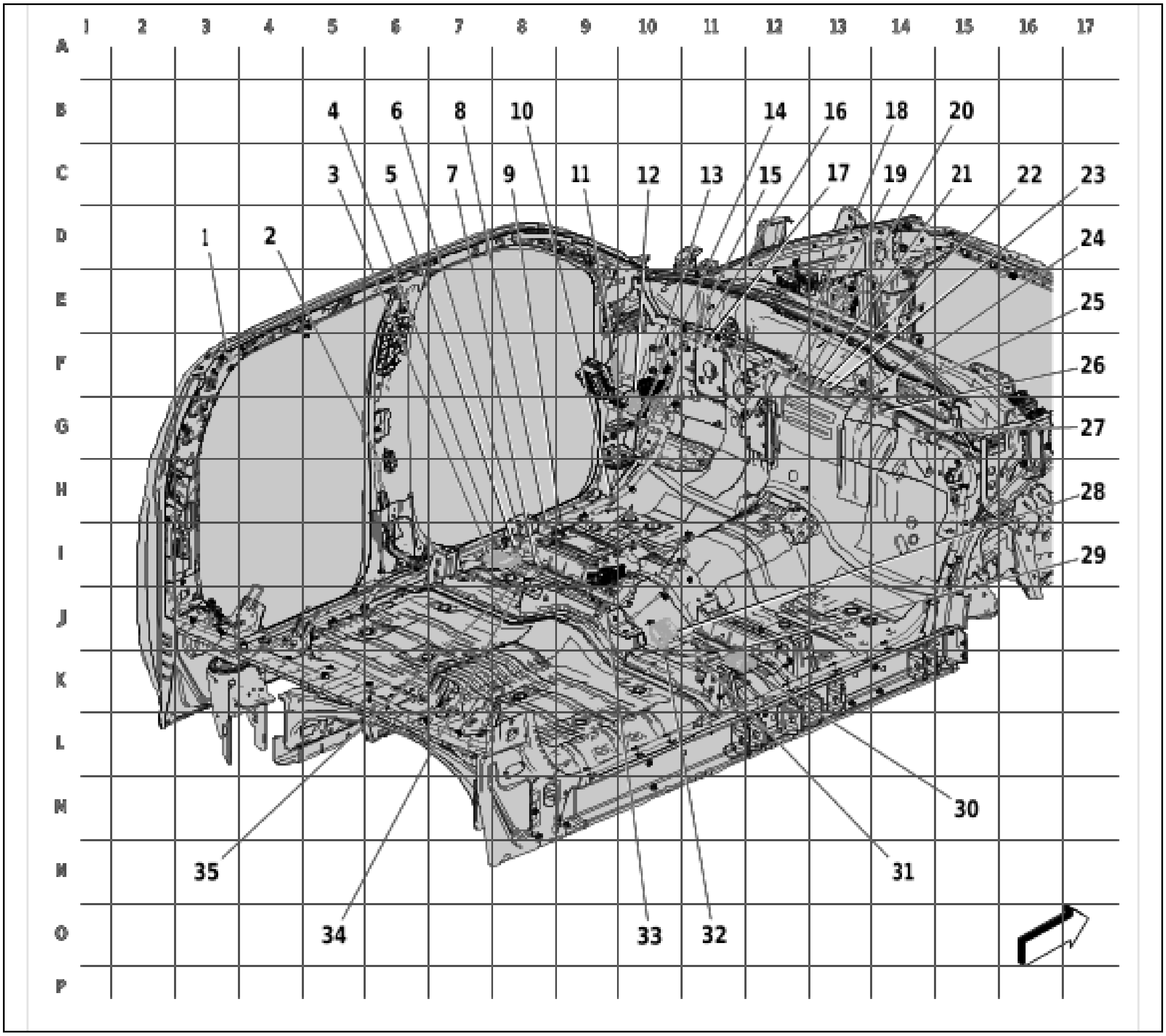
### Instrument Panel Wiring Harness - Right




6215722

| Items |
|---|
| (1) X211 Instrument Panel Wiring Harness to Body Wiring Harness |
| (2) X217 Body Wiring Harness to Instrument Panel Wiring Harness |
| (3) X218 Instrument Panel Wiring Harness to Body Wiring Harness |

**Passenger Compartment - Body Wiring Harness - Left Front - Double Cab/Crew Cab**

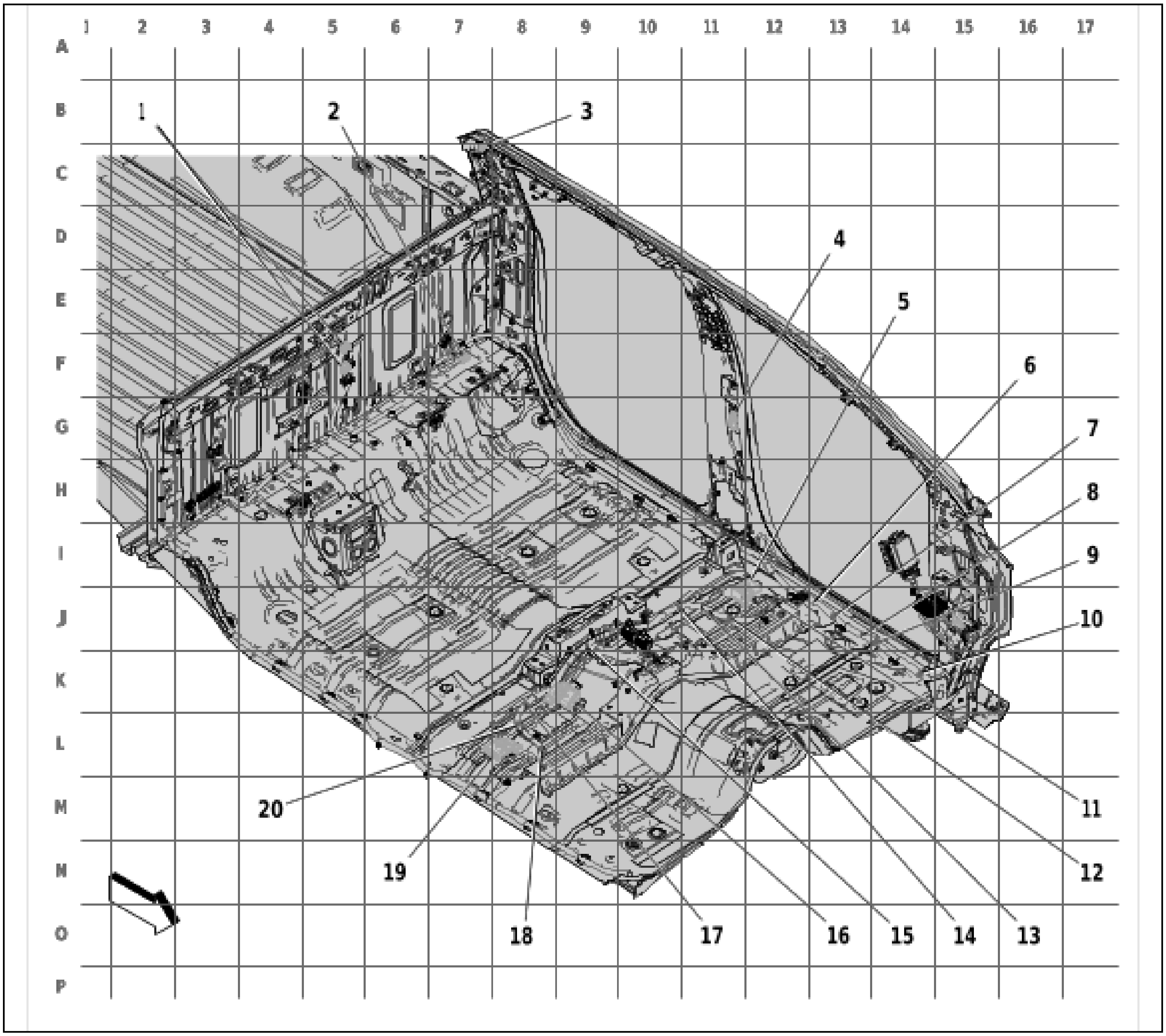



6215726

| Items |
|---|
| (1) X309A Body Wiring Harness to Inside Rearview Mirror Wiring Harness |
| (2) X700 Rear Side Door Door Wiring Harness - Left to Body Wiring Harness (Double Cab / Crew Cab) |
| (3) X331 Front Seat Wiring Harness - Driver to Body Wiring Harness |
| (4) J336 Body Wiring Harness |

| Items |
|---|
| (5) J330 Body Wiring Harness |
| (6) J327 Body Wiring Harness |
| (7) J331 Body Wiring Harness |
| (8) J312 Body Wiring Harness |
| (9) J311 Body Wiring Harness |
| (10) J310 Body Wiring Harness |
| (11) X500 Front Side Door Door Wiring Harness - Left to Body Wiring Harness |
| (12) X210 Instrument Panel Wiring Harness to Body Wiring Harness |
| (13) J308 Body Wiring Harness |
| (14) J328 Body Wiring Harness |
| (15) J309 Body Wiring Harness |
| (16) J303 Body Wiring Harness |
| (17) J302 Body Wiring Harness |
| (18) J307 Body Wiring Harness |
| (19) J306 Body Wiring Harness |
| (20) J305 Body Wiring Harness |
| (21) J304 Body Wiring Harness |
| (22) J329 Body Wiring Harness |
| (23) J322 Body Wiring Harness |
| (24) J321 Body Wiring Harness |
| (25) J385 Body Wiring Harness |
| (26) J320 Body Wiring Harness |
| (27) J319 Body Wiring Harness |
| (28) X227 Front Seat Wiring Harness - Center to Body Wiring Harness |
| (29) J334 Body Wiring Harness |
| (30) X336 Front Seat Wiring Harness - Passenger to Body Wiring Harness |
| (31) J325 Body Wiring Harness |
| (32) J333 Body Wiring Harness |
| (33) J313 Body Wiring Harness |
| (34) J314 Body Wiring Harness |
| (35) J315 Body Wiring Harness |

**Passenger Compartment - Body Wiring Harness - Middle - Double Cab/Crew Cab**

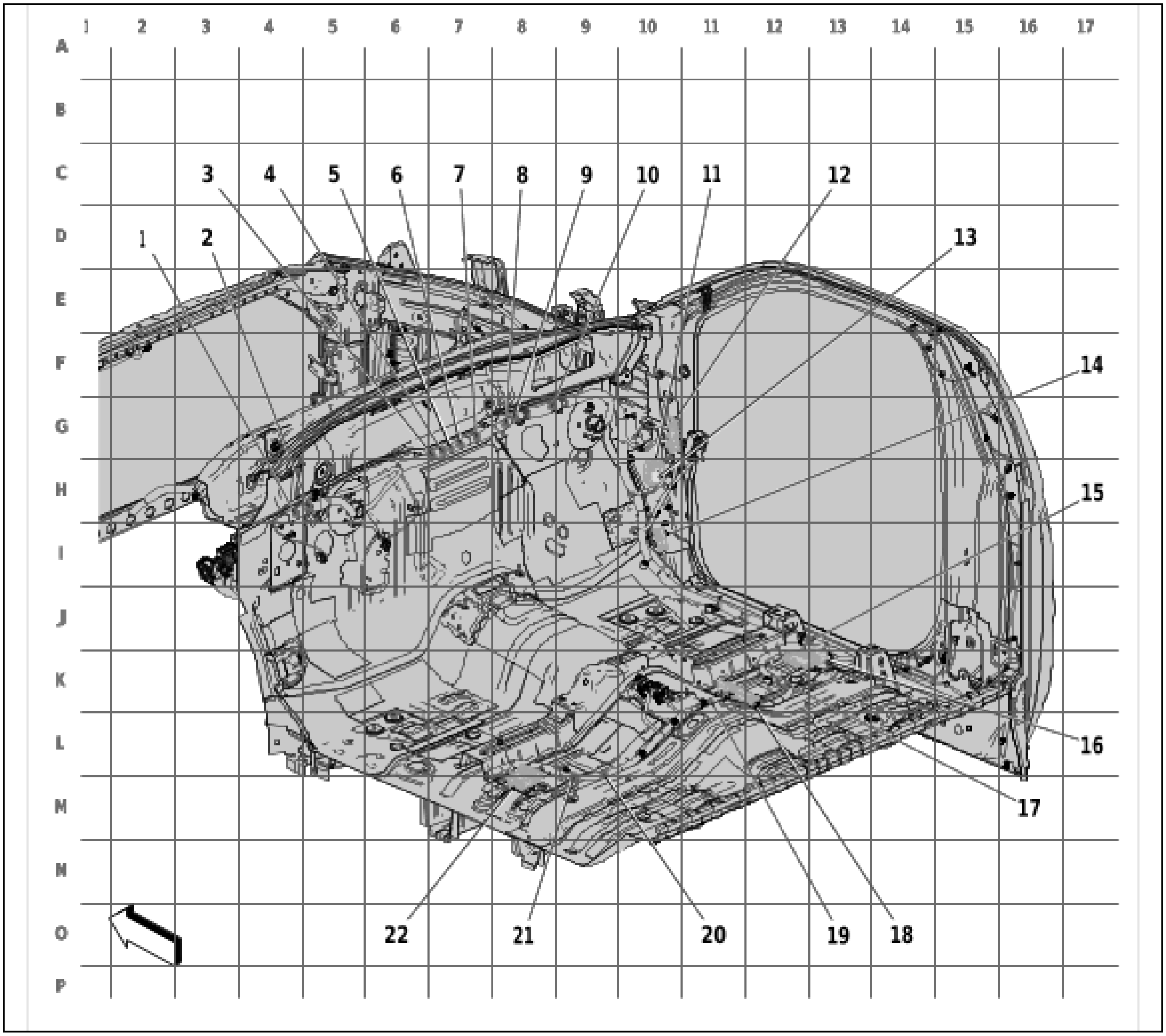



6215728

| Items |
| --- |
| (1) X324 Body Wiring Harness to Body Rear Wiring Harness Extension Harness (KI5) |
| (2) X340 Body Wiring Harness to Rear Seat Heater Control Wiring Harness (KA6) |
| (3) X309A Body Wiring Harness to Inside Rearview Mirror Wiring Harness |
| (4) X700 Rear Side Door Door Wiring Harness - Left to Body Wiring Harness (Double Cab / Crew Cab) |
| (5) X331 Front Seat Wiring Harness - Driver to Body Wiring Harness |
| (6) J336 Body Wiring Harness |
| (7) J327 Body Wiring Harness |
| (8) J312 Body Wiring Harness |
| (9) J311 Body Wiring Harness |

| Items |
| --- |
| (10) J310 Body Wiring Harness |
| (11) J330 Body Wiring Harness |
| (12) J331 Body Wiring Harness |
| (13) J315 Body Wiring Harness |
| (14) J314 Body Wiring Harness |
| (15) J313 Body Wiring Harness |
| (16) X227 Front Seat Wiring Harness - Center to Body Wiring Harness |
| (17) J333 Body Wiring Harness |
| (18) J334 Body Wiring Harness |
| (19) X336 Front Seat Wiring Harness - Passenger to Body Wiring Harness |
| (20) J325 Body Wiring Harness |

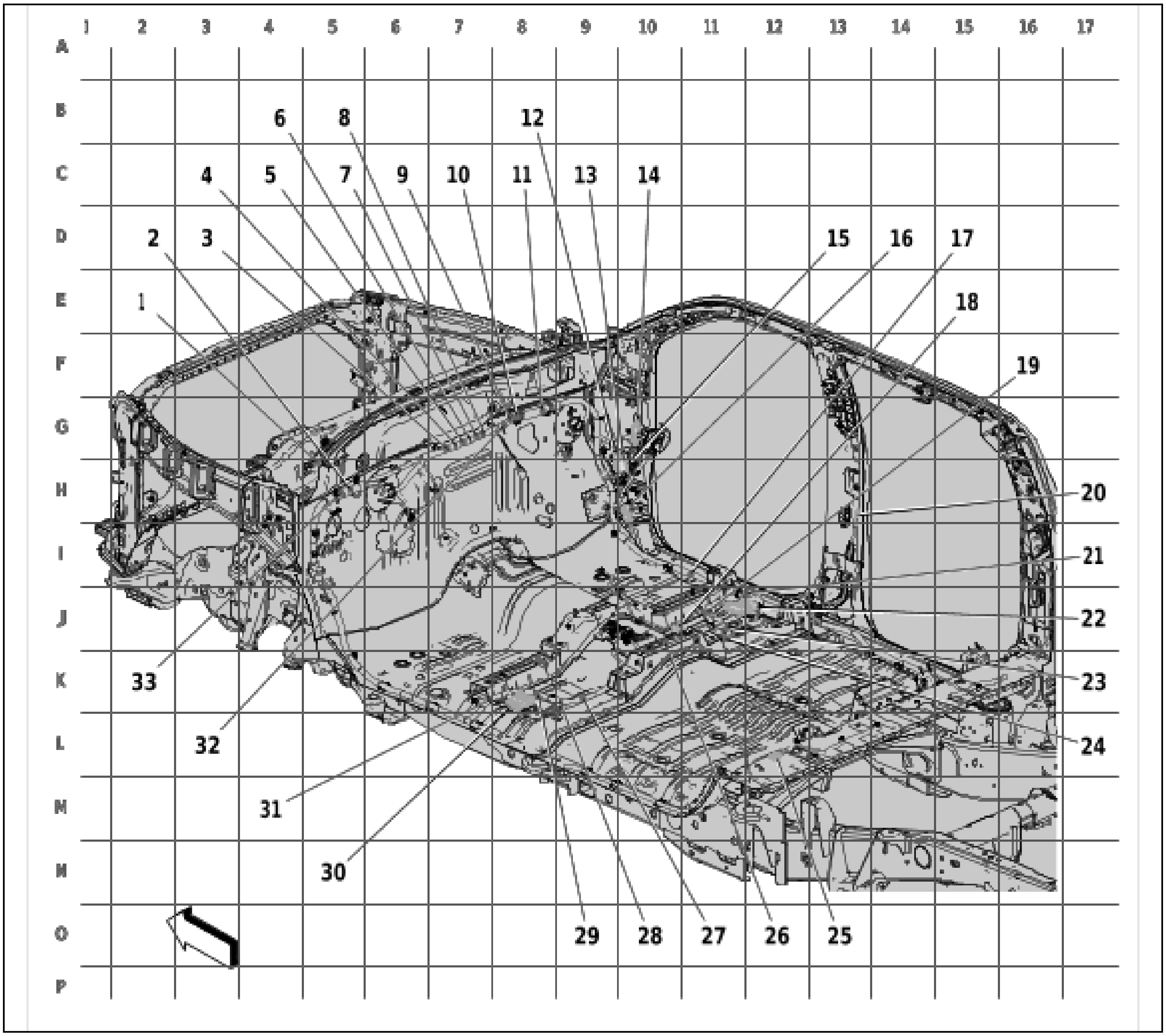
**Passenger Compartment - Body Wiring Harness - Right Front - Regular Cab**




6215729

| Items |
|---|
| (1) J303 Body Wiring Harness |
| (2) J302 Body Wiring Harness |
| (3) J307 Body Wiring Harness |
| (4) J306 Body Wiring Harness |
| (5) J305 Body Wiring Harness |
| (6) J304 Body Wiring Harness |
| (7) J322 Body Wiring Harness |
| (8) J321 Body Wiring Harness |
| (9) J320 Body Wiring Harness |
| (10) J319 Body Wiring Harness |
| (11) X211 Instrument Panel Wiring Harness to Body Wiring Harness |
| (12) X600 Front Side Door Door Wiring Harness - Right to Body Wiring Harness |
| (13) X217 Body Wiring Harness to Instrument Panel Wiring Harness |
| (14) X251 Air Heater Jumper Wiring Harness to Body Wiring Harness (C32) |
| (15) J323 Body Wiring Harness |
| (16) X336 Front Seat Wiring Harness - Passenger to Body Wiring Harness |
| (17) J325 Body Wiring Harness |
| (18) X227 Front Seat Wiring Harness - Center to Body Wiring Harness |
| (19) J313 Body Wiring Harness |
| (20) J314 Body Wiring Harness |
| (21) J315 Body Wiring Harness |
| (22) X331 Front Seat Wiring Harness - Driver to Body Wiring Harness |

**Passenger Compartment - Body Wiring Harness - Right Front -Double Cab/Crew Cab**

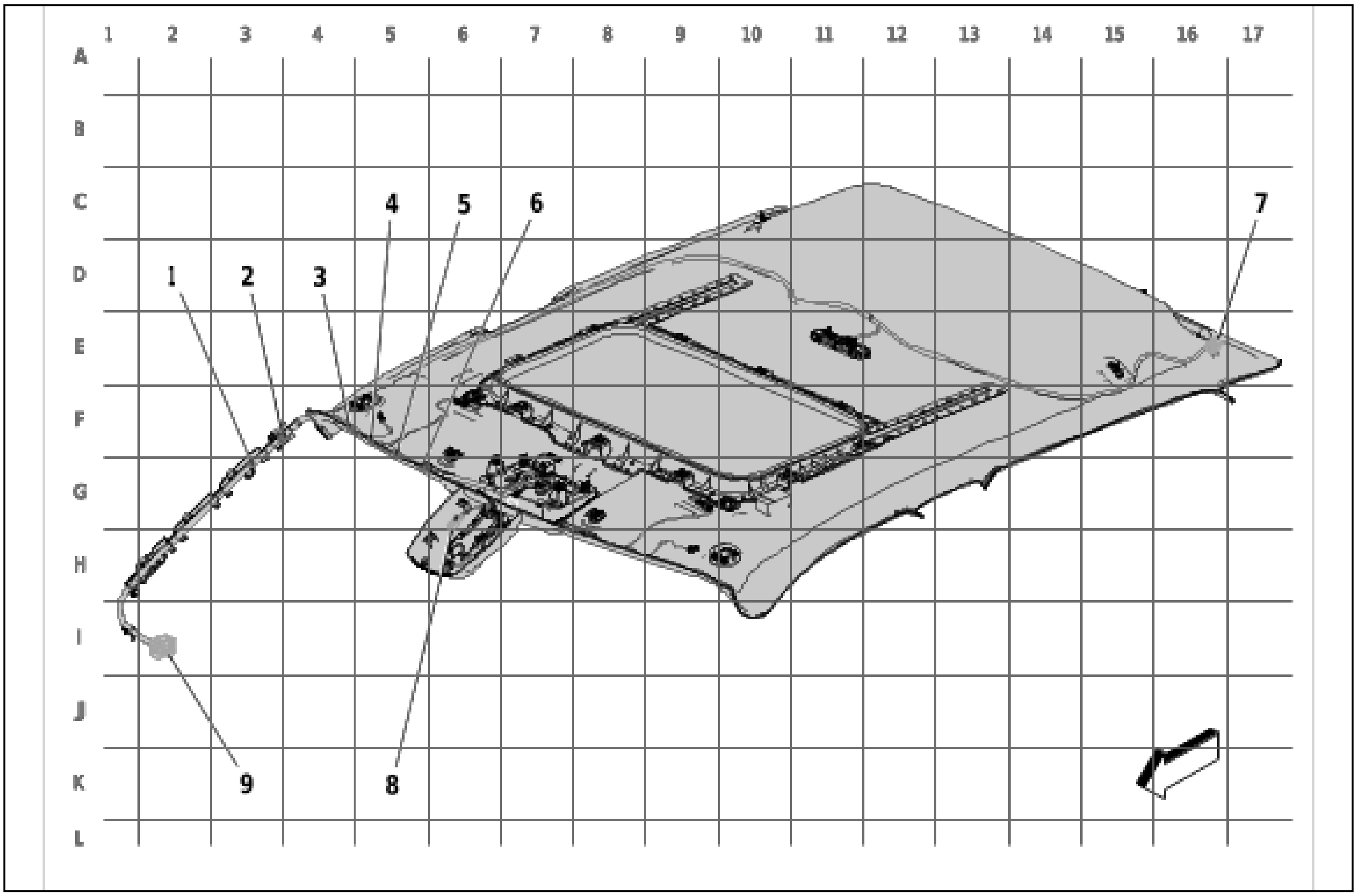



6215730

| Items |
|---|
| (1) J326 Body Wiring Harness |
| (2) J302 Body Wiring Harness |
| (3) J307 Body Wiring Harness |
| (4) J306 Body Wiring Harness |
| (5) J305 Body Wiring Harness |
| (6) J304 Body Wiring Harness |
| (7) J329 Body Wiring Harness |
| (8) J322 Body Wiring Harness |
| (9) J385 Body Wiring Harness |
| (10) J320 Body Wiring Harness |
| (11) J319 Body Wiring Harness |
| (12) X211 Instrument Panel Wiring Harness to Body Wiring Harness |

| Items |
|---|
| (13) X217 Body Wiring Harness to Instrument Panel Wiring Harness |
| (14) X600 Front Side Door Door Wiring Harness - Right to Body Wiring Harness |
| (15) X218 Instrument Panel Wiring Harness to Body Wiring Harness |
| (16) X251 Air Heater Jumper Wiring Harness to Body Wiring Harness (C32) |
| (17) J332 Body Wiring Harness |
| (18) X227 Front Seat Wiring Harness - Center to Body Wiring Harness |
| (19) J334 Body Wiring Harness |
| (20) X800 Rear Side Door Door Wiring Harness - Right to Body Wiring Harness (Double Cab / Crew Cab) |
| (21) J323 Body Wiring Harness |
| (22) X336 Front Seat Wiring Harness - Passenger to Body Wiring Harness |
| (23) J325 Body Wiring Harness |
| (24) J333 Body Wiring Harness |
| (25) X340 Body Wiring Harness to Rear Seat Heater Control Wiring Harness (KA6) |
| (26) J313 Body Wiring Harness |
| (27) J314 Body Wiring Harness |
| (28) J315 Body Wiring Harness |
| (29) J331 Body Wiring Harness |
| (30) X331 Front Seat Wiring Harness - Driver to Body Wiring Harness |
| (31) J330 Body Wiring Harness |
| (32) J321 Body Wiring Harness |
| (33) J303 Body Wiring Harness |

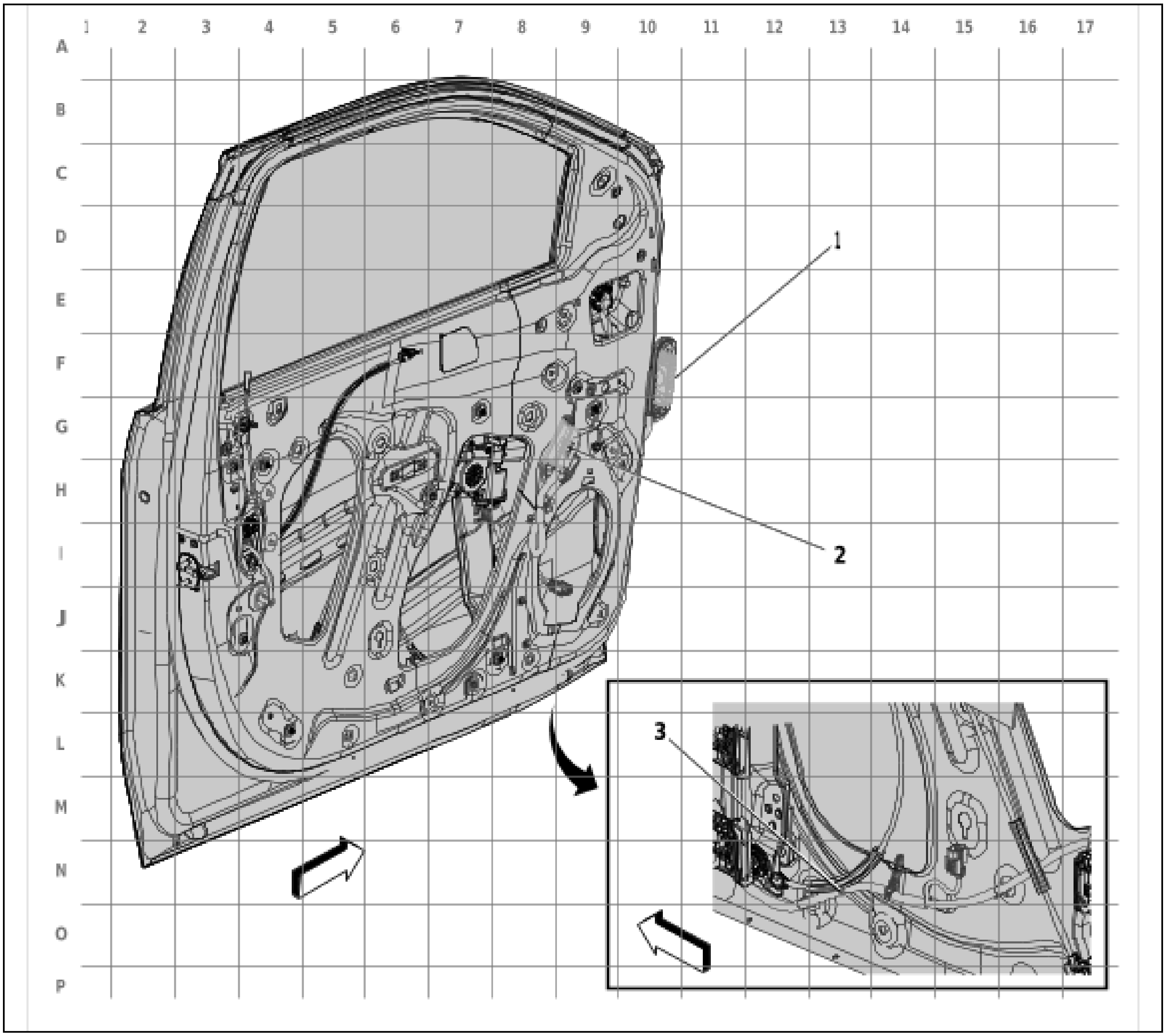
### Roof - Dome Lamp Wiring Harness - Double Cab




6215737

| Items |
|---|
| (1) J364 Dome Lamp Wiring Harness |
| (2) J363 Dome Lamp Wiring Harness |
| (3) J365 Dome Lamp Wiring Harness |
| (4) J366 Dome Lamp Wiring Harness |
| (5) J367 Dome Lamp Wiring Harness |
| (6) J368 Dome Lamp Wiring Harness |
| (7) X371A Inside Rearview Mirror Wiring Harness to Dome Lamp Wiring Harness |
| (8) X382 Windshield Outside Moisture_Ambient Light and Humidity Sensor to Dome Lamp Wiring Harness (ASV) |
| (9) X370A Dome Lamp Wiring Harness to Instrument Panel Wiring Harness (-GFF / GFI) |

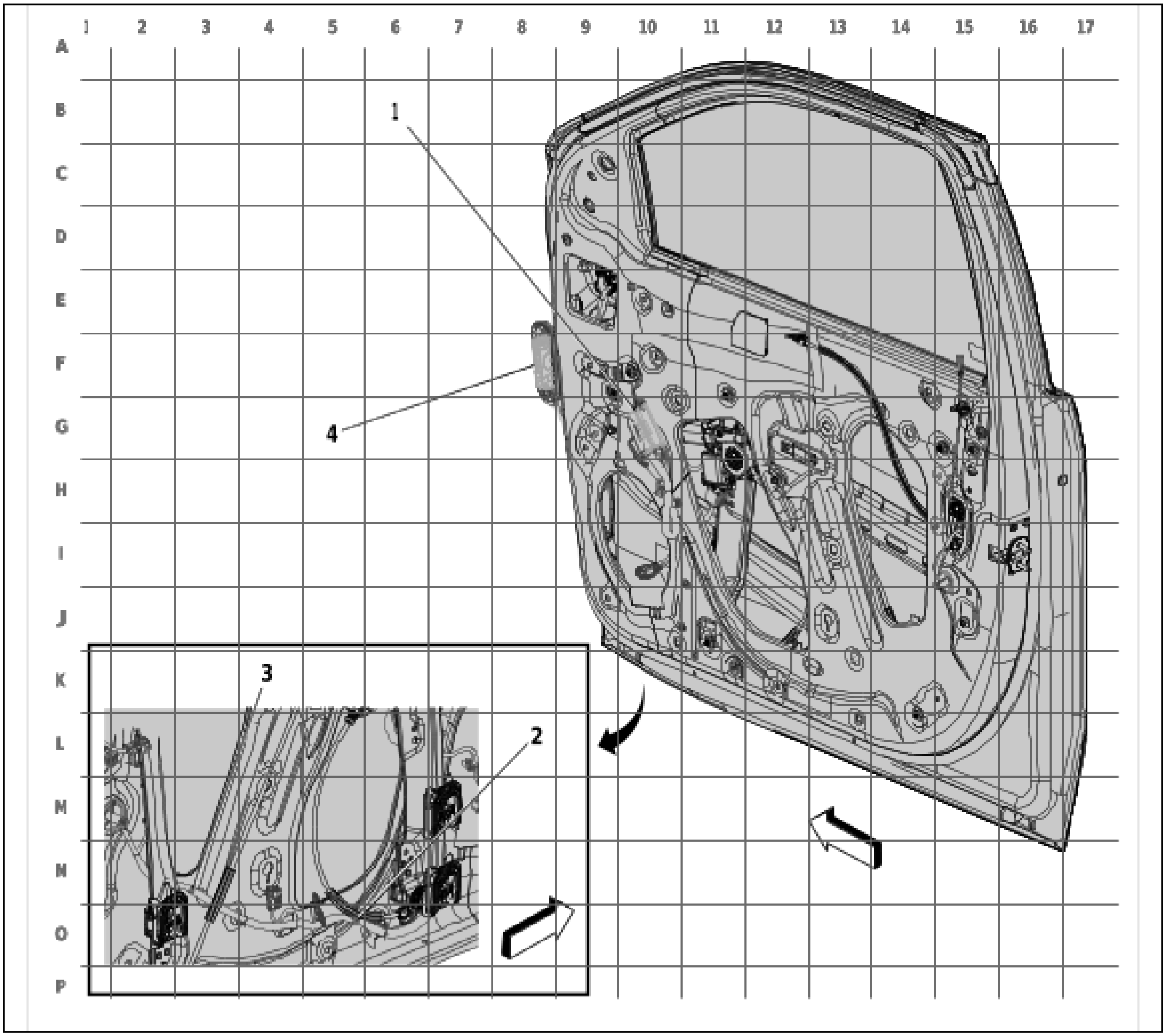
## Door Harness Routing - Driver




6343135

| Items |
|---|
| (1) X500 Front Side Door Door Wiring Harness - Left to Body Wiring Harness |
| (2) X505 Front Side Door Door Wiring Harness - Left to Front Side Door Door Lock Door Wiring Harness - Left |
| (3) J501 Front Side Door Door Wiring Harness - Driver |

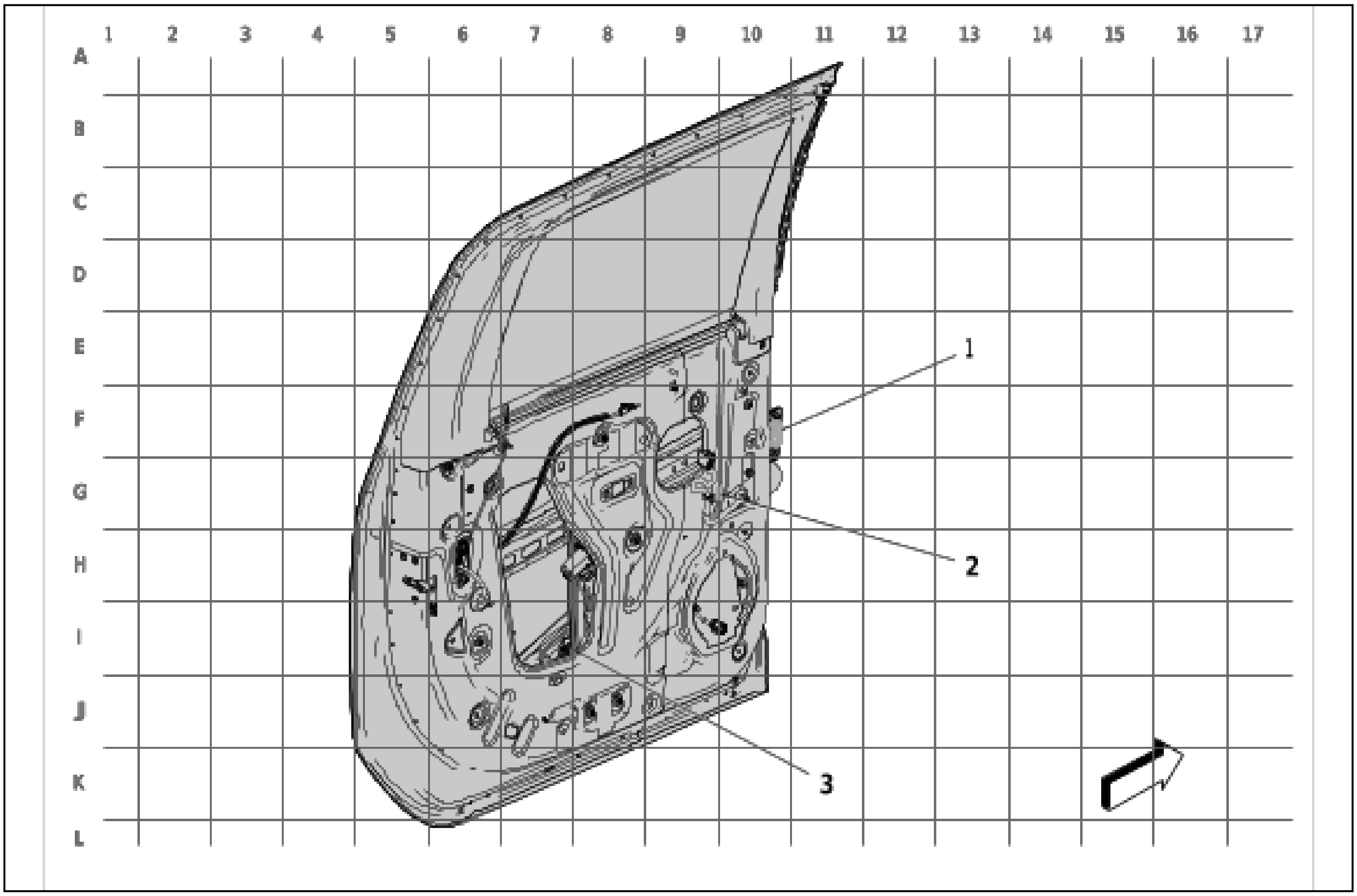
## Door Harness Routing - Passenger




6343136

| Items |
|---|
| (1) X605 Front Side Door Door Wiring Harness - Right to Front Side Door Door Lock Door Wiring Harness - Right |
| (2) J601 Front Side Door Door Wiring Harness - Passenger |
| (3) J602 Front Side Door Door Wiring Harness - Passenger |
| (4) X600 Front Side Door Door Wiring Harness - Right to Body Wiring Harness |

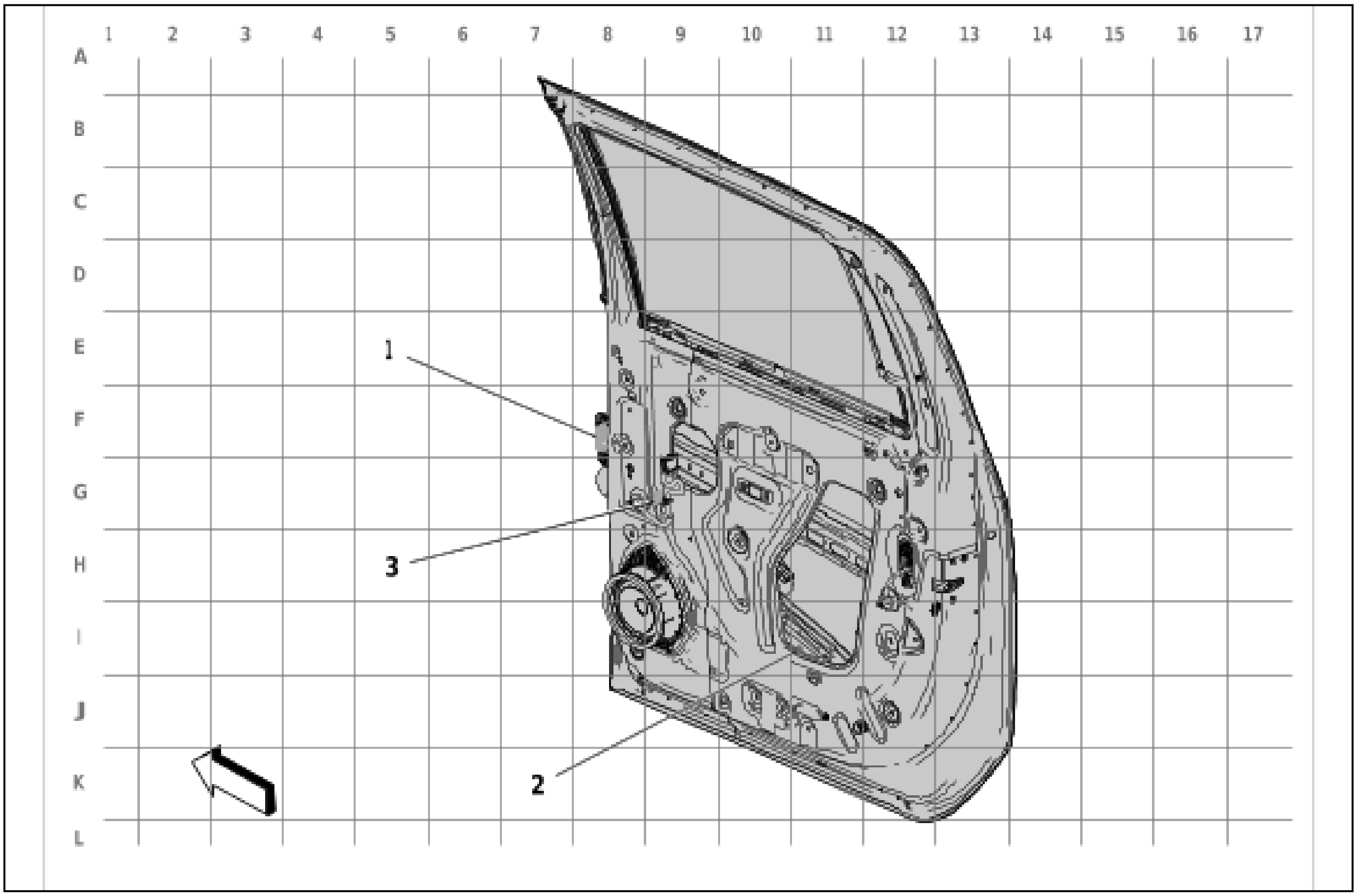
## Door Harness Routing - Left Rear - Crew/Extended Cab




6343137

| Items |
|---|
| (1) X700 Rear Side Door Door Wiring Harness - Left to Body Wiring Harness (Double Cab / Crew Cab) |
| (2) X701 Rear Side Door Door Wiring Harness - Left to Rear Side Door Wiring Harness (UQS) |
| (3) J700 Rear Side Door Door Wiring Harness - Left |

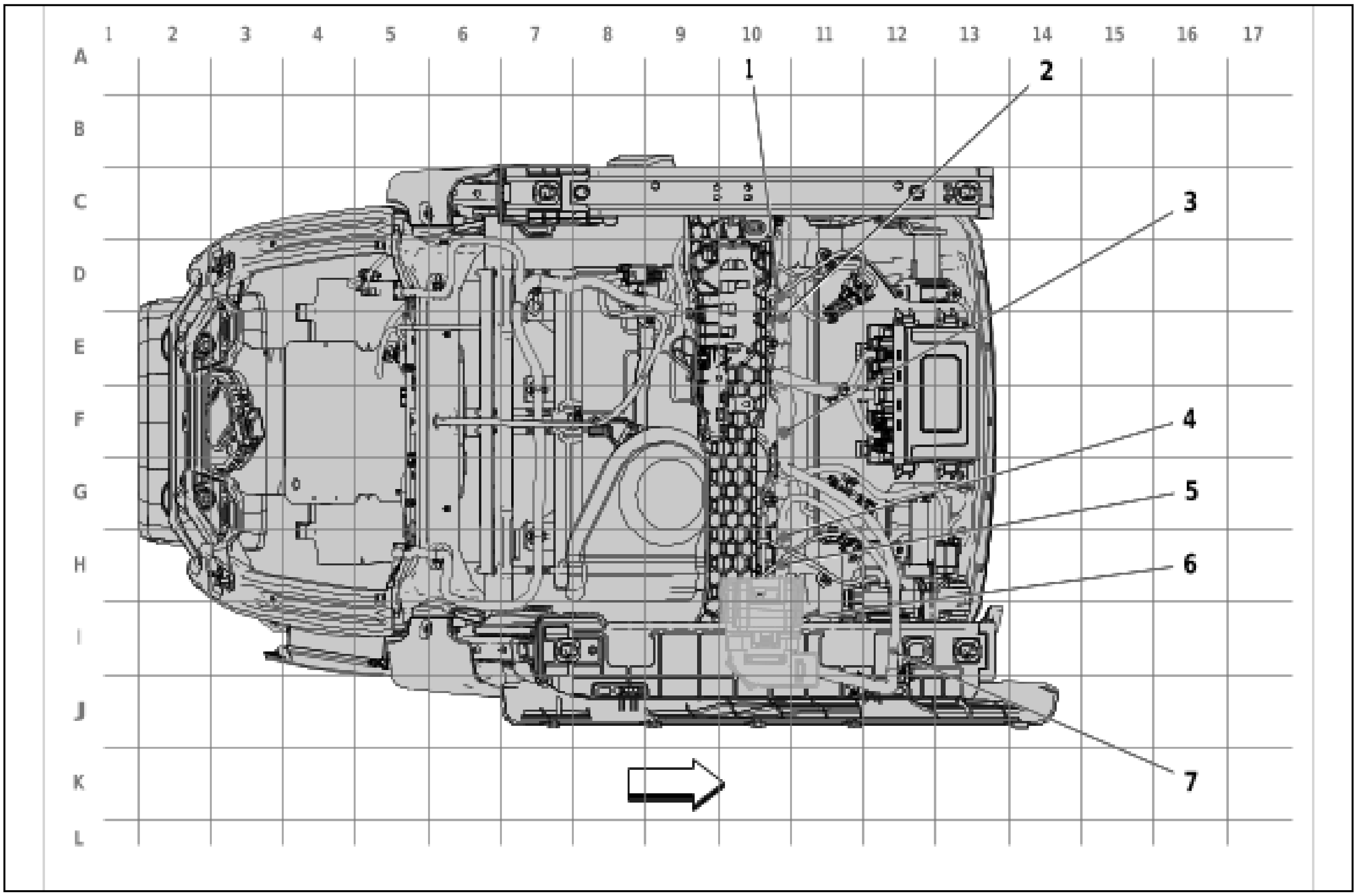
### Door Harness Routing - Right Rear - Crew/Extended Cab




6343138

| Items |
|---|
| (1) X800 Rear Side Door Door Wiring Harness - Right to Body Wiring Harness (Double Cab / Crew Cab) |
| (2) J800 Rear Side Door Door Wiring Harness - Right |
| (3) X801 Rear Side Door Door Wiring Harness - Right to Rear Side Door Wiring Harness (UQS) |

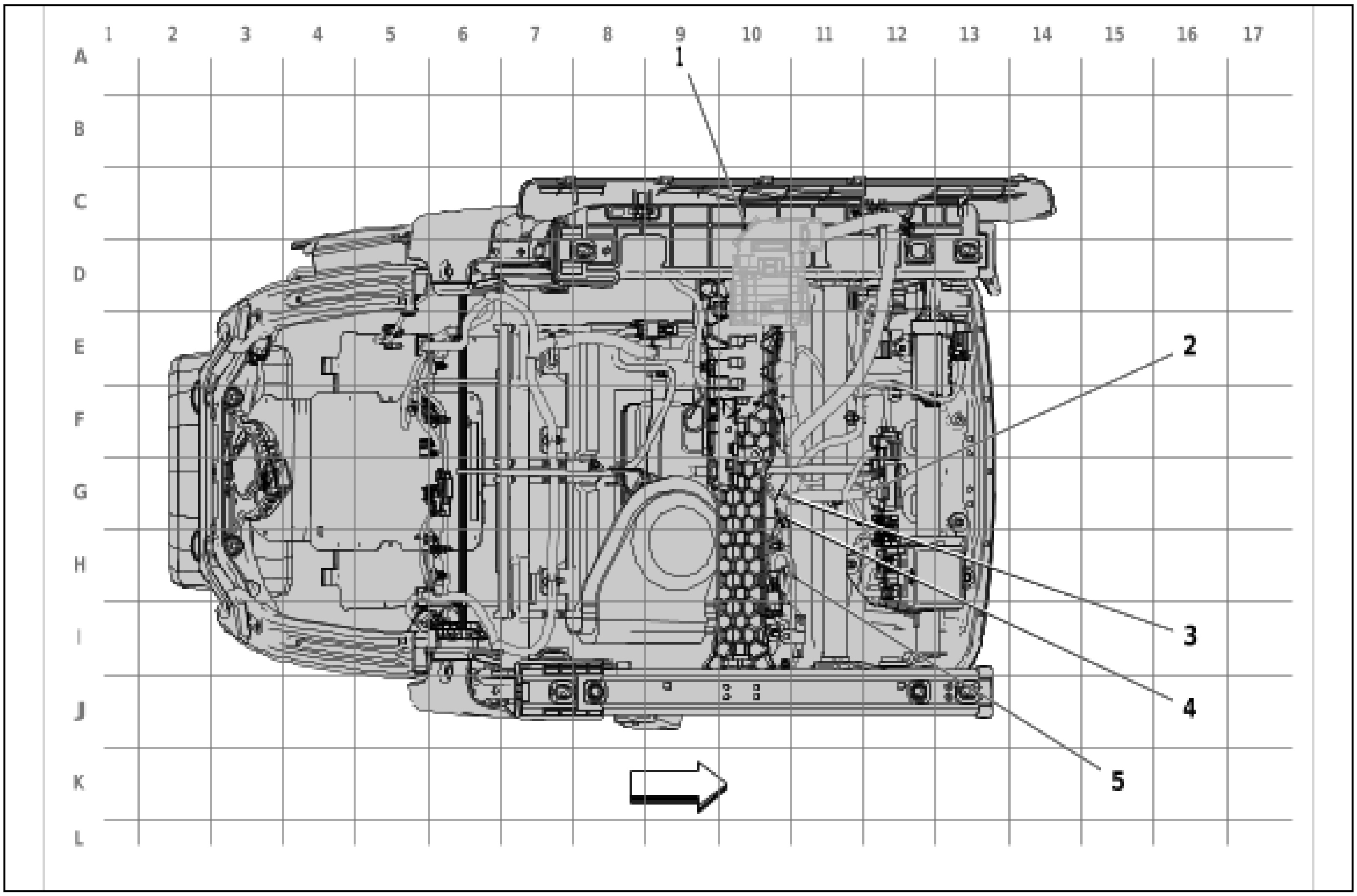
## Driver Seat Harness Routing




6398241

| Items |
|---|
| (1) J375 Front Seat Wiring Harness - Driver |
| (2) J376 Front Seat Wiring Harness - Driver |
| (3) J373 Front Seat Wiring Harness - Driver |
| (4) J372 Front Seat Wiring Harness - Driver |
| (5) J371 Front Seat Wiring Harness - Driver |
| (6) X331 Front Seat Wiring Harness - Driver to Body Wiring Harness |
| (7) J370 Front Seat Wiring Harness - Driver |

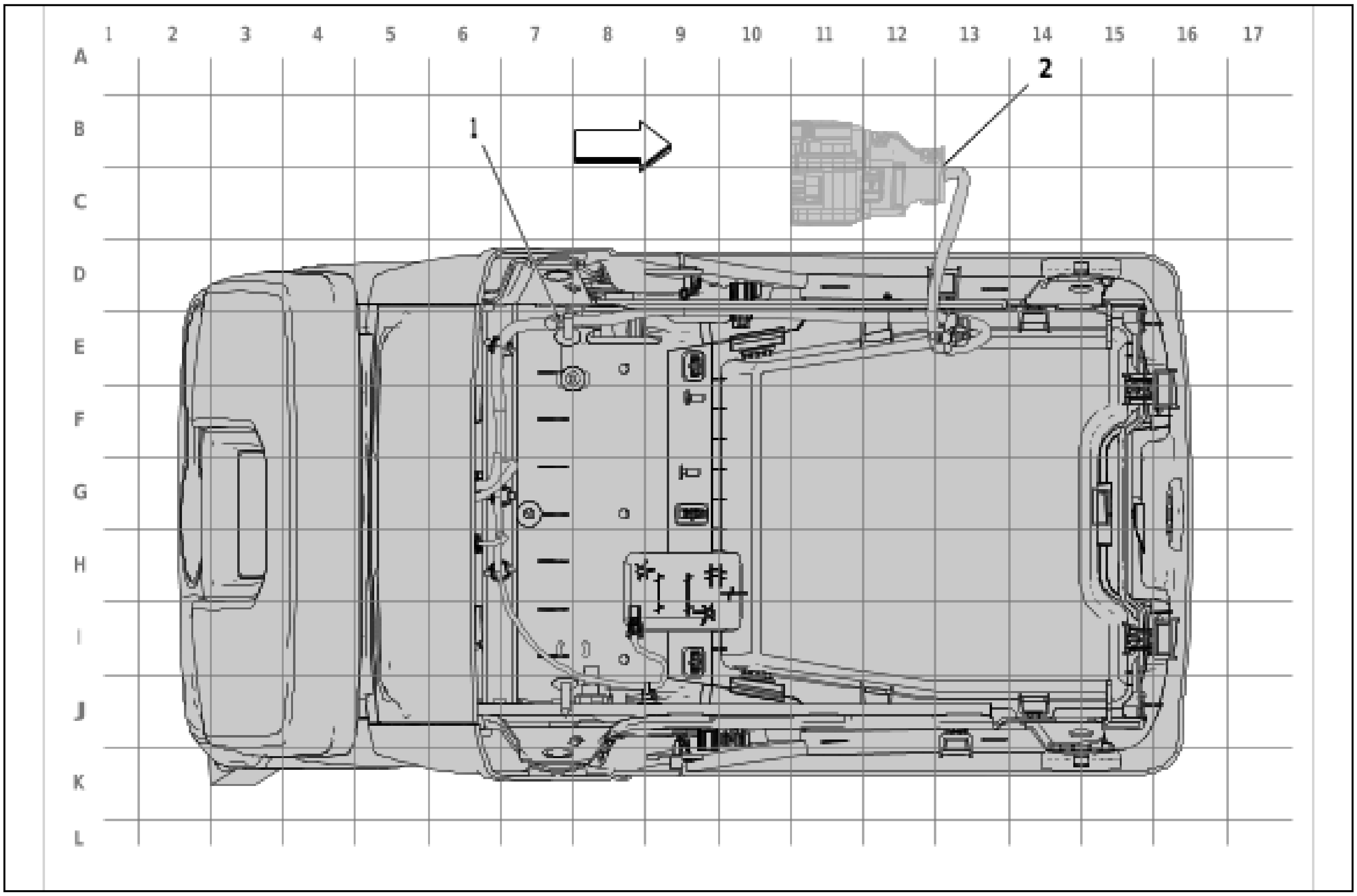
### Passenger Seat Harness Routing




6398243

| Items |
|---|
| (1) X336 Front Seat Wiring Harness - Passenger to Body Wiring Harness |
| (2) J378 Front Seat Wiring Harness - Passenger |
| (3) J380 Front Seat Wiring Harness - Passenger |
| (4) J379 Front Seat Wiring Harness - Passenger |
| (5) J377 Front Seat Wiring Harness - Passenger |

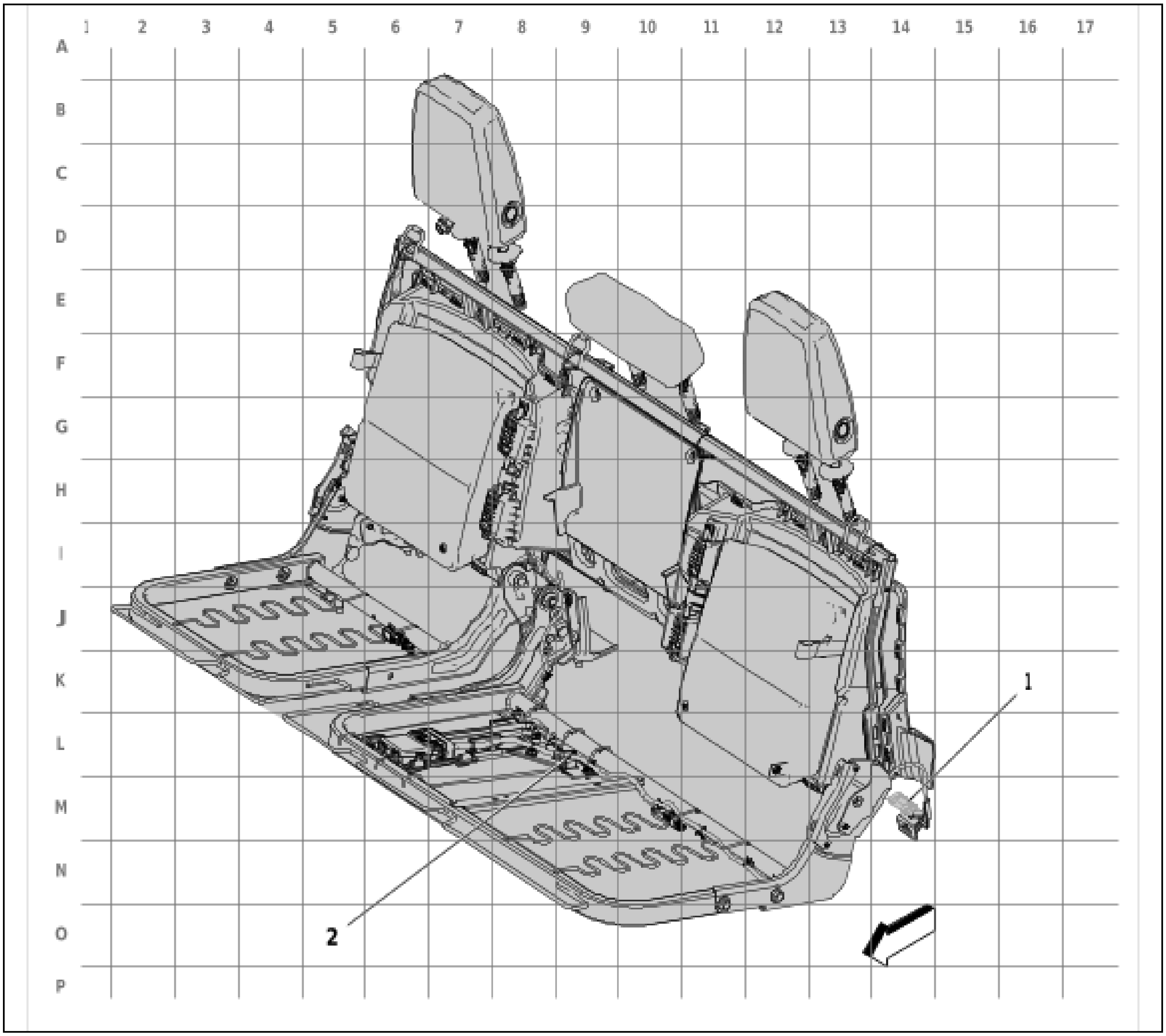
## Front Center Seat Harness Routing




6398245

| Items |
|---|
| (1) J369 Front Seat Wiring Harness - Center (AZ3) |
| (2) X227 Front Seat Wiring Harness - Center to Body Wiring Harness |

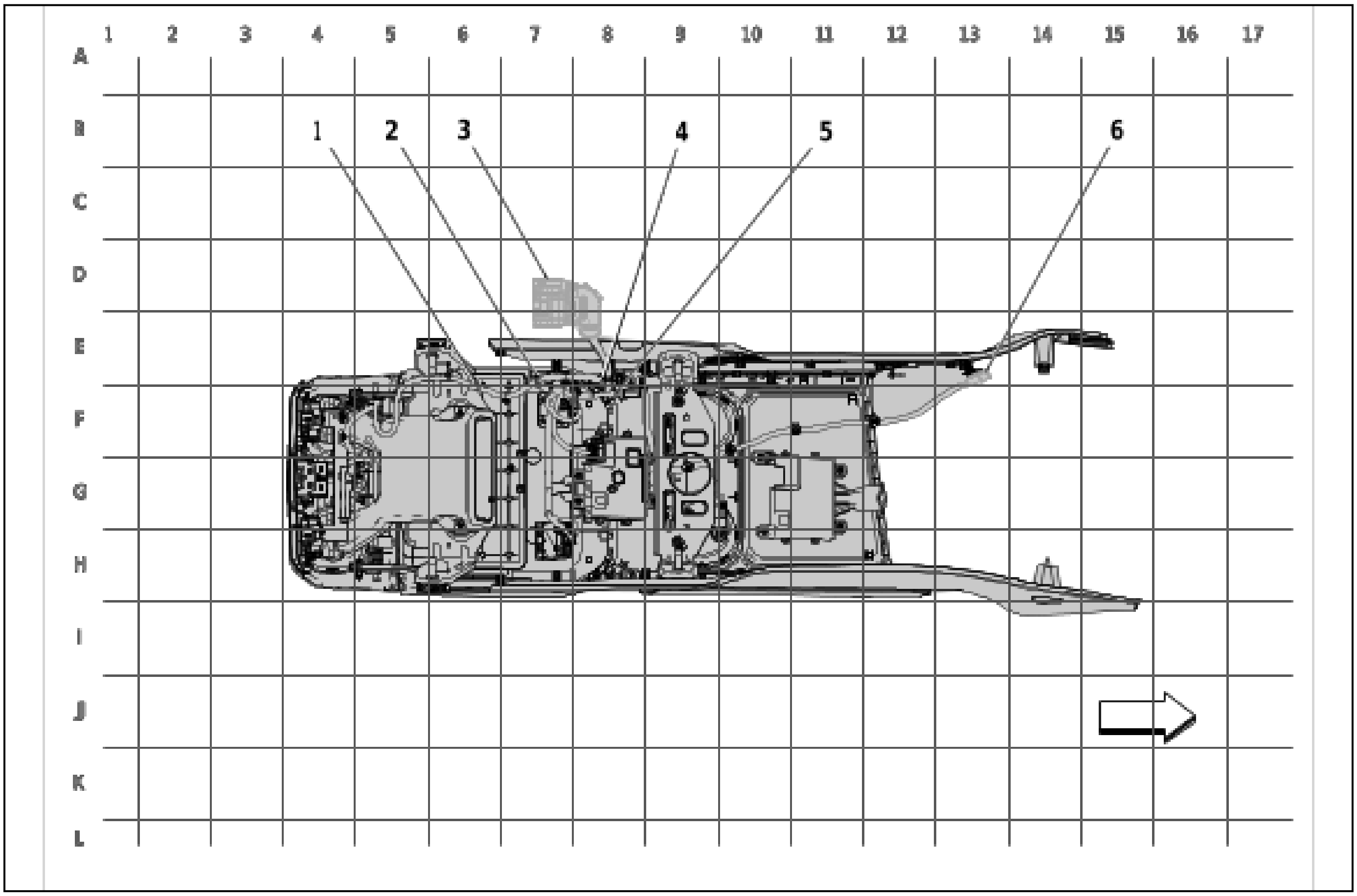
### Rear Seat Harness Routing




6398246

| Items |
|---|
| (1) X340 Body Wiring Harness to Rear Seat Heater Control Wiring Harness (KA6) |
| (2) J388 Rear Seat Heater Control Wiring Harness |

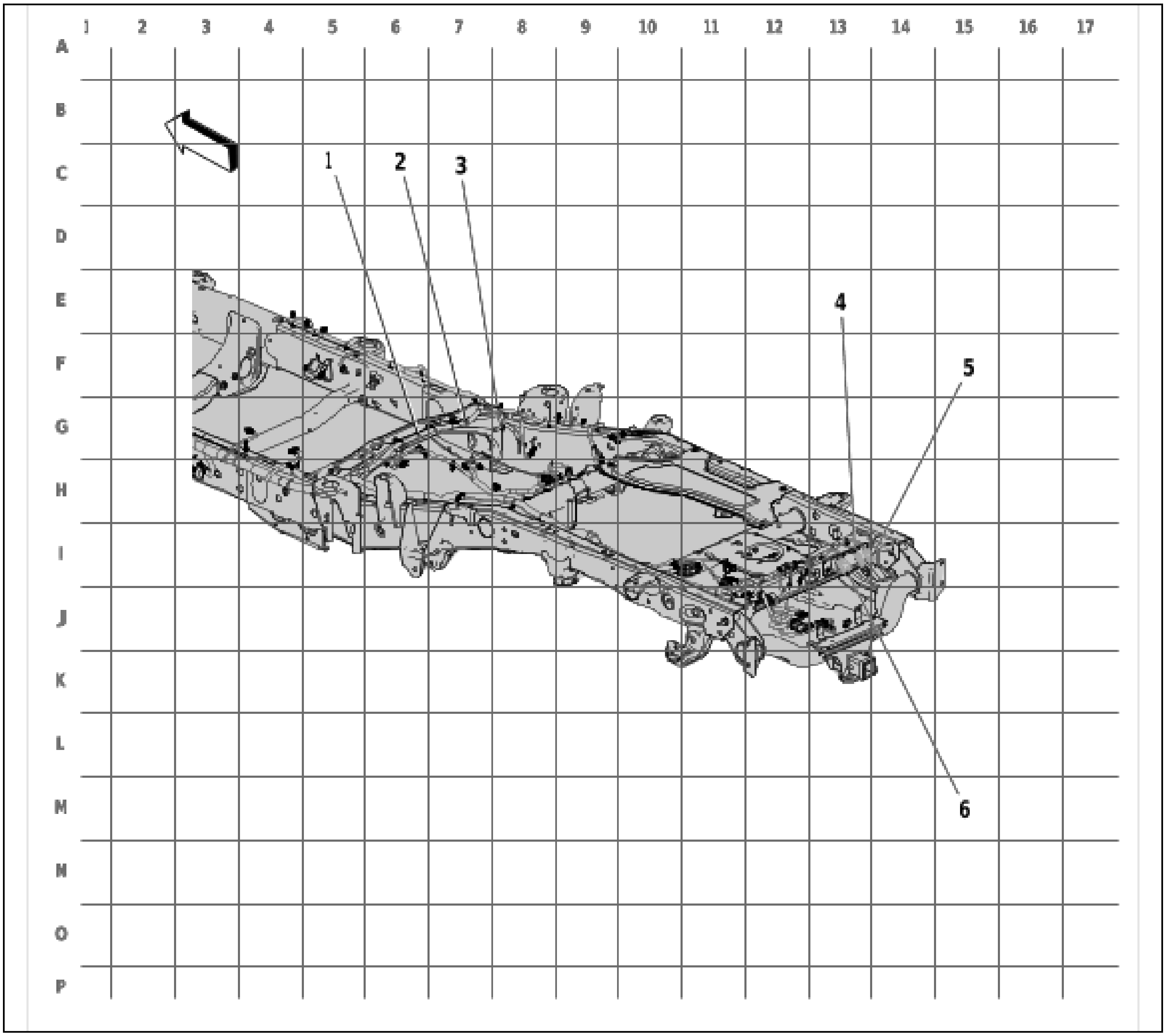
## Center Console - Front Floor Console Wiring Harness




6215740

| Items |
| --- |
| (1) J339 Front Floor Console Wiring Harness |
| (2) J337 Front Floor Console Wiring Harness |
| (3) X227 Front Seat Wiring Harness - Center to Body Wiring Harness |
| (4) J336 Body Wiring Harness |
| (5) J338 Front Floor Console Wiring Harness |
| (6) X226 Front Floor Console Wiring Harness to Instrument Panel Wiring Harness (D07) |

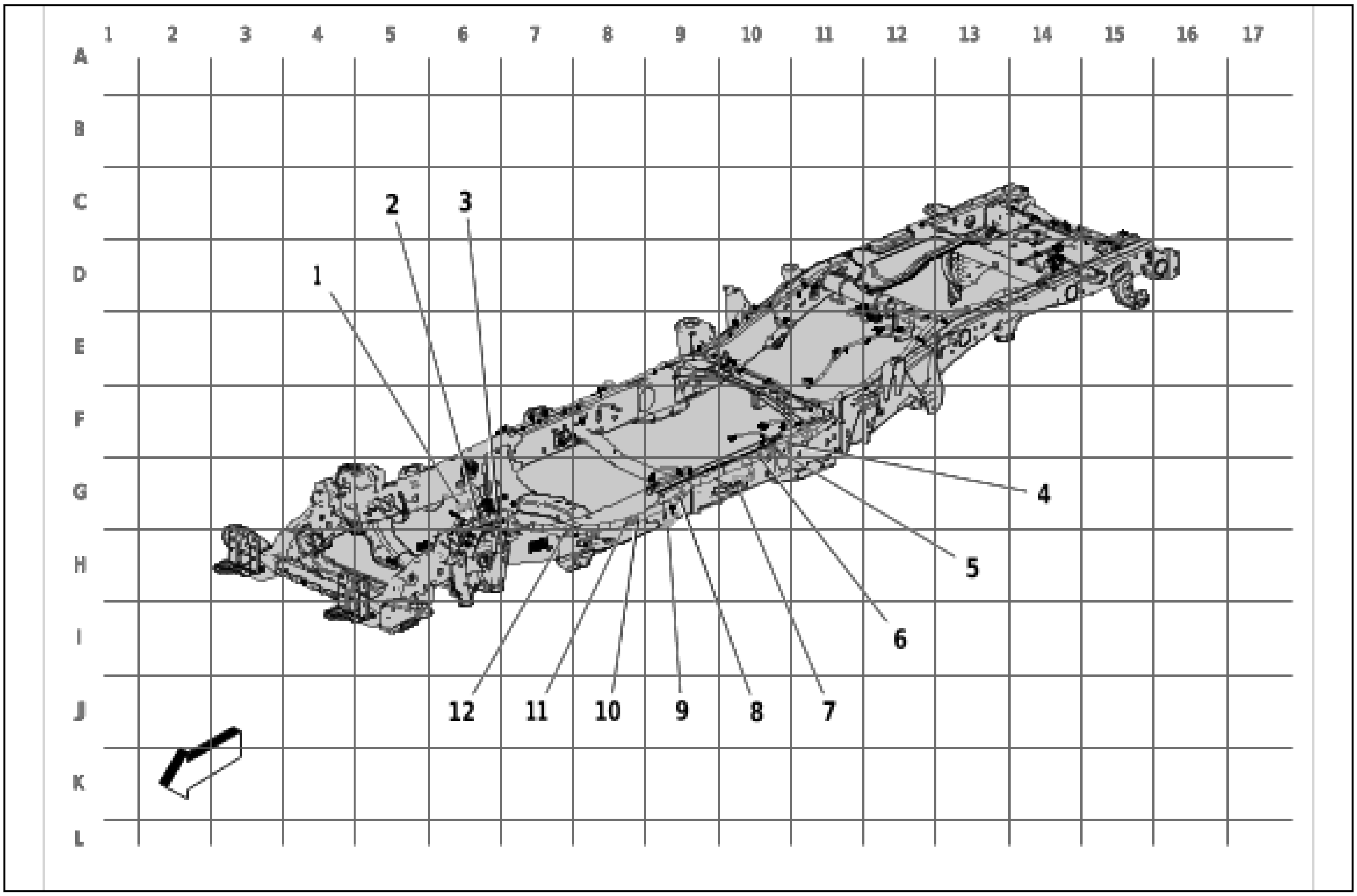
## Vehicle Underbody - Chassis Wiring Harness - Rear - Double Cab/Crew Cab




6215745

| Items |
|---|
| (1) J342 Chassis Wiring Harness |
| (2) J341 Chassis Wiring Harness |
| (3) J344 Chassis Wiring Harness (L5P) |
| (4) X414 Chassis Rear Wiring Harness to Chassis Wiring Harness (KC9 / KCA) |
| (5) X920A Tail Lamp Wiring Harness - Right to Chassis Wiring Harness |
| (6) X950 Rear Object Alarm Sensor Wiring Harness to Chassis Wiring Harness |

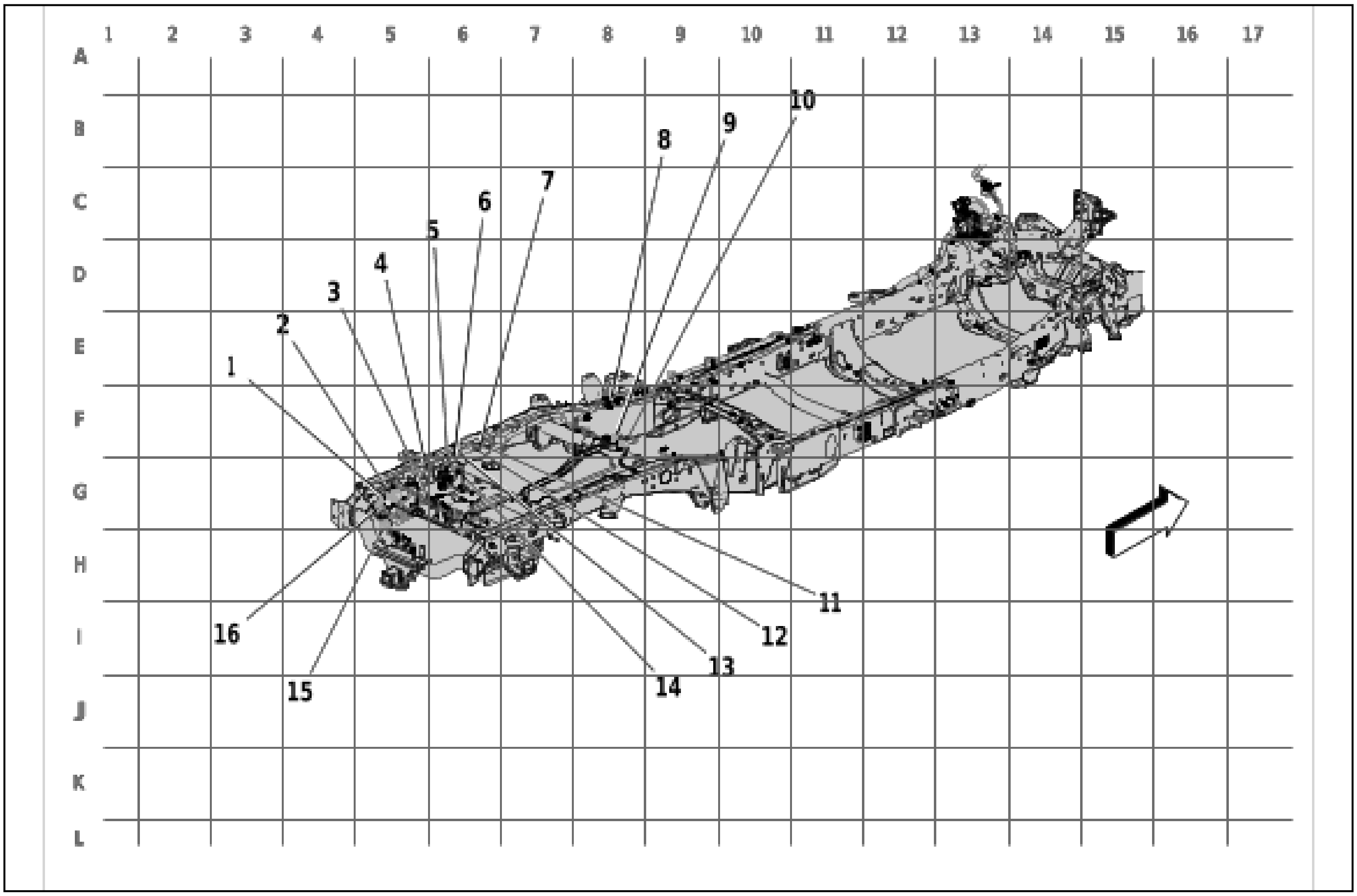
## Vehicle Underbody - Chassis Wiring Harness - Left - Double Cab/Crew Cab




6215746

| Items |
|---|
| (1) X426 Chassis Wiring Harness to Chassis Wiring Harness |
| (2) J352 Chassis Wiring Harness |
| (3) J353 Chassis Wiring Harness |
| (4) J345 Chassis Wiring Harness |
| (5) J356 Chassis Wiring Harness |
| (6) J355 Chassis Wiring Harness |
| (7) X404 Chassis Wiring Harness to Emission Reduction Fluid Tank Reservoir Wire Harness (L5P) |
| (8) J350 Chassis Wiring Harness (L5P) |
| (9) X412 Assist Step Motor jumper to Chassis Wiring Harness (BRS) |
| (10) J351 Chassis Wiring Harness |
| (11) J354 Chassis Wiring Harness (FHS) |
| (12) J340 Chassis Wiring Harness |

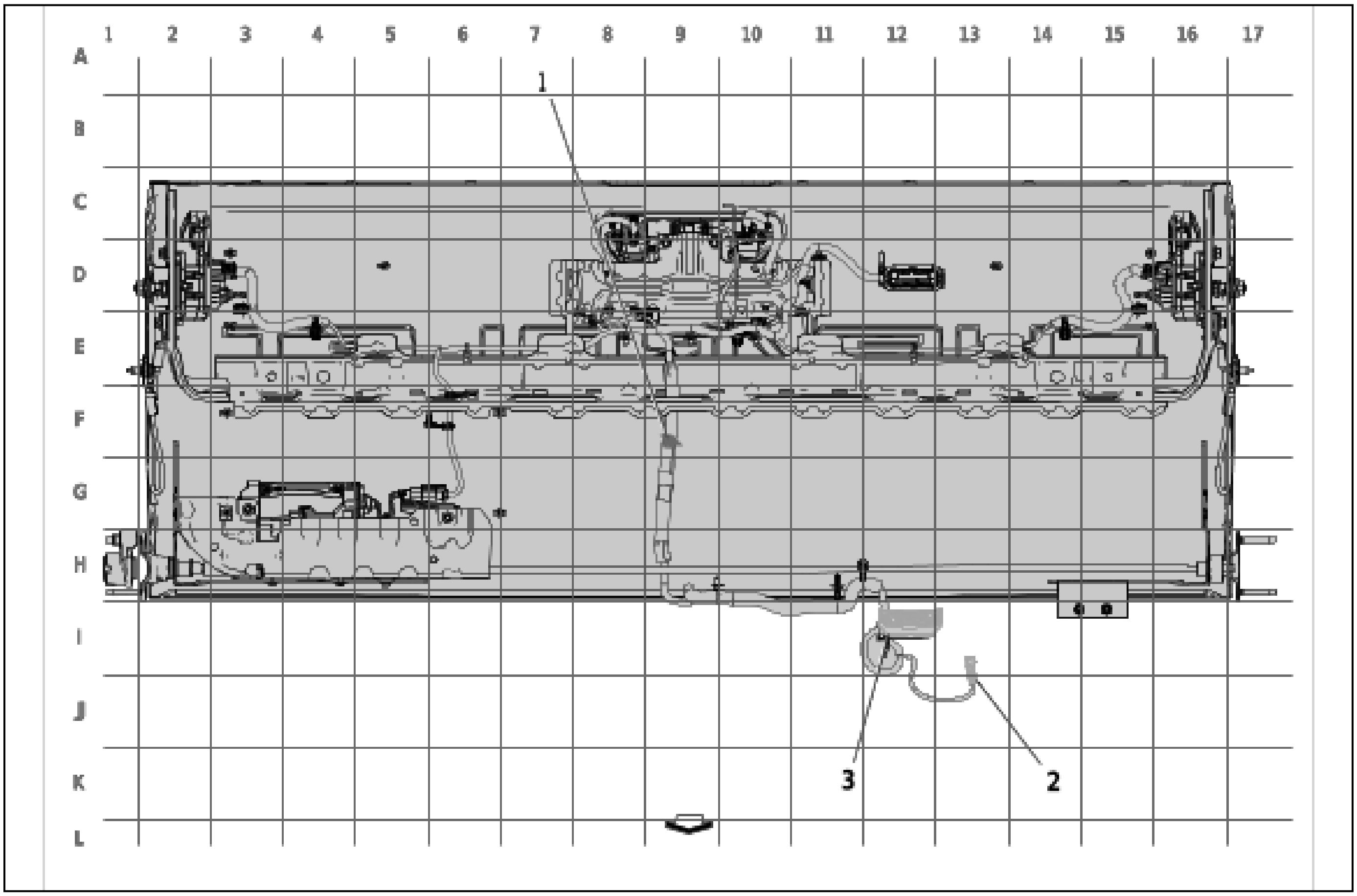
### Vehicle Underbody - Chassis Wiring Harness - Right - Double Cab/Crew Cab




6215747

| Items |
| --- |
| (1) X919 Endgate Wiring Harness to Chassis Wiring Harness |
| (2) X918 Endgate Wiring Harness to Chassis Wiring Harness |
| (3) J348 Chassis Wiring Harness |
| (4) J362 Chassis Wiring Harness |
| (5) J361 Chassis Wiring Harness |
| (6) J360 Chassis Wiring Harness |
| (7) J345 Chassis Wiring Harness |
| (8) J347 Chassis Wiring Harness (L5P) |
| (9) X420B Chassis Rear Wiring Harness Extension Harness to Chassis Wiring Harness |
| (10) X420A Chassis Rear Wiring Harness Extension Harness to Chassis Wiring Harness |
| (11) J358 Chassis Wiring Harness (BRS) |
| (12) J357 Chassis Wiring Harness |
| (13) J359 Chassis Wiring Harness |
| (14) J349 Chassis Wiring Harness |
| (15) X480 Chassis Wiring Harness to Trailer Rear Wiring Harness |
| (16) X910A Tail Lamp Wiring Harness - Left to Chassis Wiring Harness |

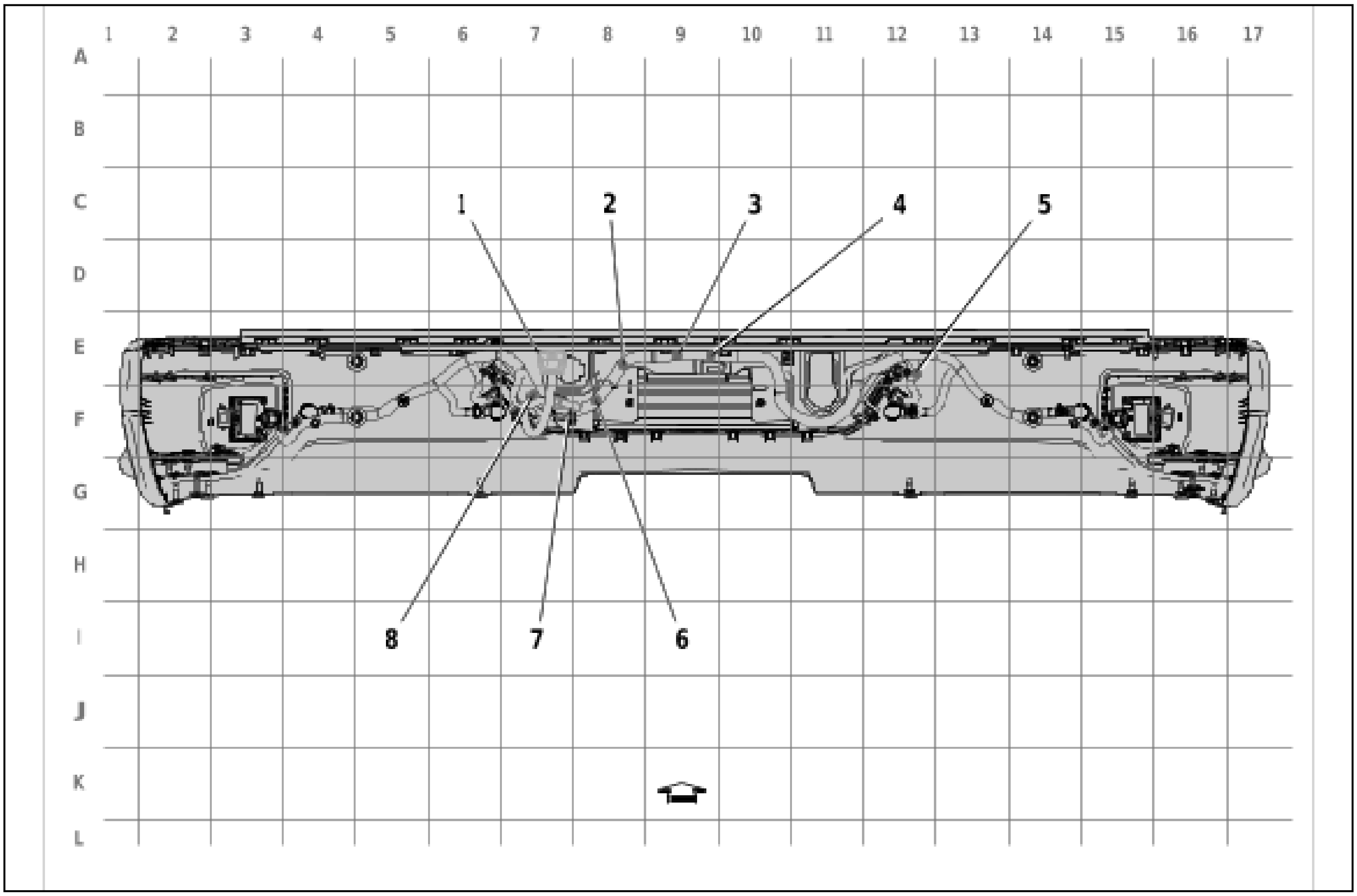
## Rear of Vehicle - Endgate Wiring Harness




6215751

| Items |
|---|
| (1) J900 Endgate Wiring Harness |
| (2) X919 Endgate Wiring Harness to Chassis Wiring Harness |
| (3) X918 Endgate Wiring Harness to Chassis Wiring Harness |

### Rear of Vehicle - Rear Object Alarm Sensor Harness

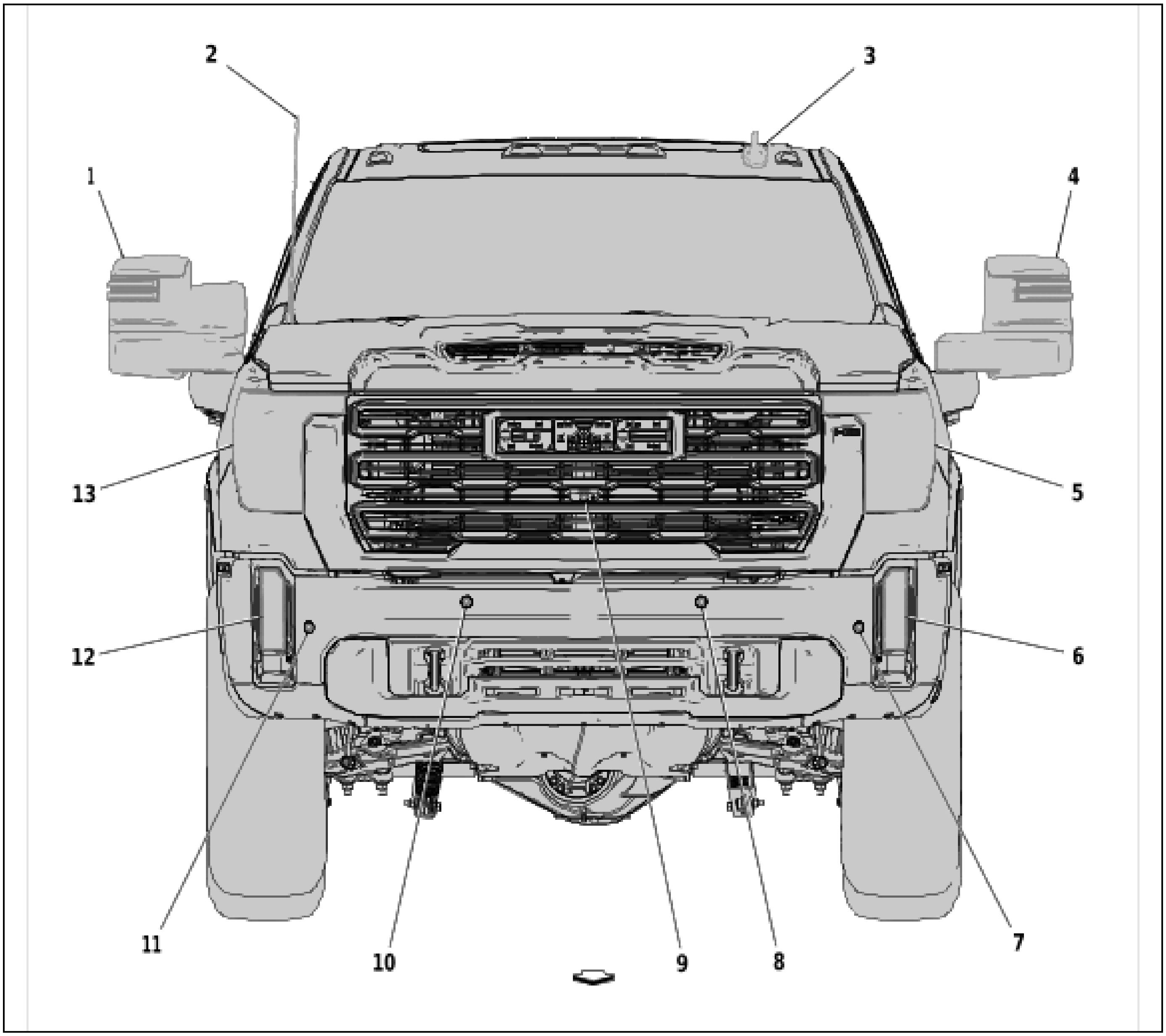



6215752

| Items |
|---|
| (1) X950 Rear Object Alarm Sensor Wiring Harness to Chassis Wiring Harness |
| (2) J907 Rear Object Alarm Sensor Wiring Harness |
| (3) J906 Rear Object Alarm Sensor Wiring Harness |
| (4) J905 Rear Object Alarm Sensor Wiring Harness |
| (5) J904 Rear Object Alarm Sensor Wiring Harness |
| (6) J908 Rear Object Alarm Sensor Wiring Harness |
| (7) R6A Terminating Resistor - High Speed Bus (UKL / (-UKC - UKV)) |
| (8) J909 Rear Object Alarm Sensor Wiring Harness |

# Component Locator

## Front of Vehicle Components

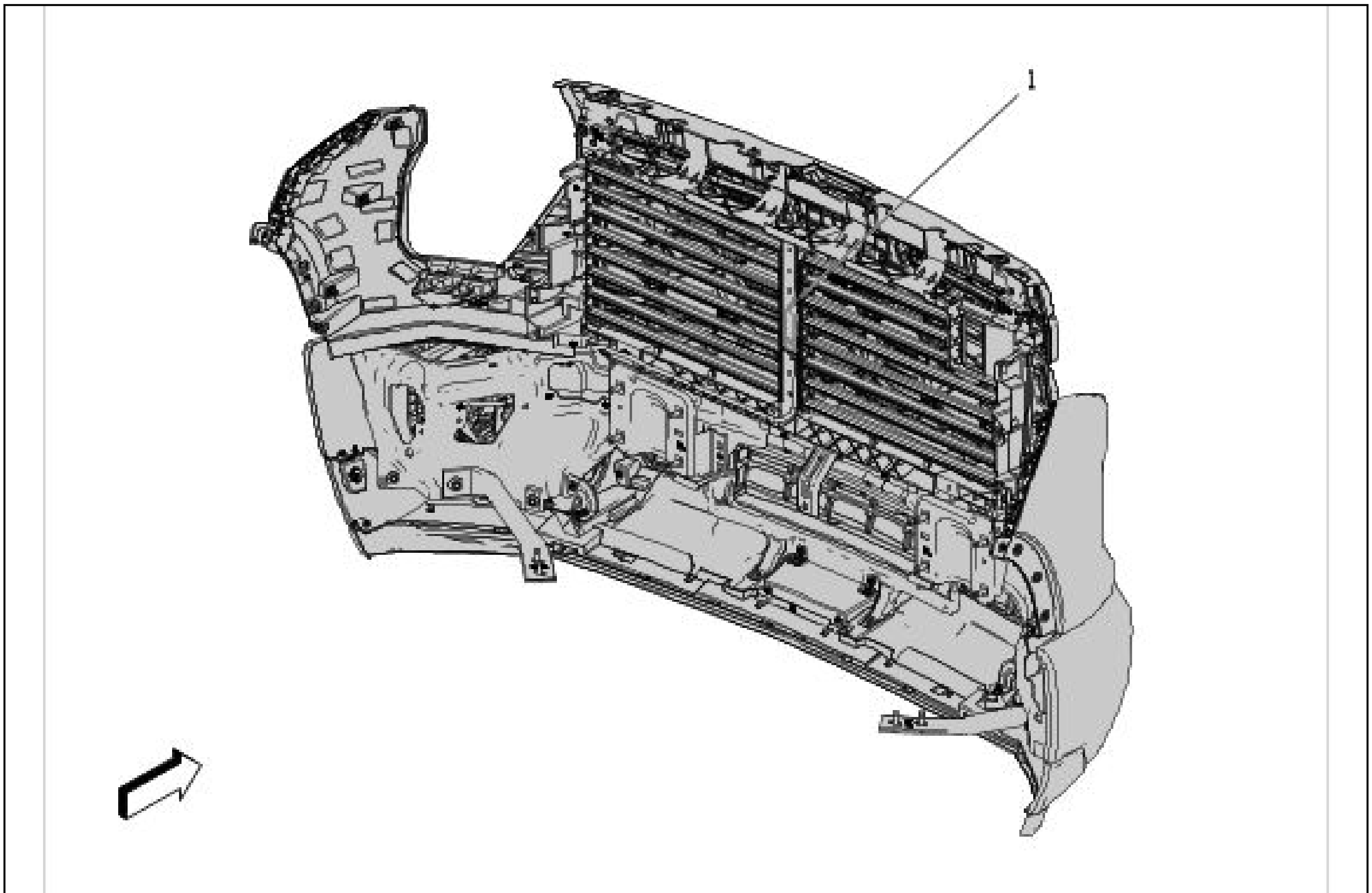



6215891

| Items |
| --- |
| (1) A9B Outside Rearview Mirror - Passenger |
| (2) T4M Radio Antenna |
| (3) T4P High Frequency Antenna |
| (4) A9A Outside Rearview Mirror - Driver |
| (5) E13LA Front Headlamp - Left |
| (6) E29LF Front Fog Lamp - Left (T3U) |
| (7) B306A Parking Assist Alarm Sensor - Front Left Outer (UD5) |
| (8) B306B Parking Assist Alarm Sensor - Front Left Middle (UD5) |
| (9) B174G Front View Driver Information Camera - Grille (UV2) |

| Items |
|---|
| (10) B306C Parking Assist Alarm Sensor - Front Right Middle (UD5) |
| (11) B306D Parking Assist Alarm Sensor - Front Right Outer (UD5) |
| (12) E29RF Front Fog Lamp - Right (T3U) |
| (13) E13RA Front Headlamp - Right |

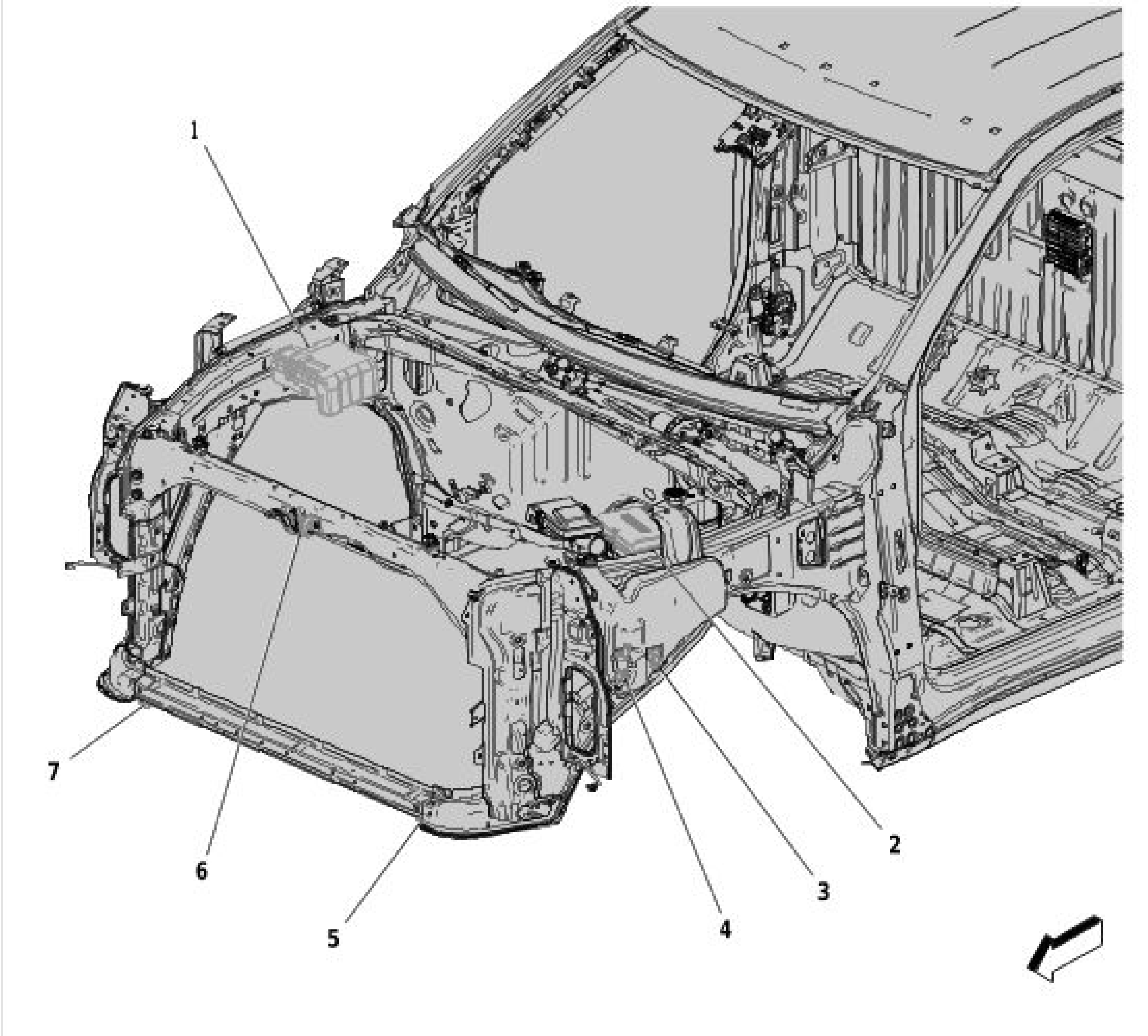
### Front Fascia Components - Inside




6215757

| Items |
|---|
| (1) M96A Active Grille Air Shutter Actuator 1 (VTI) |

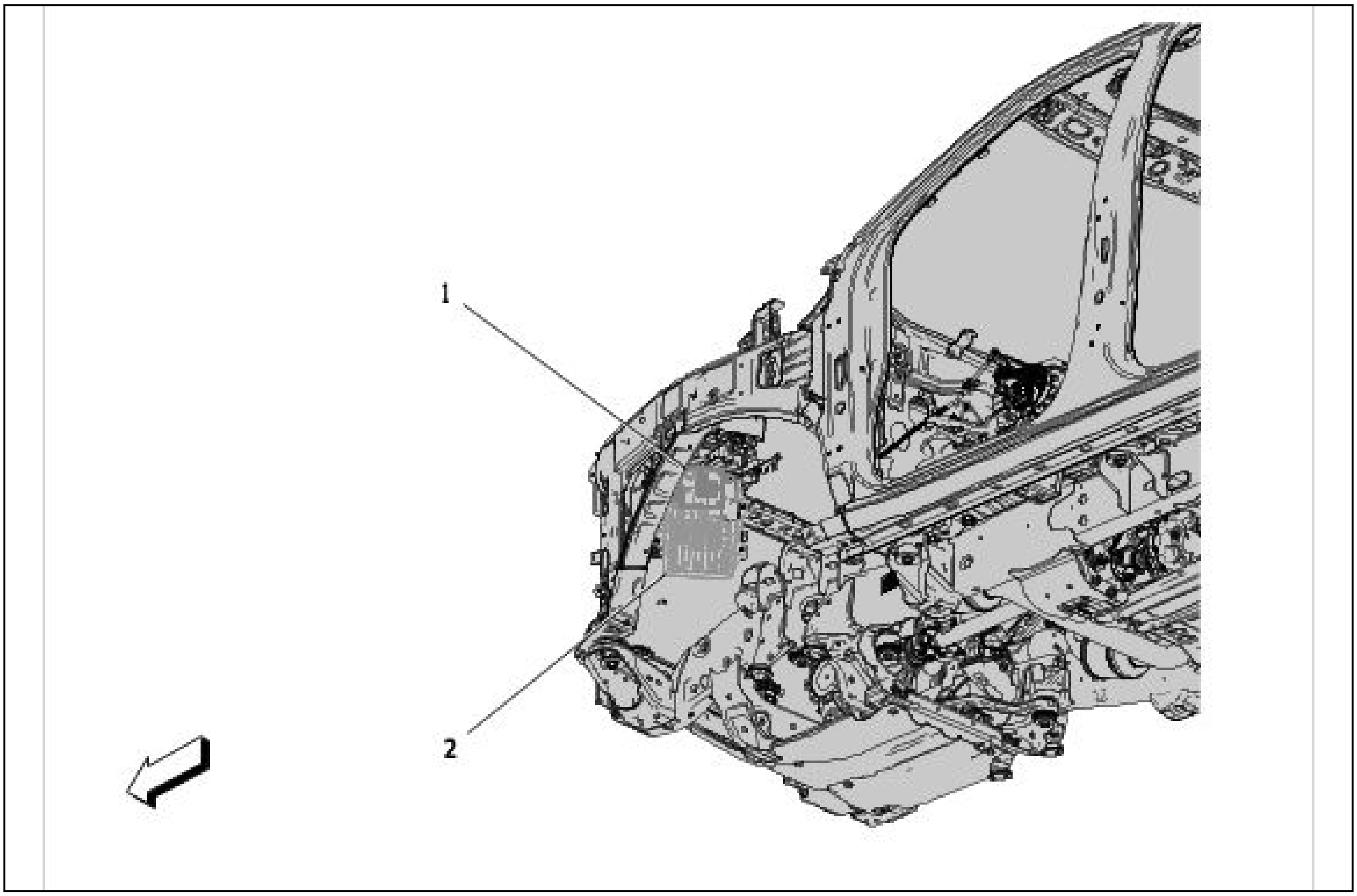
**Engine Compartment Components - Left 1 of 2**




6215760

| Items |
|---|
| (1) X50B Battery Distribution Engine Compartment Fuse Block |
| (2) X50A Engine Wiring Harness Junction Block |
| (3) B118 Windshield Washer Solvent Container Level Sensor |
| (4) G24 Windshield Washer Pump |
| (5) B58L Airbag Front End Discriminating Sensor - Left |
| (6) B55 Engine Compartment Cover Switch |
| (7) B58R Airbag Front End Discriminating Sensor - Right |

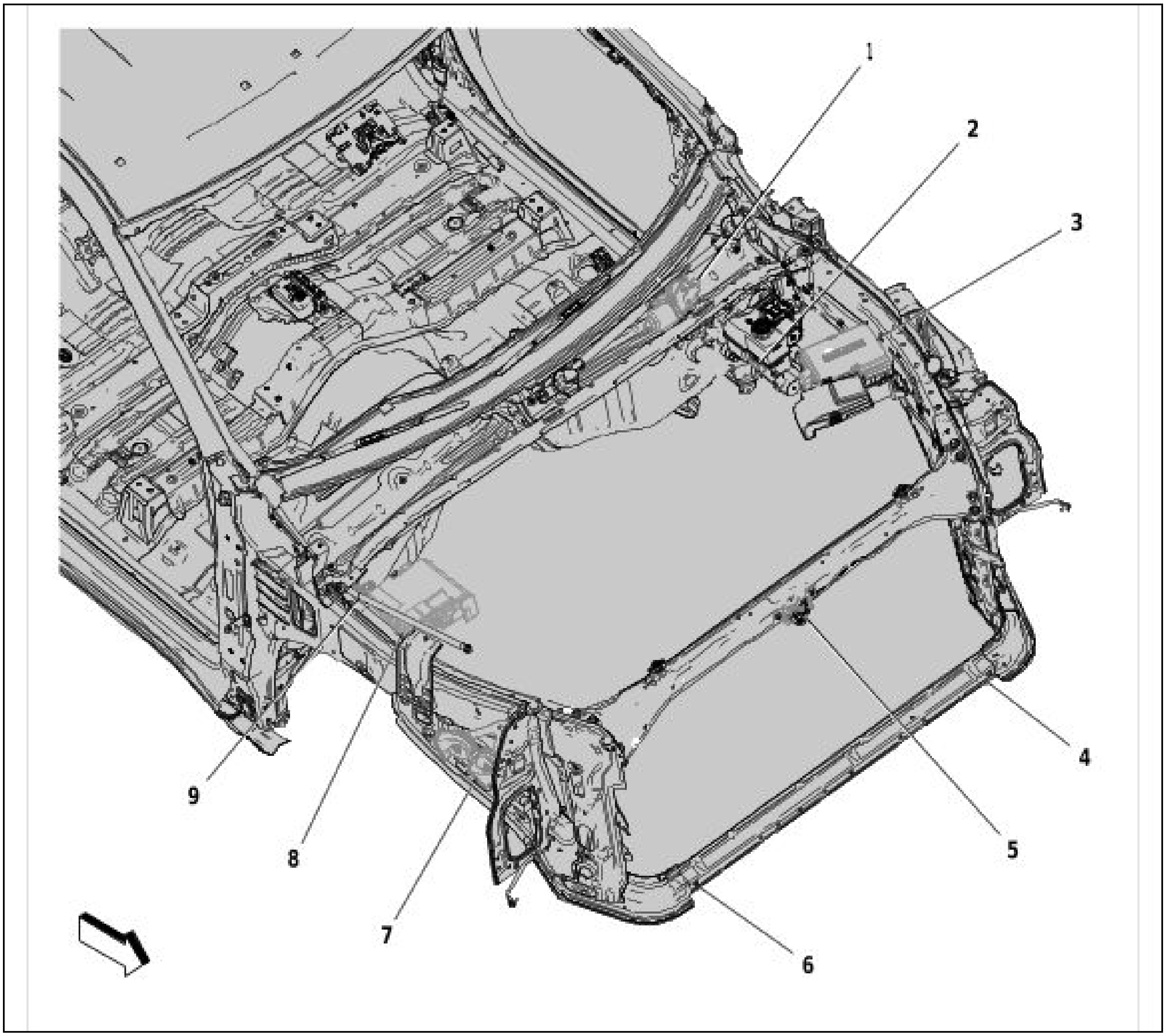
## Engine Compartment Components - Left 2 of 2




6215761

| Items |
|---|
| (1) K69 Transfer Case Control Module (NQF / NQH) |
| (2) K20 Engine Control Module |

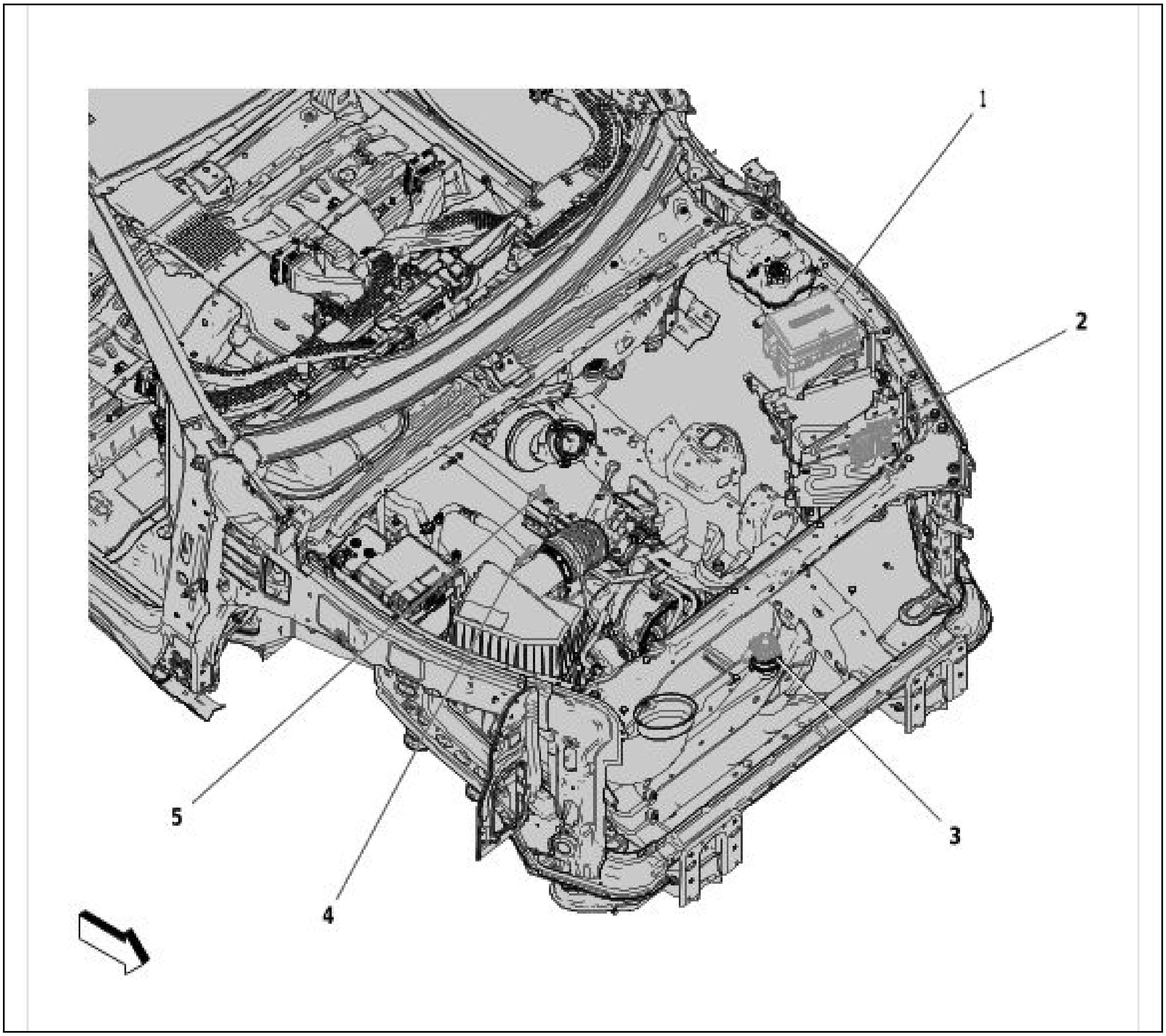
## Engine Compartment Components - Top 1 of 2




6215762

| Items |
|---|
| (1) M75 Windshield Wiper Motor |
| (2) B20A Brake Fluid Level Indicator Switch |
| (3) X50A Engine Wiring Harness Junction Block |
| (4) B58L Airbag Front End Discriminating Sensor - Left |
| (5) B55 Engine Compartment Cover Switch |
| (6) B58R Airbag Front End Discriminating Sensor - Right |
| (7) P13 Horn |
| (8) X50B Battery Distribution Engine Compartment Fuse Block |
| (9) B110 Battery Monitor Module |

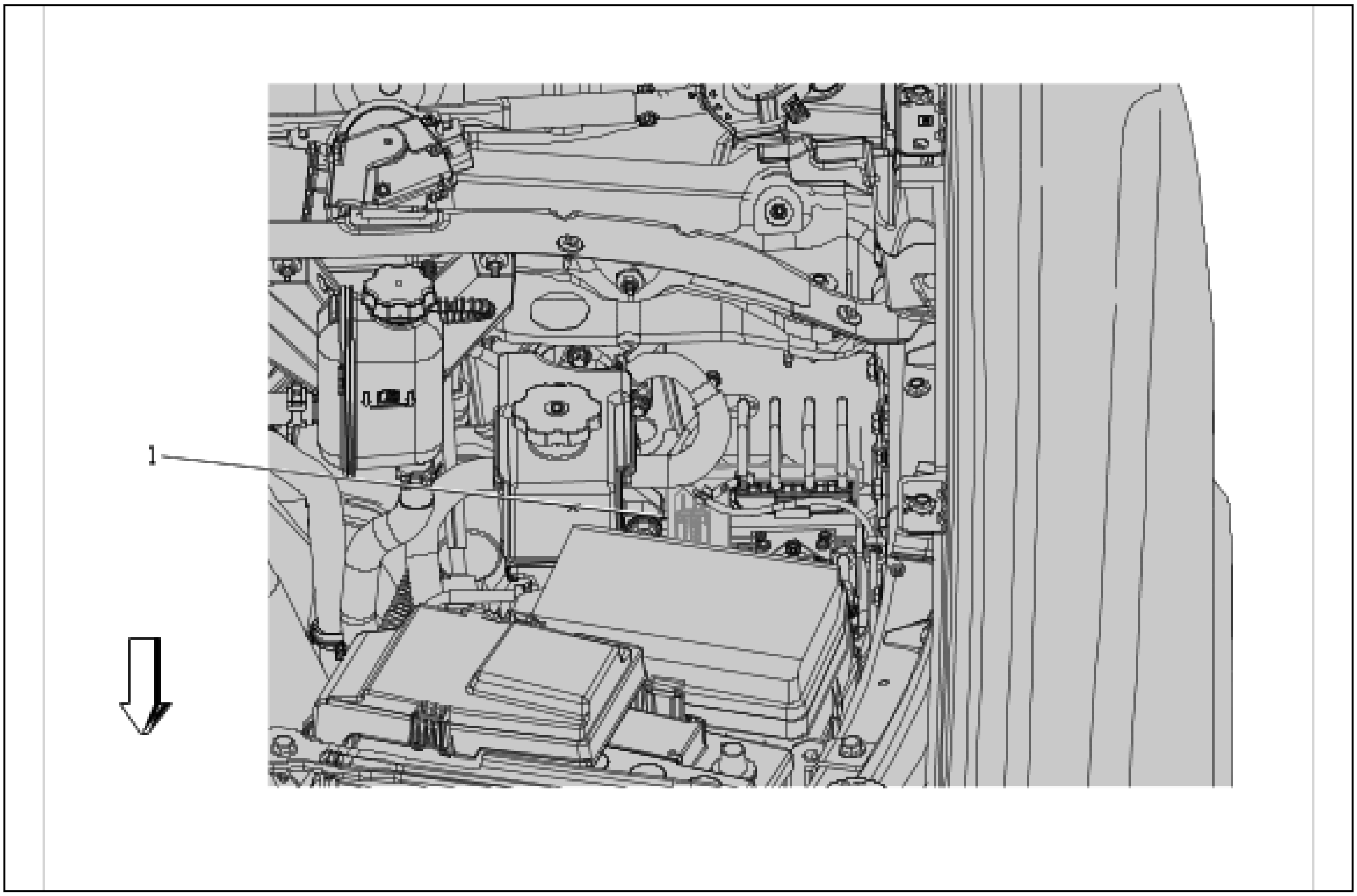
## Engine Compartment Components - Top 2 of 2




6215763

| Items |
|---|
| (1) X50A Engine Wiring Harness Junction Block |
| (2) K71 Transmission Control Module |
| (3) G73 Low Temperature Loop Coolant Pump (L5P) |
| (4) B75 Mass Airflow Sensor |
| (5) B36 Engine Oil Temperature Sensor (L8T) |

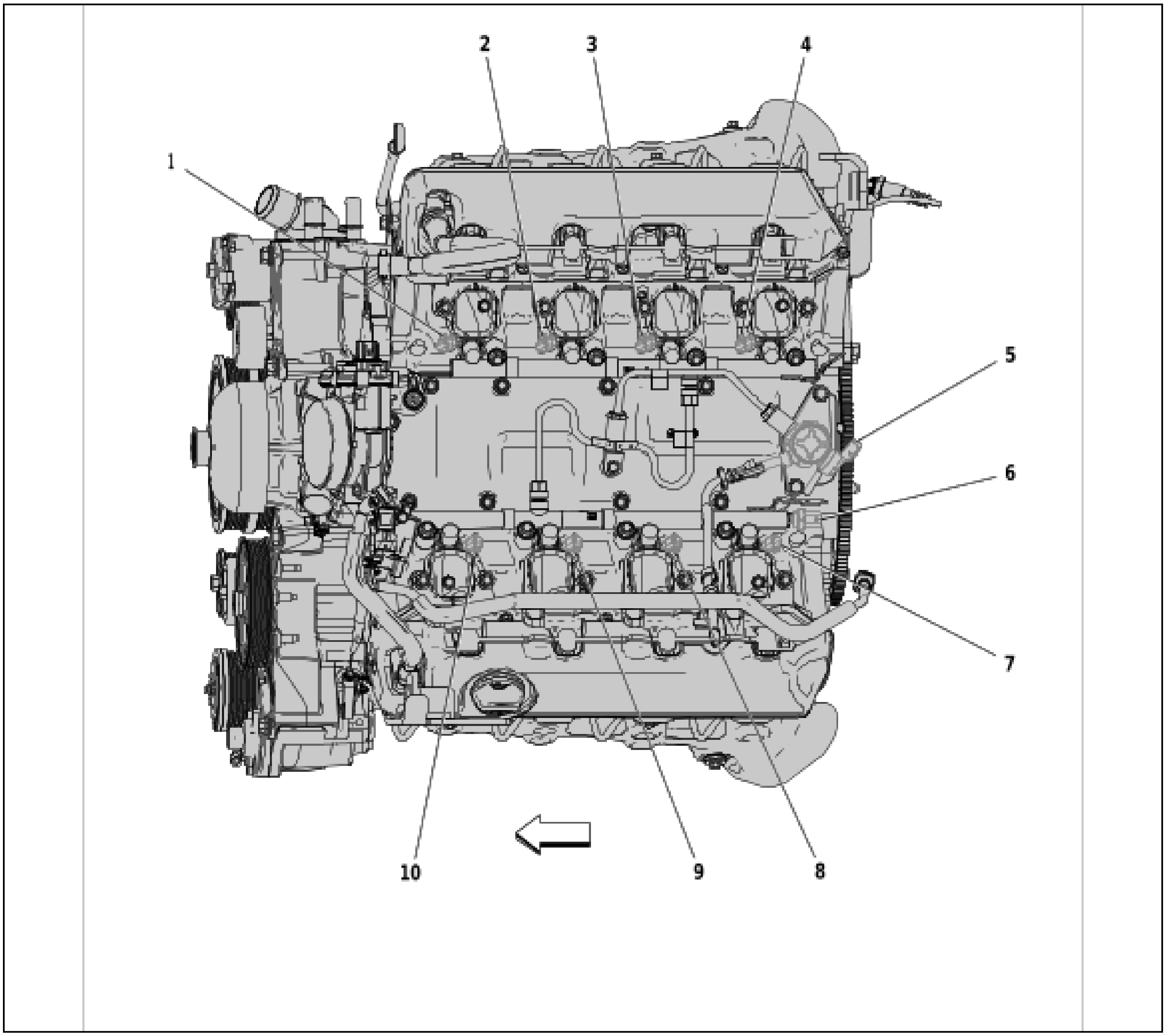
## Engine Compartment Components - Left Rear




6298333

| Items |
| --- |
| (1) K17 Electronic Brake Control Module |

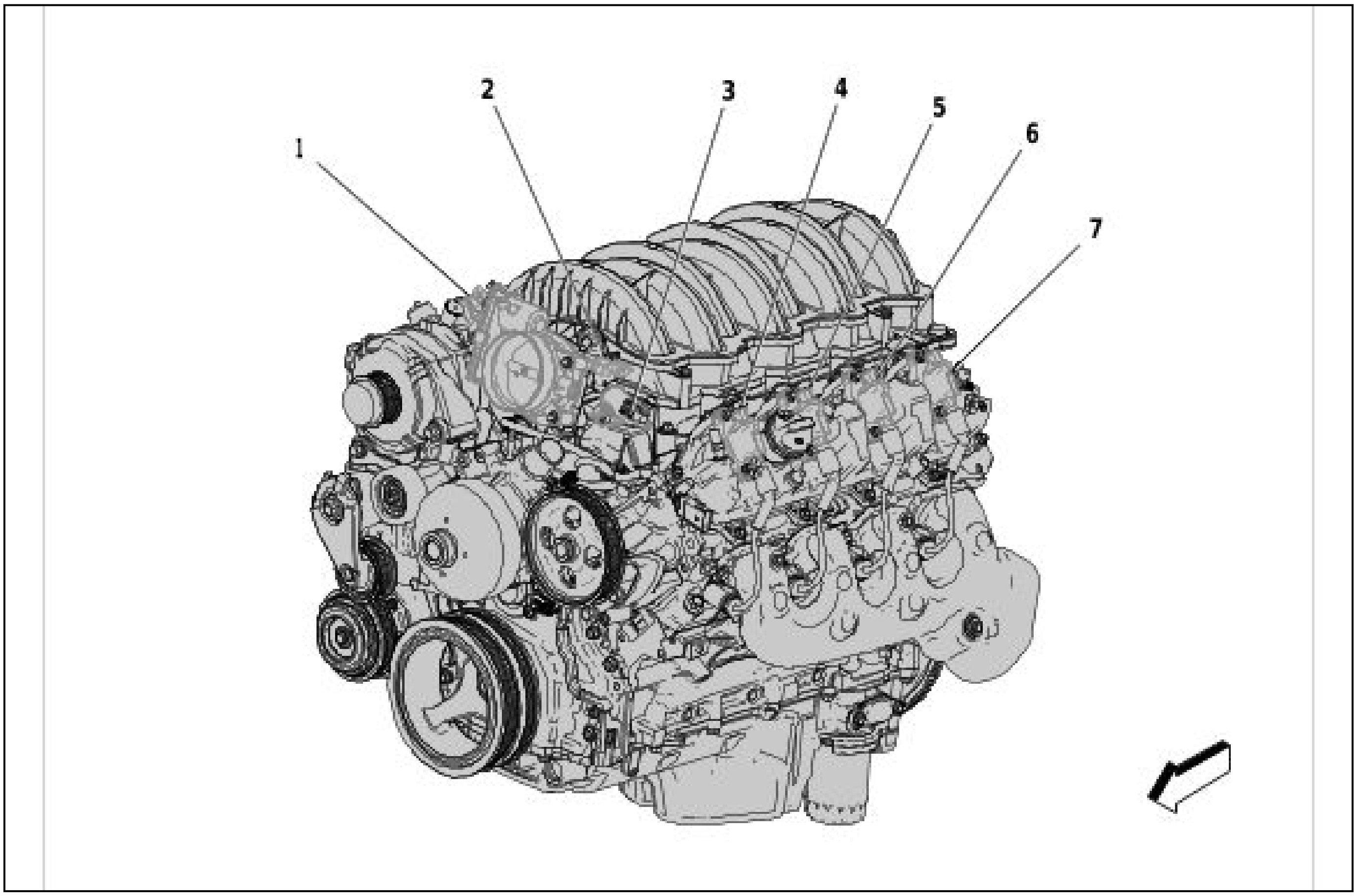
## Engine Components - Top (L8T)




6400187

| Items |
|---|
| (1) Q17B Fuel Injector 2 |
| (2) Q17D Fuel Injector 4 |
| (3) Q17F Fuel Injector 6 |
| (4) Q17H Fuel Injector 8 |
| (5) G18 Fuel Pump - High Pressure |
| (6) B310 Fuel Pressure and Temperature Sensor (L8T) |
| (7) Q17G Fuel Injector 7 |
| (8) Q17E Fuel Injector 5 |
| (9) Q17C Fuel Injector 3 |
| (10) Q17A Fuel Injector 1 |

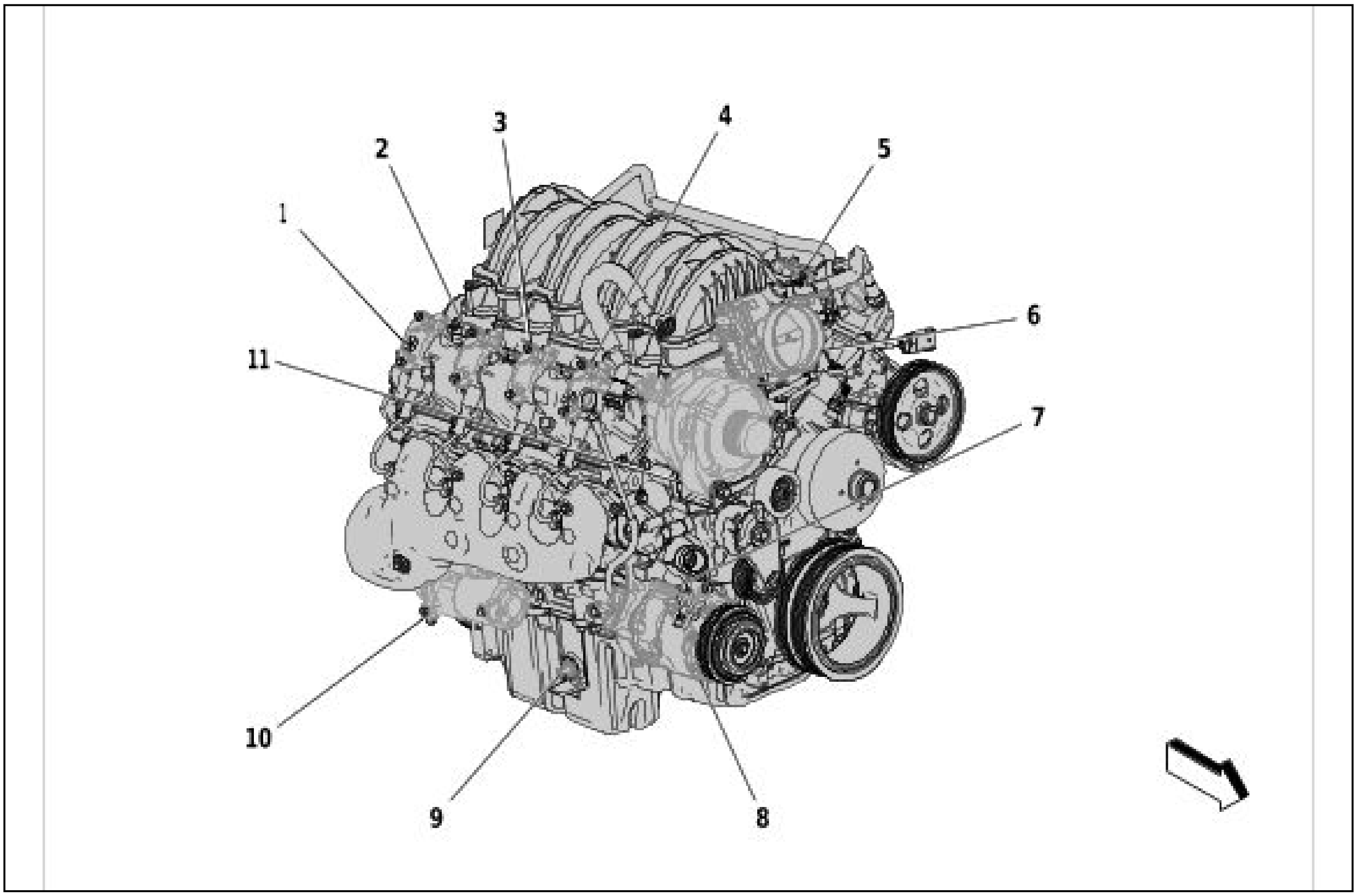
## Engine Components - Left Front (L8T)




6215765

| Items |
|---|
| (1) Q38 Throttle Body |
| (2) B74 Manifold Absolute Pressure Sensor |
| (3) Q12 Evaporative Emission Canister Purge Solenoid Valve (L8T) |
| (4) T8A Ignition Coil 1 (L8T) |
| (5) T8C Ignition Coil 3 (L8T) |
| (6) T8E Ignition Coil 5 (L8T) |
| (7) T8G Ignition Coil 7 (L8T) |

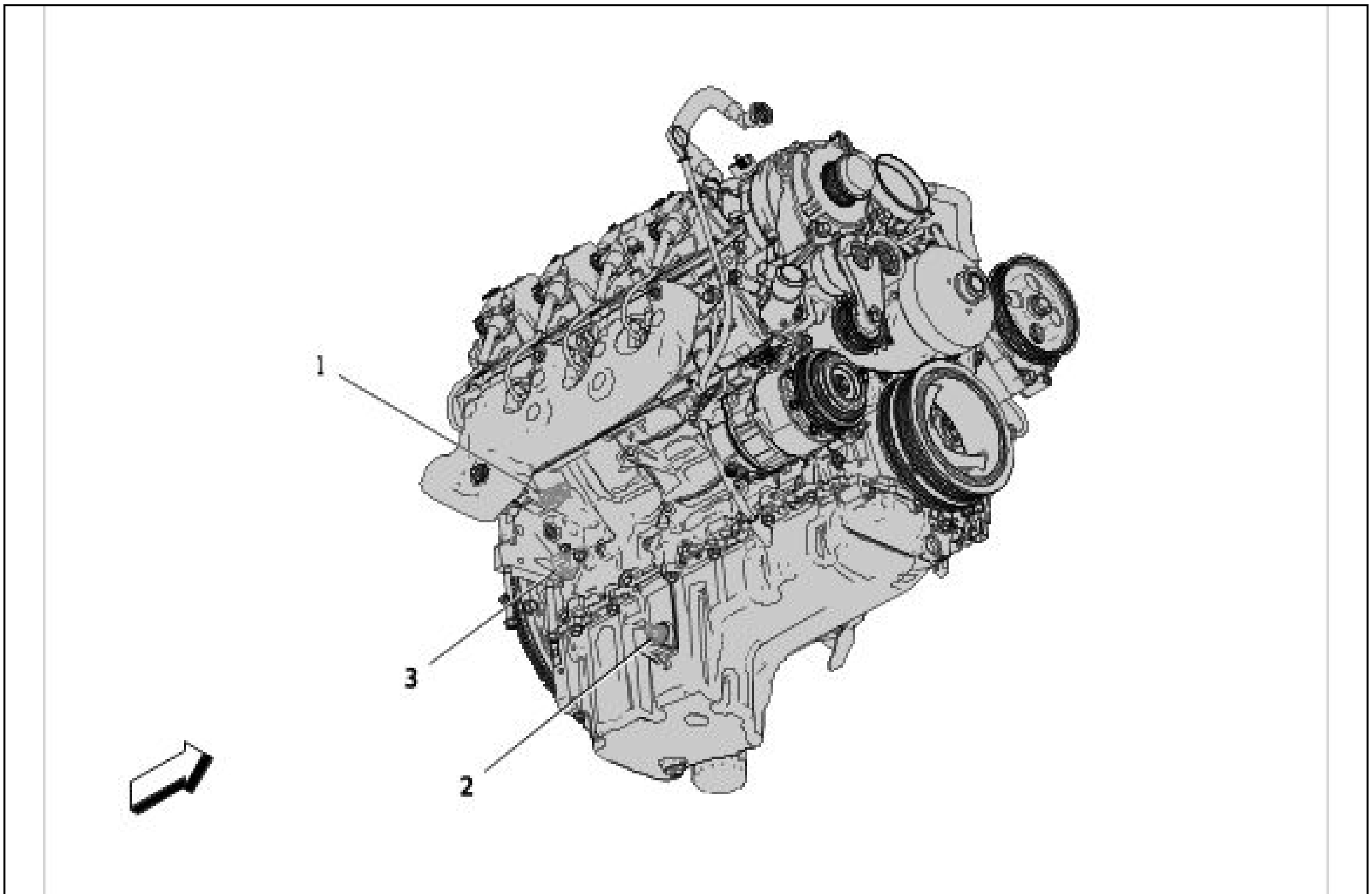
## Engine Components - Right Front (L8T)




6215766

| Items |
|---|
| (1) T8H Ignition Coil 8 (L8T) |
| (2) T8F Ignition Coil 6 (L8T) |
| (3) T8D Ignition Coil 4 (L8T) |
| (4) T8B Ignition Coil 2 (L8T) |
| (5) B74 Manifold Absolute Pressure Sensor |
| (6) Q38 Throttle Body |
| (7) Q2 Air Conditioning Clutch |
| (8) Q46 Air Conditioning Compressor Solenoid Valve |
| (9) B35 Engine Oil Level Indicator Switch (L8T) |
| (10) M64 Starter |
| (11) G13 Generator |

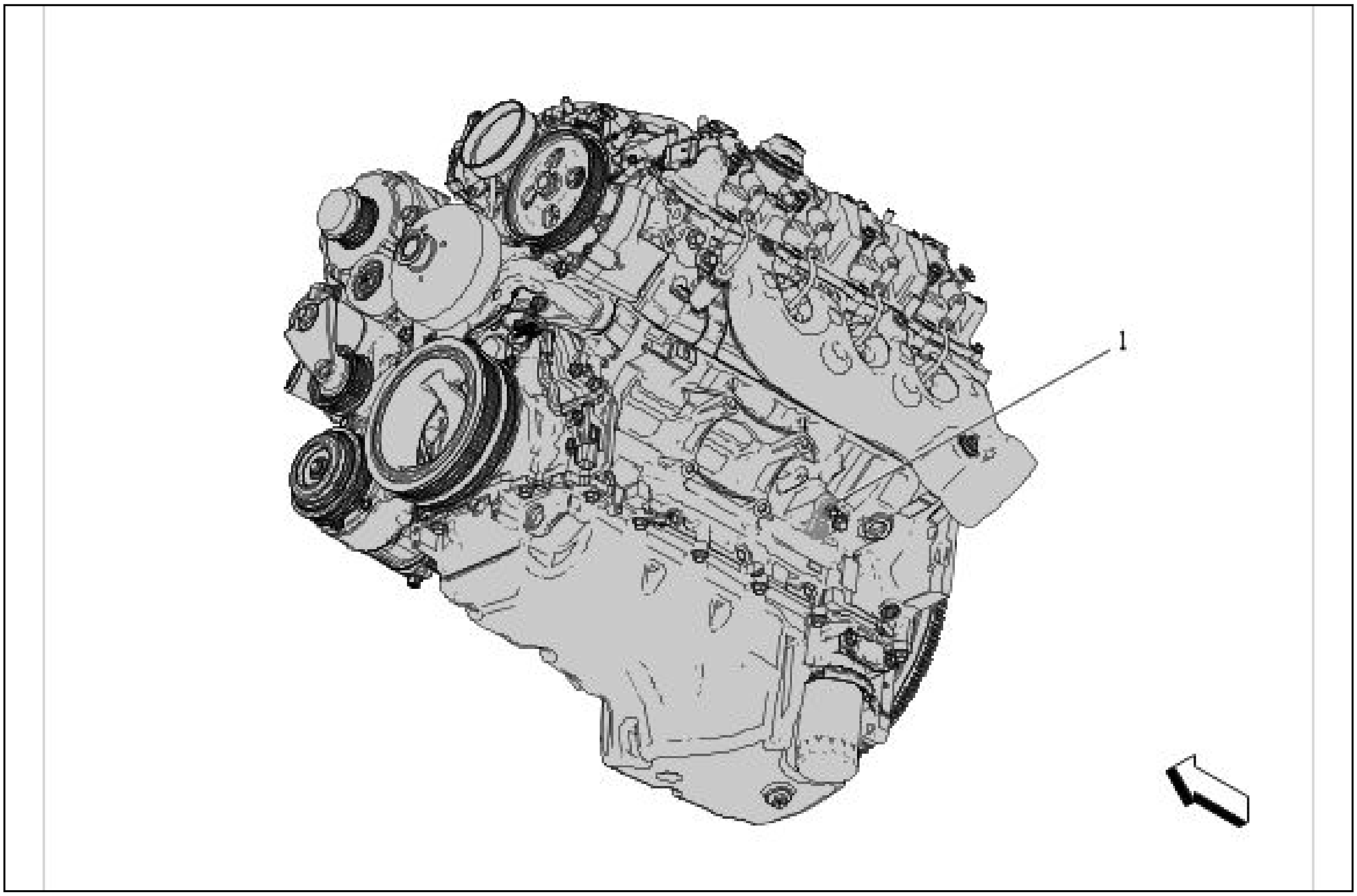
## Engine Components - Right Rear (L8T)




6215767

| Items |
|---|
| (1) B68B Knock Sensor 2 (L8T) |
| (2) B35 Engine Oil Level Indicator Switch (L8T) |
| (3) B26 Crankshaft Position Sensor |

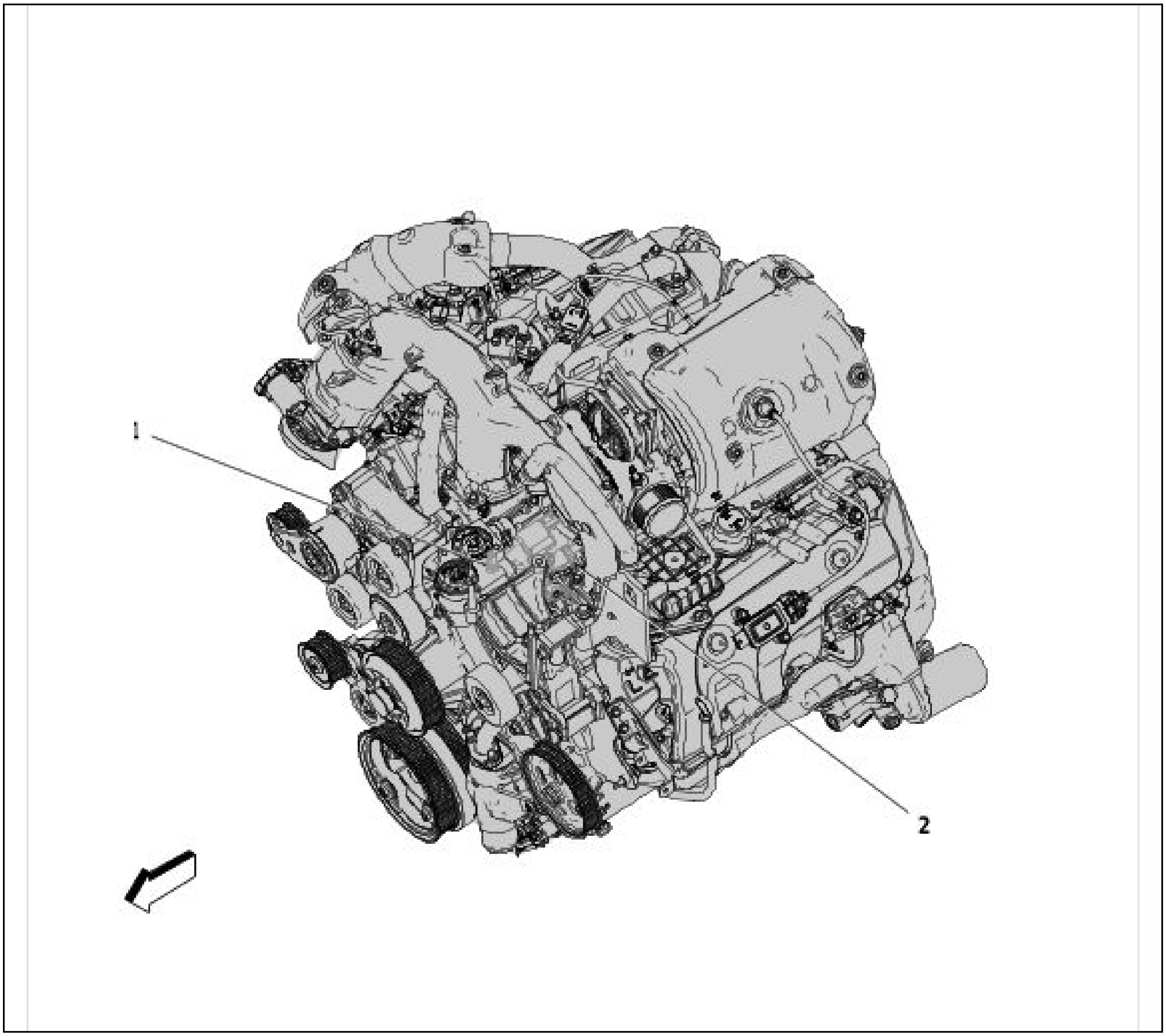
## Engine Components - Left Rear (L8T)




6215768

| Items |
| --- |
| (1) B68A Knock Sensor 1 (L8T) |

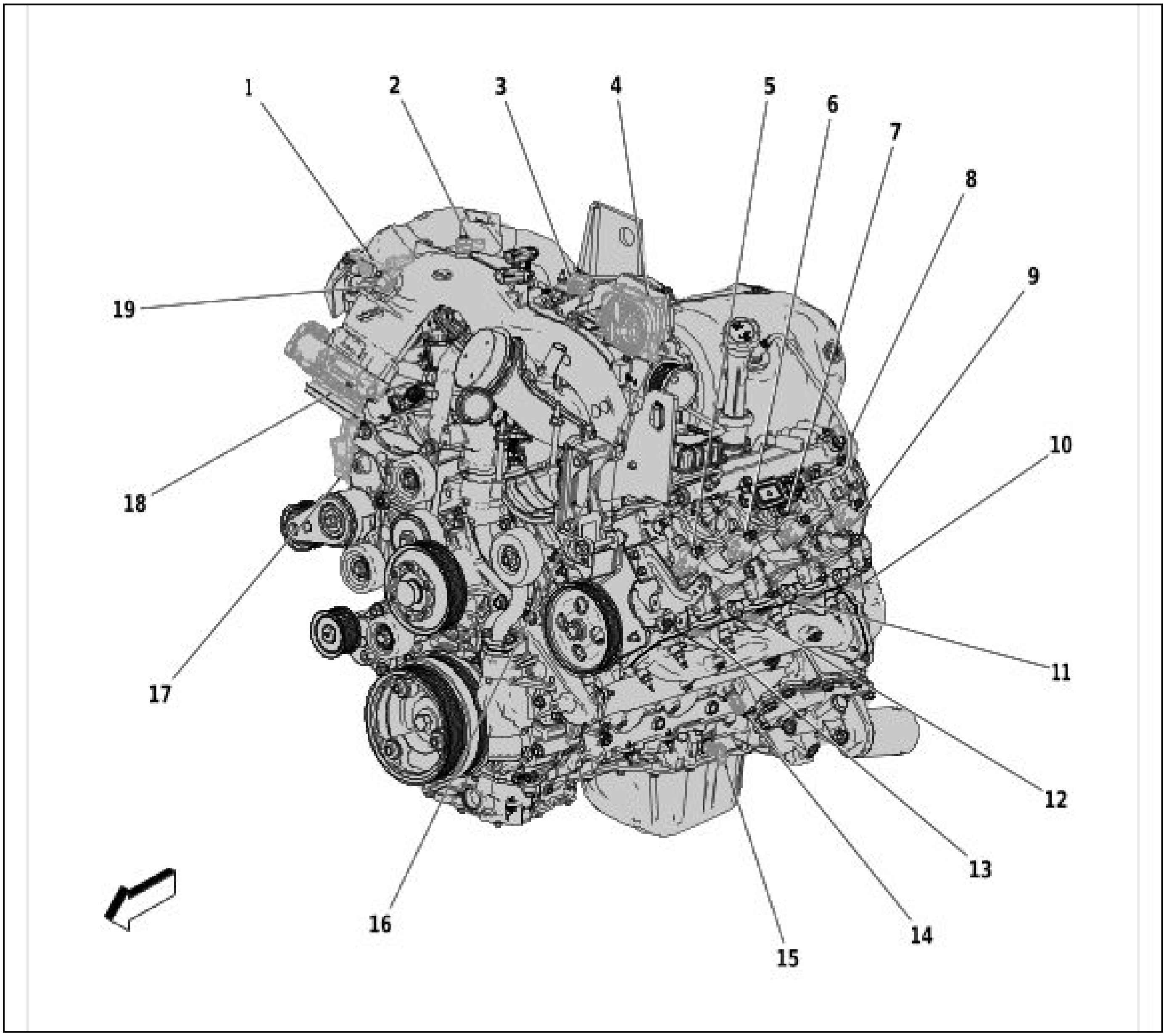
## Engine Components - Top (L5P)




6215769

| Items |
|---|
| (1) B34 Engine Coolant Temperature Sensor (L8T) |
| (2) Q18A Fuel Pressure Regulator 1 (L5P) |

## Engine Components - Left (L5P)

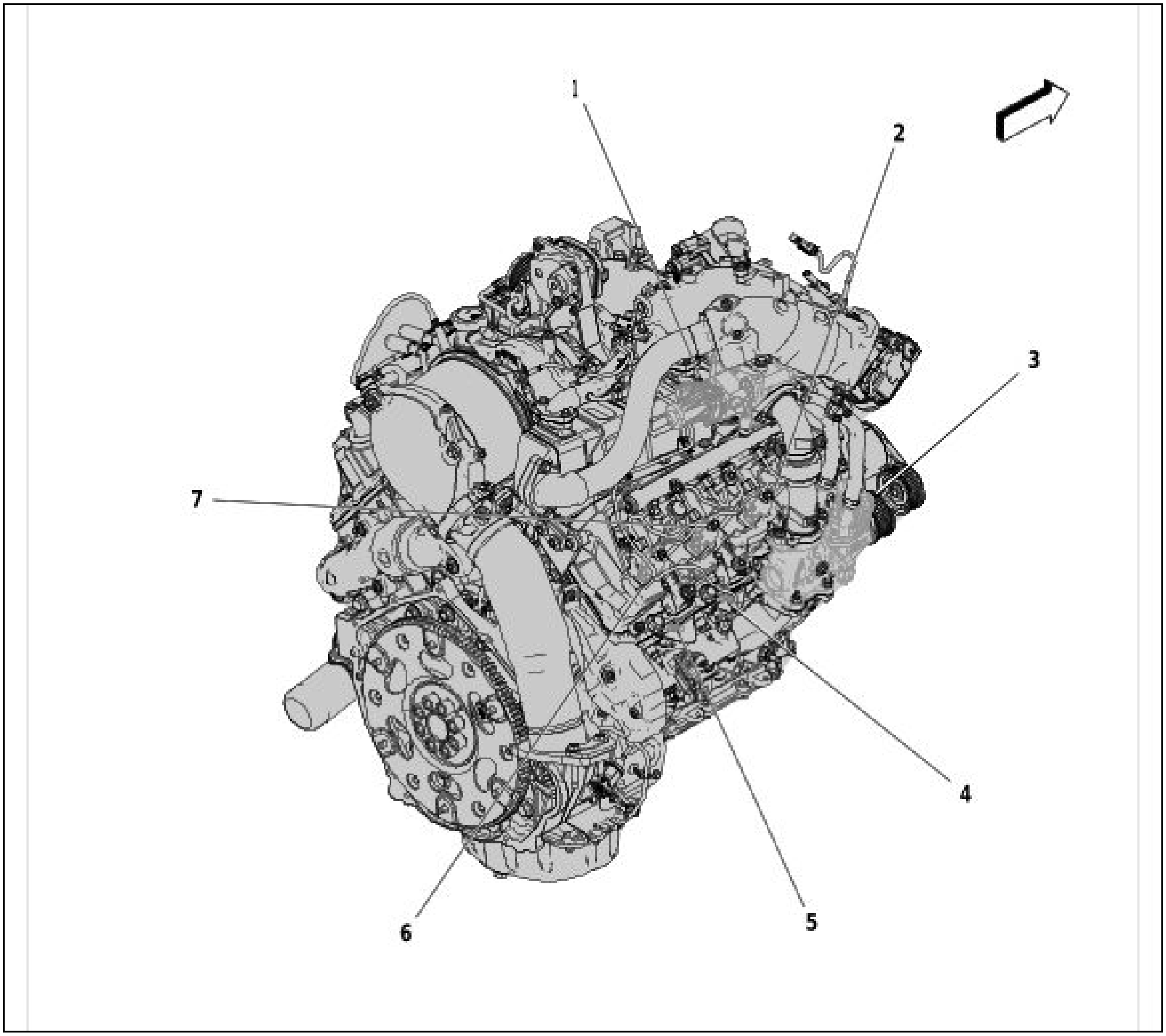



6215770

| Items |
|---|
| (1) B130 Exhaust Gas Recirculation Temperature Sensor |
| (2) B66 Intake Air Temperature Sensor (L5P) |
| (3) B359 Exhaust Gas Temperature Sensor Module (L5P) |
| (4) M103 Turbocharger Vane Position Actuator (L5P) |
| (5) Q17B Fuel Injector 2 |
| (6) Q17D Fuel Injector 4 |
| (7) Q17F Fuel Injector 6 |
| (8) Q18B Fuel Pressure Regulator 2 (L5P) |
| (9) Q17H Fuel Injector 8 |
| (10) E12H Glow Plug 8 (L5P) |
| (11) E12F Glow Plug 6 (L5P) |
| (12) E12D Glow Plug 4 (L5P) |

| Items |
| --- |
| (13) E12B Glow Plug 2 (L5P) |
| (14) B37B Engine Oil Pressure Sensor |
| (15) B35 Engine Oil Level Indicator Switch (L8T) |
| (16) B193A Charge Air Cooler Air Temperature Sensor - Inlet (L5P) |
| (17) Q14 Exhaust Gas Recirculation Valve (L5P) |
| (18) Q20 Intake Airflow Control Valve (L5P) |
| (19) B74 Manifold Absolute Pressure Sensor |

### Engine Components - Right Rear (L5P)

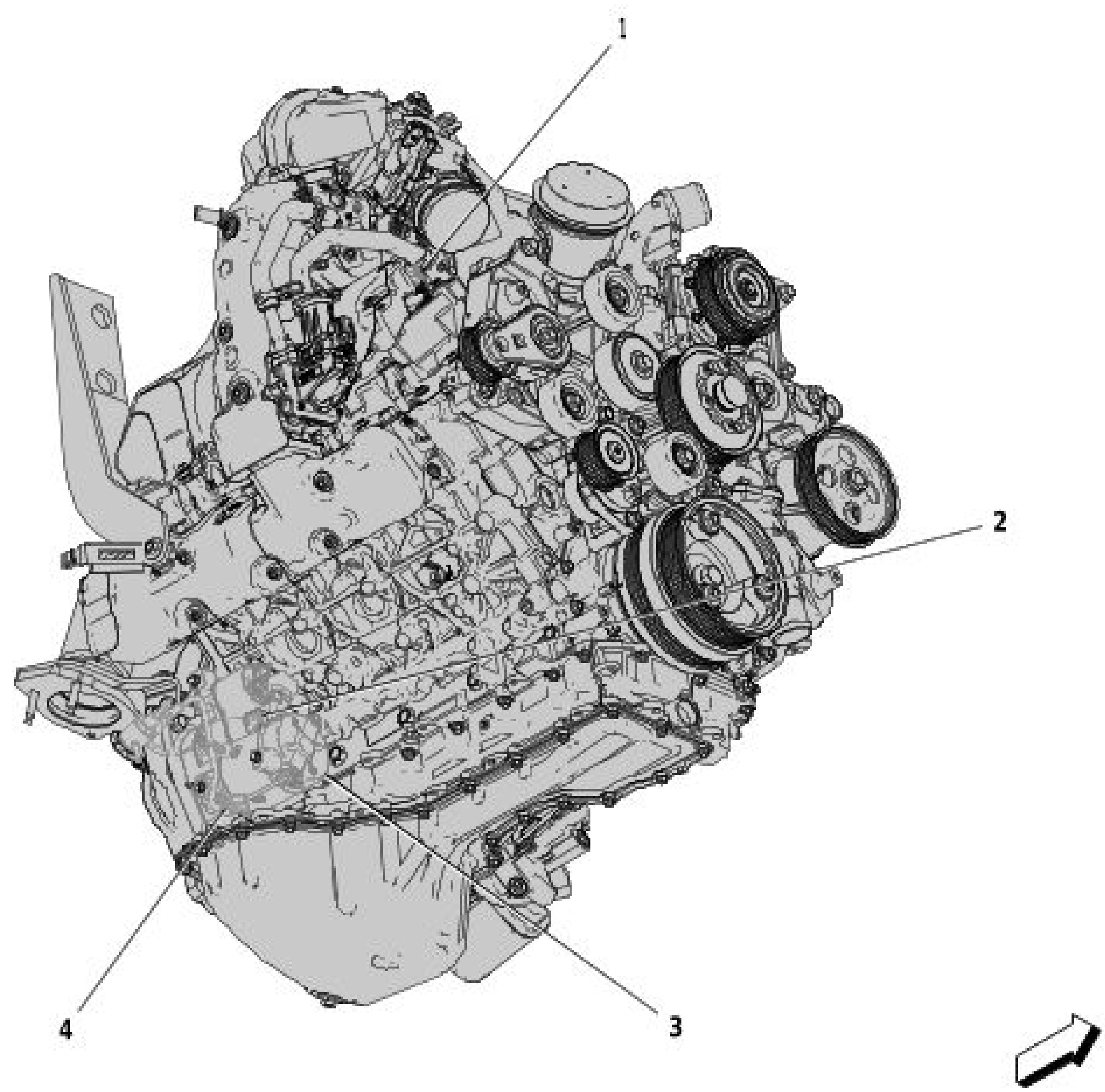



6215771

| Items |
| --- |
| (1) Q47 Exhaust Gas Recirculation Cooler Bypass Solenoid Valve |
| (2) Q17C Fuel Injector 3 |

| Items |
|---|
| (2) Q17E Fuel Injector 5 |
| (3) Q14 Exhaust Gas Recirculation Valve (L5P) |
| (4) E12E Glow Plug 5 (L5P) |
| (5) E12G Glow Plug 7 (L5P) |
| (6) Q17G Fuel Injector 7 |
| (7) Q17E Fuel Injector 5 |

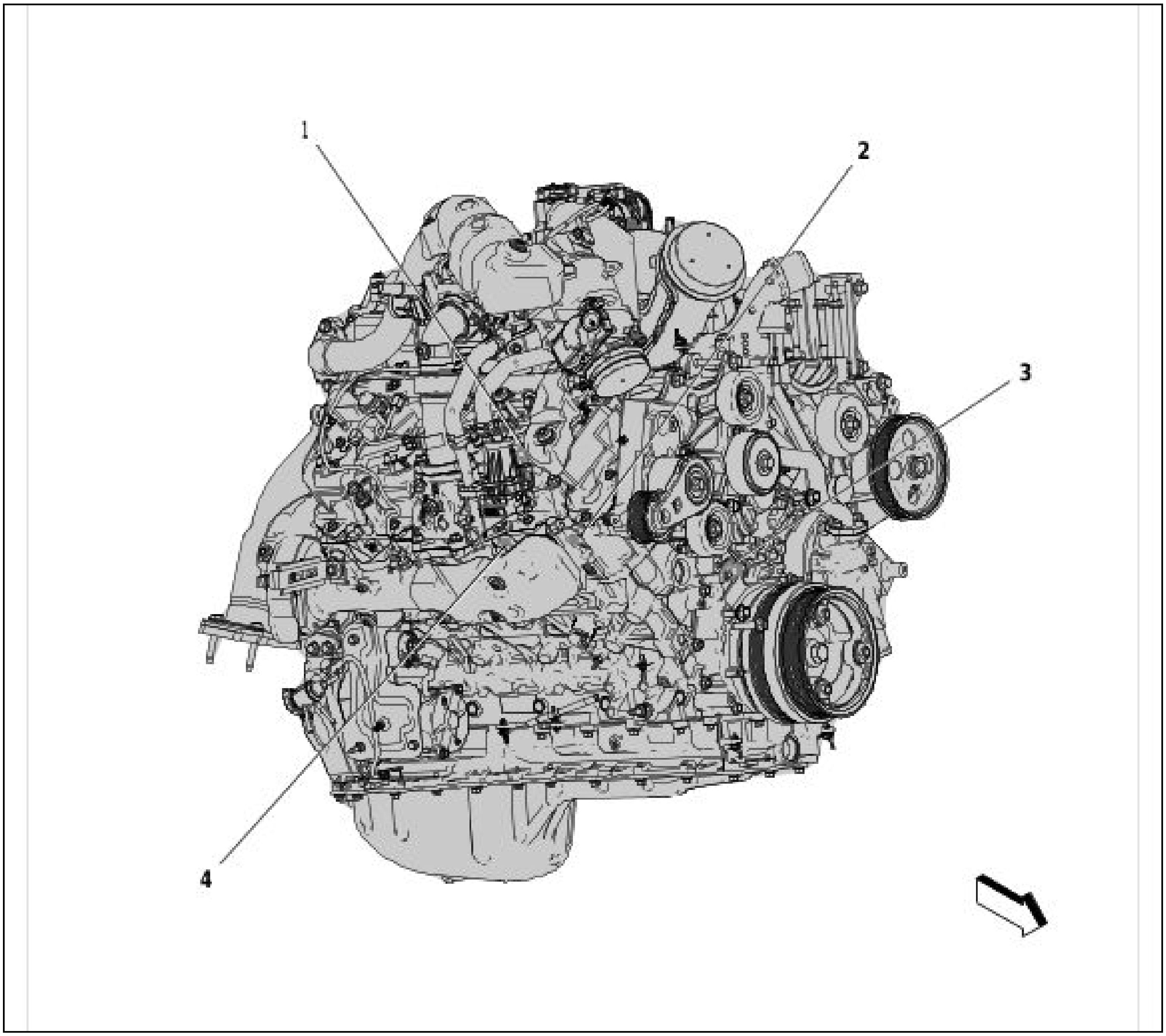
### Engine Components - Right (L5P)




6215772

| Items |
|---|
| (1) B47B Fuel Rail Pressure Sensor |
| (2) B26 Crankshaft Position Sensor |
| (3) M64 Starter |
| (4) Q61 Reductant Fluid Injector (L5P) |

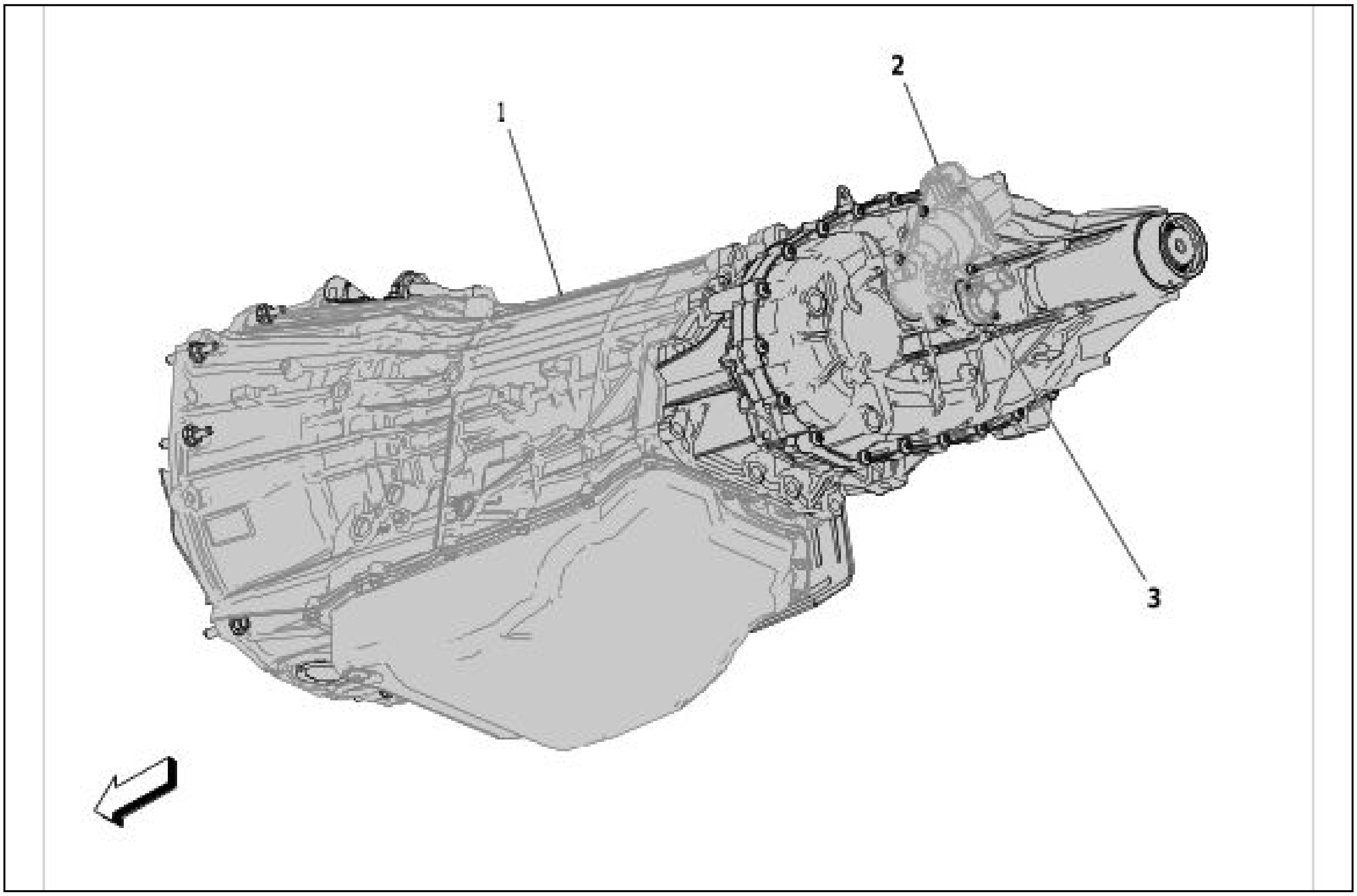
## Engine Components - Right Front (L5P)




6215773

| Items |
|---|
| (1) Q17A Fuel Injector 1 |
| (2) E12A Glow Plug 1 (L5P) |
| (3) B23 Camshaft Position Sensor |
| (4) E12C Glow Plug 3 (L5P) |

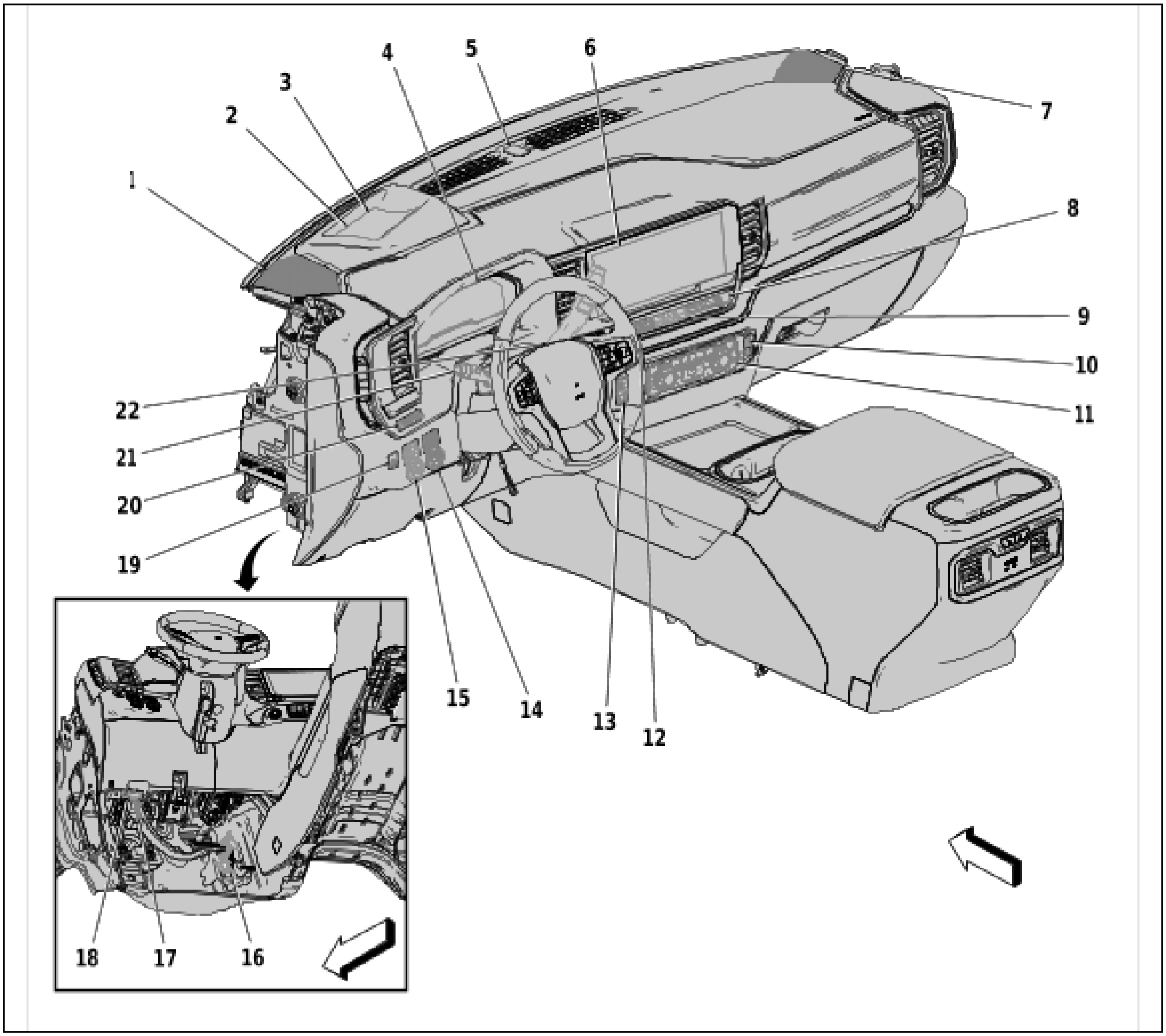
## Transfer Case Components




6215779

| Items |
| --- |
| (1) T12 Automatic Transmission |
| (2) A16 Transfer Case Four Wheel Drive Actuator (NQF / NQH) |
| (3) B139 Transfer Case Two/Four Wheel Drive Actuator Position Sensor (NQF / NQH) |

### Instrument Panel - Front

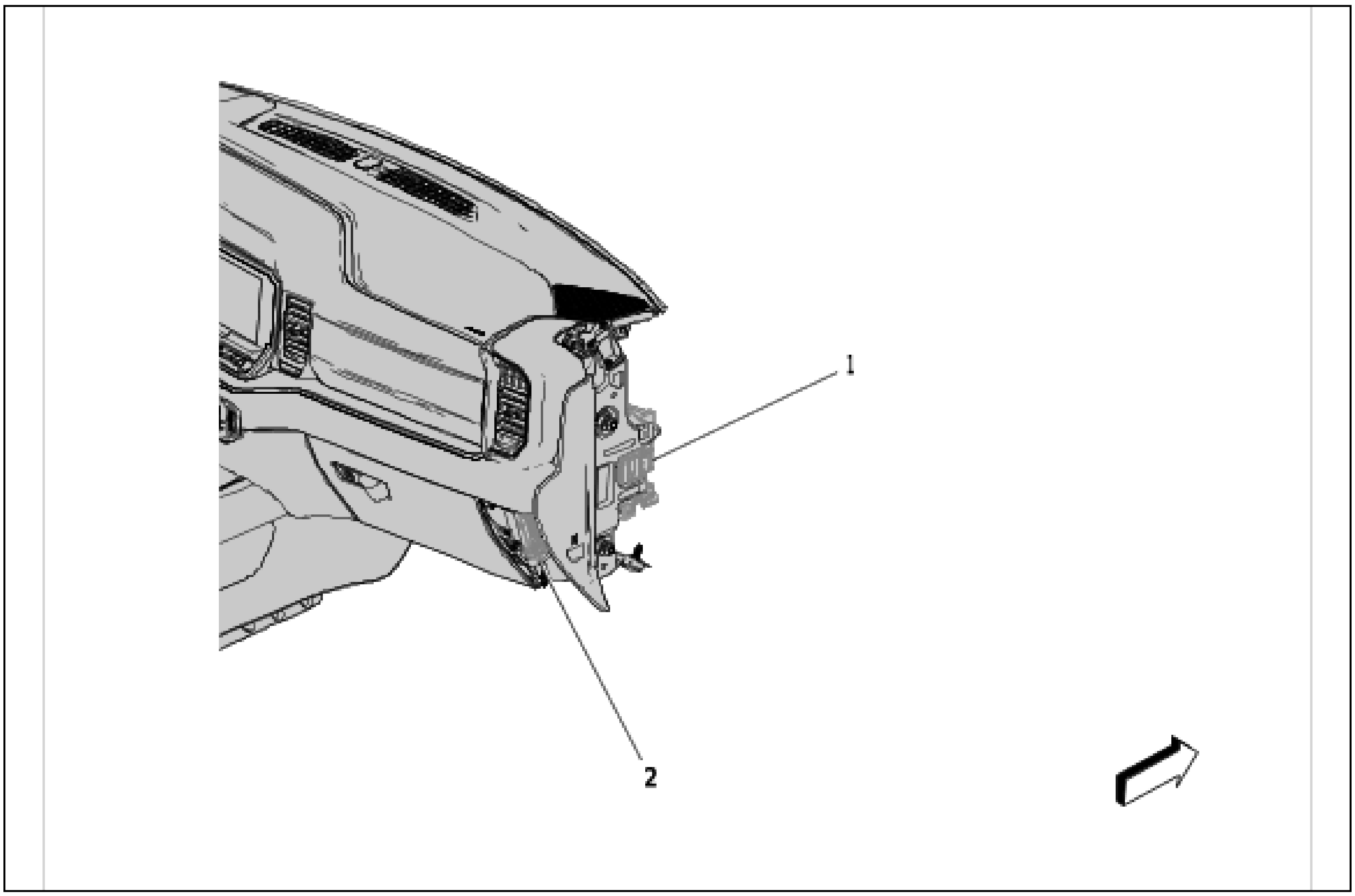



6215780

| Items |
|---|
| (1) P19J Radio Front Speaker - Instrument Panel Left |
| (2) P43 Forward Collision Alert Display ((UHX / UEU) - UV6) |
| (3) P29 Head-Up Display (UV6) |
| (4) P16 Instrument Panel Cluster Control Module |
| (5) B10D Sun Load and Ambient Light and Security Indicator Sensor |
| (6) A22 Radio Control (IOK) |
| (7) P19W Radio Front Speaker - Instrument Panel Right |
| (8) S171R Instrument Panel Center Accessory Function Switch - Right |
| (9) S86 Vehicle Stability Control System Switch |
| (10) X92IP USB 2 Port Receptacle - Instrument Panel |

| Items |
|---|
| (11) A26 Heater and Air Conditioning User Interface Control - Front |
| (12) S171L Instrument Panel Center Accessory Function Switch - Left |
| (13) S76 Trailer Brake Control Switch |
| (14) S30 Headlamp Switch |
| (15) S126 Ride Control Switch (URC) |
| (16) B107 Accelerator Pedal Position Sensor |
| (17) B22 Brake Pedal Position Sensor |
| (18) X84 Data Link Connector |
| (19) S91 Parking Brake Control Switch |
| (20) S27 Head-Up Display Switch (UV6) |
| (21) S78 Turn Signal Switch |
| (22) S3C Automatic Transmission Control Lever (MHT / MQB / MQE) |

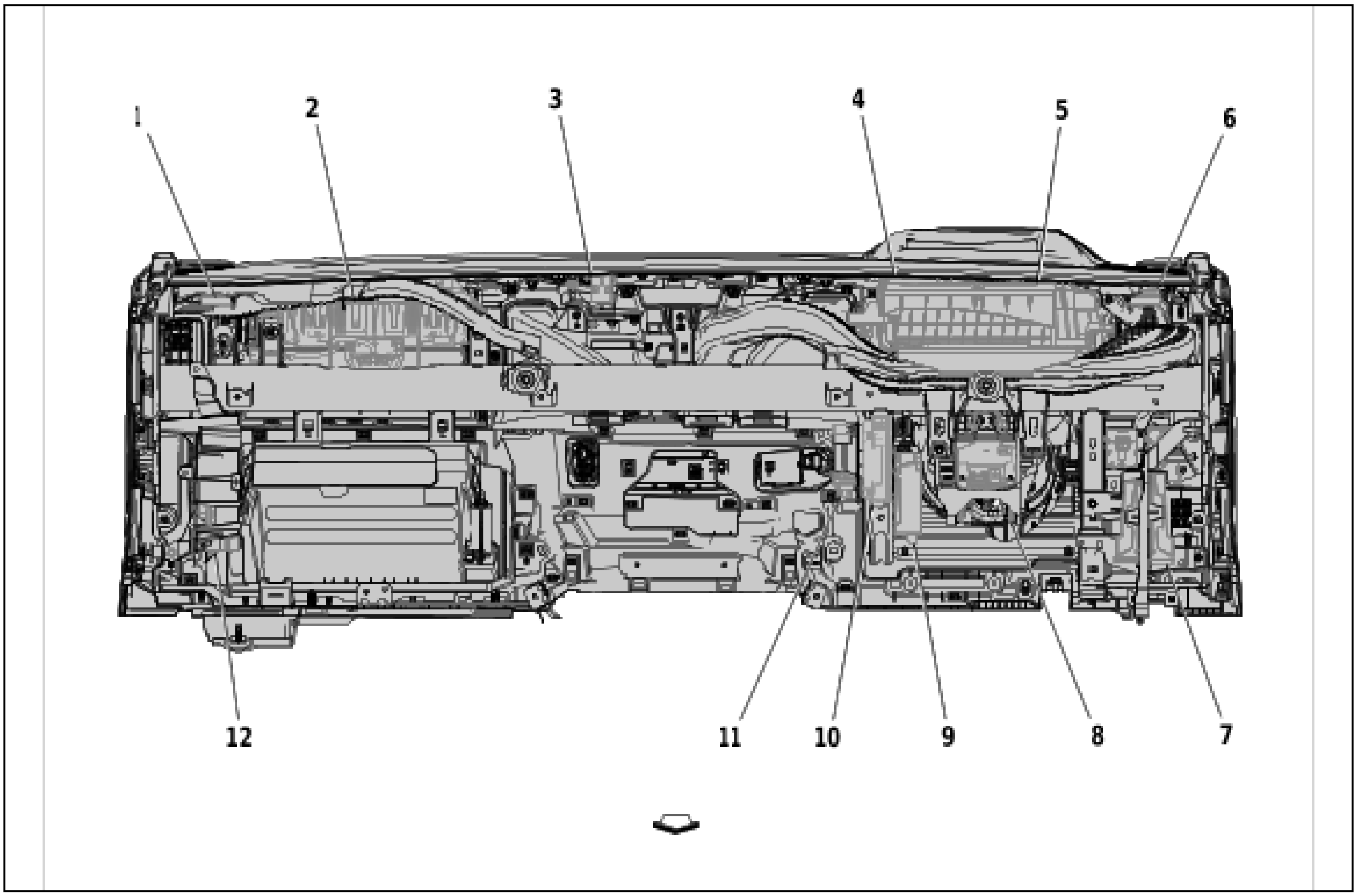
### Instrument Panel - Right




6215781

| Items |
|---|
| (1) A11 Radio |
| (2) X51R Instrument Panel Wiring Harness Junction Block - Right |

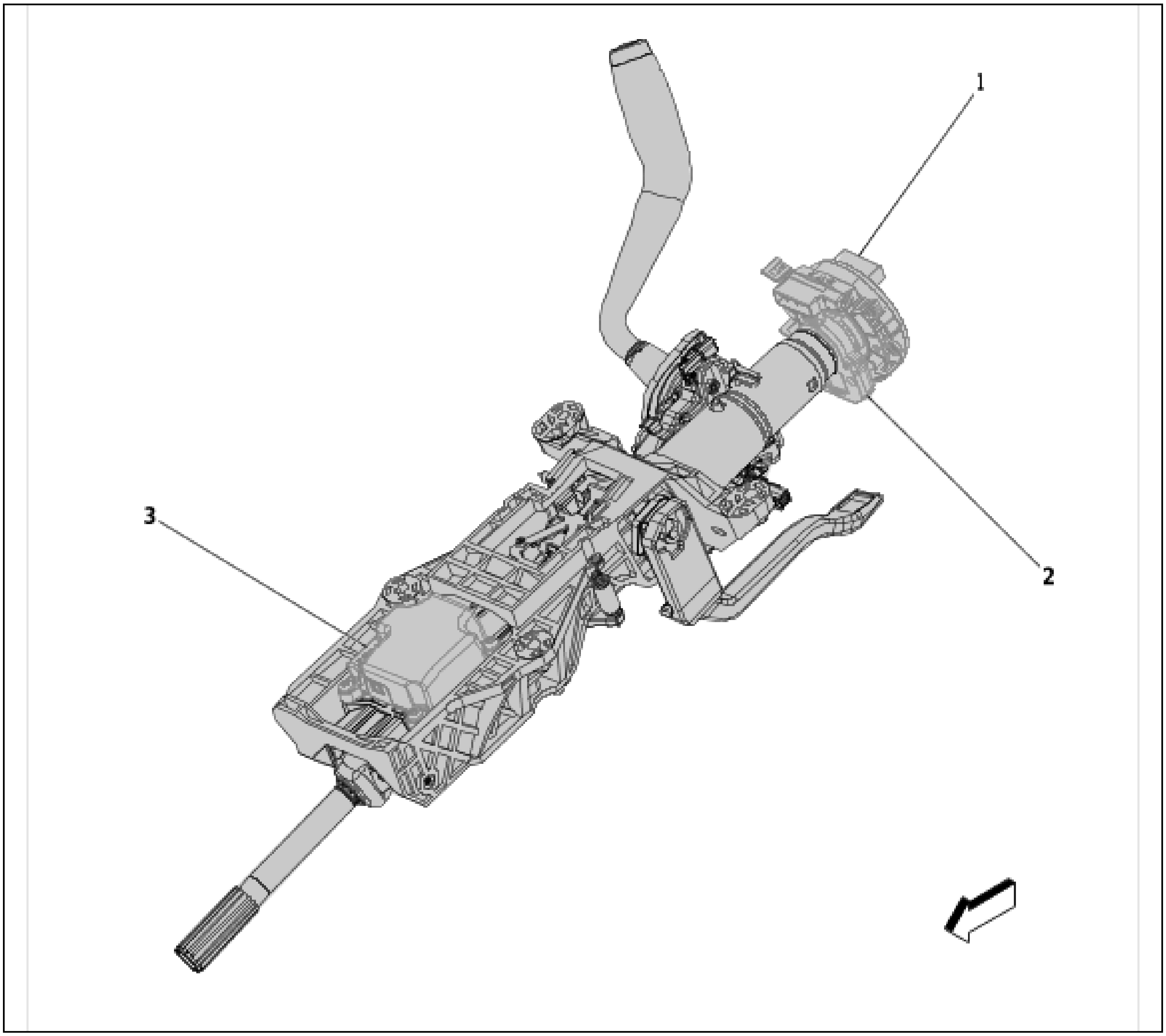
## Instrument Panel - Rear




6215782

| Items |
|---|
| (1) P19W Radio Front Speaker - Instrument Panel Right |
| (2) F101 Instrument Panel Airbag |
| (3) T4TA Auxiliary Wireless Communication Interface Antenna |
| (4) P29 Head-Up Display (UV6) |
| (5) P43 Forward Collision Alert Display ((UHX / UEU) - UV6) |
| (6) P19J Radio Front Speaker - Instrument Panel Left |
| (7) K9 Body Control Module |
| (8) K60 Column Lock Module (BTM) |
| (9) K73 Telematic Control Module (UE1) |
| (10) K56 Serial Data Gateway Module |
| (11) K56U Special Purpose Vehicle Control Module (KGU) |
| (12) A11 Radio |

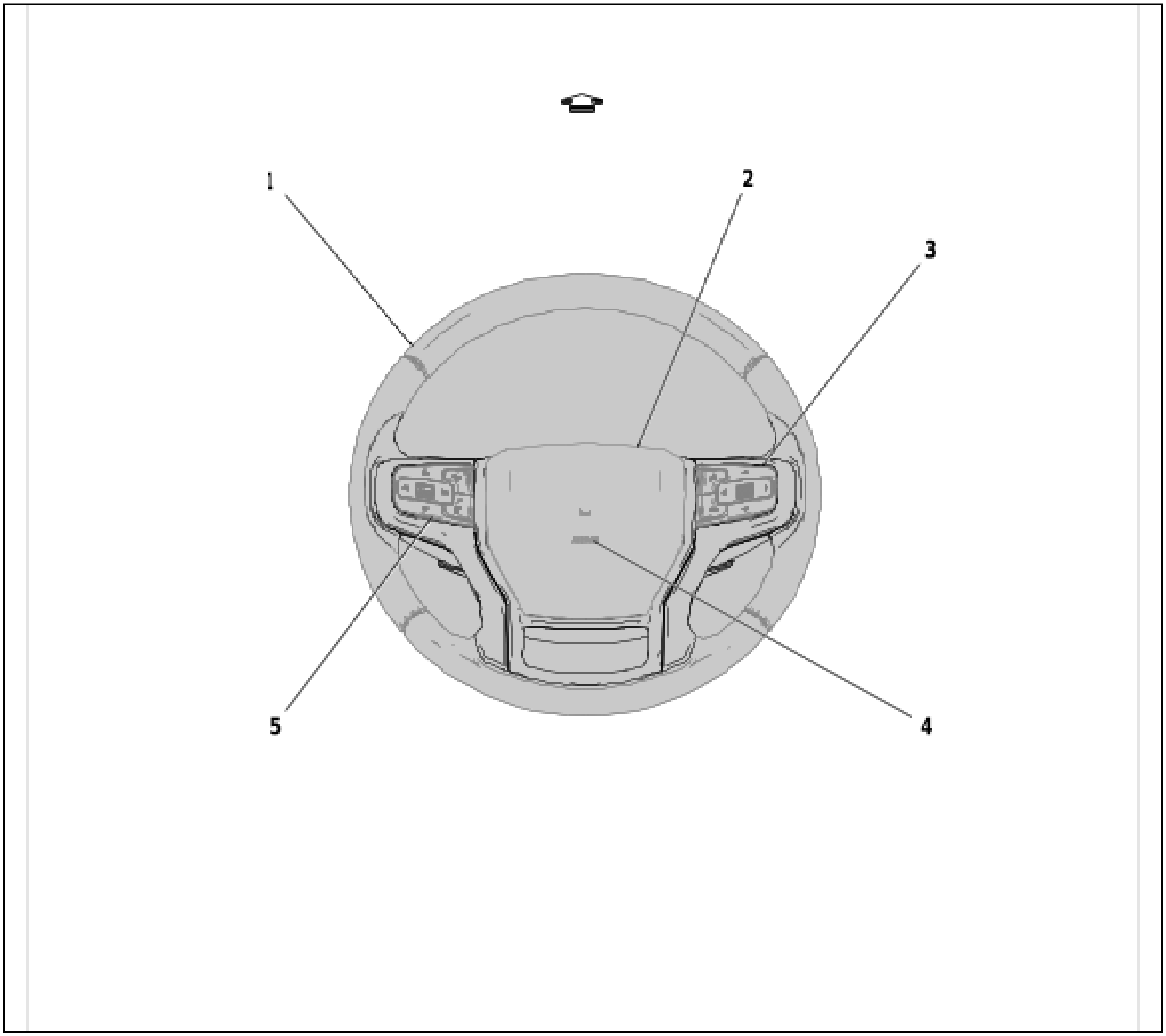
## Steering Column Components




6298331

| Items |
| --- |
| (1) X85 Steering Wheel Airbag Coil |
| (2) B99 Steering Angle Sensor Module |
| (3) K60 Column Lock Module (BTM) |

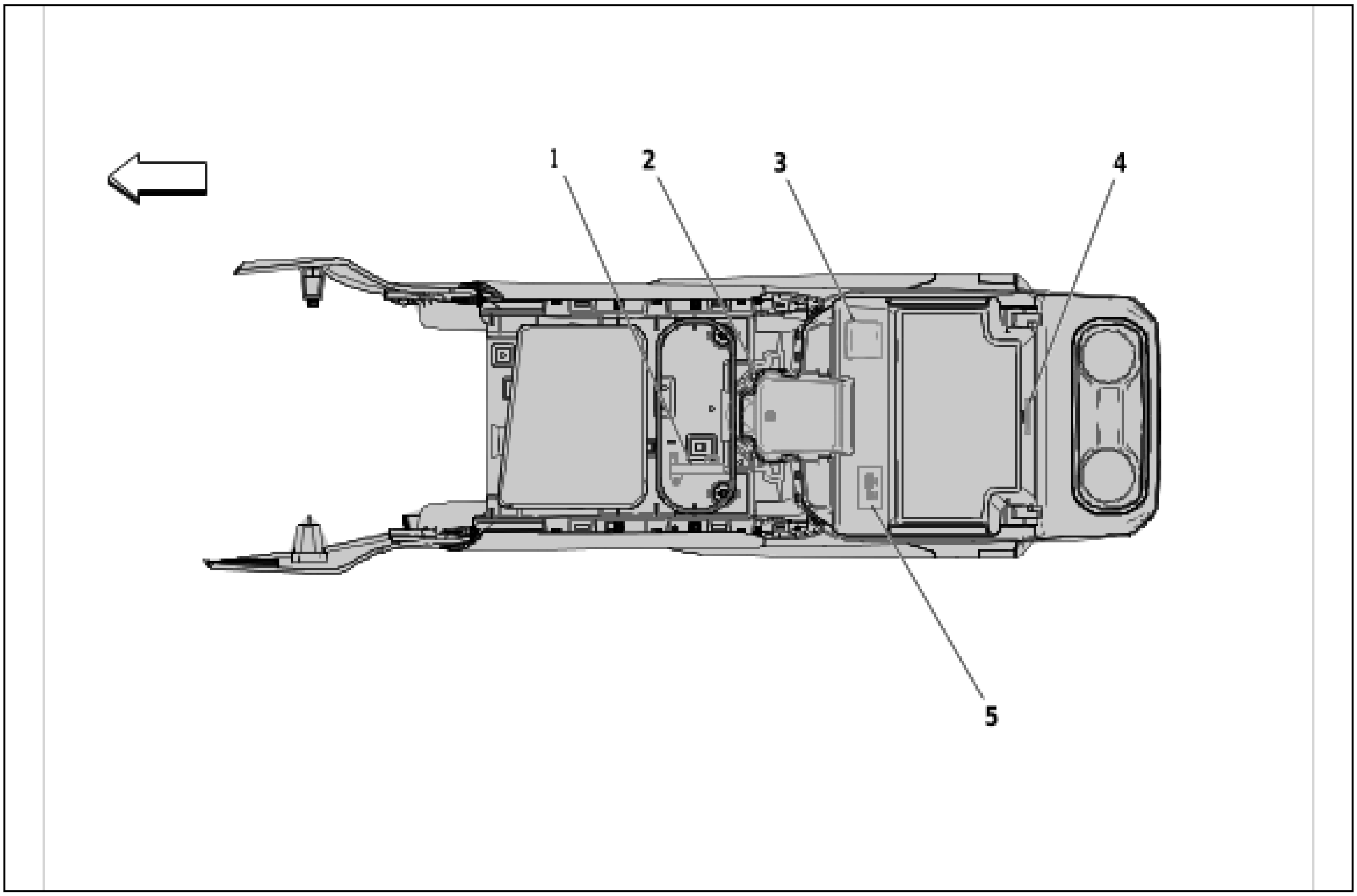
## Steering Wheel Components




6215784

| Items |
| --- |
| (1) K32 Heated Steering Wheel Module (KI3) |
| (2) S33 Steering Wheel Horn Contact |
| (3) S70R Radio Control Switch - Steering Wheel |
| (4) F107 Steering Wheel Airbag |
| (5) S70L Cruise Control Switch |

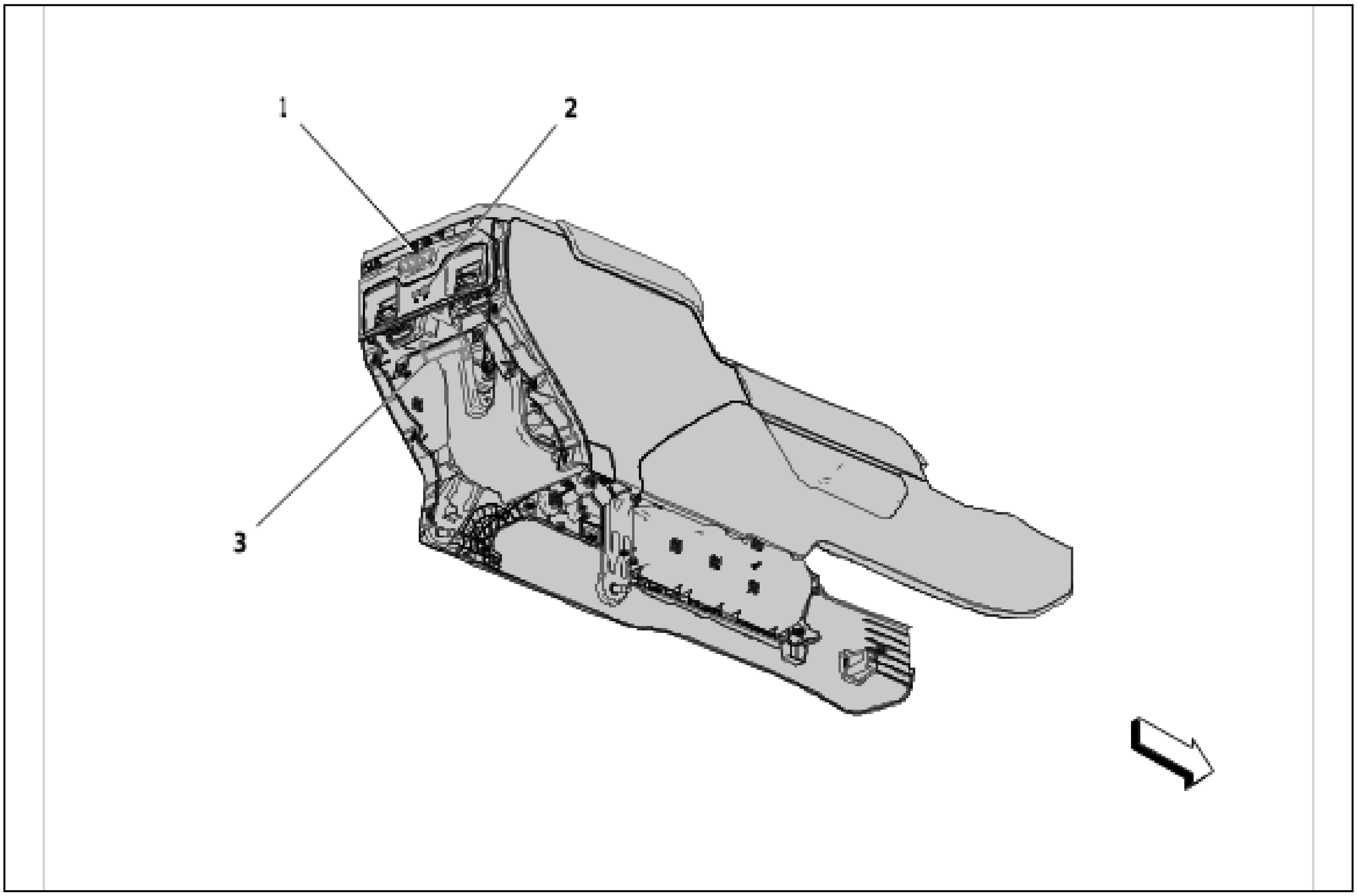
## Floor Console Components 1 of 2




6215786

| Items |
|---|
| (1) T10UA Low Frequency Console Antenna |
| (2) T22 Wireless Accessory Charging Module (K4C) |
| (3) X81ACA Front Floor Console Accessory Power Rear Receptacle - 110V AC (KI4 and D07) |
| (4) S32R Rear Seat Heater Switch (KA6) |
| (5) X83B Audio/Video Receptacle (UBC) |

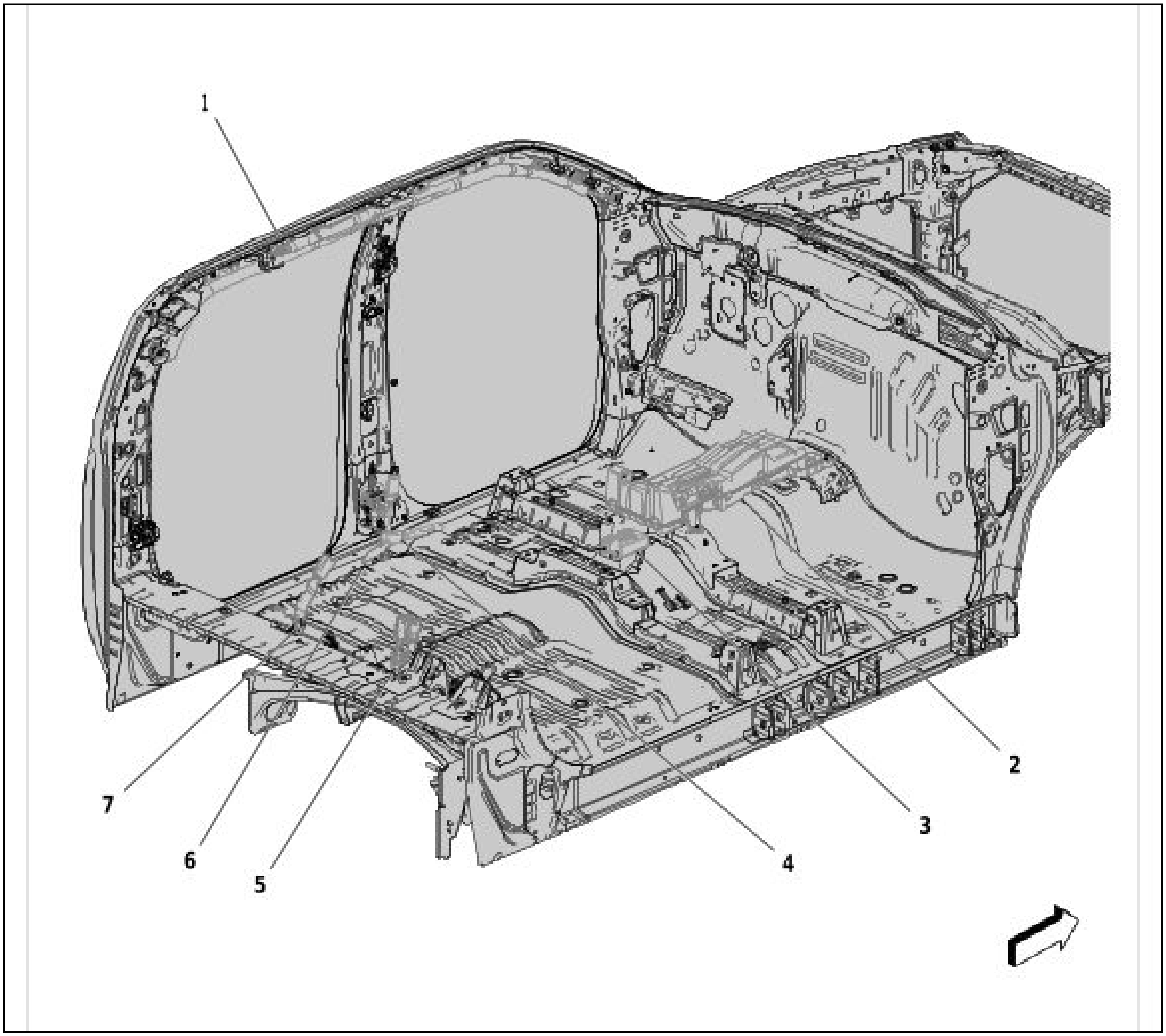
### Floor Console Components 2 of 2




6215708

| Items |
|---|
| (1) E28 Front Floor Console Compartment Lamp (D07) |
| (2) X92CD Dual Charge Only Receptacle - Floor Console Rear (D07 and UBI) |
| (3) T10KA Low Frequency Console Number 2 Antenna (D07) |

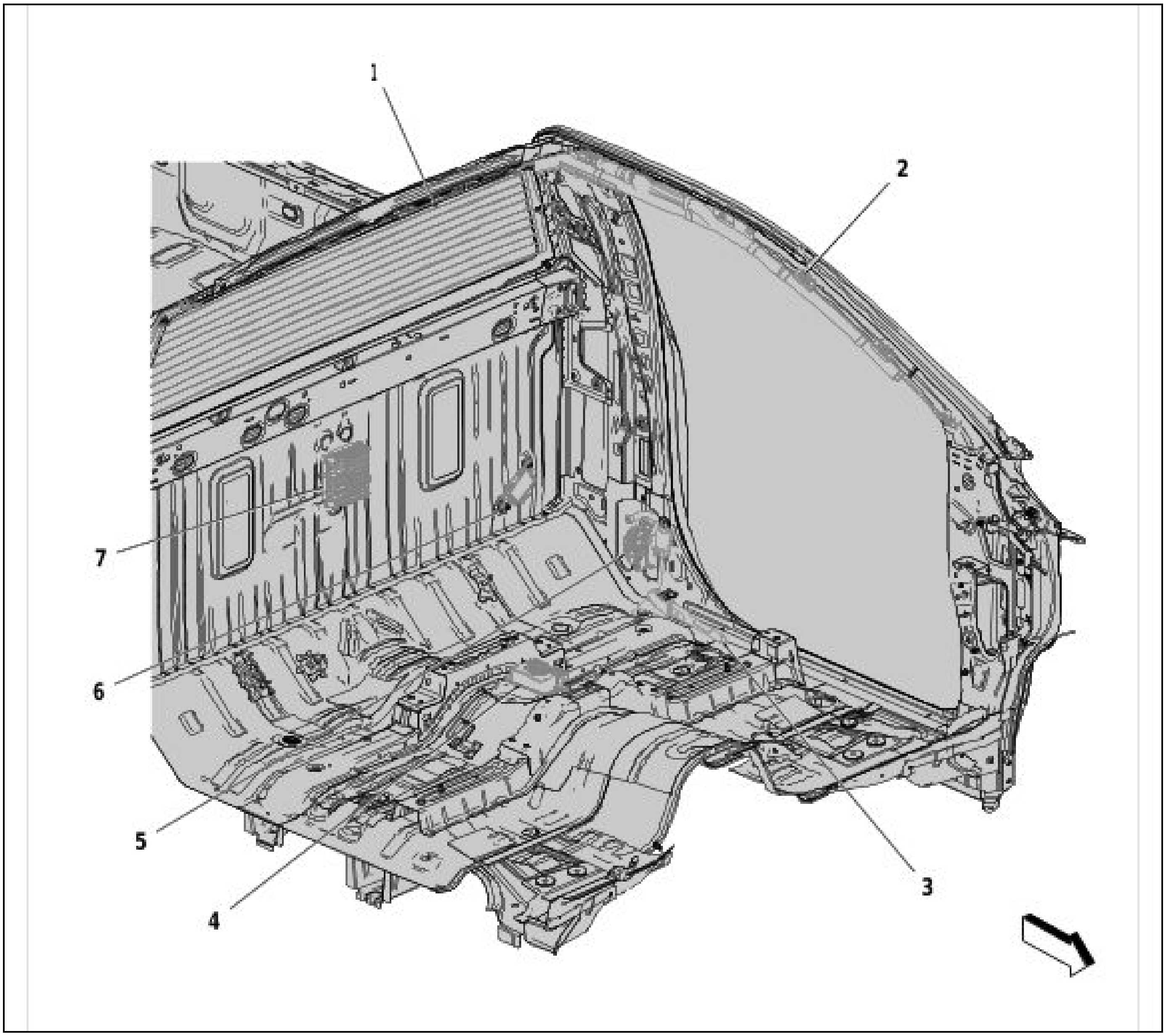
## Passenger Compartment - Left Front - Double Cab/Crew Cab




6215788

| Items |
|---|
| (1) F105L Front and Rear Row Roof Rail Airbag - Left (DOUBLE CAB / CREW CAB) |
| (2) P19AFC Front Floor Speaker - Console |
| (3) K36 Restraints Control Module |
| (4) F113D Front Seat Belt Anchor Plate Tensioner - Driver |
| (5) B153RR Rear Seat Belt Buckle - Right |
| (6) F112D Front Seat Belt Retractor - Driver |
| (7) B153LR Rear Seat Belt Buckle - Left |

## Passenger Compartment - Left Rear - Regular Cab




6215790

**Items**

(1) E18 Rear Window Defogger Grid

(2) F105LF Front Row Roof Rail Airbag - Left (REGULAR CAB)

(3) F113D Front Seat Belt Anchor Plate Tensioner - Driver

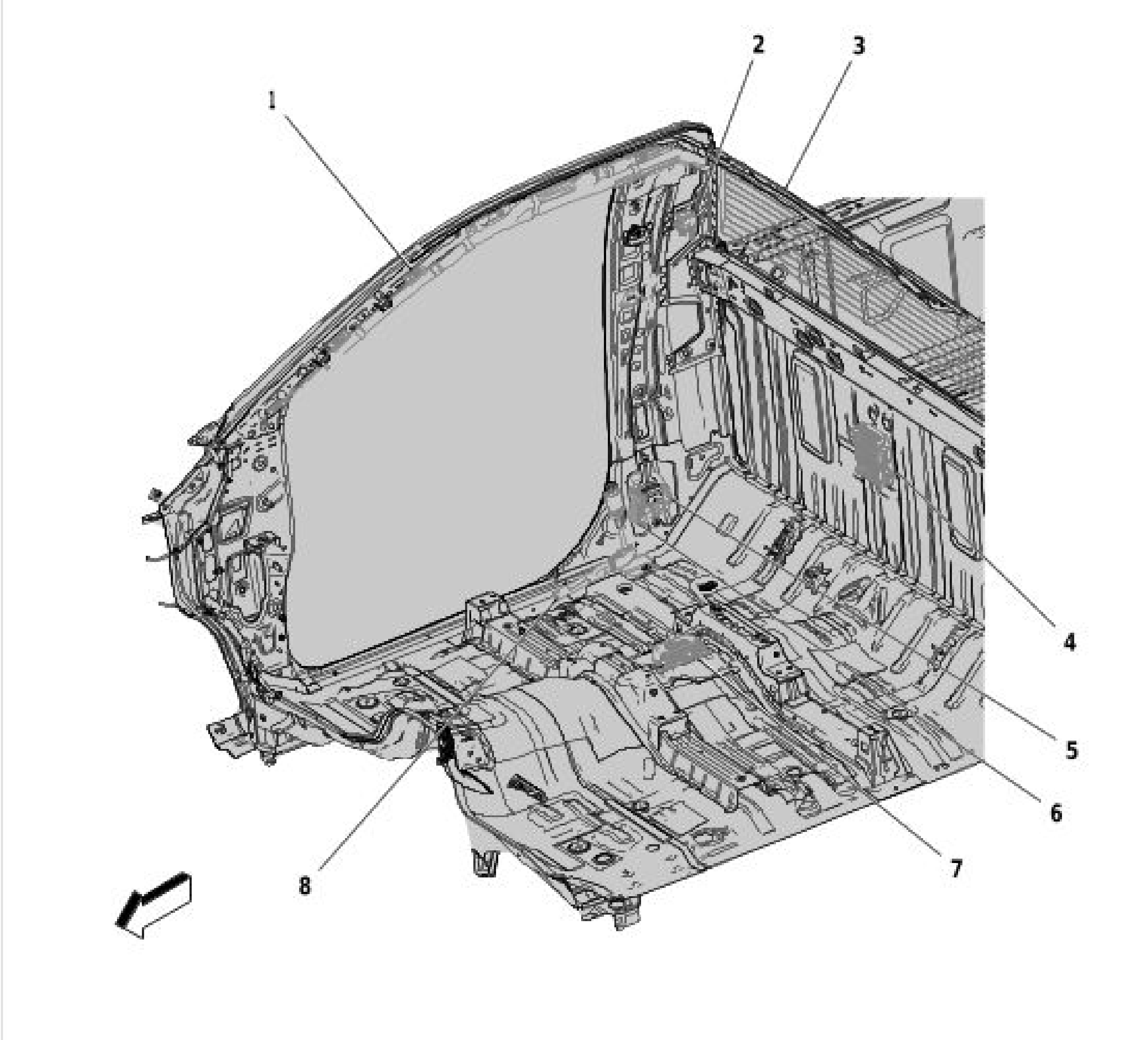
(4) K36 Restraints Control Module

(5) F112D Front Seat Belt Retractor - Driver

(6) K182 Parking Assist Control Module (UD5 / UD7)

(7) T1 DC/AC Converter Control Module (KI4 / KI5)

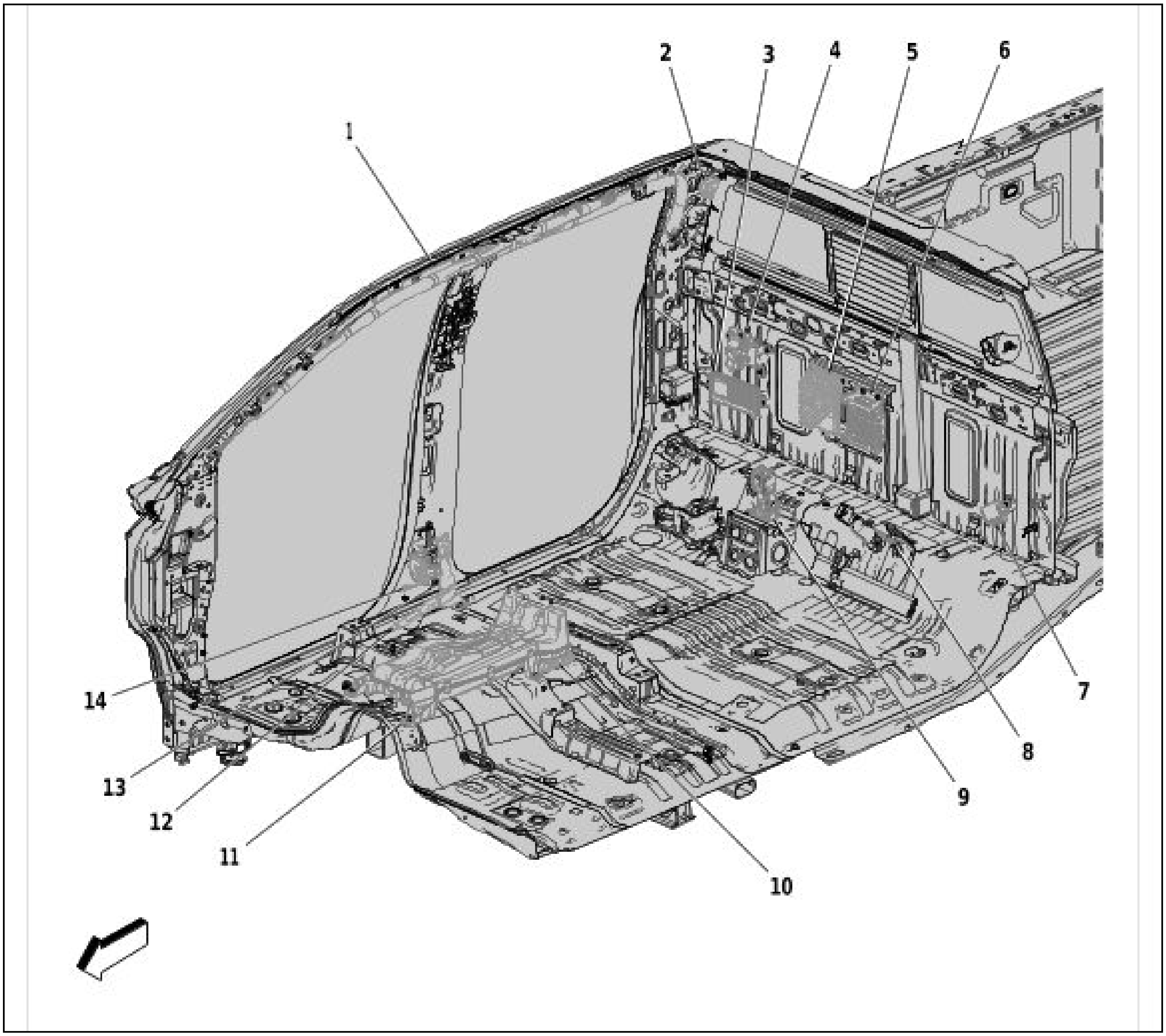
## Passenger Compartment - Right Rear - Regular Cab




6215792

| Items |
|---|
| (1) F105RF Front Row Roof Rail Airbag - Right (REGULAR CAB) |
| (2) K77 Remote Function Actuator Module |
| (3) E18 Rear Window Defogger Grid |
| (4) T1 DC/AC Converter Control Module (KI4 / KI5) |
| (5) F112P Front Seat Belt Retractor - Passenger |
| (6) B61P Seat Belt Tension Sensor - Passenger |
| (7) K36 Restraints Control Module |
| (8) F113P Front Seat Belt Anchor Plate Tensioner - Passenger |

## Passenger Compartment - Right Rear - Double Cab/Crew Cab

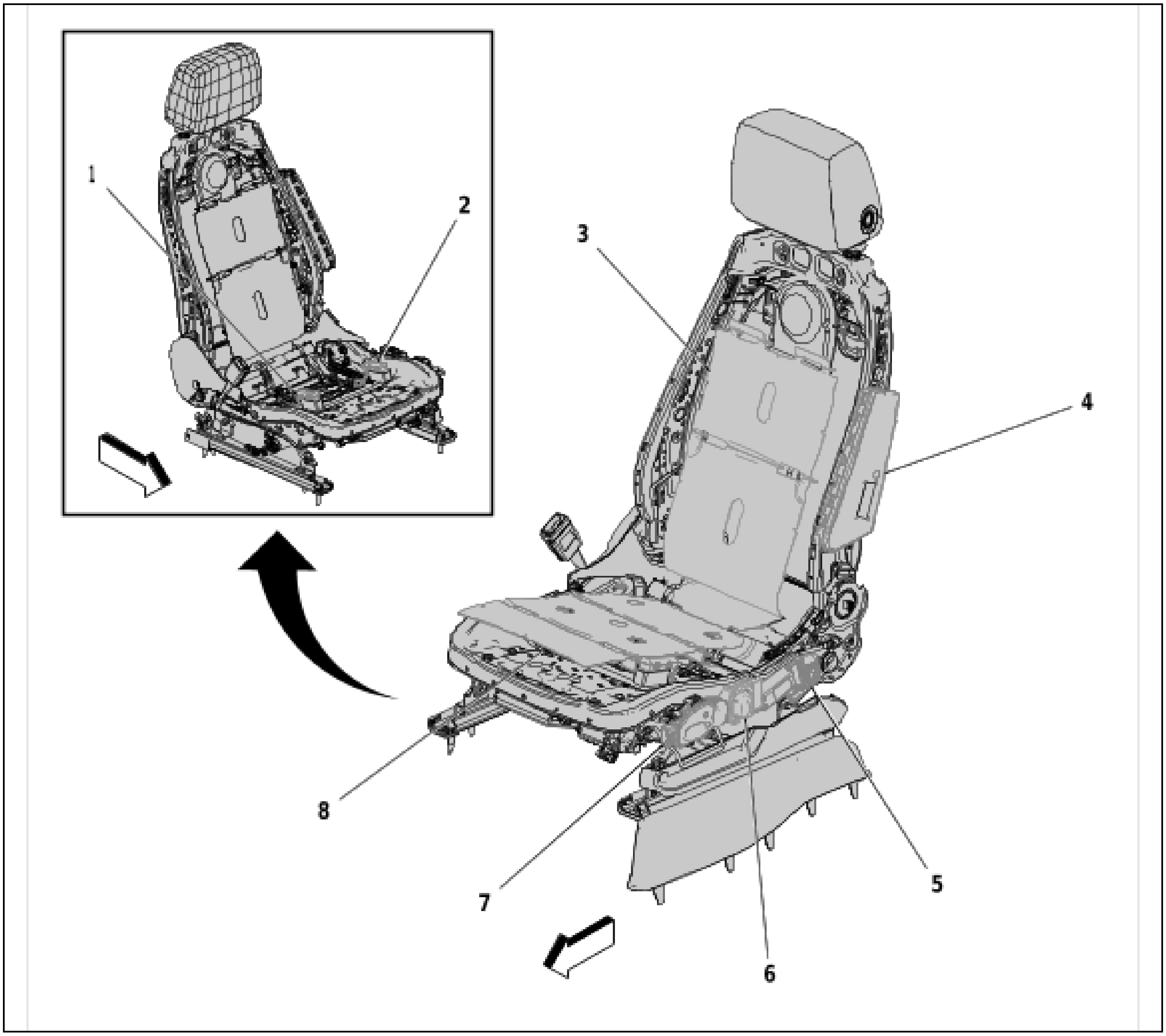



6215794

| Items |
| --- |
| (1) F105R Front and Rear Row Roof Rail Airbag - Right (DOUBLE CAB / CREW CAB) |
| (2) K77 Remote Function Actuator Module |
| (3) K157 Video Processing Module (UV2) |
| (4) M63 Rear Sliding Window Motor (A48) |
| (5) T3 Audio Amplifier (UQA) |
| (6) T1 DC/AC Converter Control Module (KI4 / KI5) |
| (7) K182 Parking Assist Control Module (UD5 / UD7) |
| (8) B153LR Rear Seat Belt Buckle - Left |
| (9) B153RR Rear Seat Belt Buckle - Right |
| (10) K36 Restraints Control Module |
| (11) P19AFC Front Floor Speaker - Console |

| Items |
|---|
| (12) F113P Front Seat Belt Anchor Plate Tensioner - Passenger |
| (13) F112P Front Seat Belt Retractor - Passenger |
| (14) B61P Seat Belt Tension Sensor - Passenger |

**Driver Seat Components 1 of 2**

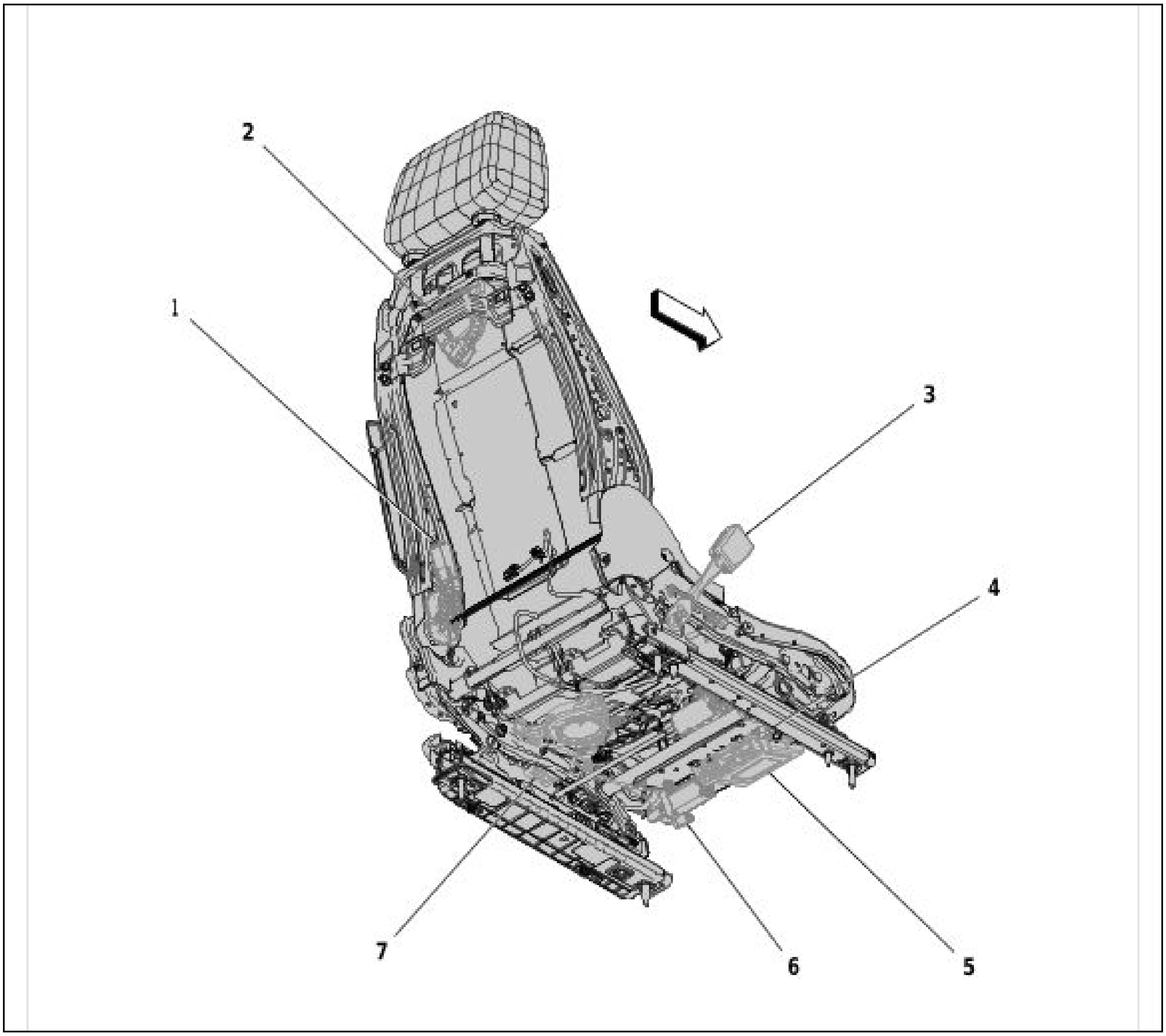



6396405

| Items |
|---|
| (1) P45R Front Seat Lane Departure Warning Actuator - Right |
| (2) P45L Front Seat Lane Departure Warning Actuator - Left |
| (3) E14A Front Seat Back Heater - Driver (KA1 / KQV) |
| (4) F106D Front Seat Outboard Seat Back Airbag - Driver |
| (5) M55D Front Seat Vertical Adjuster Actuator - Driver |
| (6) S65D Front Seat Lumbar Switch - Driver (A2X) |

| Items |
|---|
| (7) S64D Front Seat Adjuster Switch - Driver |
| (8) E14B Front Seat Cushion Heater - Driver (KA1 / KQV) |

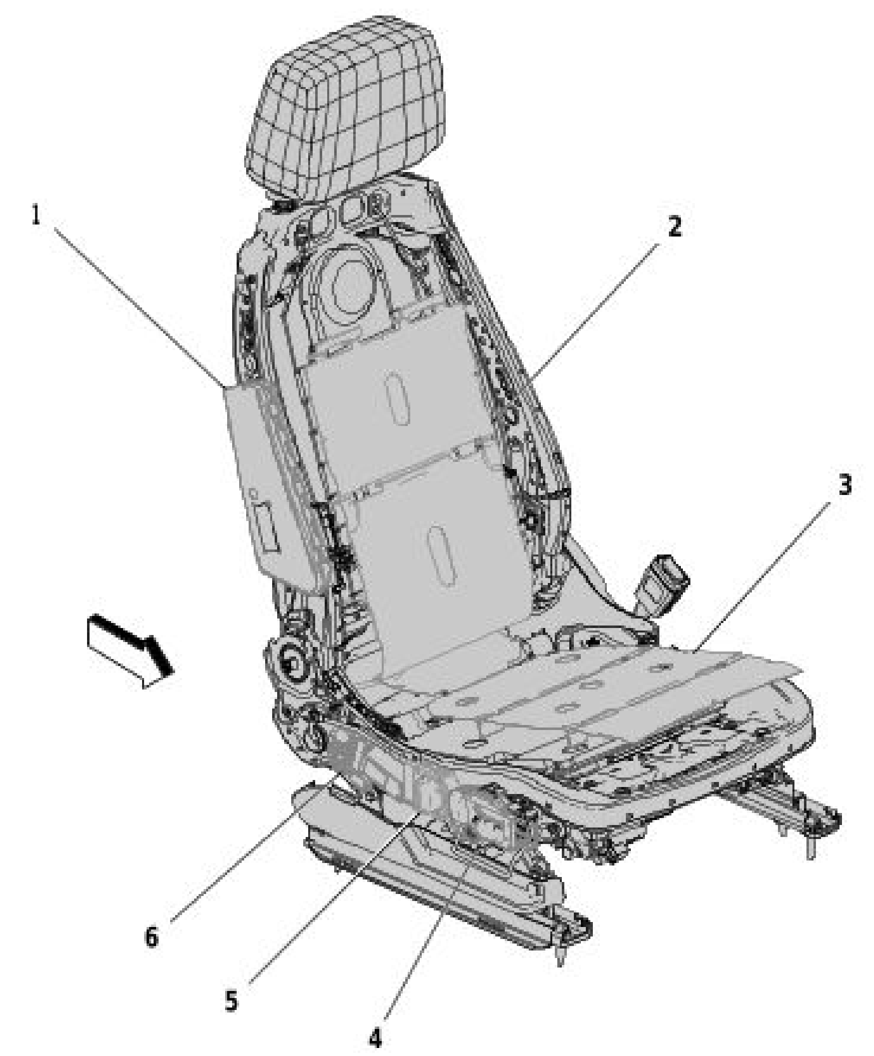
### Driver Seat Components 2 of 2




6398207

| Items |
|---|
| (1) M56D Front Seat Recliner Actuator - Driver |
| (2) M73A Front Seat Back Ventilation Blower - Driver (KQV) |
| (3) B153D Front Seat Belt Buckle - Driver |
| (4) M51D Front Seat Adjuster Actuator - Driver |
| (5) K40D Driver Seat Adjuster Memory Module (A45) |
| (6) M50D Front Seat Tilt Adjuster Actuator - Driver |
| (7) M73D Front Seat Cushion Ventilation Blower - Driver (KQV) |

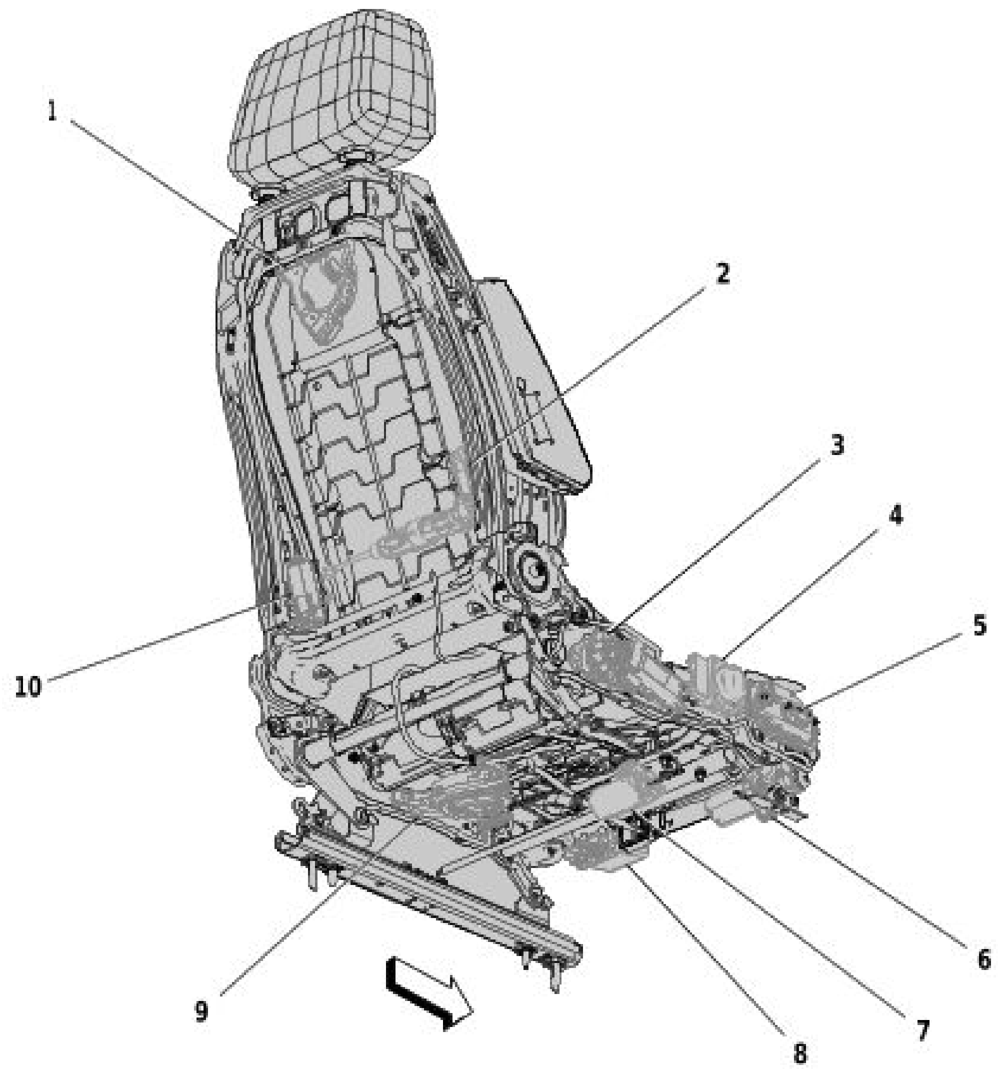
### Passenger Seat Components 1 of 2




6396406

| Items |
|---|
| (1) F106P Front Seat Outboard Seat Back Airbag - Passenger |
| (2) E14C Front Seat Back Heater - Passenger (KA1 / KQV) |
| (3) E14D Front Seat Cushion Heater - Passenger (KA1 / KQV) |
| (4) S64P Front Seat Adjuster Switch - Passenger |
| (5) S65P Front Seat Lumbar Switch - Passenger (A7K) |
| (6) M55P Front Seat Vertical Adjuster Actuator - Passenger |

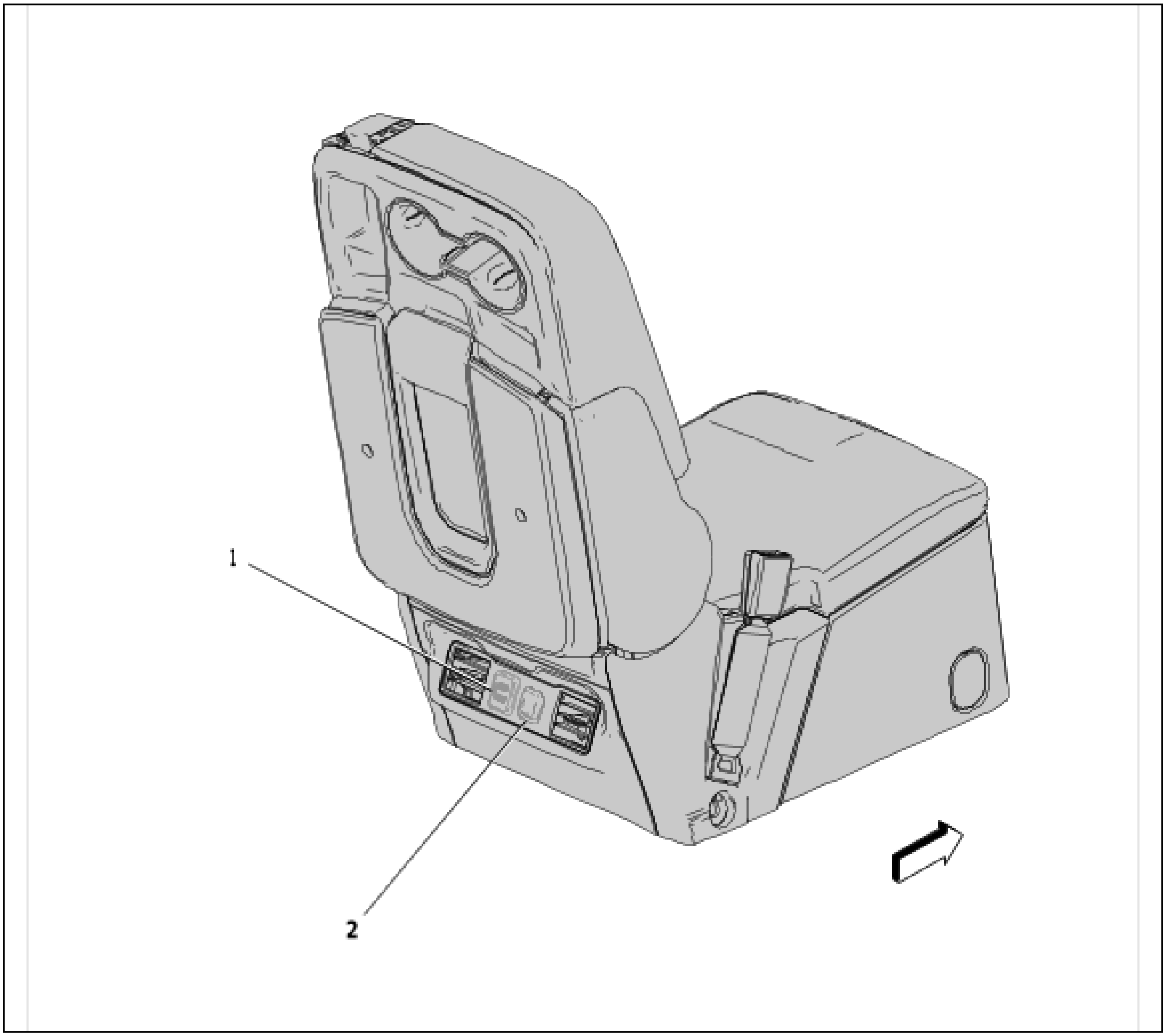
### Passenger Seat Components 2 of 2




6398220

| Items |
|---|
| (1) M73B Front Seat Back Ventilation Blower - Passenger (KQV) |
| (2) M53P Front Seat Back Lumbar Motor - Passenger |
| (3) M55P Front Seat Vertical Adjuster Actuator - Passenger |
| (4) S65P Front Seat Lumbar Switch - Passenger (A7K) |
| (5) S64P Front Seat Adjuster Switch - Passenger |
| (6) M50P Front Seat Tilt Adjuster Actuator - Passenger |
| (7) M51P Front Seat Adjuster Actuator - Passenger |
| (8) K29FV Front Seat Heater Vent Control Module (KA1 / KQV) |
| (9) M73P Front Seat Cushion Ventilation Blower - Passenger (KQV) |
| (10) M56P Front Seat Recliner Actuator - Passenger |

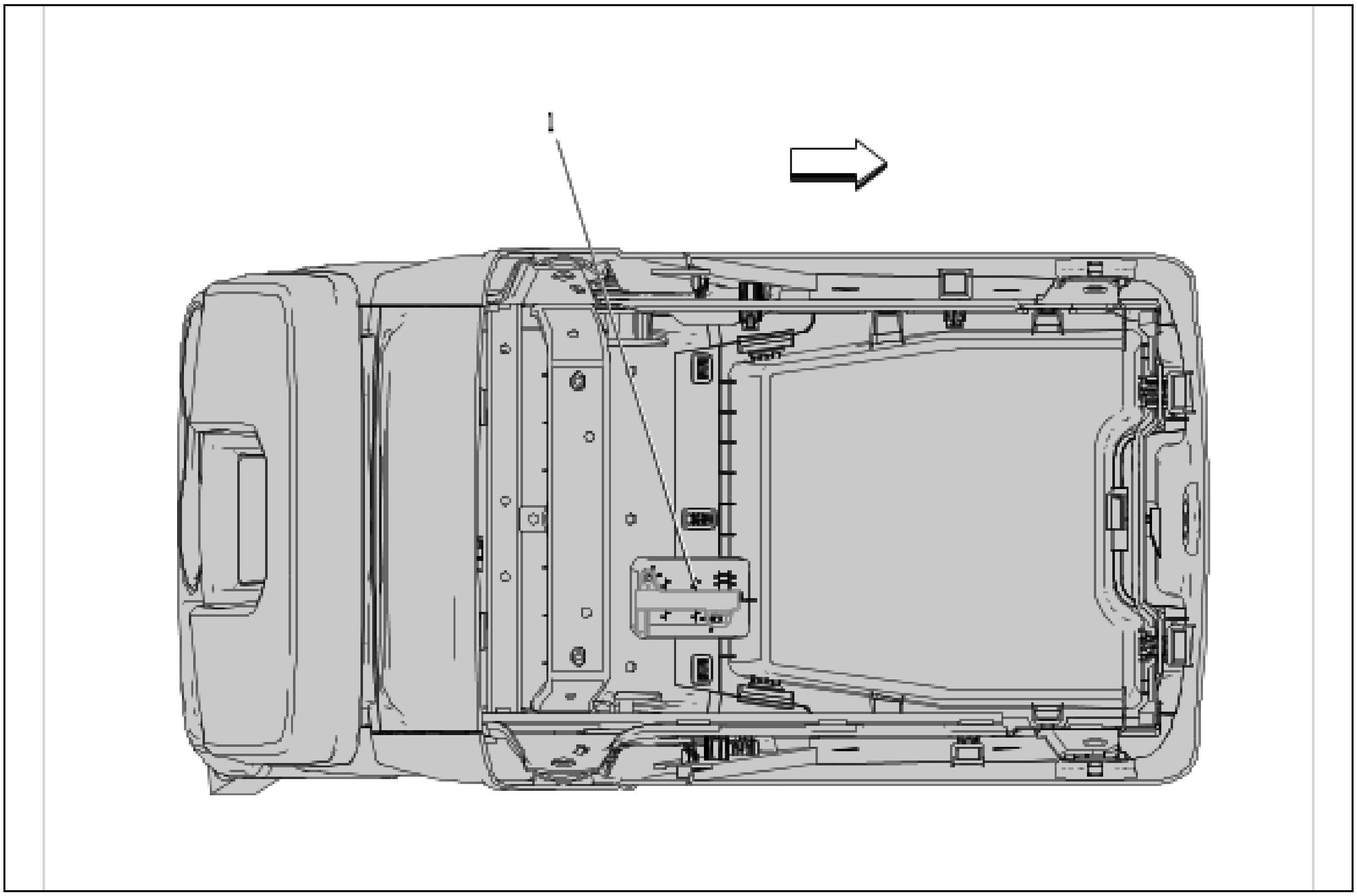
## Front Center Seat Components 1 of 2




6396408

| Items |
|---|
| (1) X92FSR Dual Charge Only Receptacle - Front Center Seat Rear Cover (AZ3 and UBI) |
| (2) X81FSA Accessory Power Receptacle - Front Center Seat Rear Cover 110V AC (AZ3 and KI4) |

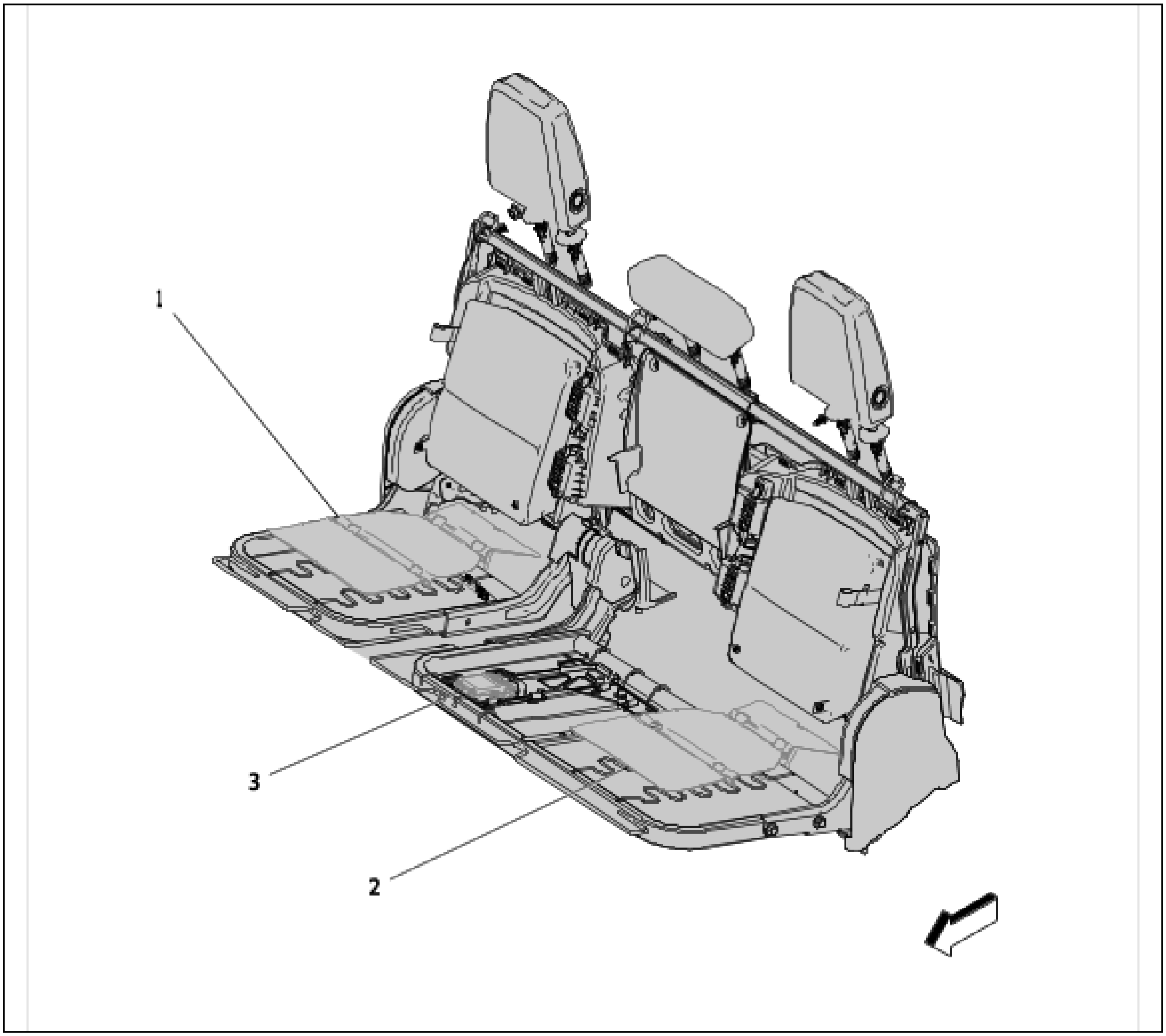
**Front Center Seat Components 2 of 2**




6398208

| Items |
| --- |
| (1) T10UA Low Frequency Console Antenna |

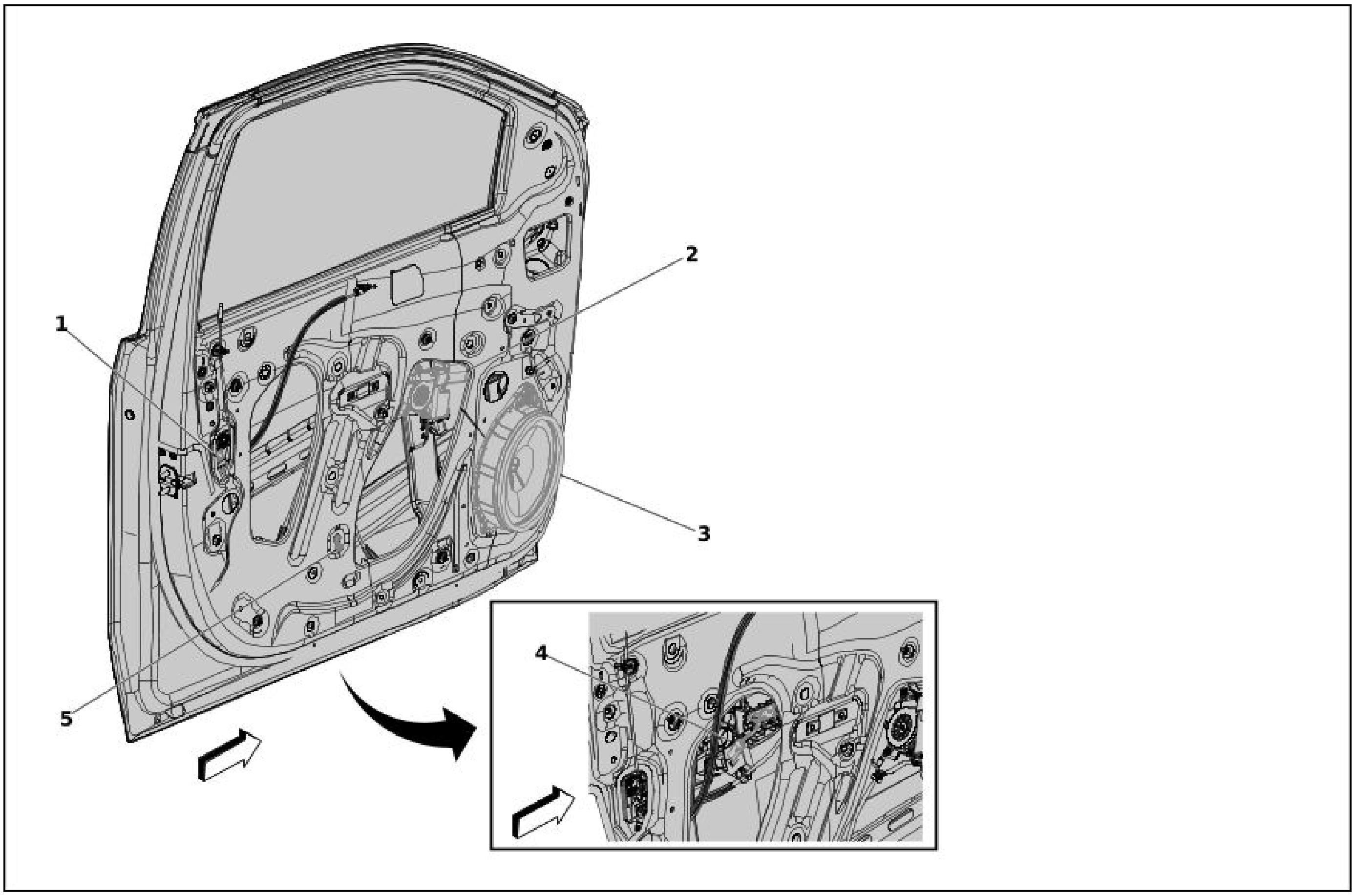
## Rear Seat Components




6396410

| Items |
|---|
| (1) E14H Rear Seat Cushion Heater - Right Rear (KA6) |
| (2) E14F Rear Seat Cushion Heater - Left Rear (KA6) |
| (3) K234 Rear Seat Heater Vent Control Module |

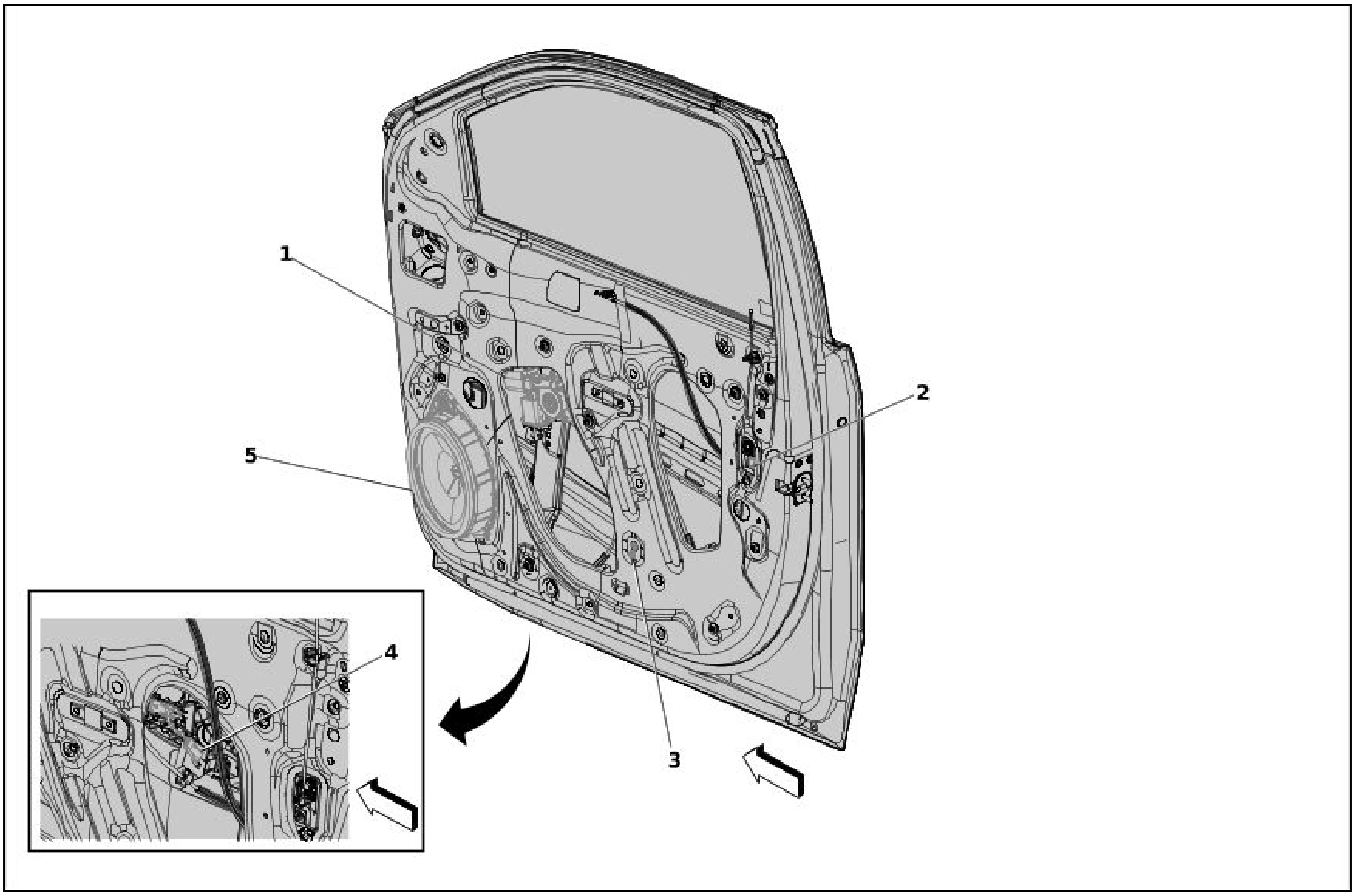
## Driver Door Components




5241114

| Items |
|---|
| (1) A23D Front Side Door Latch - Driver |
| (2) M74D Front Side Door Window Regulator Motor - Driver |
| (3) P19AG Radio Front Side Door Speaker - Left |
| (4) A24D Front Side Door Outside Handle - Left |
| (5) B63LF Airbag Side Impact Sensor - Left Front Door |

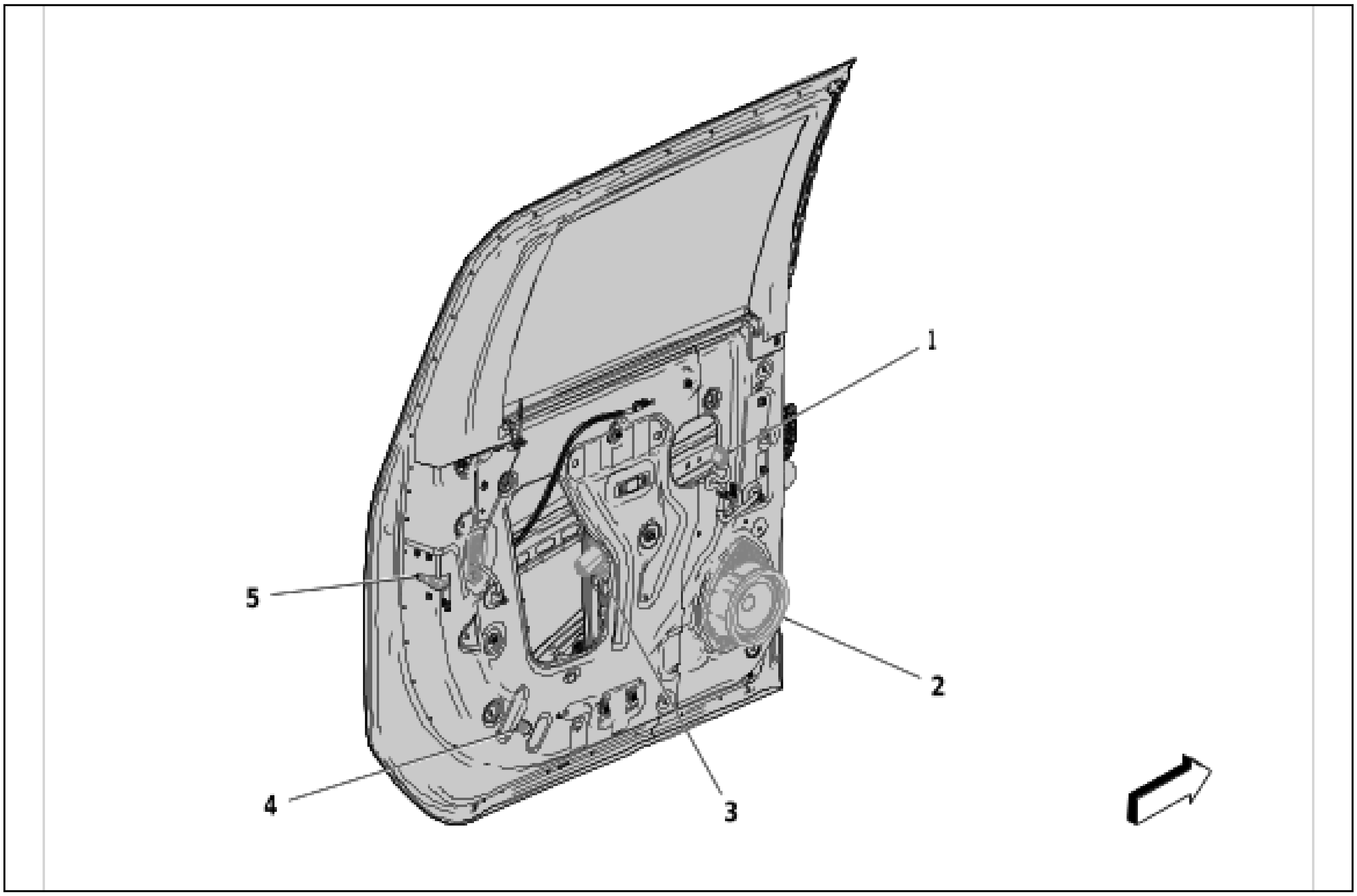
## Passenger Door Components




5241116

| Items |
|---|
| (1) M74P Front Side Door Window Regulator Motor - Passenger |
| (2) A23P Front Side Door Latch - Passenger |
| (3) B63RF Airbag Side Impact Sensor - Right Front Door |
| (4) A24P Front Side Door Outside Handle - Right |
| (5) P19AH Radio Front Side Door Speaker - Right |

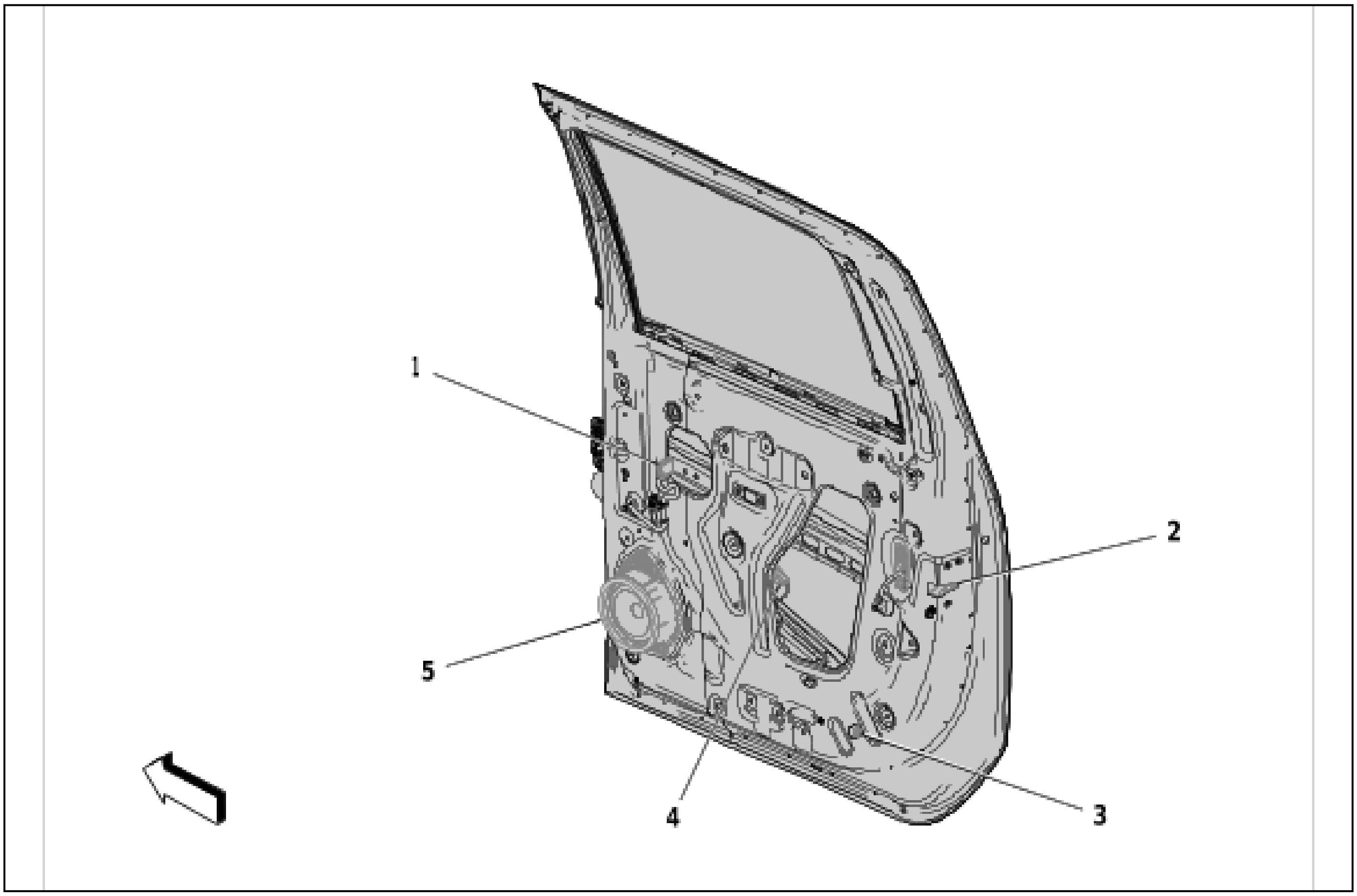
## Left Rear Door Components - Crew/Extended Cab




6343139

| Items |
|---|
| (1) S79LR Rear Side Door Window Switch - Left |
| (2) P19AL Radio Rear Side Door Speaker - Left |
| (3) M74LR Rear Side Door Window Regulator Motor - Left (Double Cab / Crew Cab) |
| (4) B63LR Airbag Side Impact Rear Sensor - Left Door (Double Cab / Crew Cab) |
| (5) A23LR Rear Side Door Latch - Left (Double Cab / Crew Cab) |

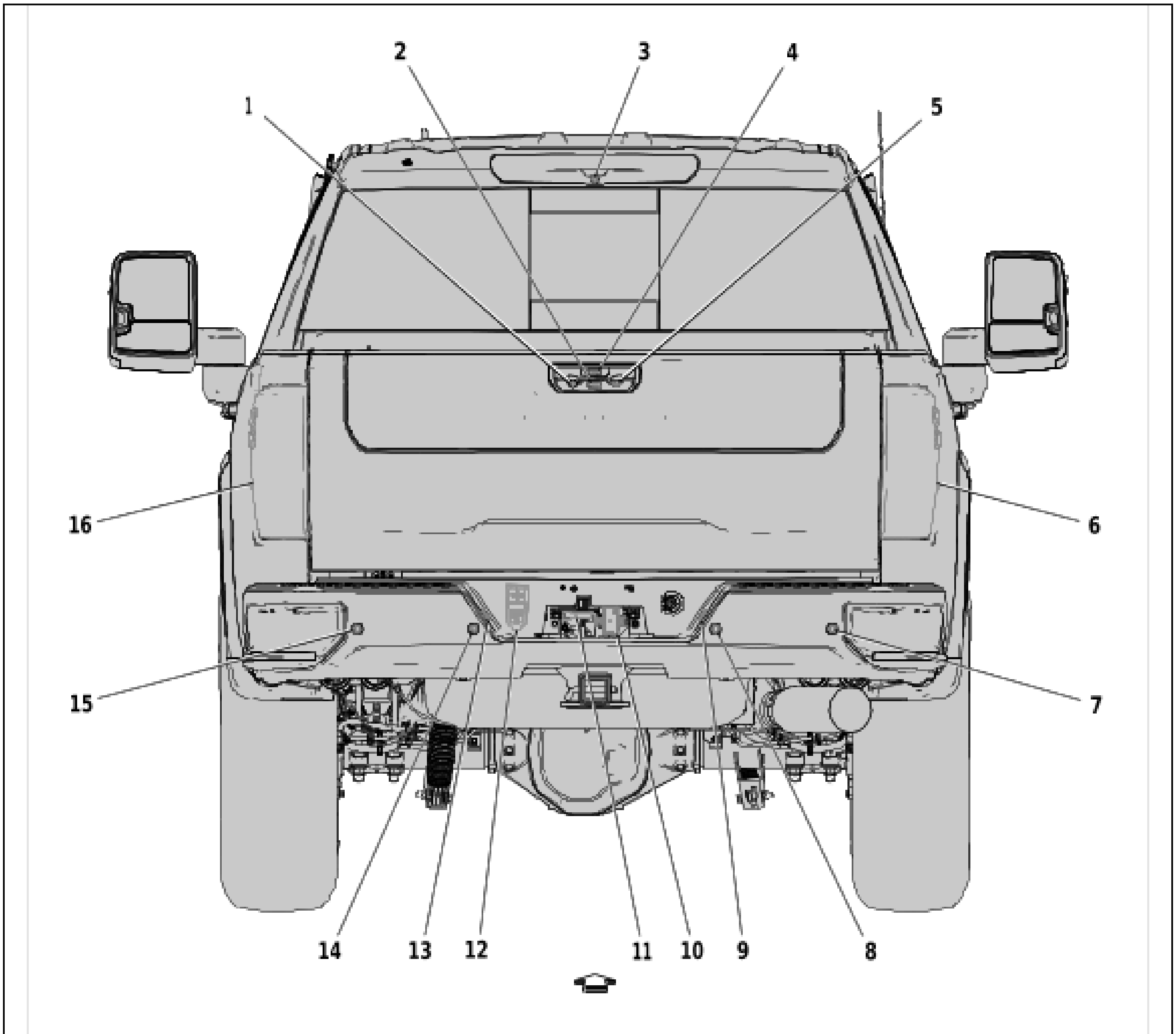
### Right Rear Door Components - Crew/Extended Cab




6343140

| Items |
|---|
| (1) S79RR Rear Side Door Window Switch - Right |
| (2) A23RR Rear Side Door Latch - Right (Double Cab / Crew Cab) |
| (3) B63RR Airbag Side Impact Rear Sensor - Right Door (Double Cab / Crew Cab) |
| (4) M74RR Rear Side Door Window Regulator Motor - Right (Double Cab / Crew Cab) |
| (5) P19AM Radio Rear Side Door Speaker - Right |

### Rear of Vehicle Components

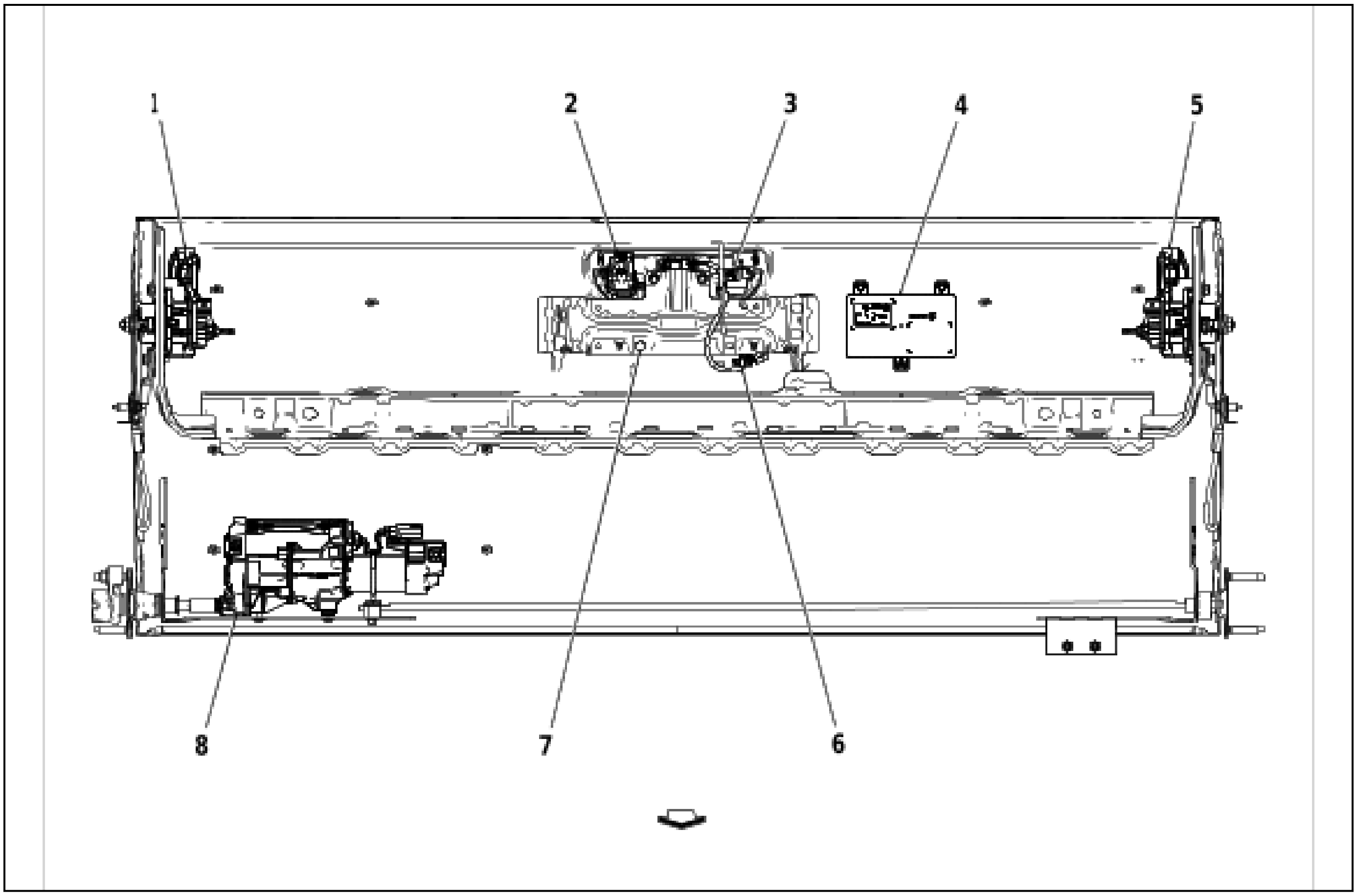



6215947

| Items |
|---|
| (1) B87 Rearview Driver Information Camera (UVB / UV2) |
| (2) S159E Liftgate Exterior Release Switch - Endgate (QT6 / QK2) |
| (3) B352 Video Display Inside Rearview Mirror Camera (DRZ) |
| (4) S158 Liftgate Exterior Release Switch - Auxiliary Endgate |
| (5) E33TH Rear Closure Auxiliary Signal Lamp |
| (6) E42R Rear Body Structure Stop Lamp - Right |
| (7) B306H Parking Assist Alarm Sensor - Rear Right Outer (UD5 / UD7) |
| (8) B306G Parking Assist Alarm Sensor - Rear Right Middle (UD5 / UD7) |
| (9) E7R Rear License Plate Lamp - Right (E63) |

| Items |
| --- |
| (10) K214 Trailer Tire Pressure Indicator Module (UET) |
| (11) T10G Low Frequency Rear Bumper Antenna |
| (12) X88B Tow Vehicle Electrical Receptacle |
| (13) E7L Rear License Plate Lamp - Left (E63) |
| (14) B306F Parking Assist Alarm Sensor - Rear Left Middle (UD5 / UD7) |
| (15) B306E Parking Assist Alarm Sensor - Rear Left Outer (UD5 / UD7) |
| (16) E42L Rear Body Structure Stop Lamp - Left |

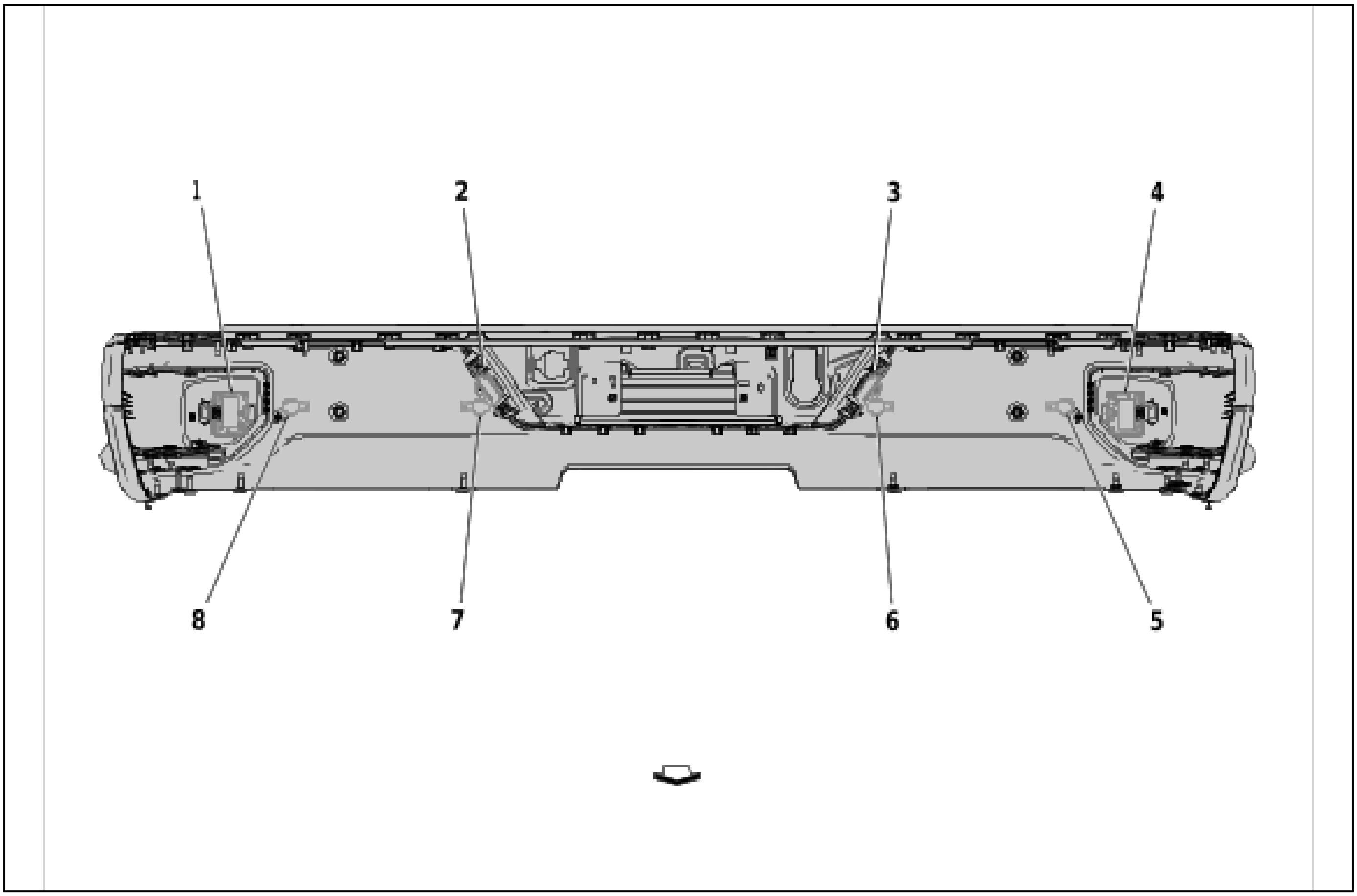
### Endgate Components




6215813

| Items |
| --- |
| (1) M151R Pickup Box Endgate Cinch Latch Actuator - Right (QT6) |
| (2) E33TH Rear Closure Auxiliary Signal Lamp |
| (3) B87 Rearview Driver Information Camera (UVB / UV2) |
| (4) K194 Rear Gate Module (QT6) |
| (5) M151L Pickup Box Endgate Cinch Latch Actuator - Left (QT6) |
| (6) S159E Liftgate Exterior Release Switch - Endgate (QT6 / QK2) |
| (7) M14A Pickup Box Endgate Lock Actuator (QK1) |
| (8) M125 Pickup Box Endgate Power Assist Actuator (QT6) |

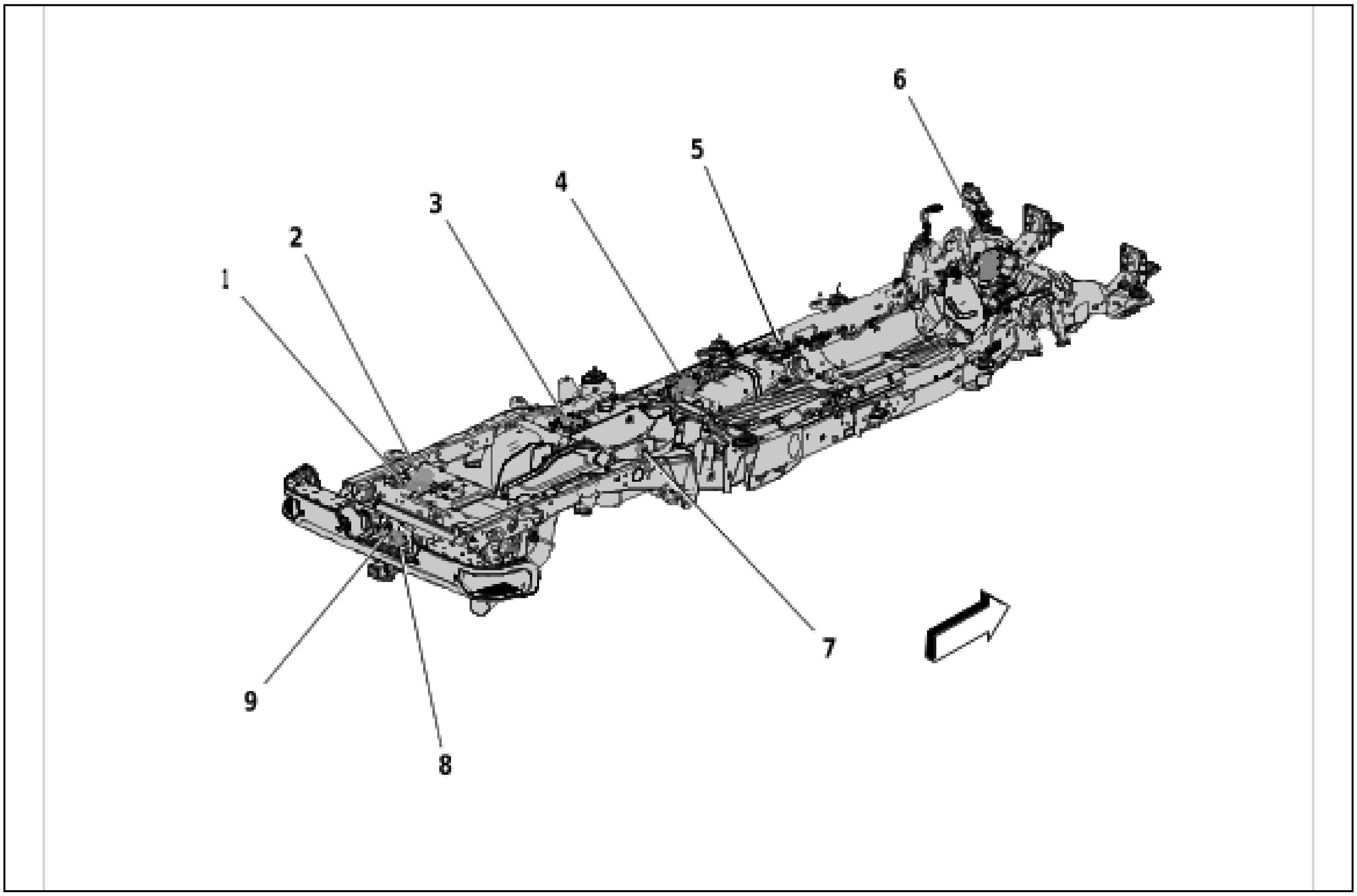
## Rear Bumper - Inside




6215815

| Items |
|---|
| (1) B218R Side Obstacle Detection Control Module - Right (UKC) |
| (2) E7R Rear License Plate Lamp - Right (E63) |
| (3) E7L Rear License Plate Lamp - Left (E63) |
| (4) B218L Side Obstacle Detection Control Module - Left (UKC) |
| (5) B306E Parking Assist Alarm Sensor - Rear Left Outer (UD5 / UD7) |
| (6) B306F Parking Assist Alarm Sensor - Rear Left Middle (UD5 / UD7) |
| (7) B306G Parking Assist Alarm Sensor - Rear Right Middle (UD5 / UD7) |
| (8) B306H Parking Assist Alarm Sensor - Rear Right Outer (UD5 / UD7) |

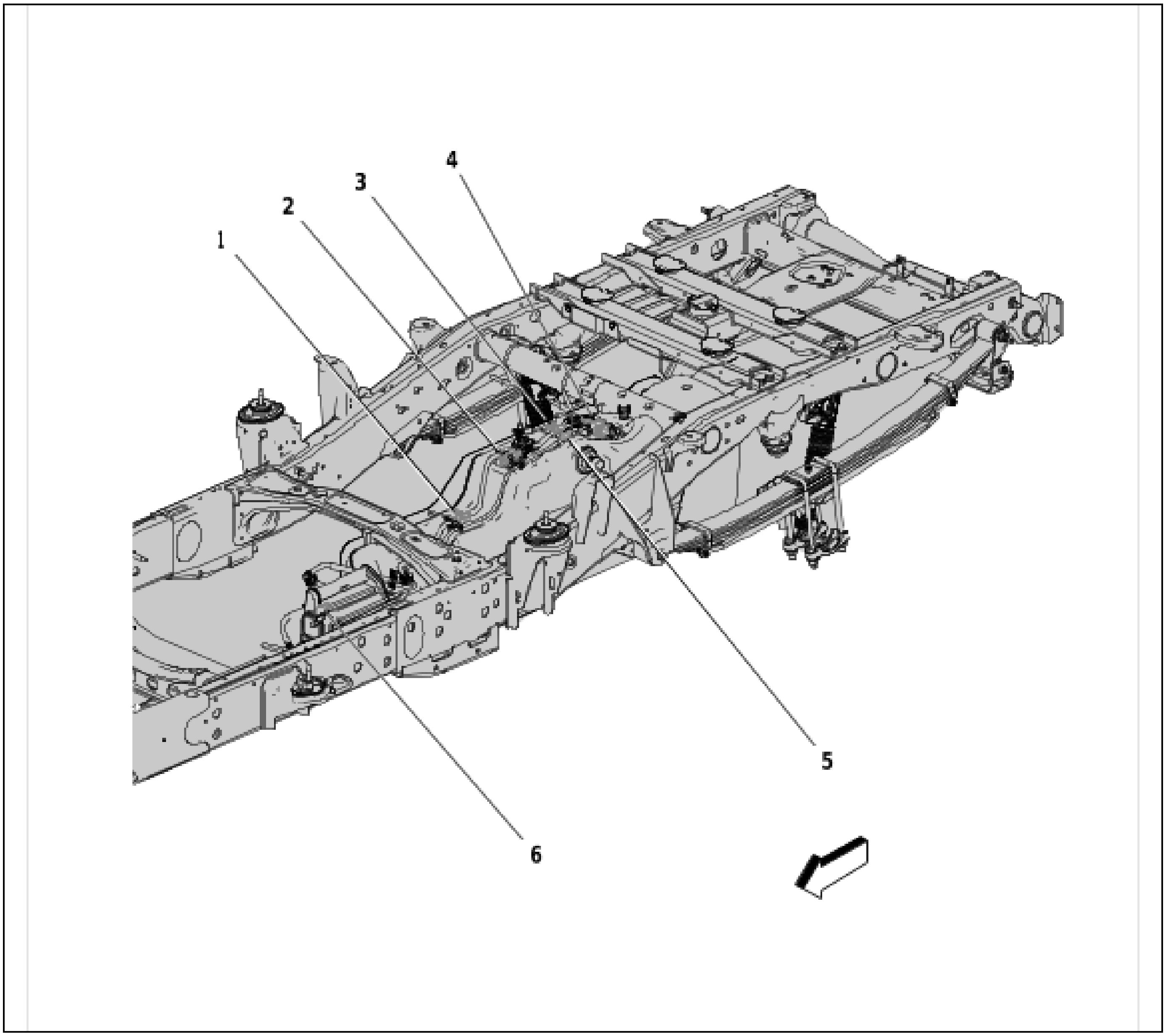
### Underbody Components




6215816

| Items |
|---|
| (1) K67 Trailer Brake Control Module (JL1) |
| (2) K111 Fuel Pump Power Control Module |
| (3) A7 Fuel Tank Fuel Pump Module |
| (4) R29 Fuel Filter (L5P) |
| (5) B47 Fuel Pressure Sensor |
| (6) K43 Power Steering Control Module |
| (7) B345P Exhaust Pressure Differential Sensor - Particulate Filter (L5P) |
| (8) K214 Trailer Tire Pressure Indicator Module (UET) |
| (9) T10G Low Frequency Rear Bumper Antenna |

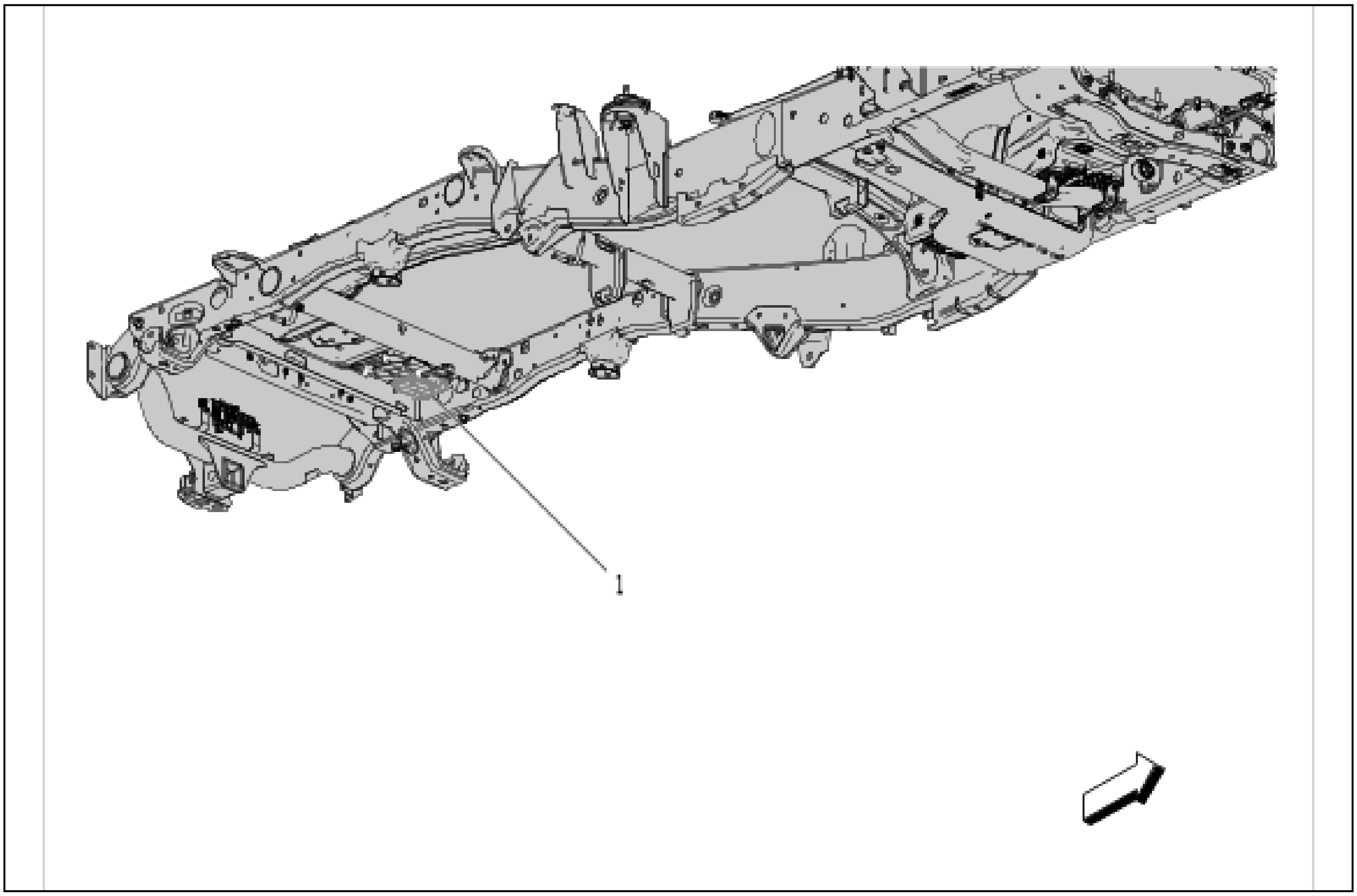
## Fuel Tank Components (L8T)




6215818

| Items |
|---|
| (1) B394 Evaporative Emission Canister Purge System Pressure Sensor |
| (2) Q64 Evaporative Emission System Switching Valve (L8T) |
| (3) B150 Fuel Tank Pressure Sensor (L8T) |
| (4) A7 Fuel Tank Fuel Pump Module |
| (5) B47 Fuel Pressure Sensor |
| (6) Q13 Evaporative Emission Canister Vent Solenoid Valve |

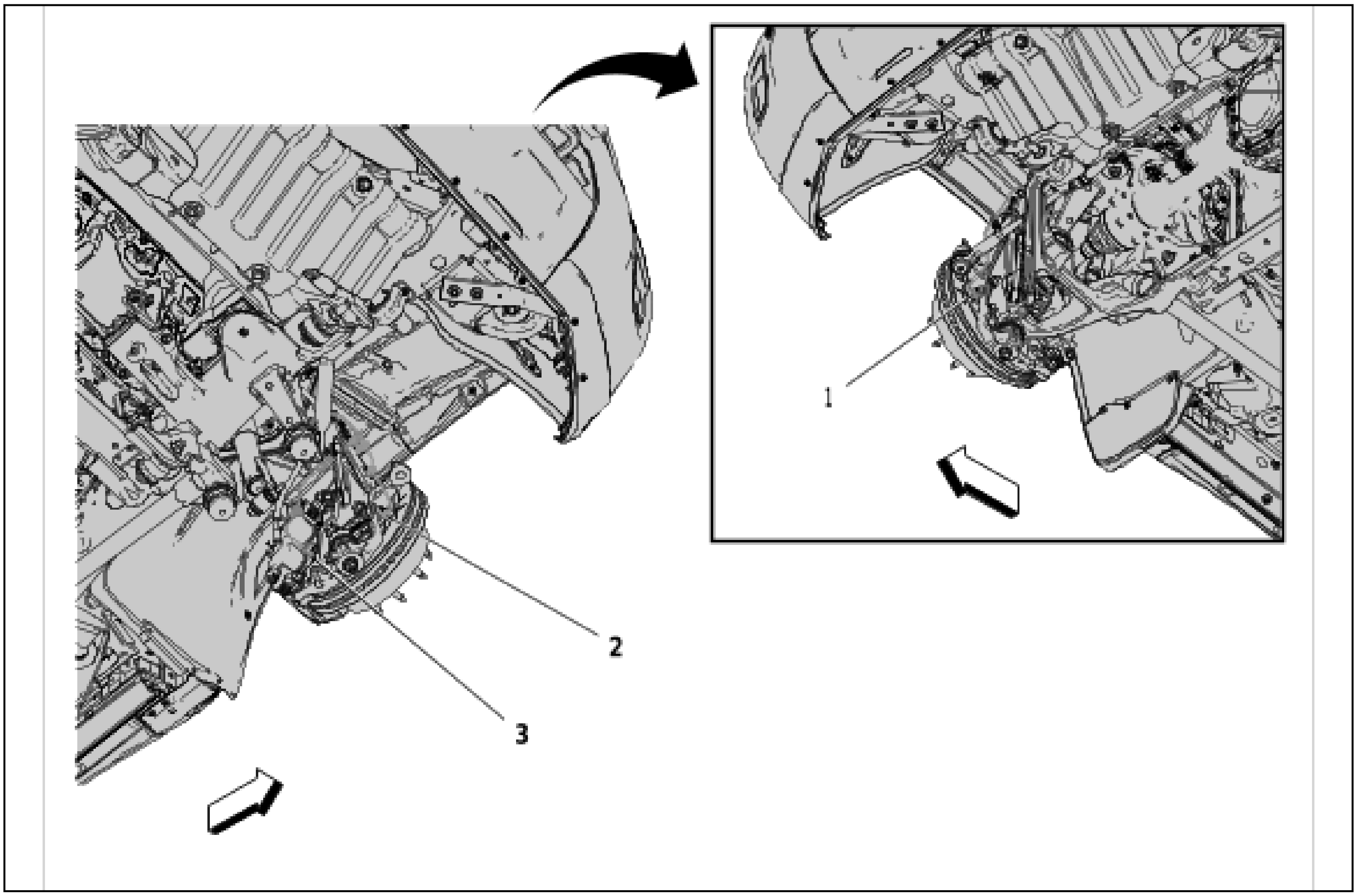
### Rear Underbody Components




6215819

| Items |
|---|
| (1) K68 Trailer Lamp Control Module (U1D) |

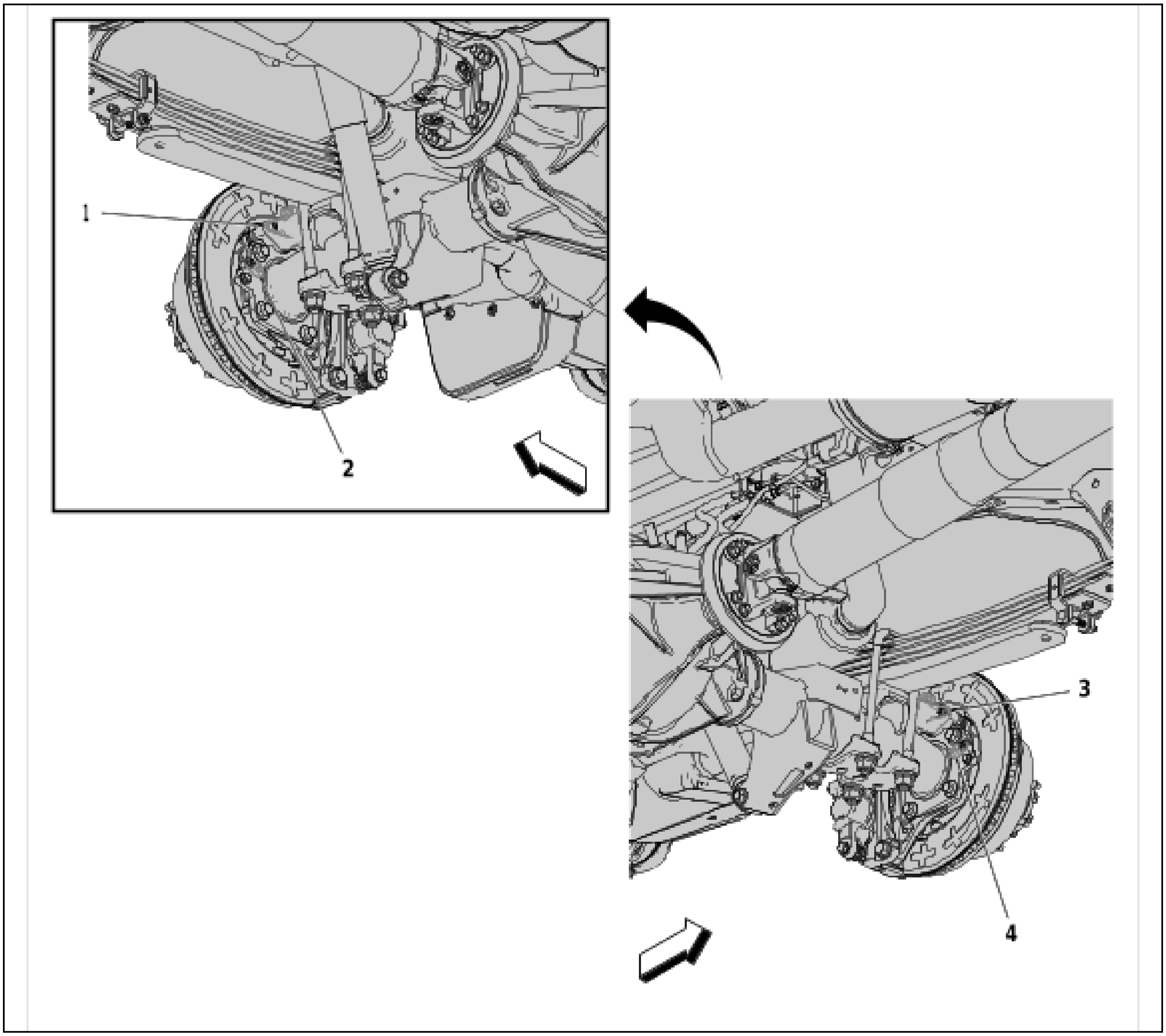
### Front Brake and Suspension Components




6215820

| Items |
|---|
| (1) B5RF Front Wheel Speed Sensor - Right |
| (2) B5LF Front Wheel Speed Sensor - Left |
| (3) B172LF Front Disc Brake Pad Wear Sensor - Left |

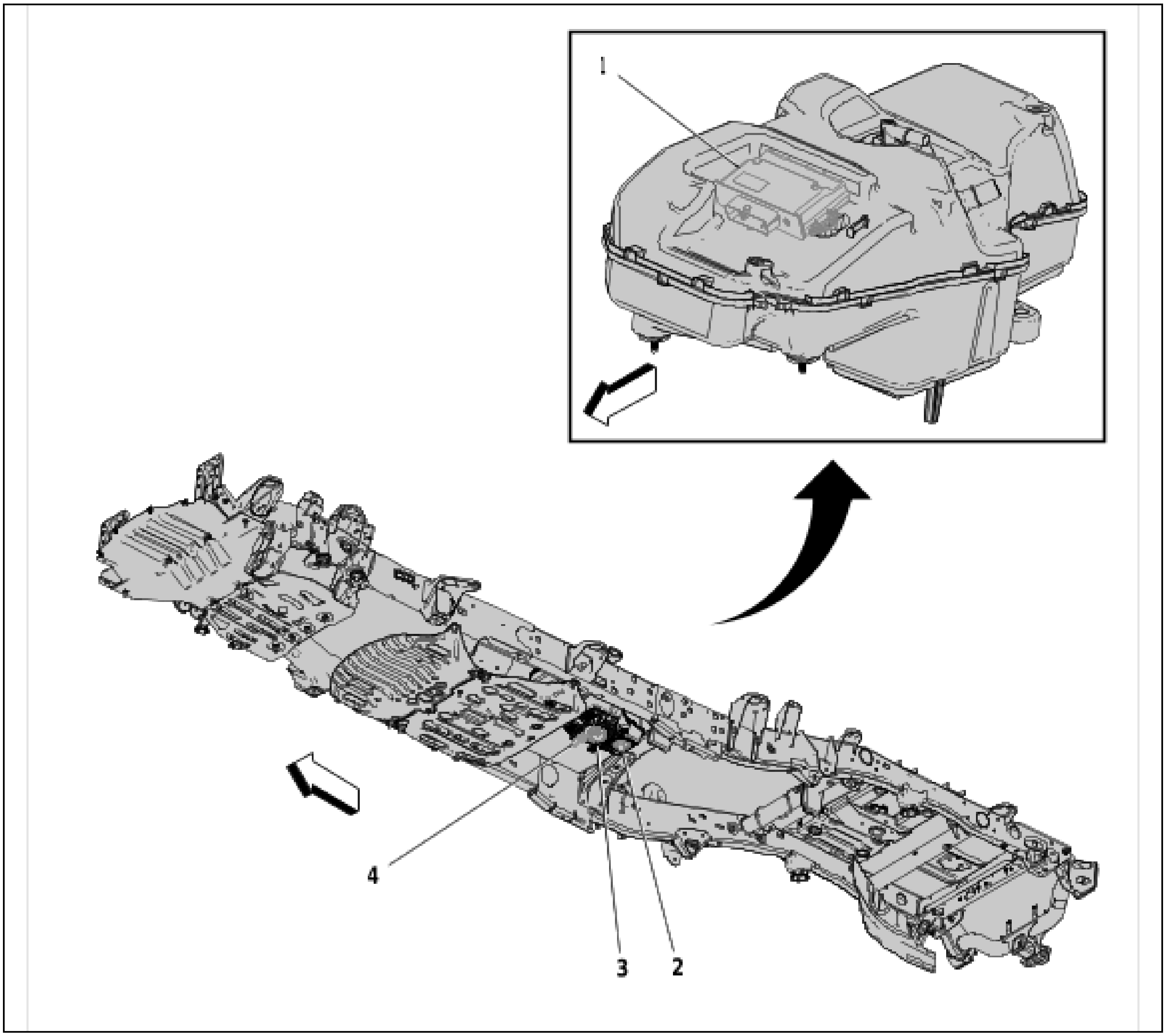
### Rear Brake and Suspension Components




6215821

| Items |
|---|
| (1) M104R Parking Brake Actuator - Right |
| (2) B5RR Rear Wheel Speed Sensor - Right |
| (3) M104L Parking Brake Actuator - Left |
| (4) B5LR Rear Wheel Speed Sensor - Left |

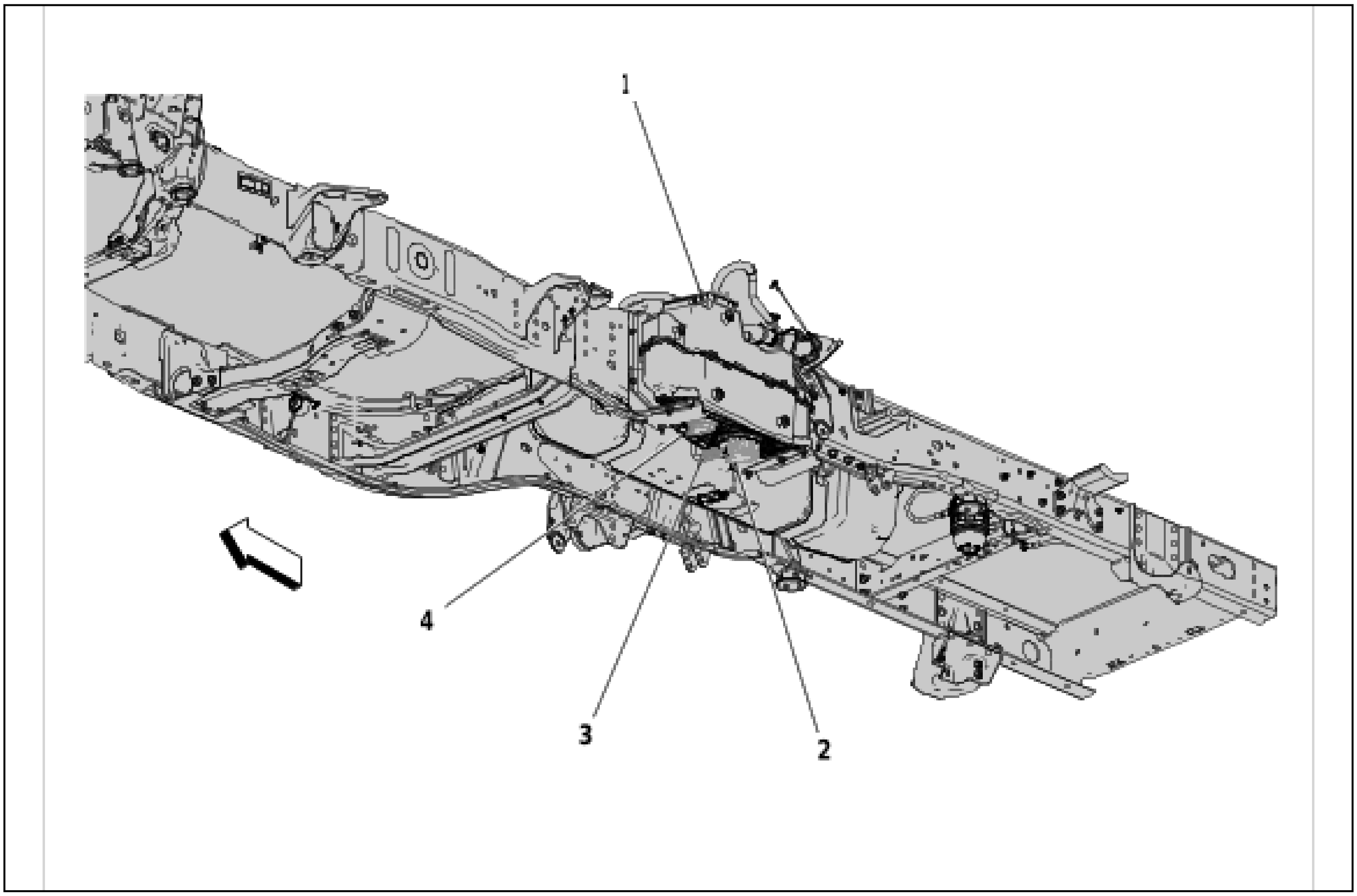
## Reductant Fluid Tank Components - Pickup




6400073

| Items |
|---|
| (1) K115 Reductant Control Module (L5P) |
| (2) B212 Reductant Tank Fluid Sensor (L5P) |
| (3) A38 Reductant Tank Fluid Supply Pump Module (L5P) |
| (4) E52 Reductant Heater 2 - Injector Supply Pipe (L5P) |

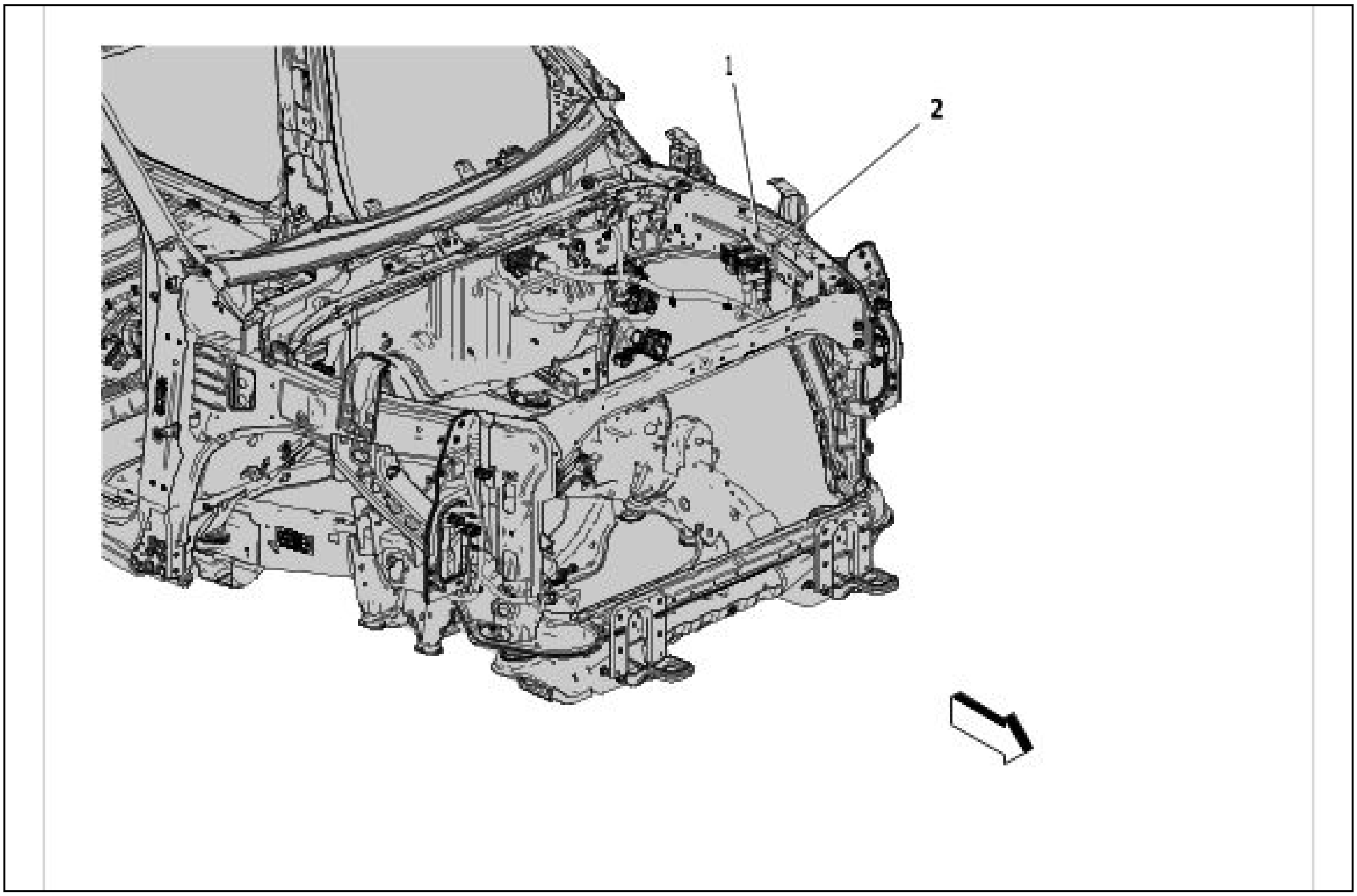
### Reductant Fluid Tank Components - Chassis Cab




6400078

| Items |
|---|
| (1) K115 Reductant Control Module (L5P) |
| (2) A38 Reductant Tank Fluid Supply Pump Module (L5P) |
| (3) E52 Reductant Heater 2 - Injector Supply Pipe (L5P) |
| (4) B212 Reductant Tank Fluid Sensor (L5P) |

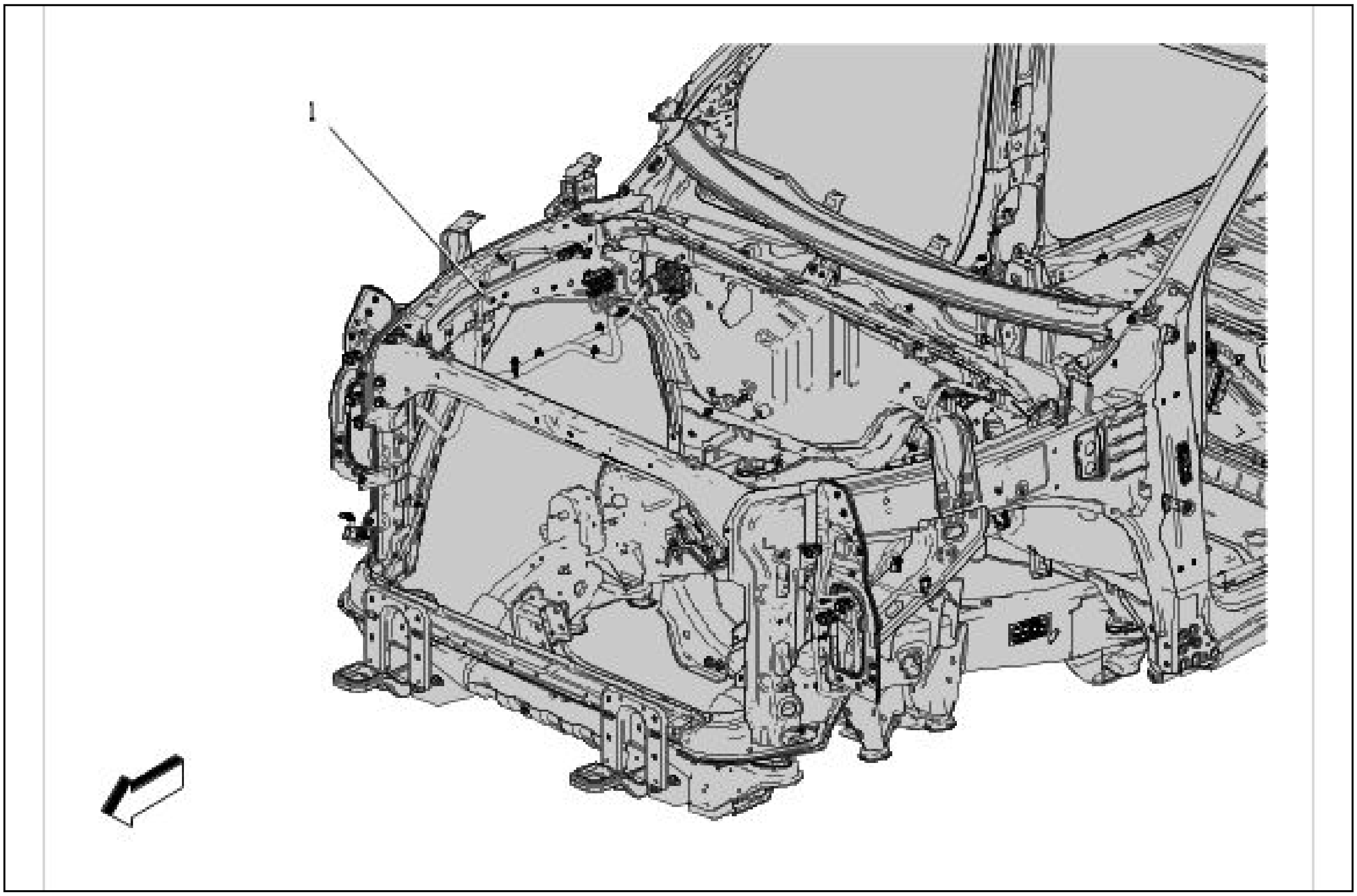
### G103A and G103B




6215822

| Items |
|---|
| (1) G103A Body Wiring Harness |
| (2) G103B Body Wiring Harness |

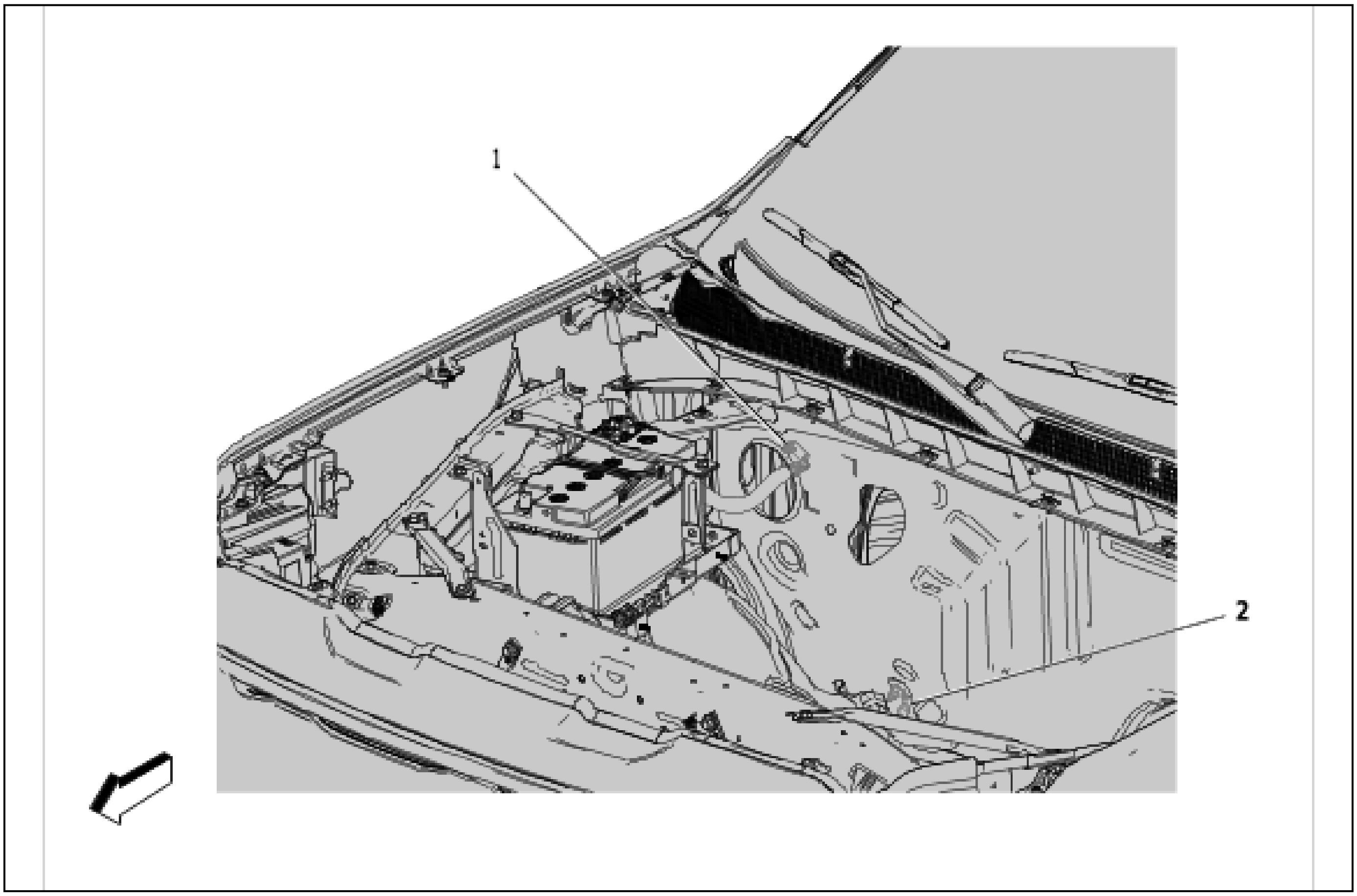
## G104




6215823

| Items |
|---|
| (1) G104 Body Wiring Harness |

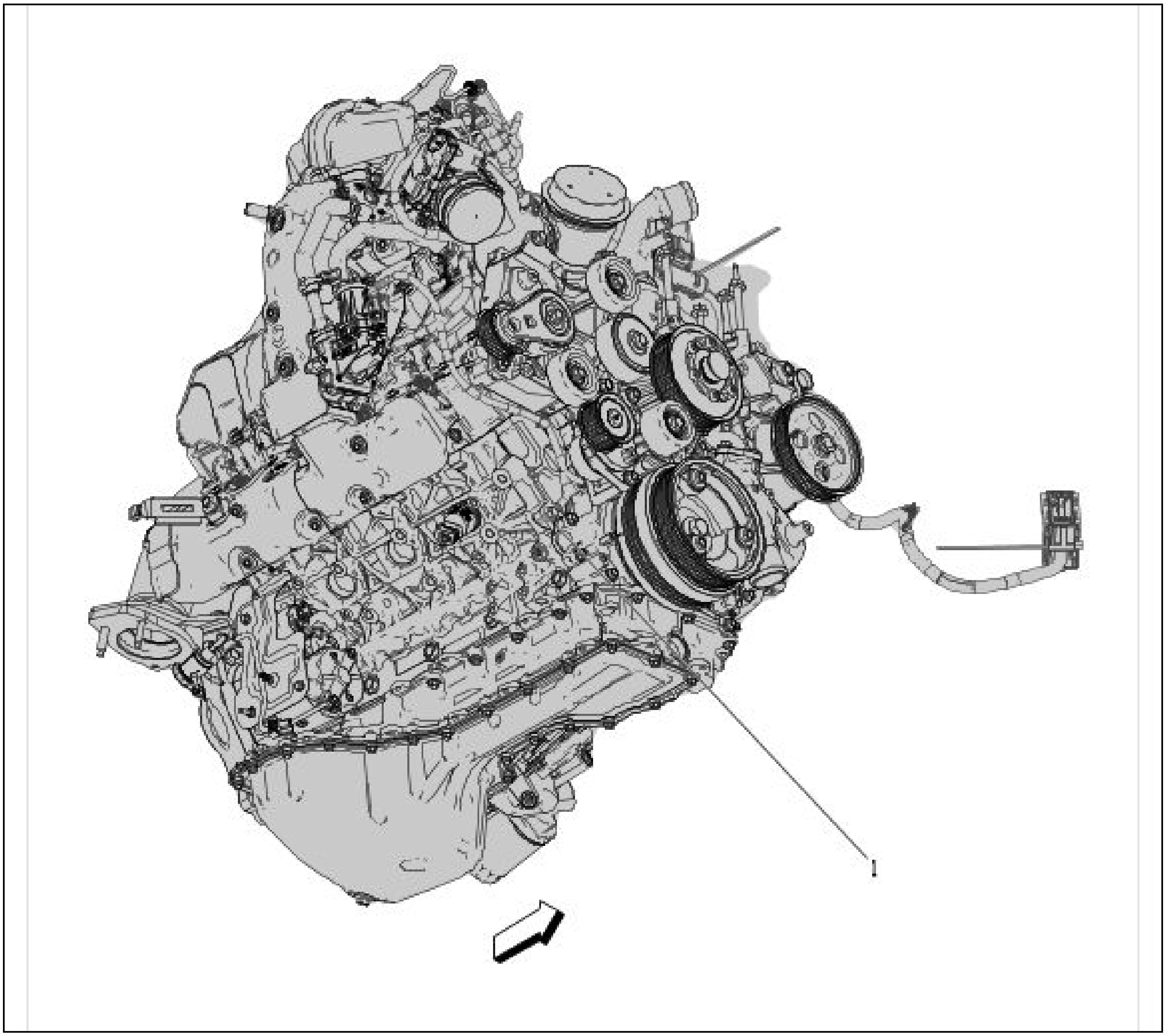
## G105 and G134




6050092

| Items |
| --- |
| (1) G105 Battery Negative Cable |
| (2) G134 Ground Strap |

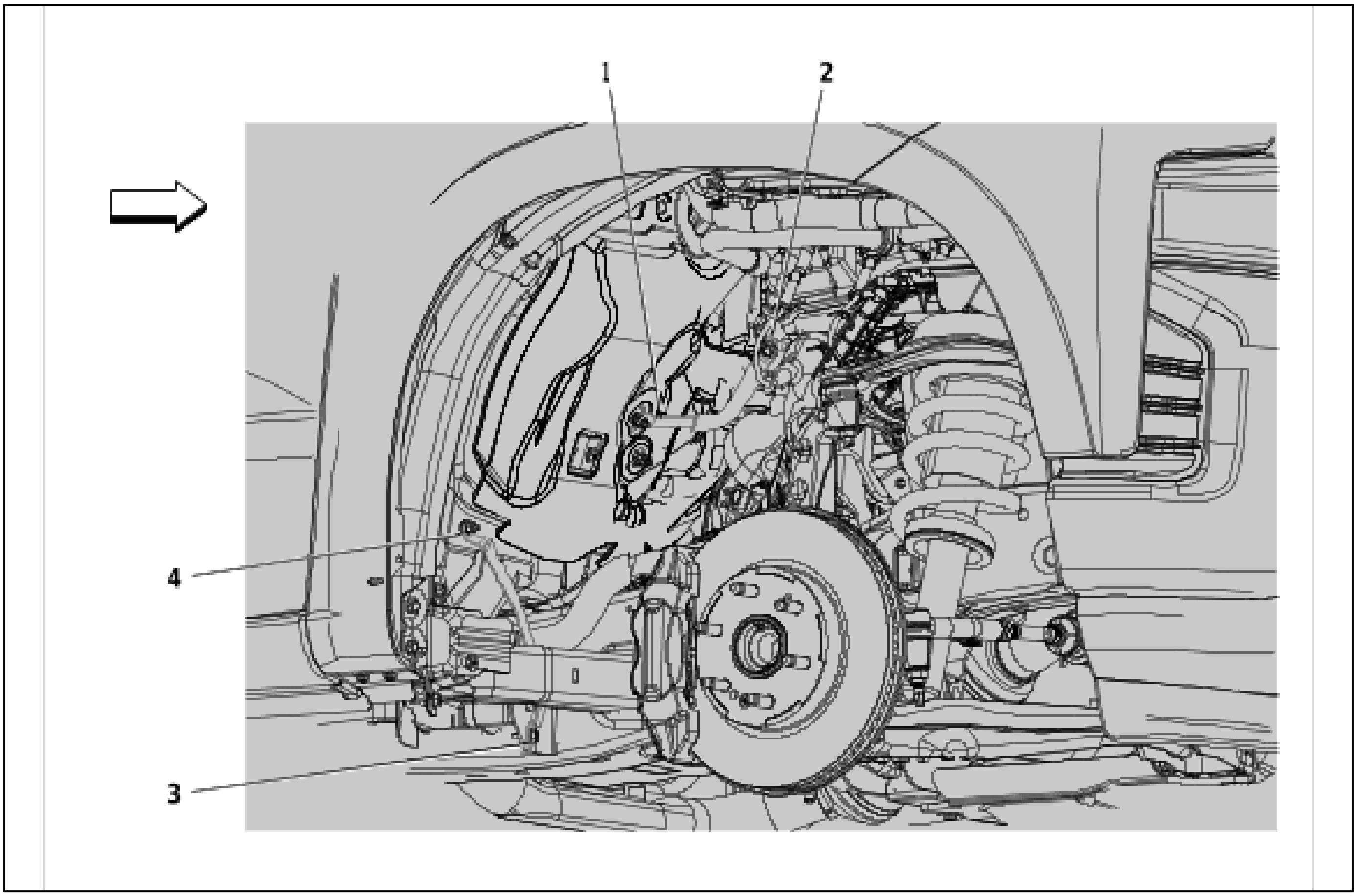
## G114 (L5P)




6215825

| Items |
|---|
| (1) G114 Engine Wiring Harness |

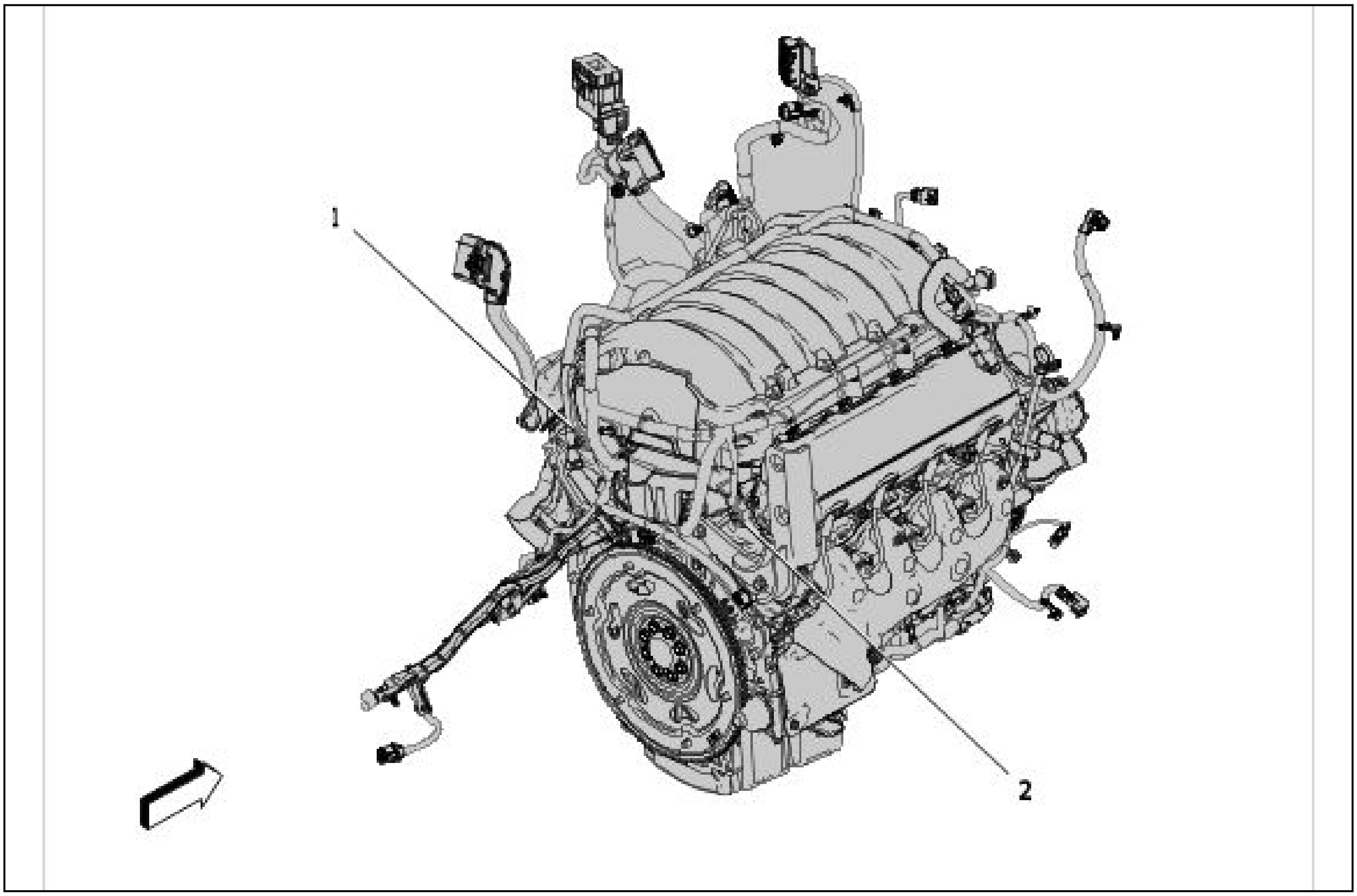
### G131, G132, G133, and G134




6370948

| Items |
| --- |
| (1) G132 Ground Strap |
| (2) G134 Ground Strap |
| (3) G131 Ground Strap |
| (4) G133 Ground Strap |

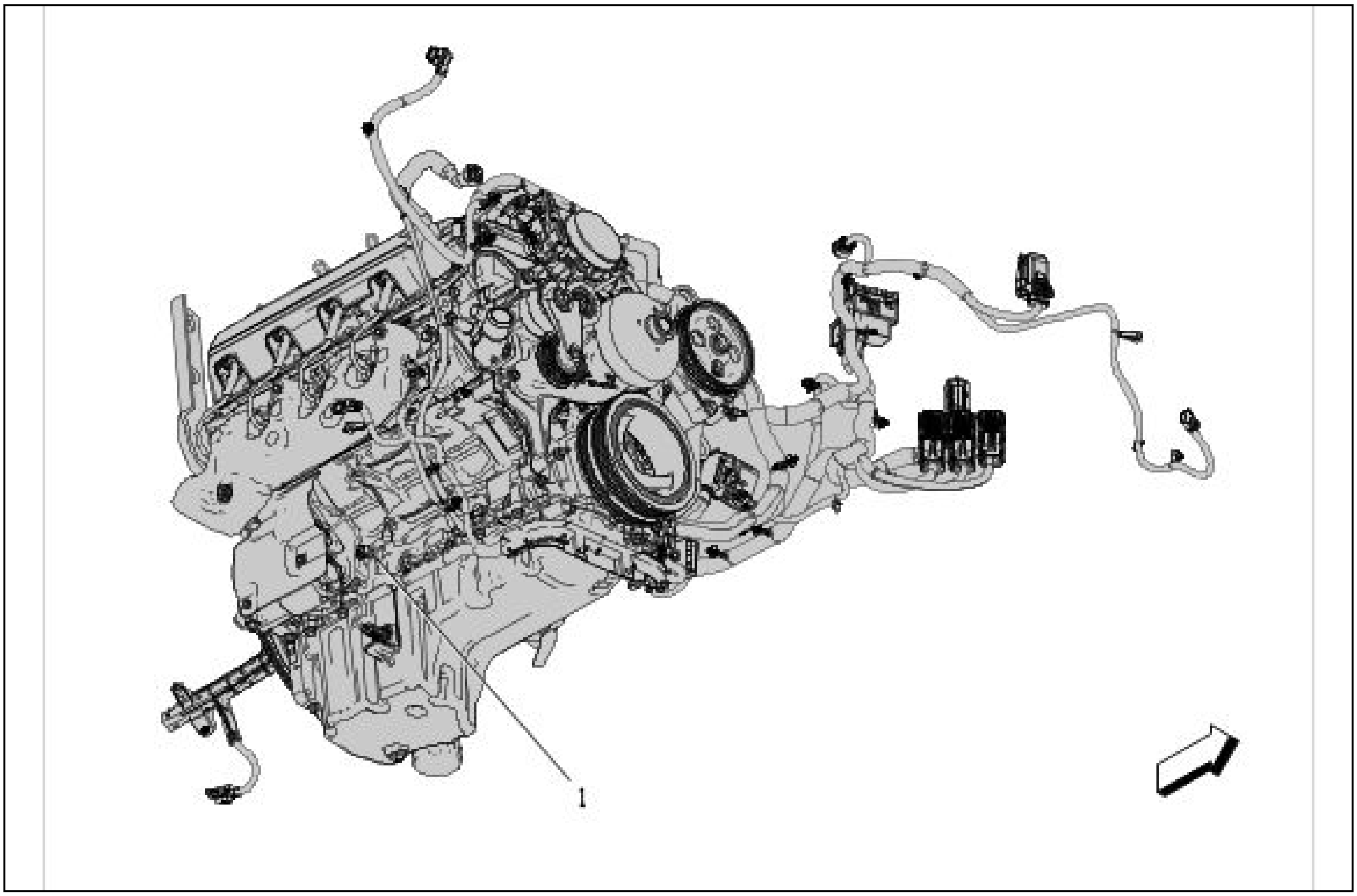
## G175L and G176R




6215829

| Items |
| --- |
| (1) G175L Engine Wiring Harness (L8T) |
| (2) G176R Engine Wiring Harness (L8T) |

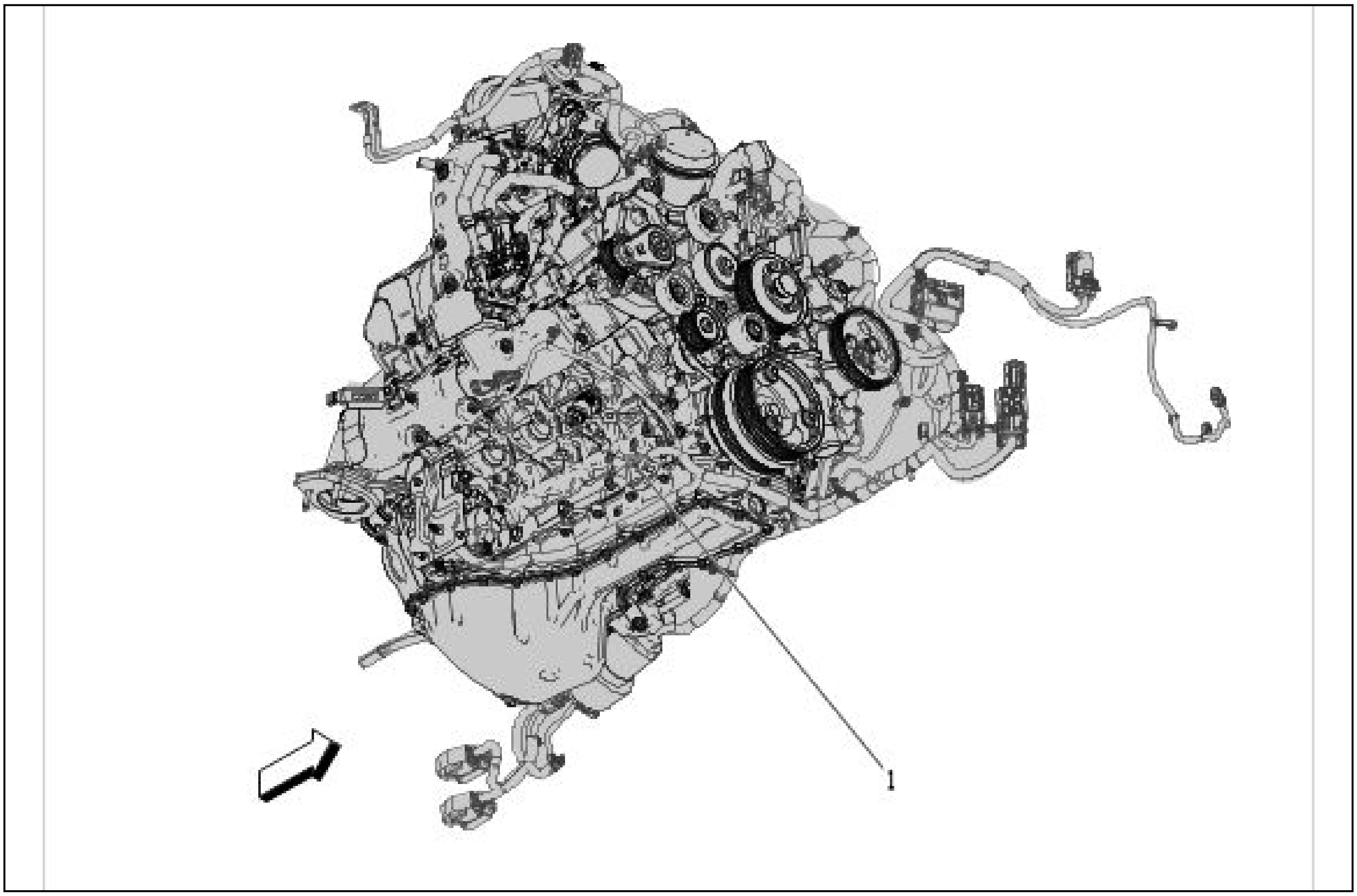
## G177B (L8T)




6276739

| Items |
|---|
| (1) G177B Engine Wiring Harness |

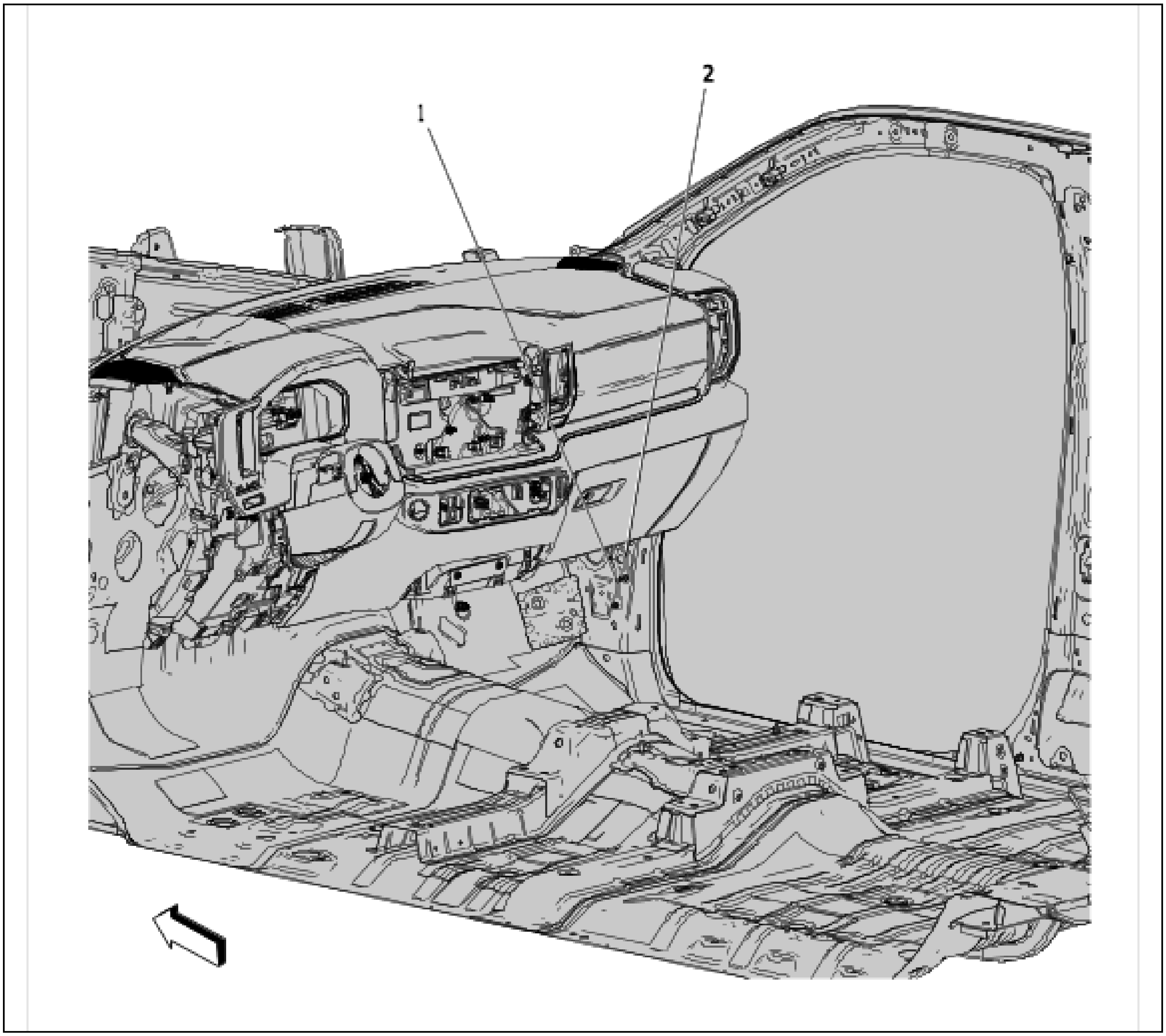
## G177B (L5P)




6215830

| Items |
| --- |
| (1) G177B Engine Wiring Harness |

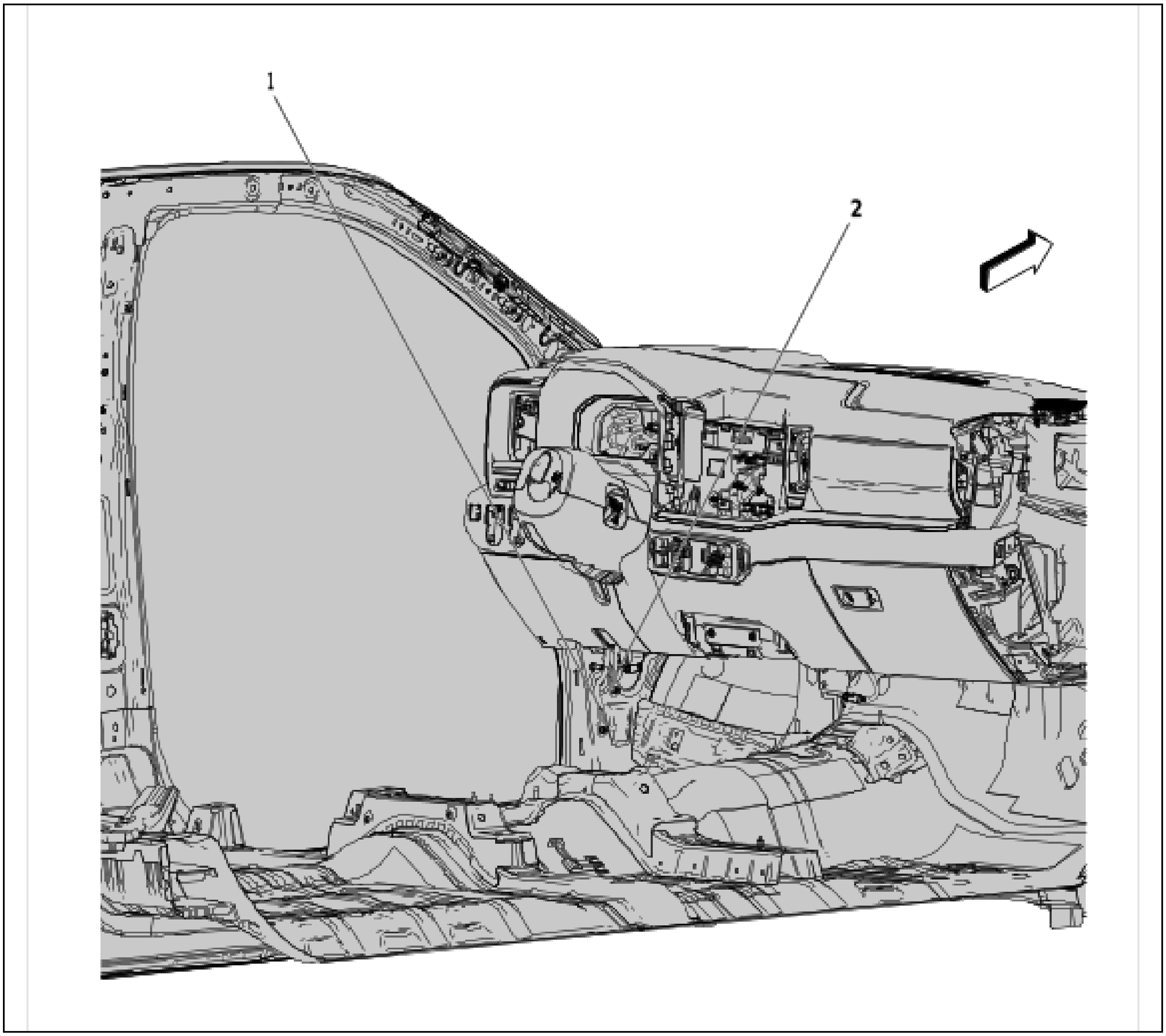
## G200 and G202




6370950

| Items |
| --- |
| (1) G200 Instrument Panel Wiring Harness |
| (2) G202 Air Heater Ground Wiring Harness (C32) |

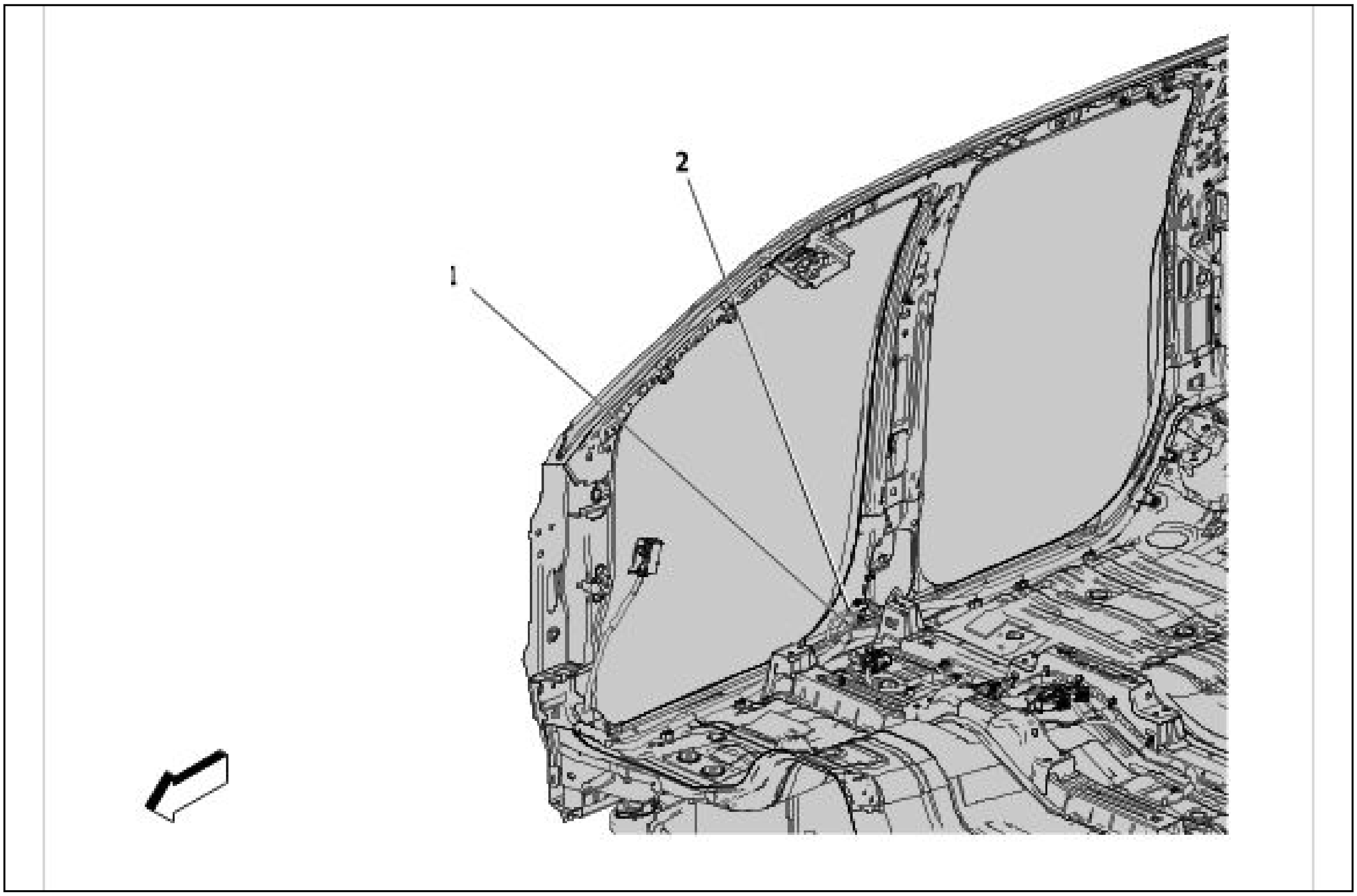
## G201 and G203




6370958

| Items |
| --- |
| (1) G203 Air Heater Ground Wiring Harness (C32) |
| (2) G201 Instrument Panel Wiring Harness |

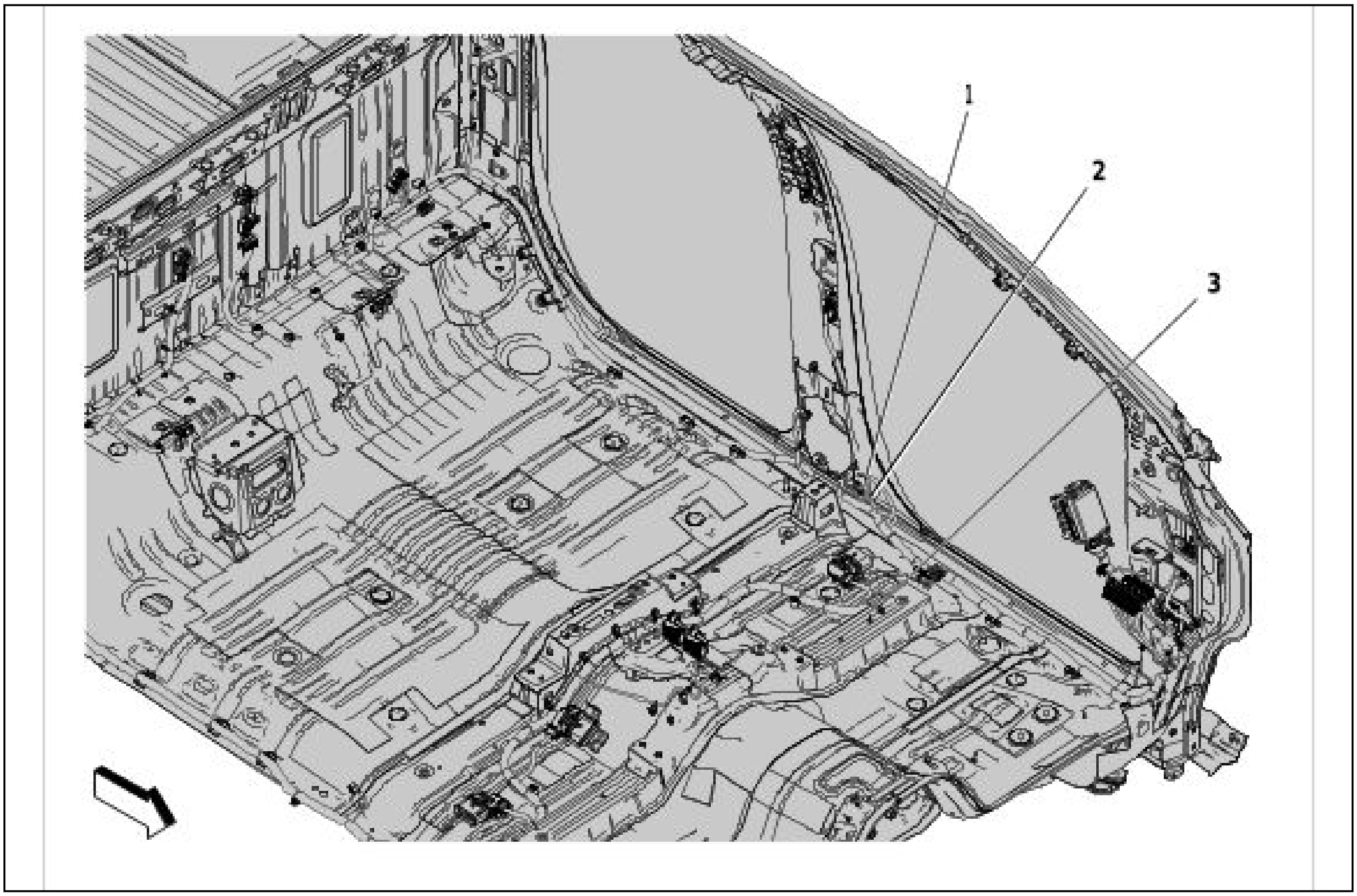
## G300A and G300B - Double Cab/Crew Cab




6215836

| Items |
| --- |
| (1) G300A Body Wiring Harness |
| (2) G300B Body Wiring Harness |

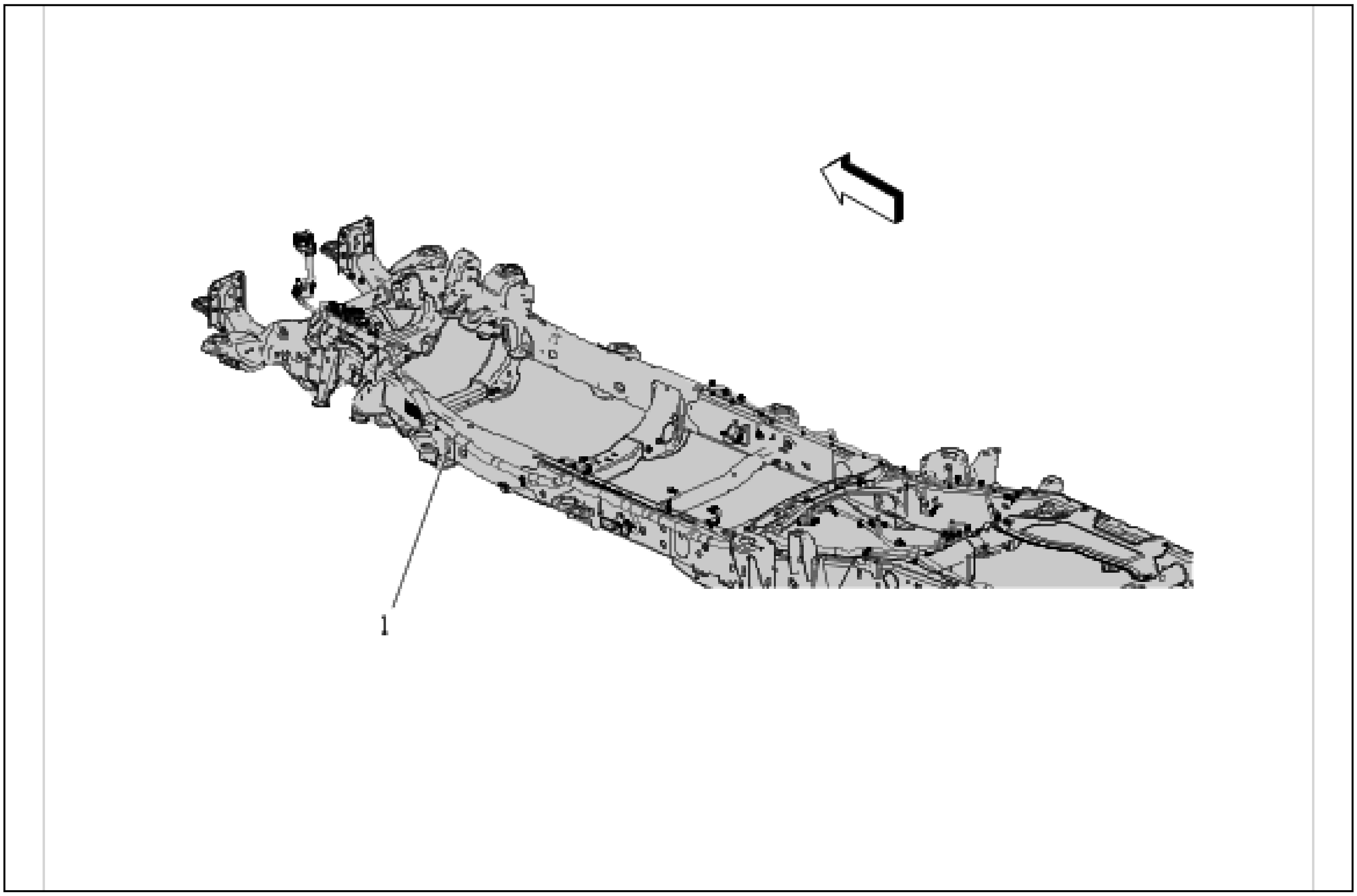
## G301A, G301B and G303 - Double Cab/Crew Cab




6215838

| Items |
|---|
| (1) G301B Body Wiring Harness |
| (2) G301A Body Wiring Harness |
| (3) G303 Body Wiring Harness |

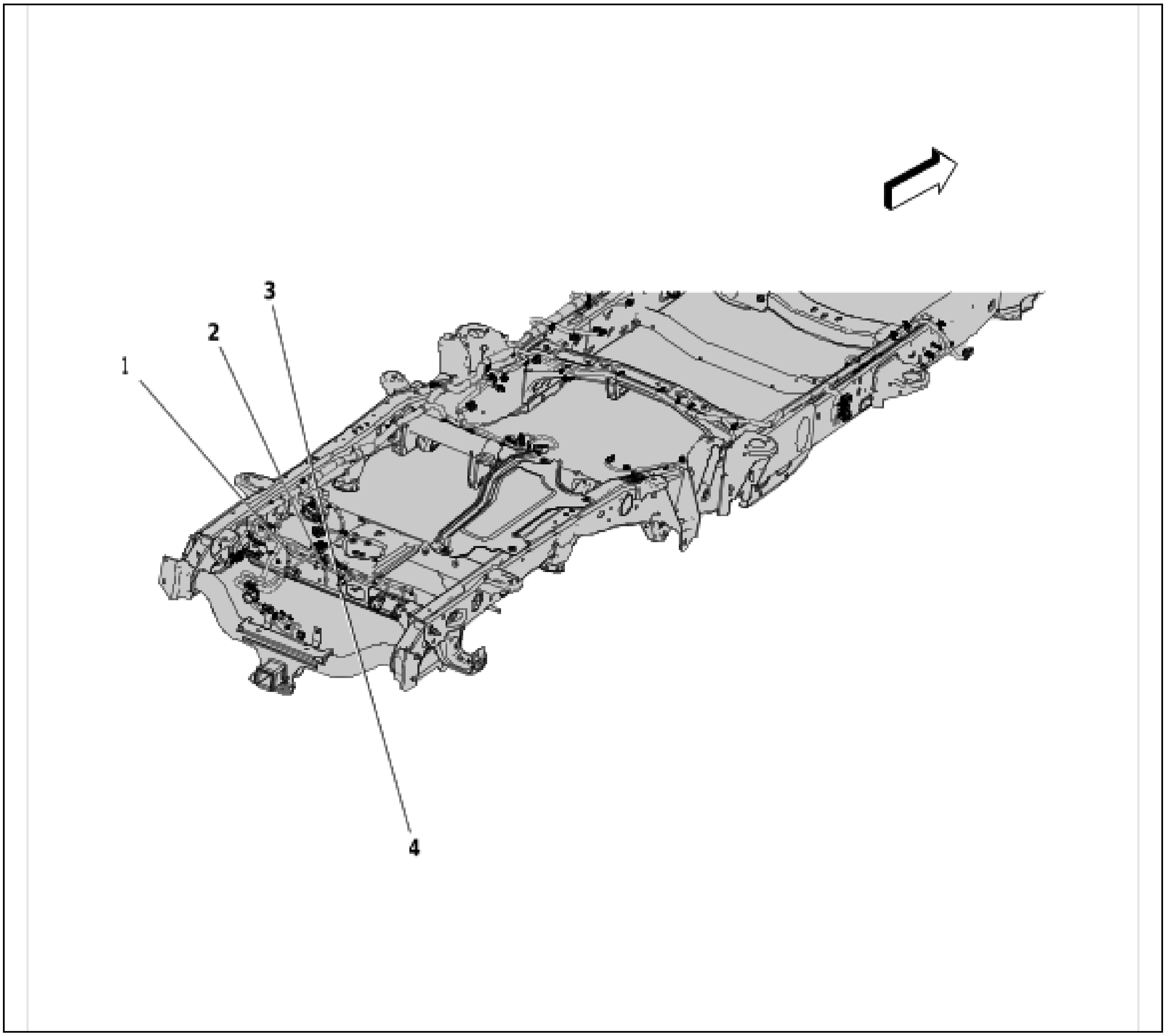
**G402**




6215839

| Items |
| --- |
| (1) G402 Chassis Wiring Harness |

## G404, G406A, G406B and G407



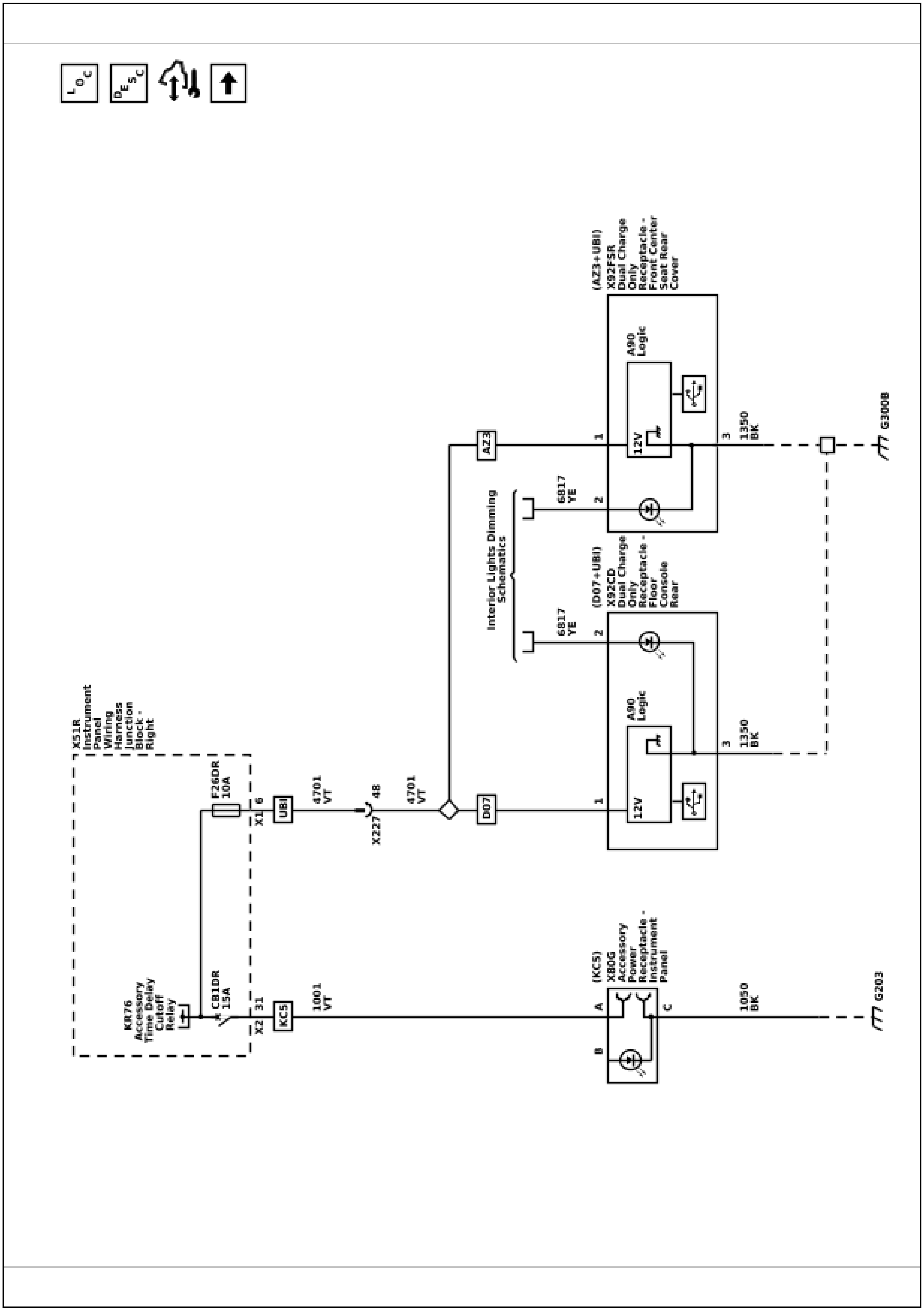

6215840

| Items |
|---|
| (1) G407 Chassis Wiring Harness |
| (2) G404 Chassis Wiring Harness |
| (3) G406A Chassis Wiring Harness |
| (4) G406B Chassis Wiring Harness |

# Power Outlets

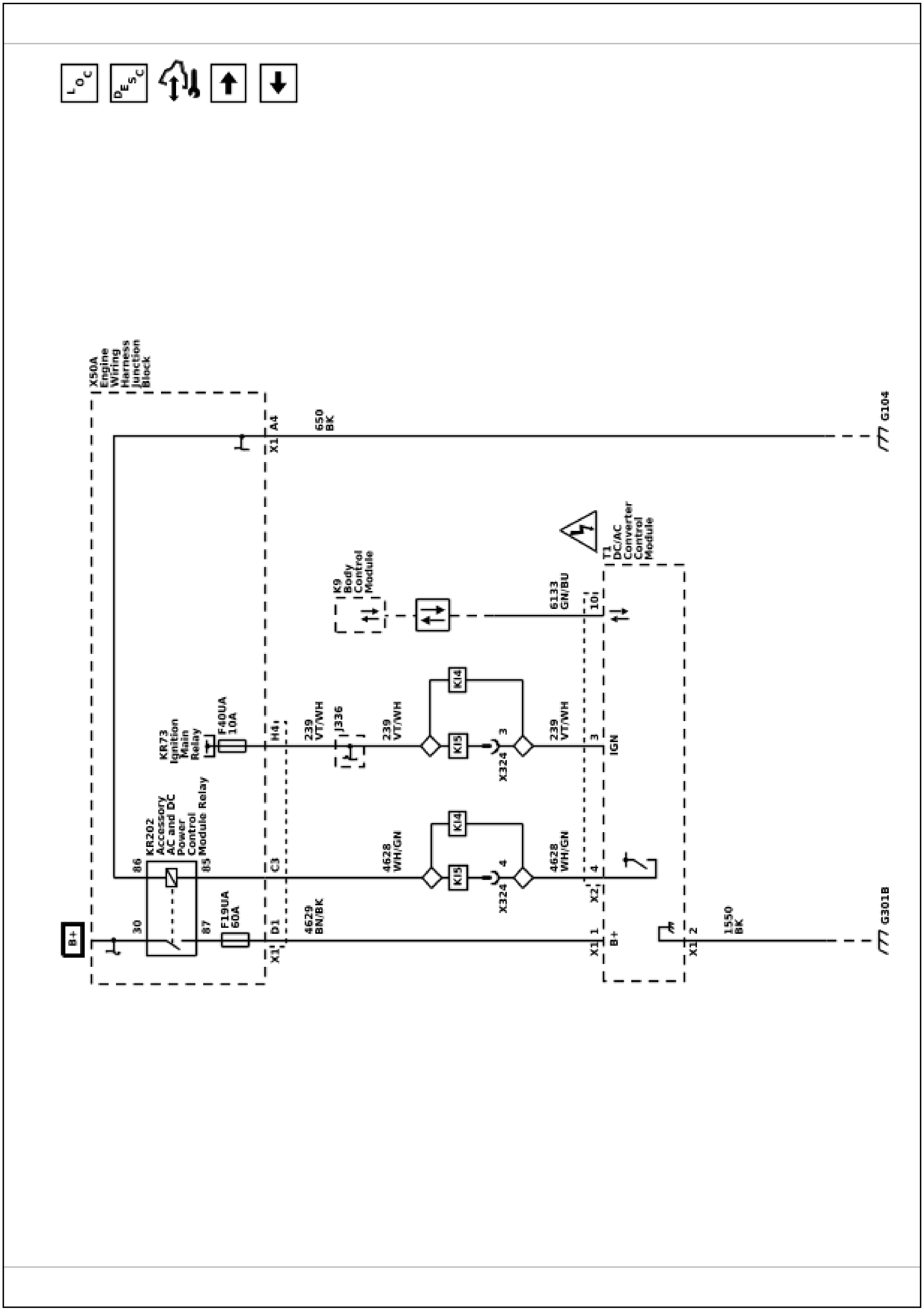
## Schematic and Routing Diagrams

## Cigar Lighter/Power Outlet Schematics (Power and Charge Receptacles)



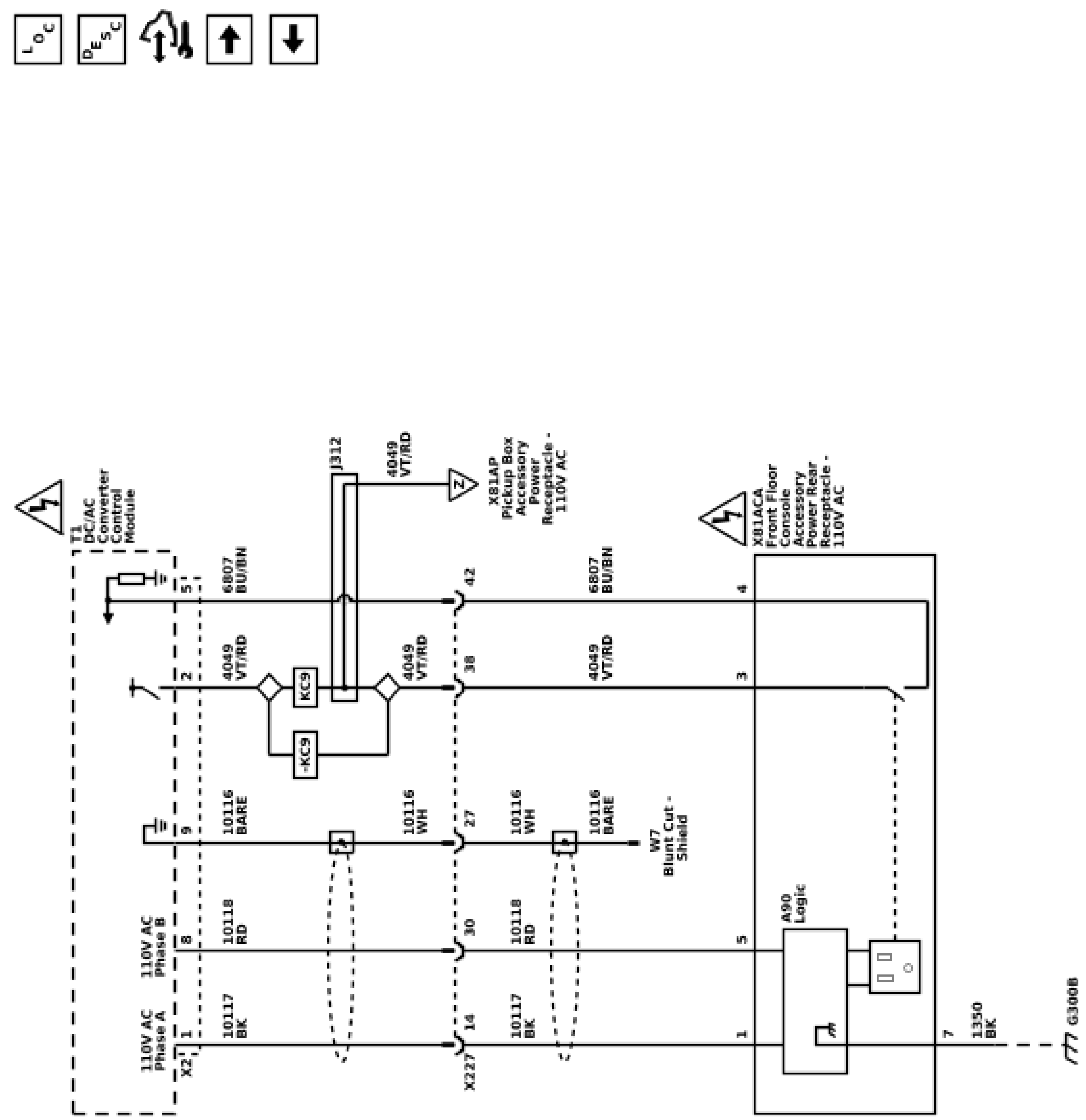

6845946

## Cigar Lighter/Power Outlet Schematics (Inverter Module Power, Ground, and Serial Data)

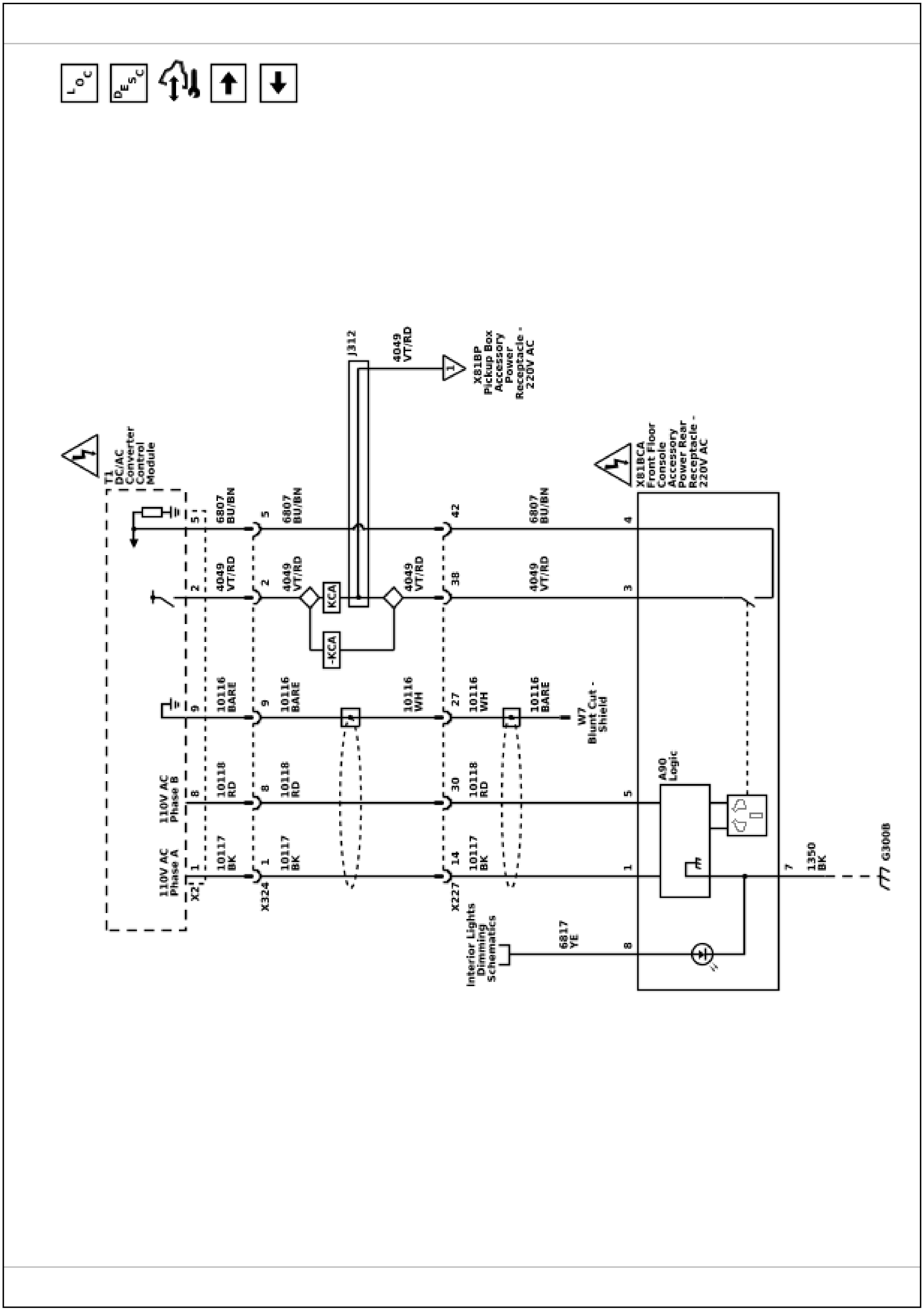


## Cigar Lighter/Power Outlet Schematics (110V AC Accessory Power Rear Receptacle - Front Floor Console)

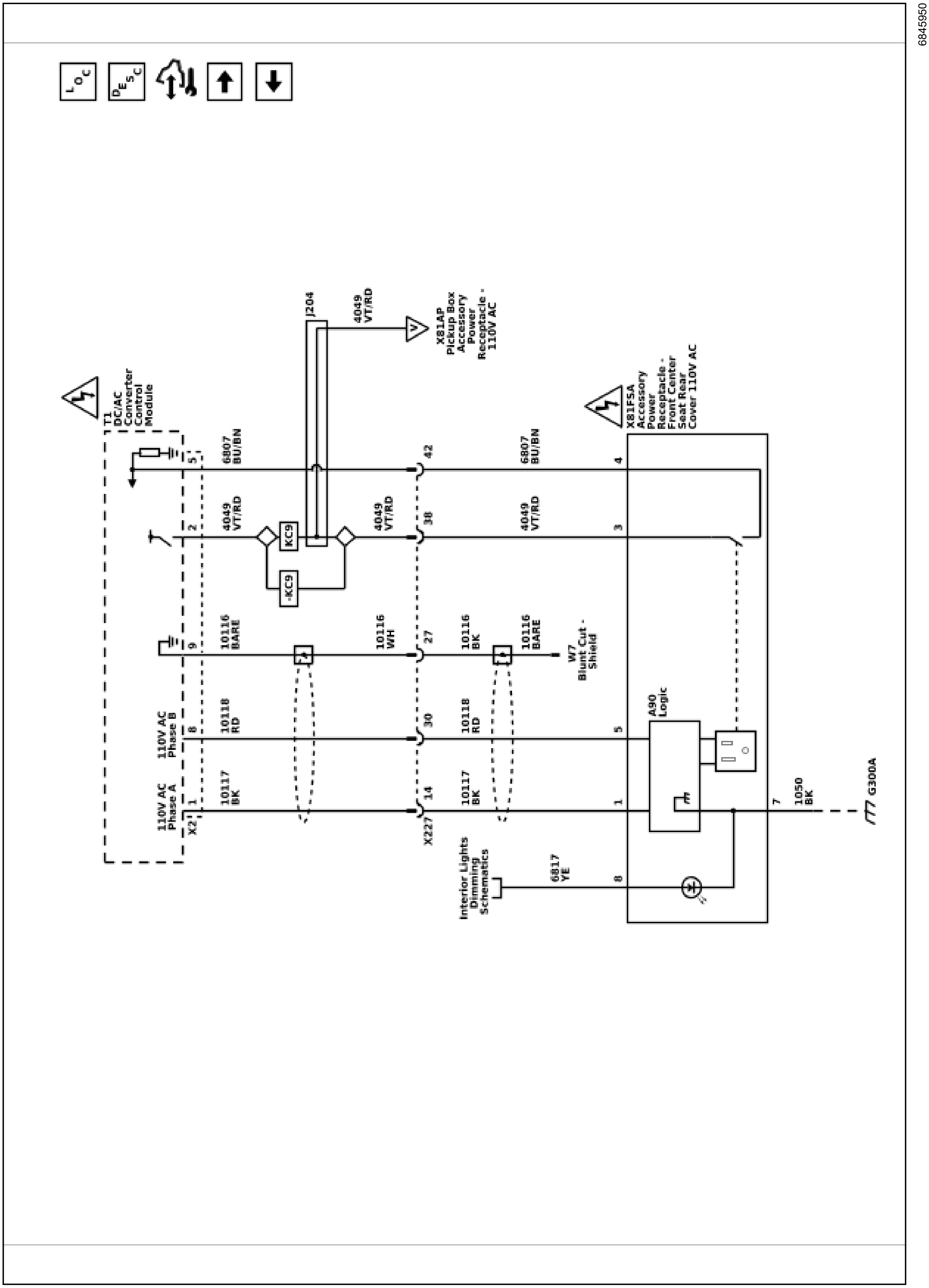
6845948



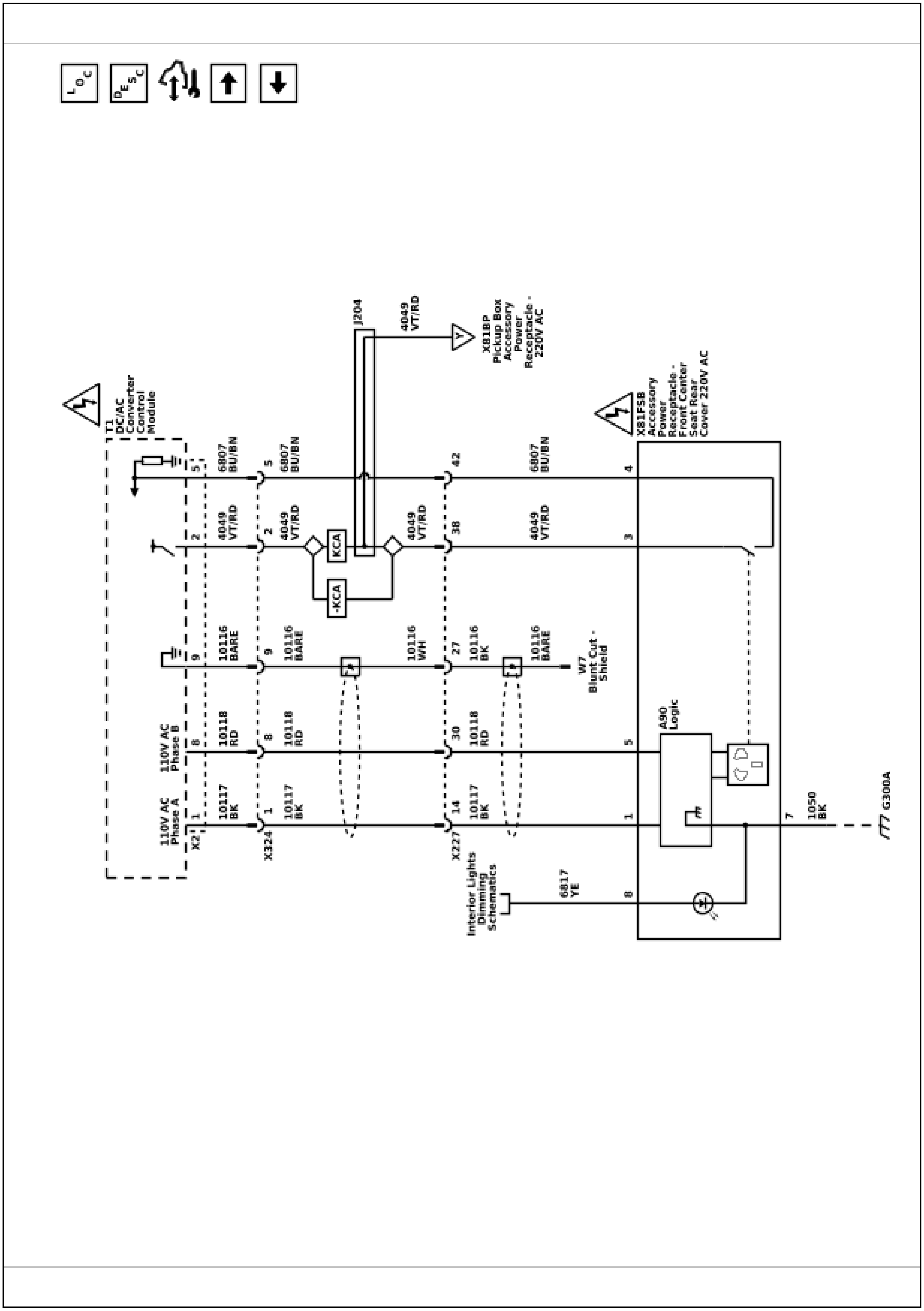
## Cigar Lighter/Power Outlet Schematics (220V AC Accessory Power Rear Receptacle - Front Floor Console)



## Cigar Lighter/Power Outlet Schematics (110V AC Accessory Power Receptacle - Front Center Seat Rear)



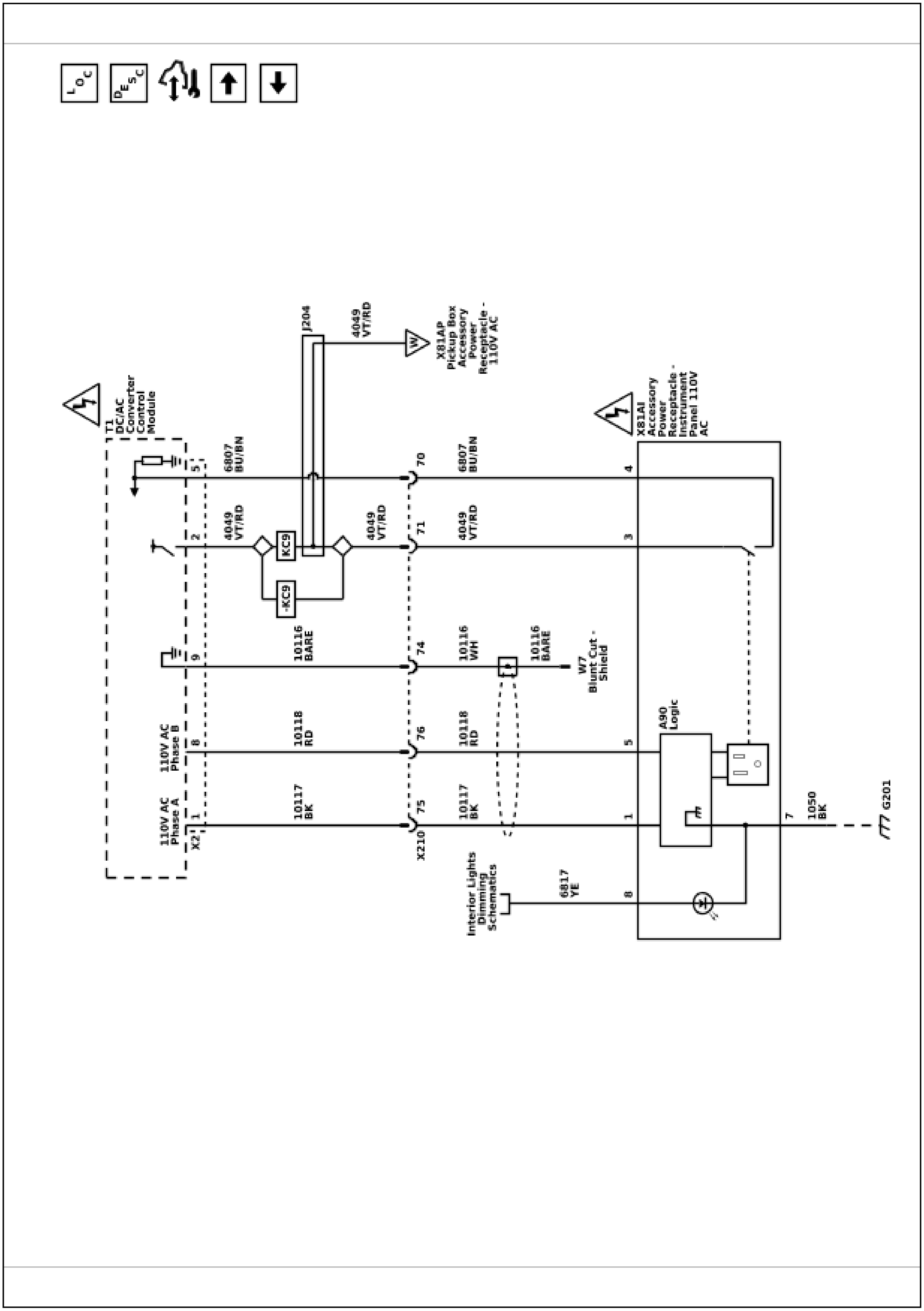
## Cigar Lighter/Power Outlet Schematics (220V AC Accessory Power Receptacle - Front Center Seat Rear (KI4))



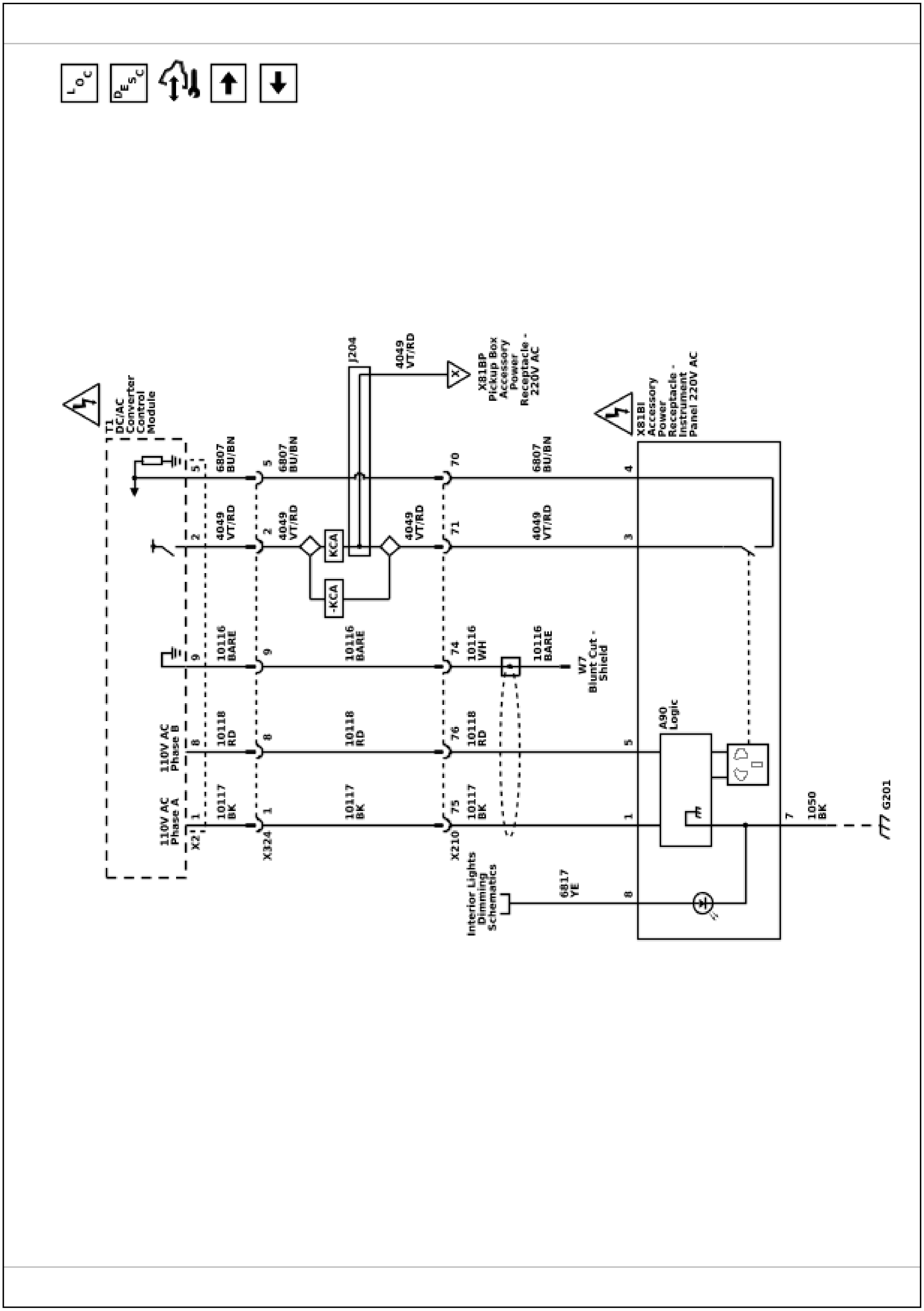

6845951

## Cigar Lighter/Power Outlet Schematics (110V AC Accessory Power Receptacle - Instrument Panel (KI5))

6845952

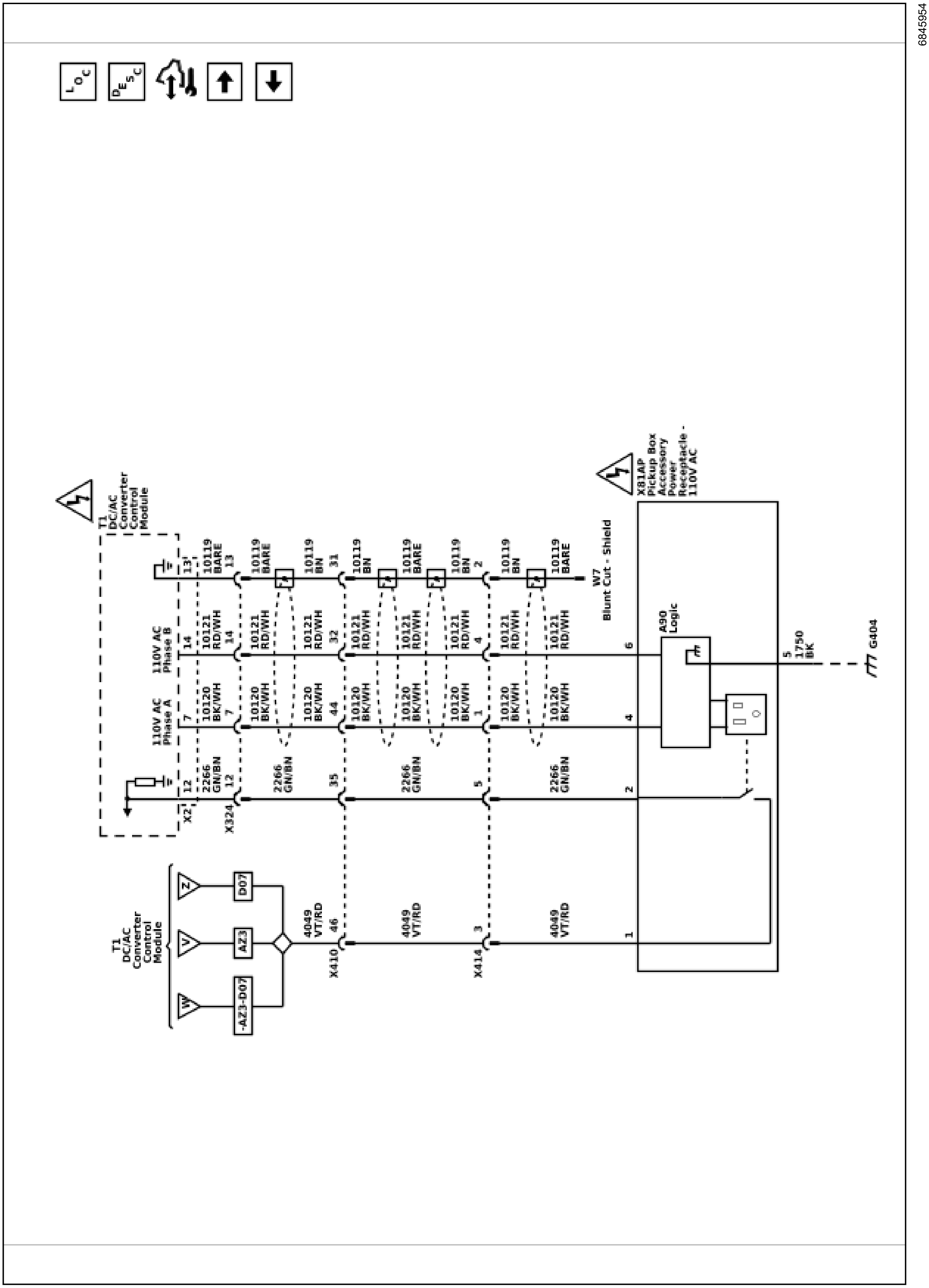


## Cigar Lighter/Power Outlet Schematics (220V AC Accessory Power Receptacle - Instrument Panel (KC9 / KCA))

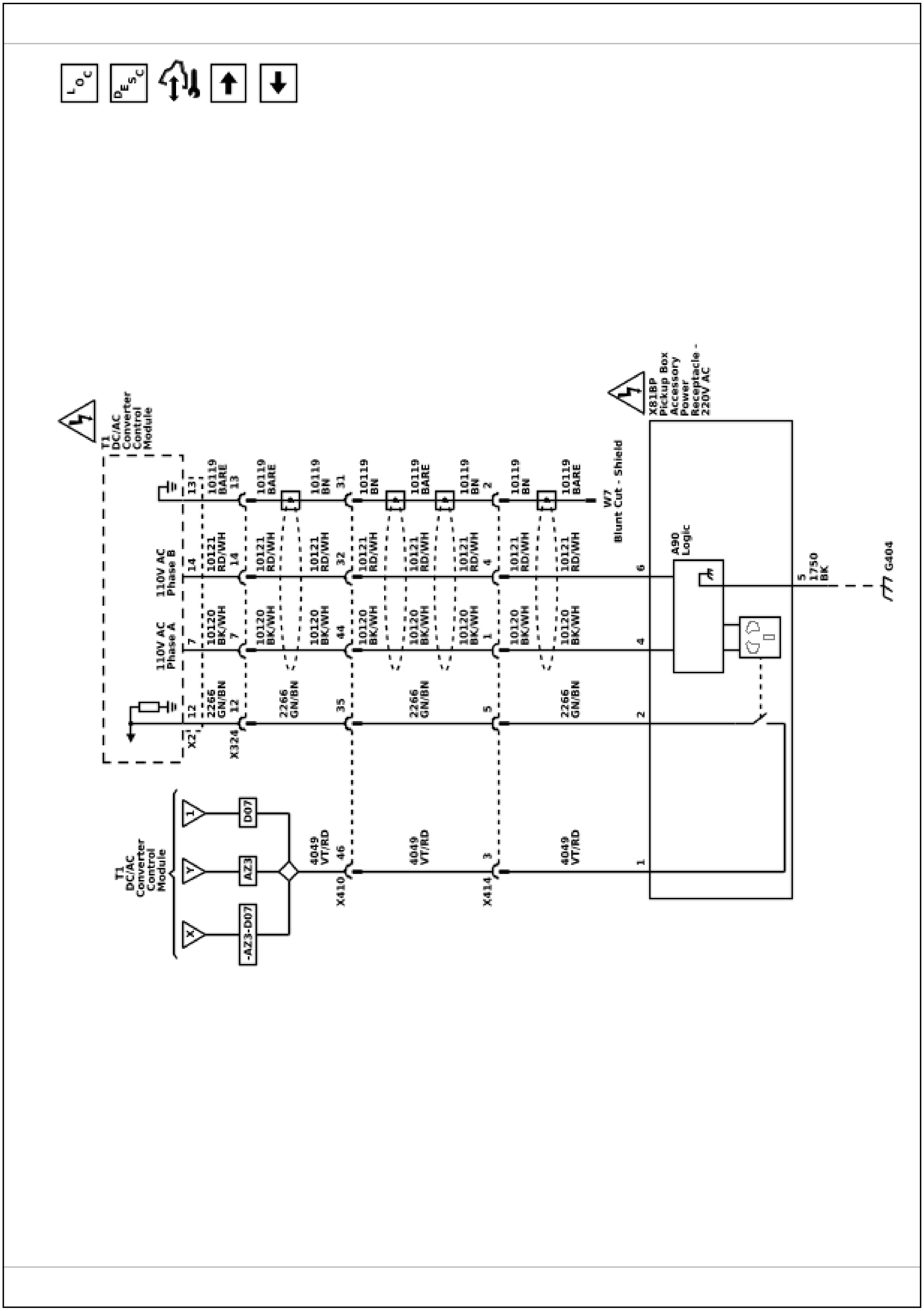



6845953

## Cigar Lighter/Power Outlet Schematics (110V AC Pickup Box Accessory Power Receptacle (KC9))



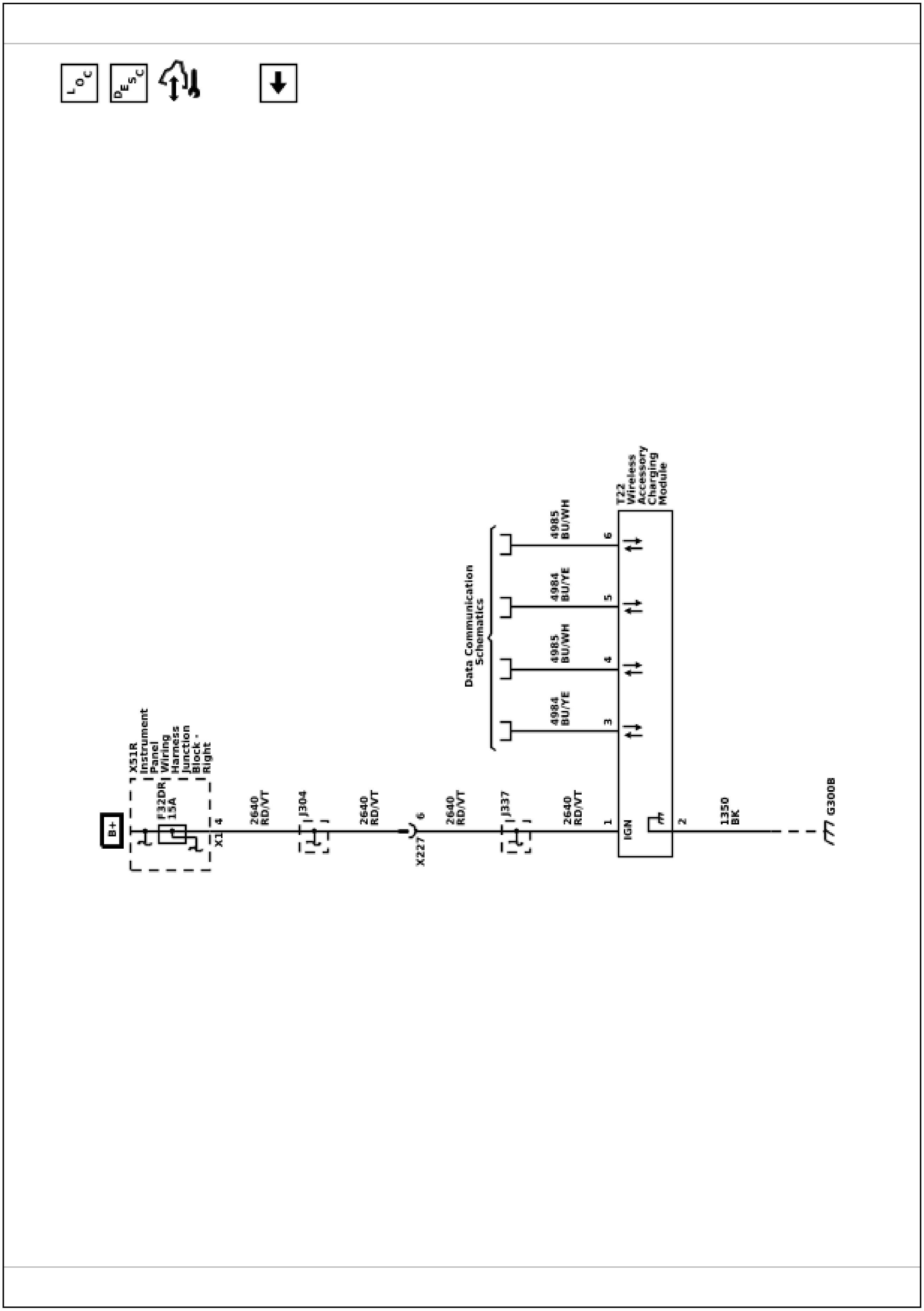
## Cigar Lighter/Power Outlet Schematics (220V AC Pickup Box Accessory Power Receptacle (KCA))




6845955

## Cigar Lighter/Power Outlet Schematics (Wireless Charging (K4C))

6845956



# Description and Operation

## Mobile Device Wireless Charger Description and Operation

### Mobile Device Wireless Charging System

The Mobile Device Wireless Charging System (WCS) is an system for wirelessly charging mobile devices. It is capable of charging the batteries of compatible mobile devices. A compatible device is one that is compliant with Power Matters Alliance (PMA), Wireless Power Consortium (WPC) Standard, or Alliance for Wireless Power (A4WP), meaning that it is equipped with a PMA, WPC, or A4WP wireless charge “receiver” that will work with the charge “transmitter” installed in the vehicle. The devices may utilize built-in charging circuitry or an adapter (external plug-in device which contains the charging circuitry). To check for phone or other device compatibility, refer to GM Total Connect.

***Warning: Remove all objects from the charging pad before charging your mobile device. Objects, such as coins, keys, rings, paper clips, or cards, between the phone and charging pad will become very hot. On the rare occasion that the charging system does not detect an object, and the object gets wedged between the phone and charger, remove the phone and allow the object to cool before removing it from the charging pad, to prevent burns.***

### Charging

To charge a device, place it on the charging surface in the vehicle. There is a charging coil located in the center of the charging surface. The device has a charging coil typically near the center of the device. These coils must be lined up in order for charging to proceed. When the interruptible retained accessory power (IRAP) relay is closed (this is true typically when vehicle ignition is in Run or Accessory position), the WCS will detect the device, establish communications with the device to confirm it is a compatible device, and then deliver charging power to the device via wireless interface. The WCS will be able to deliver 5W to 15W of power as requested by the compatible device. It shall only enter a charging state if communication is established and a compatible device is identified.

The WCS shall not enter a charging state if there is no communication established with a compatible device. Due to differences in objects, a foreign object detection protocol is employed to detect a non-compliant device and hold power transfer initiation until the non-compliant object has been removed and a compliant object has been detected. The charger monitors its internal temperature and will shut down if the charger temperature exceeds 185F (85C).

### Indicator

The K9 Body Control Module will detect the device battery is charging and send a serial data message on the GMLAN bus to the radio display. The radio display will indicate a device is currently charging by displaying a lightning bolt over the phone icon. When the indicator is toggling on and off this indicates a thermal limit has been reached and the device will not charge. For more information refer to the owners manual.

### Cooling

The Wireless Charge modules (WCM) have a fan on the bottom of the module. When the WCM charges, it simply pulls or pushes air from the phone, through the vents in the rubber liner, over the module, and down into the center console.

## Power Outlets Description and Operation

### 12 Volt Power Outlet Receptacle Description and Operation

The 12 V accessory power receptacles are supplied with power by the accessory relay.

The vehicle is fitted with a cigarette lighter and/or with a 12 V accessory power receptacle. The cigarette lighter and accessory power outlets are controlled by an ignition operated relay. The accessory power receptacle and cigarette lighter are operational when the ignition is turned to either the On or the Accessories positions. To operate the cigarette lighter, press in the lighter knob. When the element is hot, the lighter automatically pops out and is ready for use.

### 110 Volt Power Outlet Receptacle System Description

The alternating current (AC) accessory power outlet system consists of the accessory DC/AC power inverter module and the accessory power receptacle – 110 V AC. The accessory DC/AC power inverter module converts 12 V direct current (DC) battery power to 110 V at 60 Hertz (Hz) AC power to operate AC powered devices. The accessory DC/AC power inverter module provides up to 400 watts of power. The accessory power receptacle – 110 V AC provides the usual connection for AC powered devices.

### 110 Volt Power Outlet Receptacle System Operation

The accessory DC/AC power inverter module receives fuse protected battery voltage and is connected to the 12 V electrical system ground. The accessory power receptacle – 110 V AC has an internal switch, that detects when an AC powered device is plugged into the outlet. When the ignition is ON, and an AC powered device is plugged into the accessory power receptacle – 110 V AC, the normally open switch in the accessory power receptacle – 110 V AC, closes. When the accessory DC/AC power inverter module detects the voltage from the accessory power receptacle – 110 V AC switch, the inverter module begins to supply 110 V AC to the accessory power receptacle – 110 V AC after a 1.5 s delay. The accessory AC power system is protected against circuit overload and circuit shorts to ground.

### 110 Volt Power Outlet Receptacle Isolation Fault Protection

The accessory DC/AC power inverter module contains a ground fault circuit interrupter (GFCI). GFCI monitors the 110 V circuit for a short to vehicle chassis ground. If a 110 V AC short to ground is detected, the accessory DC/AC power inverter module will turn OFF. The module remains OFF, until the AC powered device is unplugged from the outlet, and then plugged into the outlet after a 3 s delay.

### 110 Volt Power Outlet Receptacle Overload Shutdown

The accessory DC/AC power inverter module will turn OFF if the current in the 110 V circuit is greater than 3.8 A for 1 s , or 2.5 A for 10 s . The module will turn ON again, when the AC powered device is unplugged from the outlet, and then plugged into the outlet after a 3 s delay.

### 110 Volt Power Outlet Receptacle Internal Shutdown

The accessory DC/AC power inverter module will turn OFF if the B+ supply voltage is greater than 16.5 V or less than 11 V. The module will also turn OFF if the device temperature is greater than 85°C (185°F). The module will turn ON again, after the shutdown condition is corrected, and the AC powered device is unplugged from the outlet, and then plugged into the outlet.

### 230 Volt Power Outlet Receptacle System Description

The alternating current (AC) accessory power outlet system consists of the accessory DC/AC power inverter module and the accessory power receptacle – 220V AC. The accessory DC/AC power inverter module converts 12 V direct current (DC) battery power to 220–230 V at 50 Hertz (Hz) AC power to operate AC powered devices. The accessory DC/AC power inverter module provides up to 400 watts of power. The accessory power receptacle – 220V AC provides the usual connection for AC powered devices.

### 230 Volt Power Outlet Receptacle System Operation

The accessory DC/AC power inverter module receives fuse protected battery voltage and is connected to the 12 V electrical system ground. The accessory power receptacle – 220V AC has an internal switch, that detects when an AC powered device is plugged into the outlet. When the ignition is ON, and an AC powered device is plugged into the accessory power receptacle – 220V AC, the normally open switch in the accessory power receptacle – 220V AC, closes. When the accessory DC/AC power inverter module detects the voltage from the accessory power receptacle – 220V AC switch, the inverter module begins to supply 220–230 V AC to the accessory power receptacle – 220V AC after a 1.5 second delay. The accessory AC power system is protected against circuit overload and circuit shorts to ground.

### 230 Volt Power Outlet Receptacle Isolation Fault Protection

The accessory DC/AC power inverter module contains a ground fault circuit interrupter (GFCI). GFCI monitors the 230 V circuit for a short to vehicle chassis ground. If a 230 V AC short to ground is detected, the accessory DC/AC power inverter module will turn OFF. The module remains OFF, until the AC powered device is unplugged from the outlet, and then plugged into the outlet after a 3 s delay.

### 230 Volt Power Outlet Receptacle Overload Shutdown

The accessory AC/DC power control module will turn OFF if the current in the 230 V circuit is greater than 3.8 A for 1 second, or 2.5 A for 10 seconds. The module will turn ON again, when the AC powered device is unplugged from the outlet, and then plugged into the outlet after a 3 second delay.

## 230 Volt Power Outlet Receptacle Internal Shutdown

The accessory DC/AC power inverter module will turn OFF if the B+ supply voltage is greater than 16.5 V or less than 11 V. The module will also turn OFF if the device temperature is greater than 85°C (185°F). The module will turn ON again, after the shutdown condition is corrected, and the AC powered device is unplugged from the accessory power receptacle – 220V AC, and then plugged into the accessory power receptacle – 220V AC.

## USB Receptacle Description and Operation (USS)

The vehicle is fitted with USB charge port receptacles. These USB receptacles are for charging devices only. The USB receptacles are controlled by an ignition operated relay and are operational when the ignition is turned to either the On or the Accessories positions.

# Wiring Systems and Power Management

## Schematic and Routing Diagrams

### How to Use Electrical Schematics

#### Information Overview

The following explains some of the key parts of the GM wiring diagrams. Included are:

- Color Abbreviations
- Electronic Delivery Navigation Features

#### Color Abbreviations

The following sequence is used when depicting wire colors:

1. Color modifier of the wire, such as light or dark (if applicable)
2. Primary color of the wire
3. Secondary color of the wire (tracer/stripe)

Wire insulation and connector body colors in schematic information are abbreviated with a two character code as listed below.

| Abbreviation | Color | Abbreviation | Color |
|---|---|---|---|
| AM | Amber | OG | Orange |
| BARE | Bare | PK | Pink |
| BG | Beige | PU | Purple |
| BK | Black | RD | Red |
| BN | Brown | RU | Rust |
| BU | Blue | SR | Silver |
| CL | Clear | TL | Teal |
| CR | Cream | TN | Tan |
| CU | Curry | TQ | Turquoise |
| GD | Gold | VT | Violet |
| GN | Green | WH | White |
| GY | Gray | YE | Yellow |
| NA | Natural | — | — |
| Color Modifiers | | | |
| L | Light | D | Dark |

Additionally, industry standard cable types are not identified by color, but are listed by cable type as follows:

| Abbreviation | Cable Type |
|---|---|
| COAX | Coax Cable |
| ENET | Ethernet |
| FW | Flat Wire |
| HDMI | High Definition Multimedia Interface |
| LVDS | Low-voltage Differential Signaling |
| TWINAX | Twinax Cable |
| USB | Universal Serial Bus |

#### Electronic Delivery Navigation Features

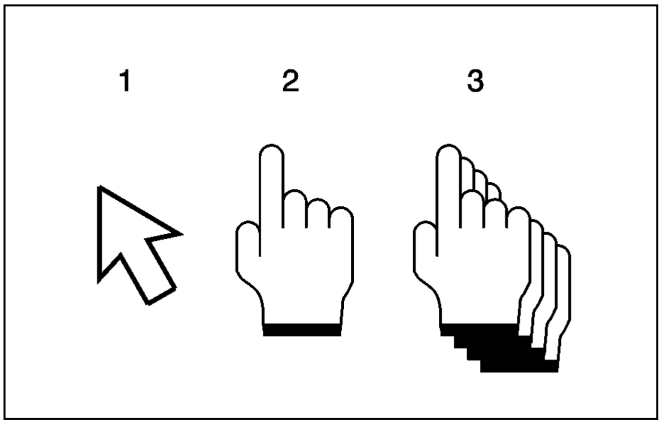
The schematics information has been enhanced for electronic delivery and the following explains the features that are now available.

The enhanced features are categorized into three types:

- Mouse-overs, which are active when the mouse pointer is placed over the activated area

- Hotspots (links to other information), which are active by placing the mouse pointer over the activated area and clicking the left mouse button
- Hotspot Target Highlighting, which is when linking from one graphic to another graphic, the point of interest will be highlighted in red. This feature is available only when linking from a schematic graphic to a component locator/harness routing view, or when linking from a schematic to an electrical center identification view

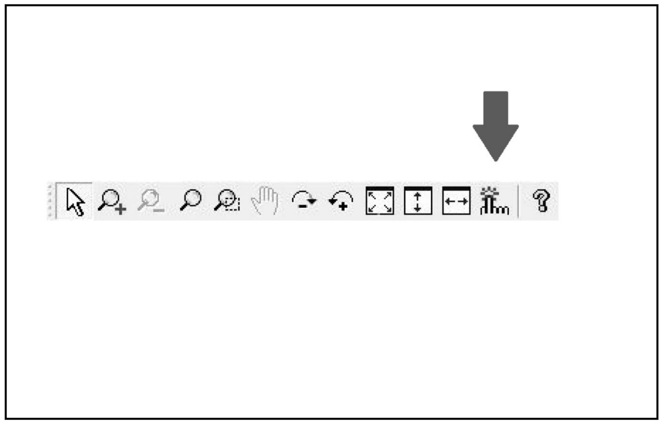
Depending on the amount of information that is linked to from a hotspot, the mouse pointer changes shape.




3819127

1. Basic mouse pointer – this means there are no hotspots available, but there may be a mouse-over available.
2. Single hand pointer – this means there is a mouse-over and hotspot link to a single document. Clicking on these areas will automatically take you to the target link.
3. Multiple hand pointer – this means there is a mouse-over and hotspot link to a multiple document. Clicking on these areas will bring up a pop-up menu that will display all available links. You may then select one of the available links clicking on one of the displayed links.

To see which areas of the schematic information have an available hotspot and/or a mouse-over, select and hold down the highlight hotspots button of the cgm viewer. This will highlight all areas of the graphic that have an available hotspot and/or a mouse-over in red. Once the button is released, the areas of the graphic will no longer be highlighted.



3819130

Each type of schematic related information has some level of these features. The schematic related information consists of the following information types:

- Schematics
- Connector End Views
- Component Locator Views
- Harness Routing Views
- Electrical Center Identification Views
- Master Electrical Component List
- Master Electrical Schematic Icons
- Schematics RPO Code List
- Circuit Number/Wire Colors
- Wire Lines
- Connector Cavities

## Schematics

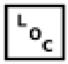
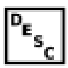
An electrical schematic hotspot is an activated icon or area in the schematic that can be cursor selected to link to additional information. Additionally, each of the hotspots in schematics has a mouse-over.

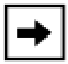
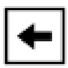
Hotspots in schematics are categorized into three types:

- Schematic Navigational Icon Hotspots
- Schematic Informational Icon Hotspots
- Schematic Navigational Hotspots

## Schematic Navigational Icon Hotspots

The following lists icons that may appear on the upper right corner of a schematic that have an available mouse-over and hotspot.

| Icon | Mouse-Over | Hotspot Link to Information |
|---|---|---|
|  1990537 | Master Electrical Component List | Links to the vehicle Master Electrical Component List that shows all electrical components and harness items on the vehicle and has links to any available views |
|  1990538 | Title of the subsystem description and operation | Links to the System Description and Operation |
|  1988674 | Control Module References | Links to the Control Module References table |

| Icon | Mouse-Over | Hotspot Link to Information |
|---|---|---|
|  1990541 | Title of the next schematic page | Links to the next schematic of the subsystem schematics |
|  1990542 | Title of the previous schematic page | Links to the previous schematic of the subsystem schematics |

### Schematic Informational Icon Hotspots

The following lists the icons that may appear anywhere on a schematic that have an available mouse-over and hotspot.

| Icon | Mouse-Over | Hotspot Link to Information |
|---|---|---|
| Danger  1988672 | Master Electrical Schematic Icons | Links to the vehicle Master Electrical Schematic Icons list that describes the message for the icon. |
| High Voltage  1988673 | Master Electrical Schematic Icons | Links to the vehicle Master Electrical Schematic Icons list that describes the message for the icon. |
| Caution  1990543 | Master Electrical Schematic Icons | Links to the vehicle Master Electrical Schematic Icons list that describes the message for the icon. |
| Supplemental Restraint  1988667 | Master Electrical Schematic Icons | Links to the vehicle Master Electrical Schematic Icons list that describes the message for the icon. |

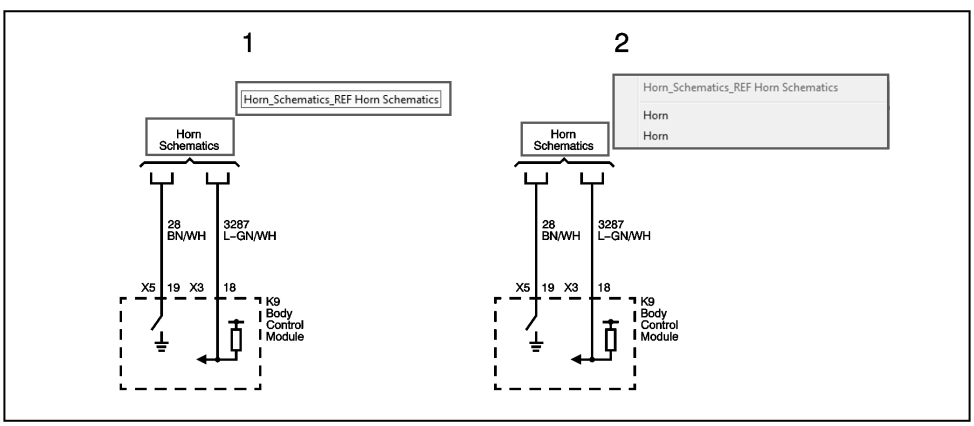
| Icon | Mouse-Over | Hotspot Link to Information |
|---|---|---|
| Pedestrian Impact  3814889 | Master Electrical Schematic Icons | Links to the vehicle Master Electrical Schematic Icons list that describes the message for the icon. |
| Additional Information  1988670 | Master Electrical Schematic Icons | Links to the vehicle Master Electrical Schematic Icons list that describes the message for the icon. |

## Schematic Navigational Hotspots

In addition to the navigational icons, schematics have other active hotspots that link to supporting information such as related schematics, component locator views, harness routing views, and connector end views.

These hotspots can be either text based or symbol based. The following are the items that will have a mouse-over and hotspot.

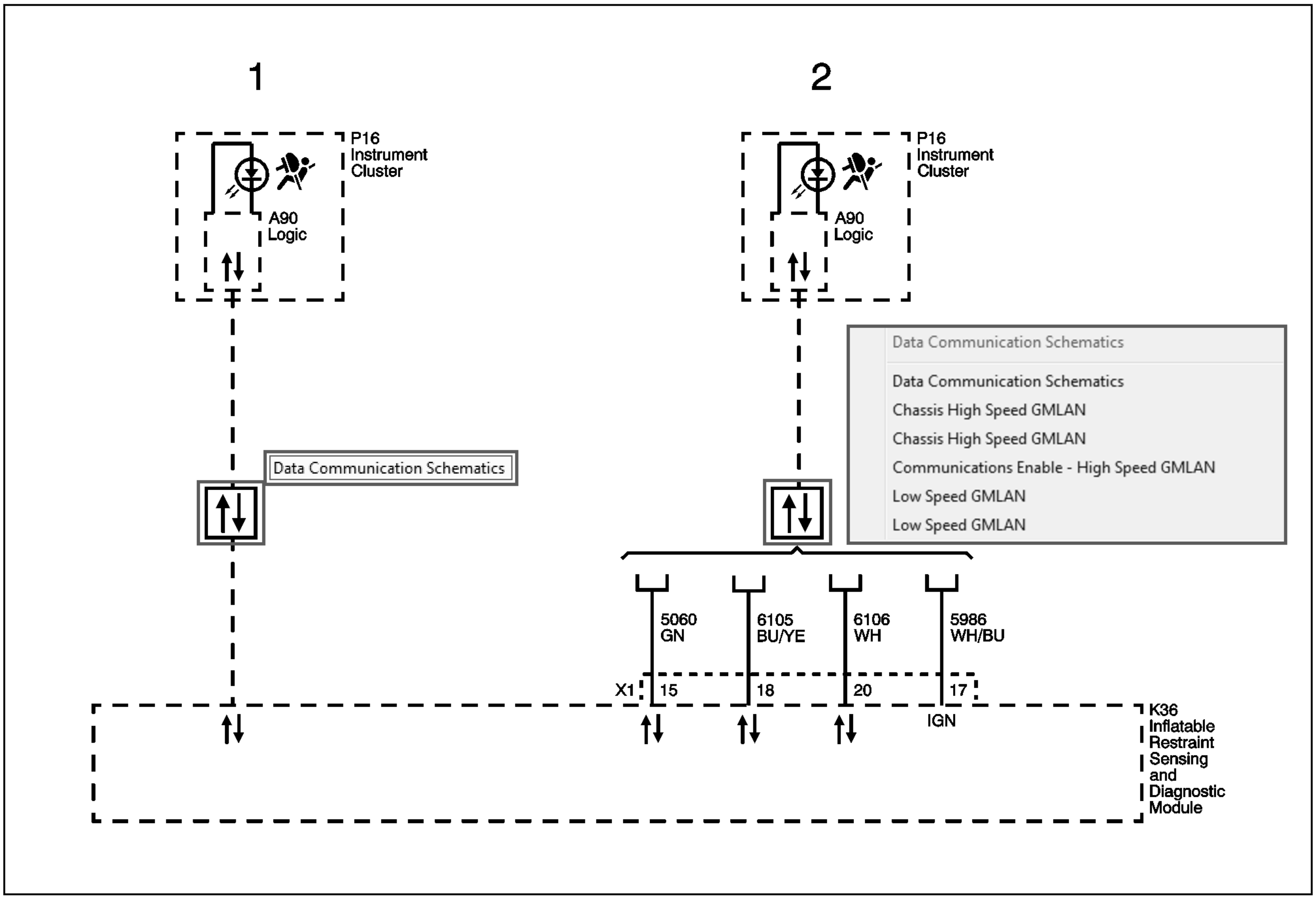
## Schematic Title Circuit References




3814891

1. **Mouse-over:** Displays the title of the schematic page linked to.
2. **Hotspot Link to Information:** Links to the individual subsystem schematic page(s) that shows the circuit in detail. If multiple circuits are included, or if the circuit is shown in multiple schematics, a menu will appear when the link is selected. This menu includes links to all schematics that contain the same circuit number as the circuit being referenced. Additionally, when the target schematic is opened, the referenced circuit will be highlighted to draw visual attention. Note that when there are multiple target links, the links may appear to be duplicate in the menu, however, they are not. The exact same title is repeated for each circuit number that is pointing to the same target schematic. A future update will include the circuit number before the link description to further assist in link selection.

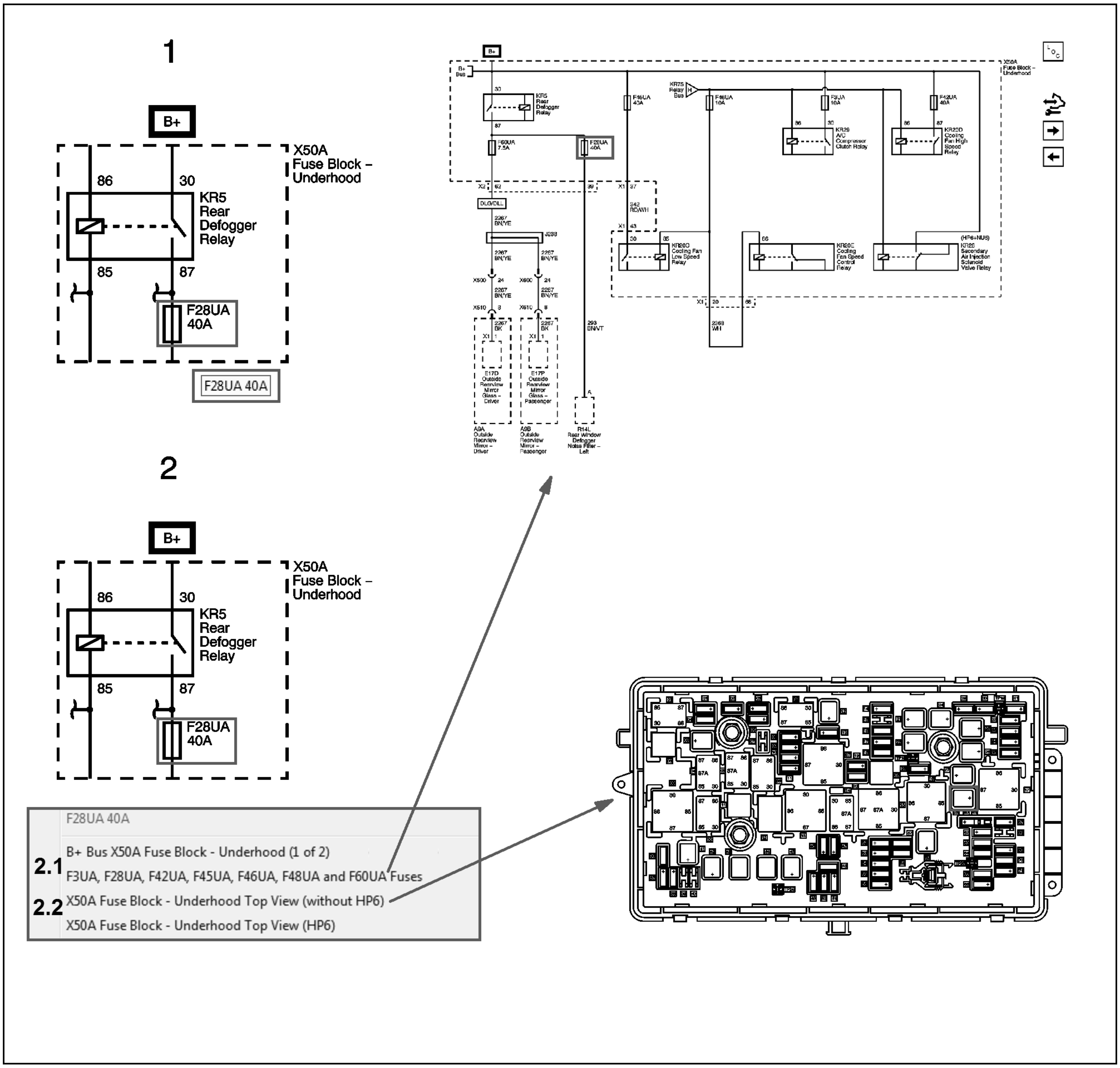
### Serial Data Functional Circuit Icon




3818612

1. **Mouse-over:** Displays the schematic title Data Communication Schematics.
2. **Hotspot Link to Information:**
   - ⇒ When a dashed serial data wire and icon are shown without any circuit numbers, the serial data circuit icon will link to the complete list of Data Communication schematic pages, and not a specific schematic. This is due to no circuit numbers are shown.
   - ⇒ When a circuit wire(s) are shown with circuit numbers, a menu will appear when the link is selected. This menu includes links to the list of Data Communication schematic pages as well as links to the individual schematics that contain the same circuit number as the circuit being referenced. Additionally, when the target schematic is opened, the referenced circuit will be highlighted to draw visual attention. Note that when there are multiple target links, the links may appear to be duplicate in the menu, however, they are not. The exact same title is repeated for each circuit number that is pointing to the same target schematic. A future update will include the circuit number before the link description to further assist in link selection.

## Fuse/Circuit Breaker Symbol and Name within Subsystem Schematics



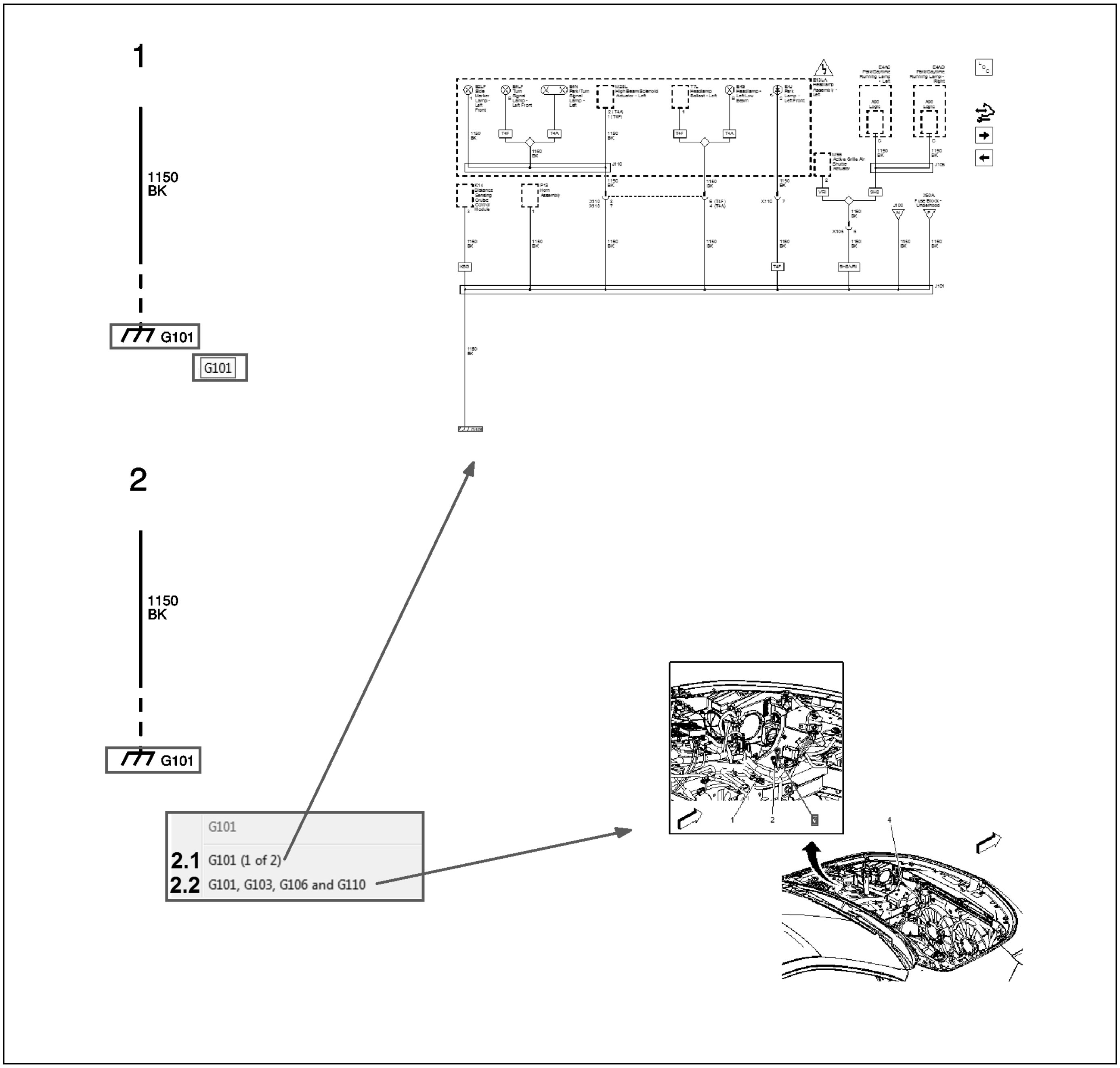

3818725

1. **Mouse-over:** Displays the code and the amperage of the protection device.
2. **Hotspot Link to Information:**
   - ⇒ When multiple links are available, a menu will appear when the link is selected. This menu includes all available links in a structured sequence.

   2.1. Links to the individual schematic page(s) within the Power Distribution Schematics where the circuits are shown in detail. Additionally, when the target schematic is opened, the circuit protection device will be highlighted to draw visual attention.

   2.2. Links to individual fuse block top or bottom view(s) within the Electrical Center Identification Views and will show where the device is located in the fuse block. Additionally, when the target view is opened, the device outline will be highlighted for visual attention.

### Ground Symbol/Name in Subsystem Schematics



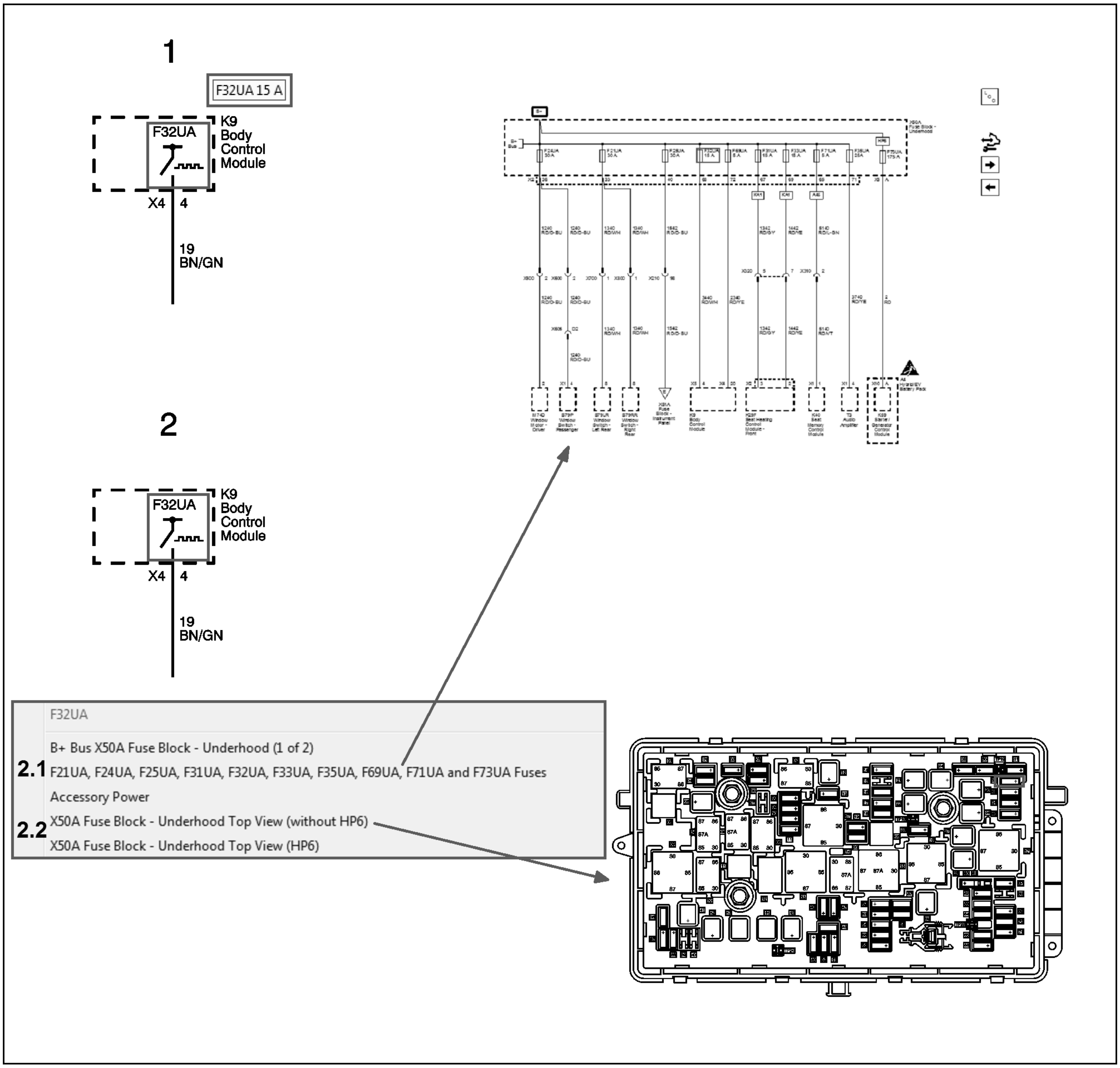

3818918

1. **Mouse-over:** Displays the ground number.
2. **Hotspot Link to Information:**
   - ⇒ When multiple links are available, a menu will appear when the link is selected. This menu includes all available links in a structured sequence.

   2.1. Links to the individual schematic page(s) within the Ground Distribution Schematics where the circuits are shown in detail. Additionally, when the target schematic is opened, the ground will be highlighted to draw visual attention.

   2.2. Links to the individual locator view(s) within the Ground Views and will show where the ground is located on the vehicle. Additionally, when the target view is opened, the ground and callout leader line/number will be highlighted to draw visual attention.

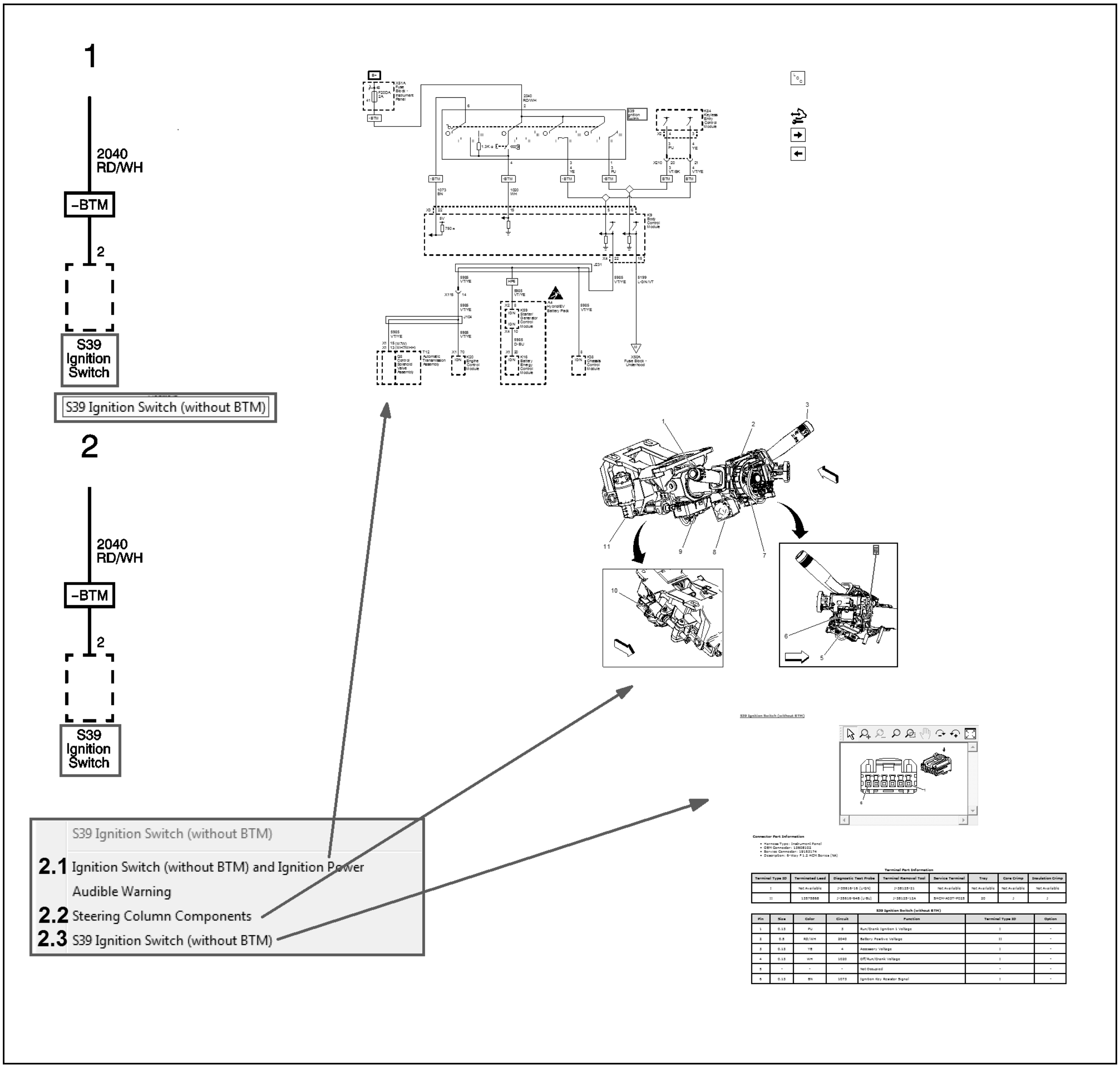
## Body Control Module High-Side Driver Output Symbol/Driver Source Fuse Name in Subsystem Schematics




3819026

1. **Mouse-over:** Displays the code of the protection device that supplies the high-side driver output circuit.
2. **Hotspot Link to Information:**
   ⇒ When multiple links are available, a menu will appear when the link is selected. This menu includes all available links in a structured sequence.
   2.1. Links to the individual schematic page(s) within the Power Distribution Schematics where the circuits are shown in detail. Additionally, when the target schematic is opened, the circuit protection device will be highlighted to draw visual attention.
   2.2. Links to individual fuse block top or bottom view(s) within the Electrical Center Identification Views and will show where the device is located in the fuse block. Additionally, when the target view is opened, the device outline will be highlighted for visual attention.

## Component Name in Power and Ground Distribution Schematics




3819063

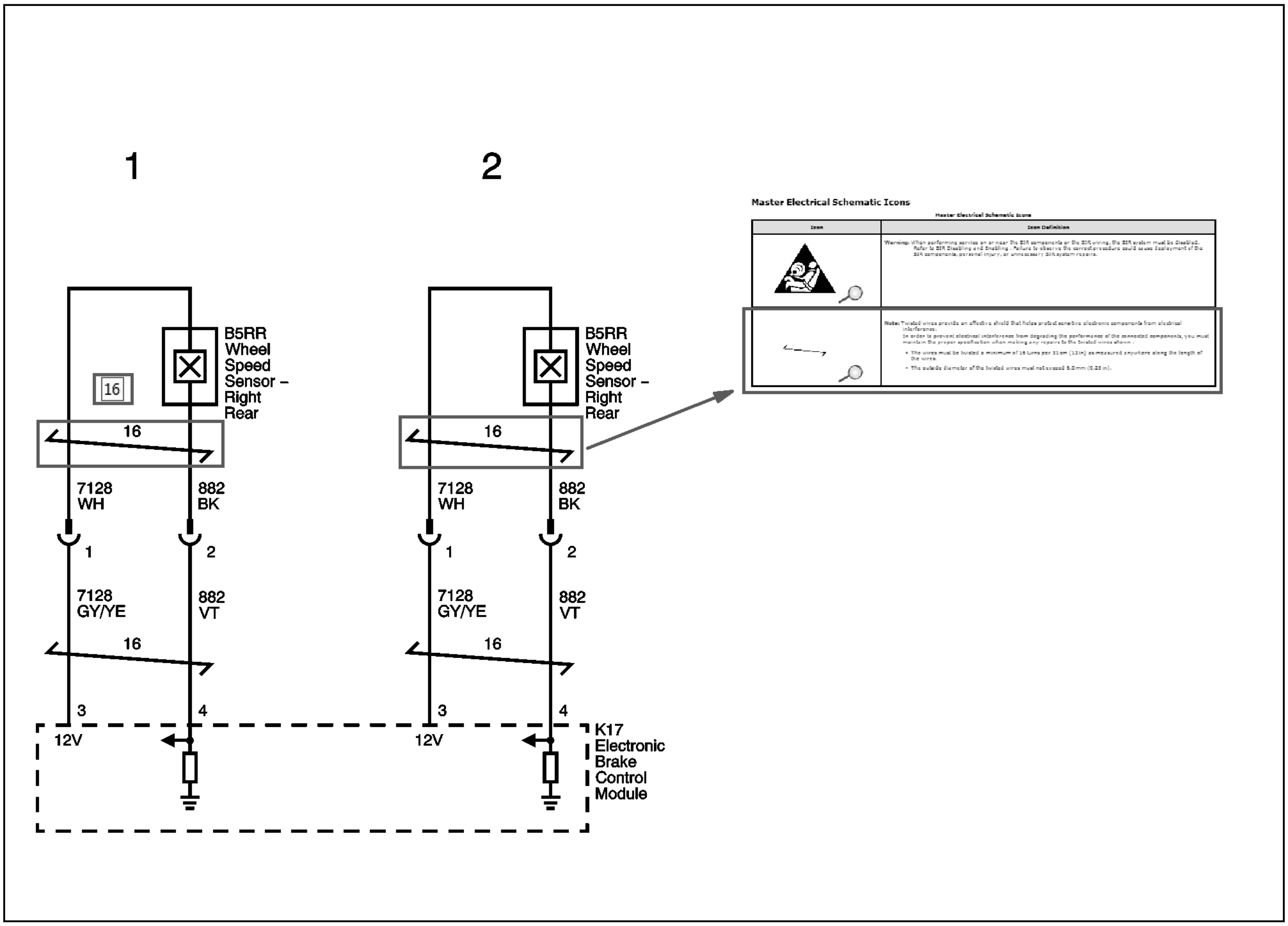
1. **Mouse-over:** Displays the code and name of the component.
2. **Hotspot Link to Information:**
   ⇒ When multiple links are available, a menu will appear when the link is selected. This menu includes all available links in a structured sequence.

   2.1. Links to the individual schematic page(s) within the Subsystem Schematic(s) where the circuits are shown in detail. Additionally, when the target schematic is opened, the component code and name will be highlighted to draw visual attention.

   2.2. Links to the individual locator view(s) within the applicable component view category and will show where the component is located on the vehicle. Additionally, when the target view is opened, the component and callout leader line/number will be highlighted to draw visual attention.

   2.3. Links to individual connector end view(s) within the Component Connector End Views.

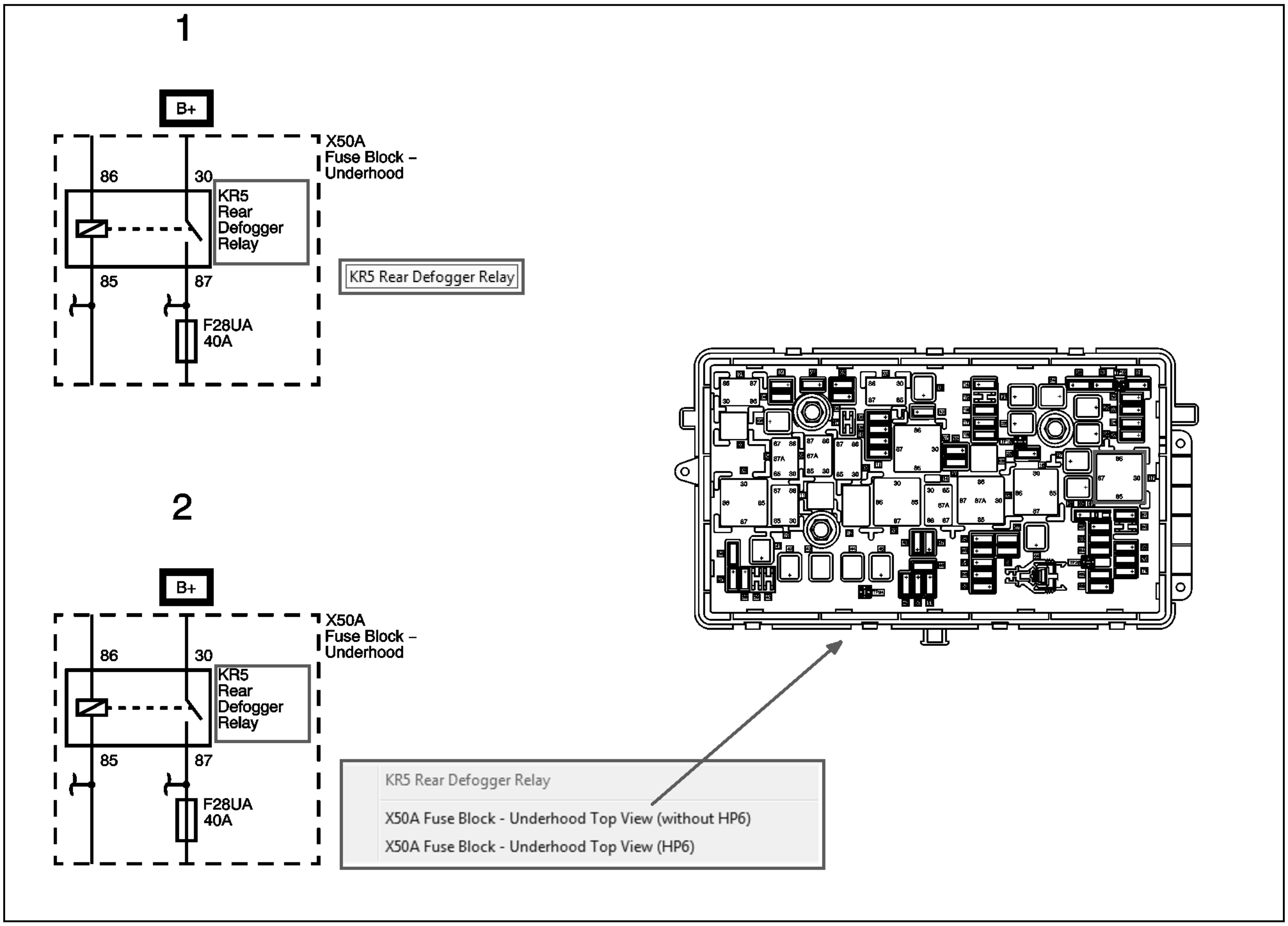
## Twisted Pair Symbols




3819064

1. **Mouse-over:** Displays the repair specification for the number of twists of the wire within the specified distance.
2. **Hotspot Link to Information:** Links to the Master Electrical Schematic Icons list that shows the icon along with the repair specification details for the wire.

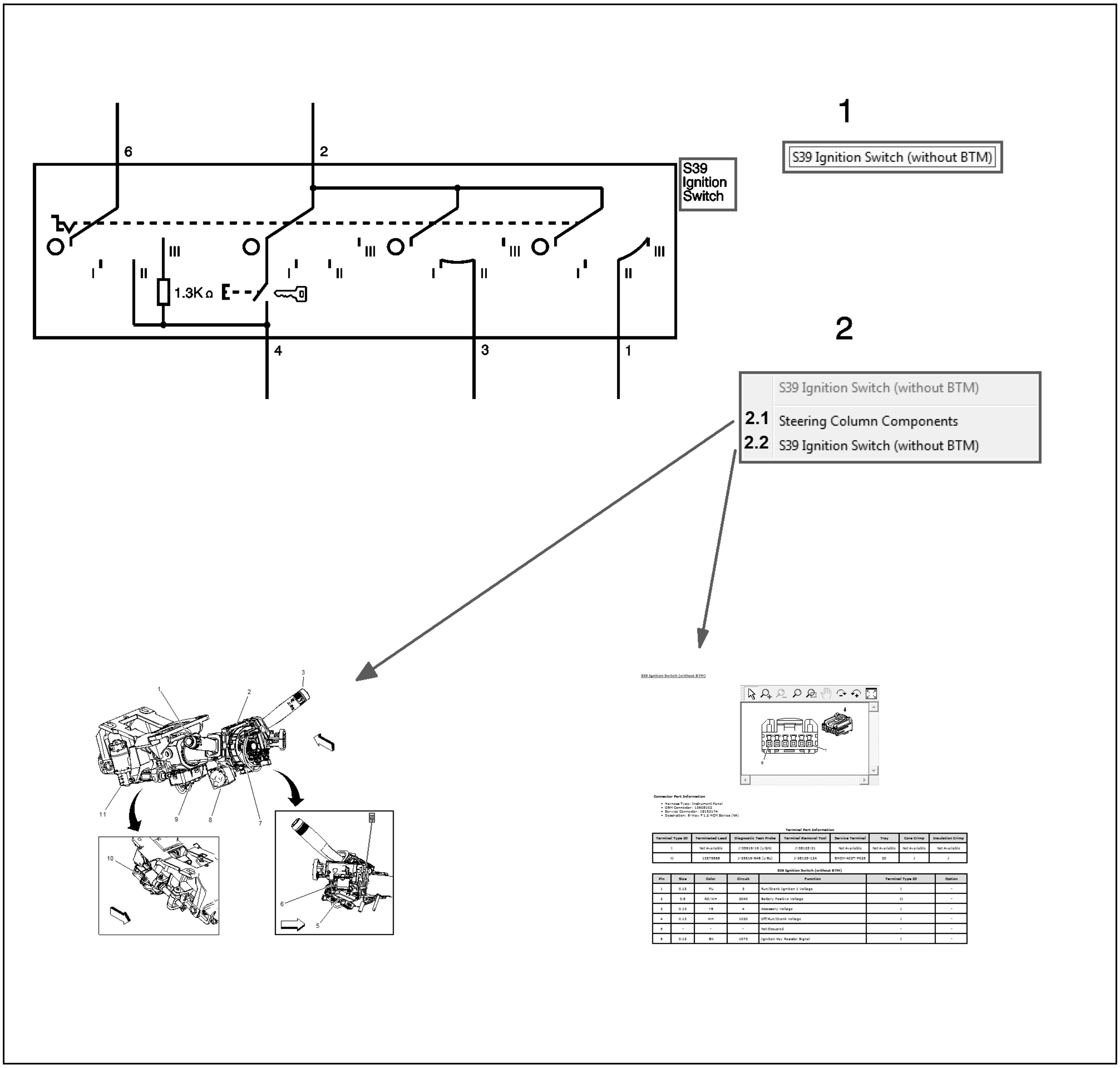
### Relay Name (located within a block)




3819124

1. **Mouse-over:** Displays the relay code and name.
2. **Hotspot Link to Information:** Links to individual fuse block top or bottom view(s) within the Electrical Center Identification Views and will show where the device is located in the fuse block. Additionally, when the target view is opened, the device outline will be highlighted for visual attention.

## Component Name in Subsystem Schematics



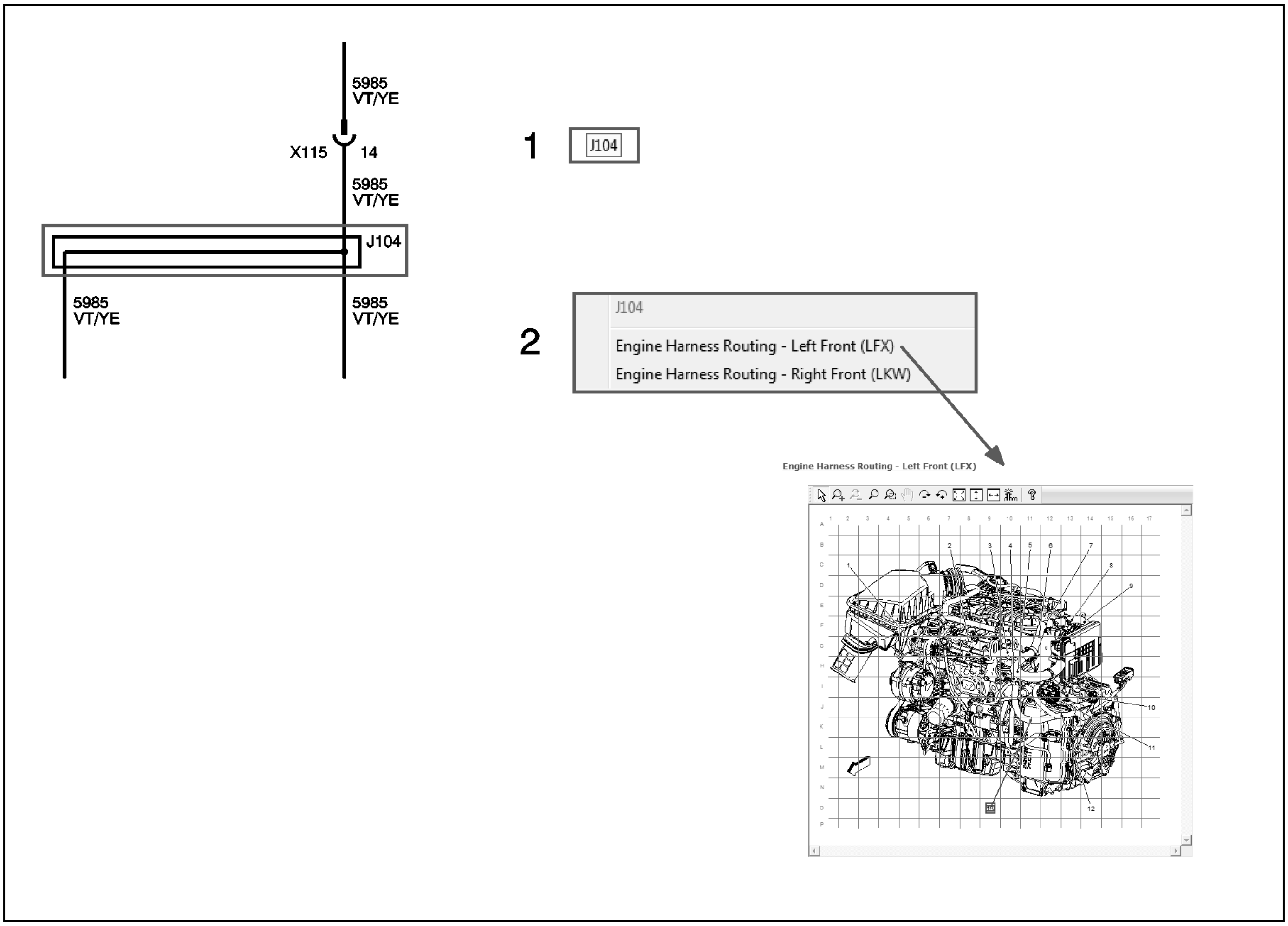

3819141

1. **Mouse-over:** Displays the code and name of the component.
2. **Hotspot Link to Information:**
   - ⇒ When multiple links are available, a menu will appear when the link is selected. This menu includes all available links in a structured sequence.

   2.1. Links to the individual locator view(s) within the applicable component view category and will show where the component is located on the vehicle. Additionally, when the target view is opened, the component and callout leader line/number will be highlighted to draw visual attention.

   2.2. Links to individual connector end view(s) within the Component Connector End Views.

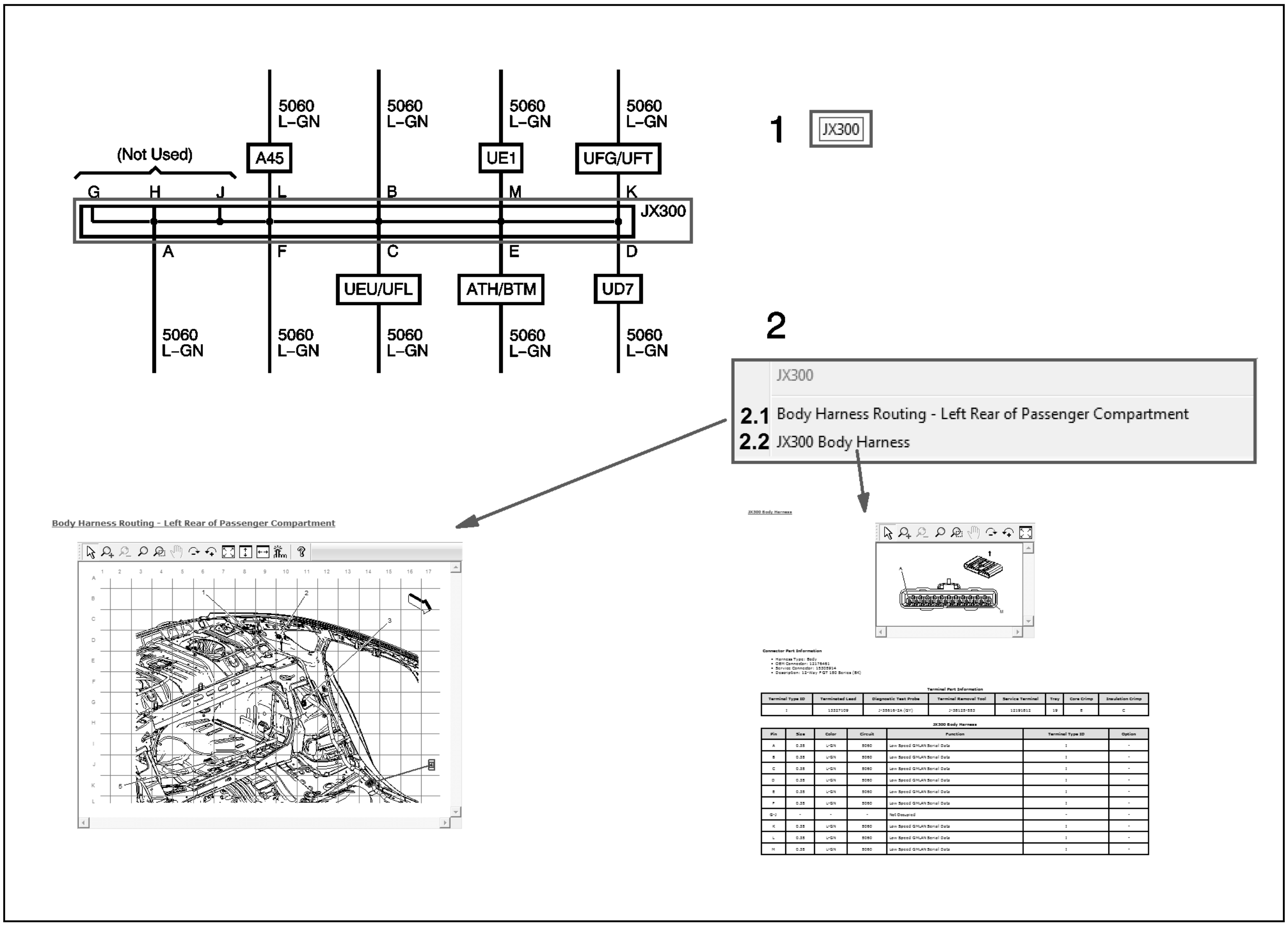
## Splice Names




3819287

1. **Mouse-over:** Displays the code of the harness splice.
2. **Hotspot Link to Information:** Links to the individual harness routing view(s) within the Harness Routing Views and will show where the harness item is located on the vehicle harness. Additionally, when the target view is opened, the harness item and callout leader line/number will be highlighted to draw visual attention.

## Splice Pack Names



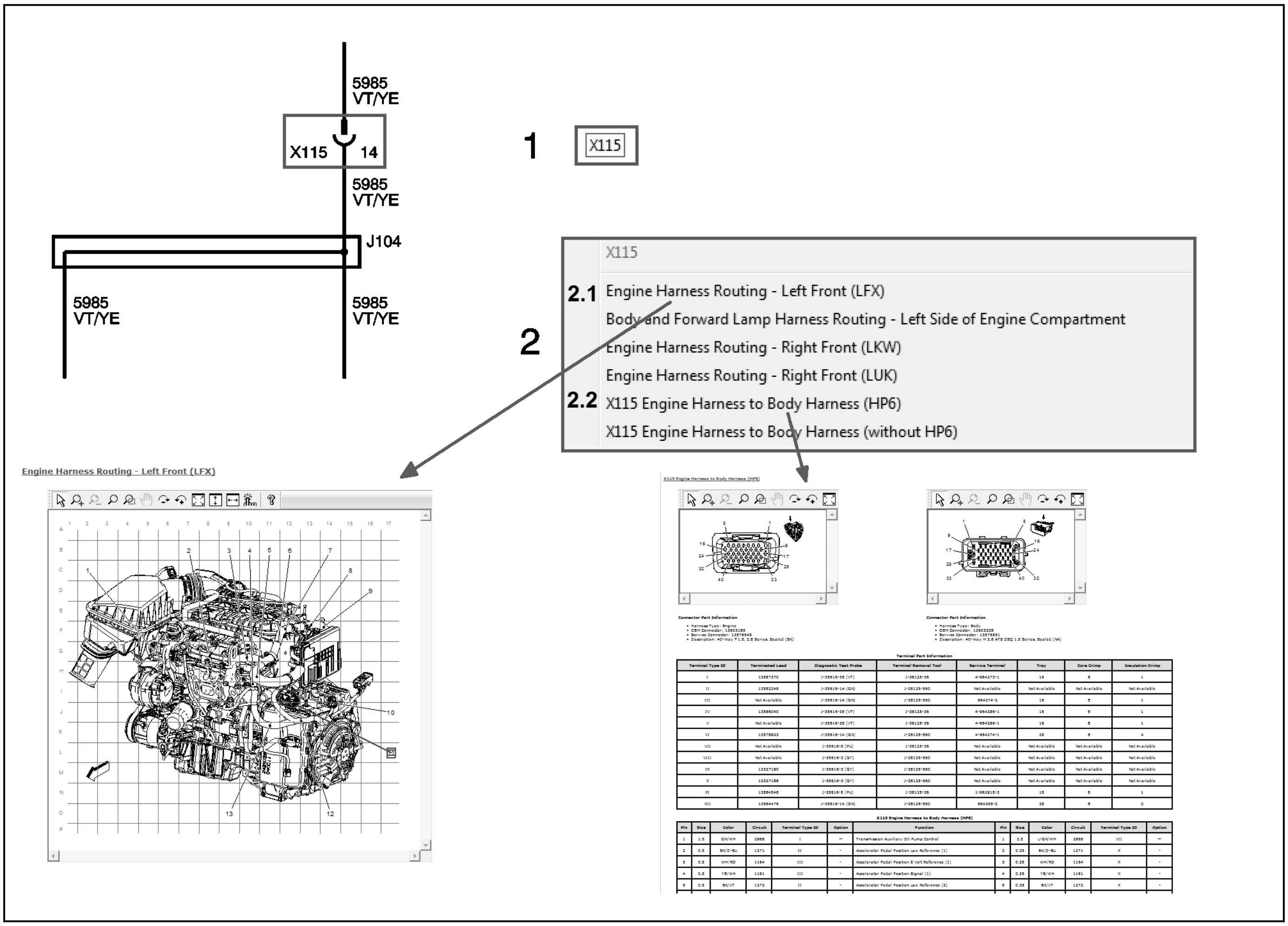

3819454

1. **Mouse-over:** Displays the code of the harness splice pack.
2. **Hotspot Link to Information:**
   - ⇒ When multiple links are available, a menu will appear when the link is selected. This menu includes all available links in a structured sequence.

   2.1. Links to the individual harness routing view(s) within the Harness Routing Views and will show where the harness item is located on the vehicle harness. Additionally, when the target view is opened, the harness item and callout leader line/number will be highlighted to draw visual attention.

   2.2. Links to individual connector end view(s) within the Splice Pack Connector End Views.

## Inline Harness Connector Names



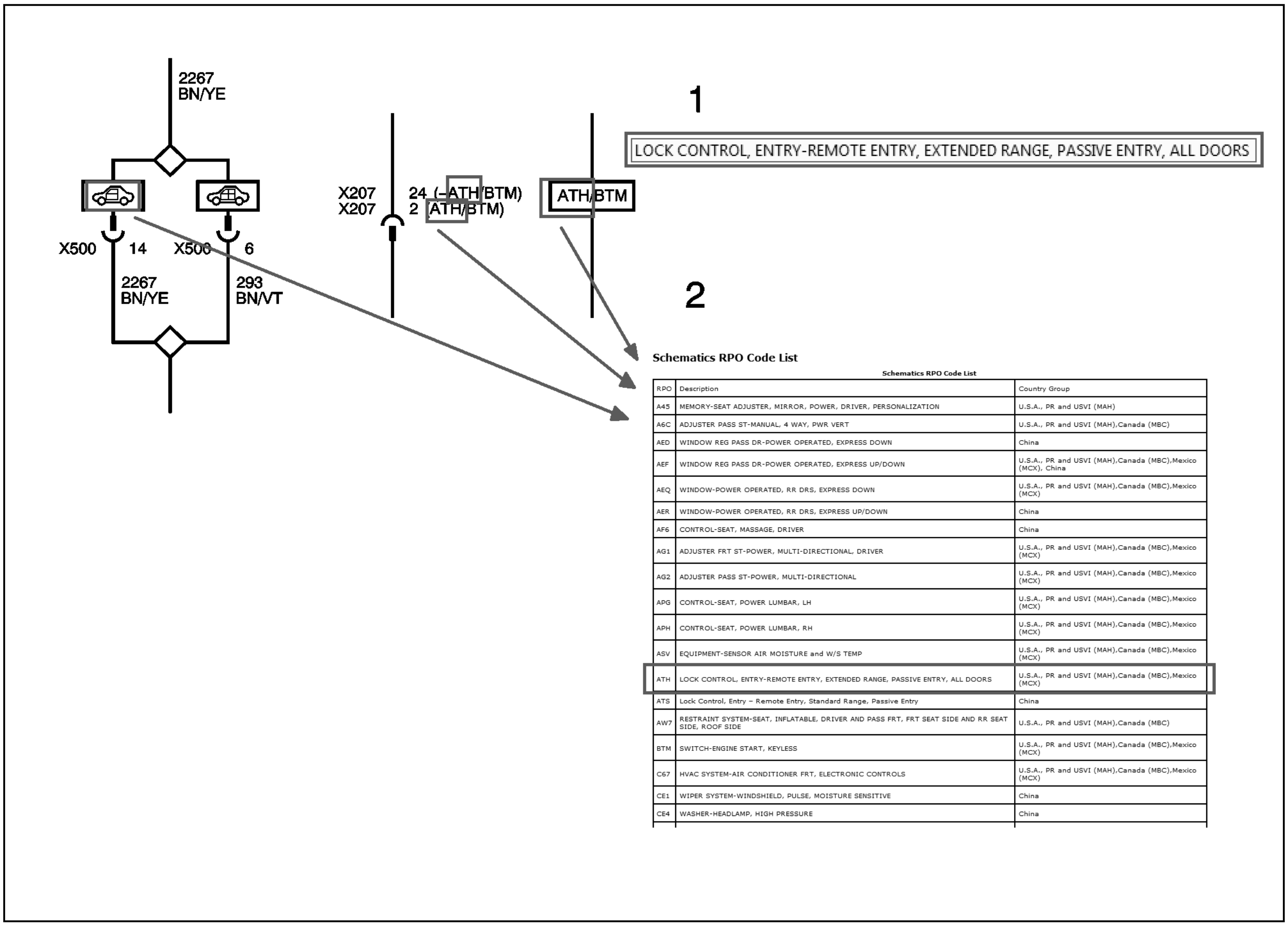

3819345

1. **Mouse-over:** Displays the code of the inline harness connector.
2. **Hotspot Link to Information:**
   - ⇒ When multiple links are available, a menu will appear when the link is selected. This menu includes all available links in a structured sequence.

   2.1. Links to the individual harness routing view(s) within the Harness Routing Views and will show where the harness item is located on the vehicle harness. Additionally, when the target view is opened, the harness item and callout leader line/number will be highlighted to draw visual attention.

   2.2. Links to individual connector end view(s) within the Inline Harness Connector End Views.

## Regular Production Option (RPO) Codes/Icons

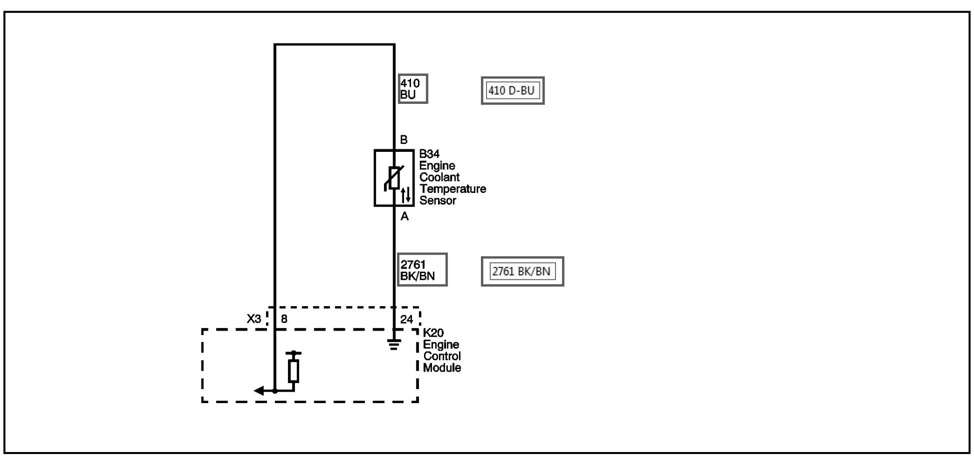



| RPO | Description | Country Group |
|---|---|---|
| A45 | MEMORY-SEAT ADJUSTER, MIRROR, POWER, DRIVER, PERSONALIZATION | U.S.A., PR and USVI (MAH) |
| A6C | ADJUSTER PASS ST-MANUAL, 4 WAY, PWR VERT | U.S.A., PR and USVI (MAH),Canada (MBC) |
| AED | WINDOW REG PASS DR-POWER OPERATED, EXPRESS DOWN | China |
| AEF | WINDOW REG PASS DR-POWER OPERATED, EXPRESS UP/DOWN | U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX), China |
| AEQ | WINDOW-POWER OPERATED, RR DRS, EXPRESS DOWN | U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX) |
| AER | WINDOW-POWER OPERATED, RR DRS, EXPRESS UP/DOWN | China |
| AF6 | CONTROL-SEAT, MASSAGE, DRIVER | China |
| AG1 | ADJUSTER FRT ST-POWER, MULTI-DIRECTIONAL, DRIVER | U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX) |
| AG2 | ADJUSTER PASS ST-POWER, MULTI-DIRECTIONAL | U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX) |
| APG | CONTROL-SEAT, POWER LUMBAR, LH | U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX) |
| APH | CONTROL-SEAT, POWER LUMBAR, RH | U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX) |
| ASV | EQUIPMENT-SENSOR AIR MOISTURE and W/S TEMP | U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX) |
| ATH | LOCK CONTROL, ENTRY-REMOTE ENTRY, EXTENDED RANGE, PASSIVE ENTRY, ALL DOORS | U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX) |
| ATS | Lock Control, Entry – Remote Entry, Standard Range, Passive Entry | China |
| AW7 | RESTRAINT SYSTEM-SEAT, INFLATABLE, DRIVER AND PASS FRT, FRT SEAT SIDE AND RR SEAT SIDE, ROOF SIDE | U.S.A., PR and USVI (MAH),Canada (MBC) |
| BTM | SWITCH-ENGINE START, KEYLESS | U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX) |
| C67 | HVAC SYSTEM-AIR CONDITIONER FRT, ELECTRONIC CONTROLS | U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX) |
| CE1 | WIPER SYSTEM-WINDSHIELD, PULSE, MOISTURE SENSITIVE | China |
| CE4 | WASHER-HEADLAMP, HIGH PRESSURE | China |

3819777

1. **Mouse-over:** Displays the description of the RPO code as well as the country group names where the option is possible to order. Note that each RPO shown will have its own mouse-over and description. Also note that the mouse-over does not include any symbols indicating with (shown as a + sign if combined option) or without (shown as a – sign to mean without/except).
2. **Hotspot Link to Information:** Links to the Schematics RPO Code List that shows the RPO, the description of the option, and the country group names where the option is possible to order.

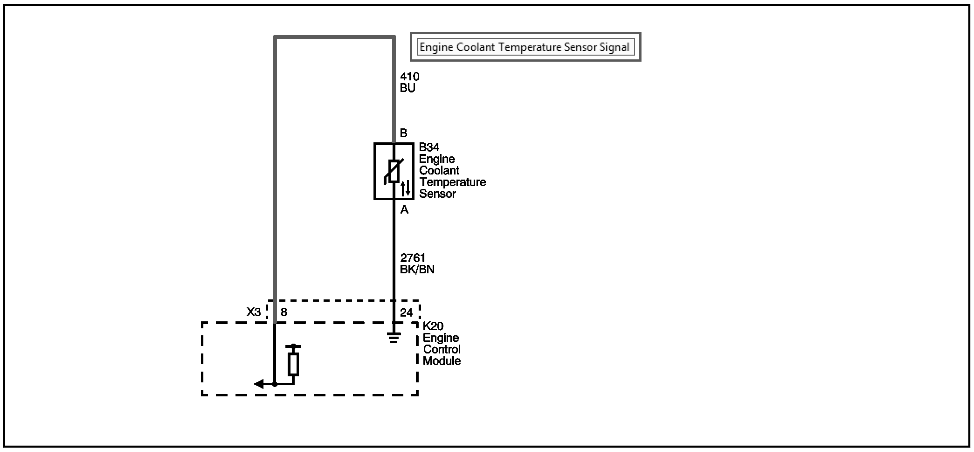
## Circuit Number/Wire Colors




3819880

1. **Mouse-over:** Displays the circuit number (if shown) and the color abbreviation of the wire insulation. Refer to Color Abbreviations for an explanation of each wire color abbreviation. A future update may spell out the wire colors in all languages.
2. **Hotspot Link to Information:** None at this time.

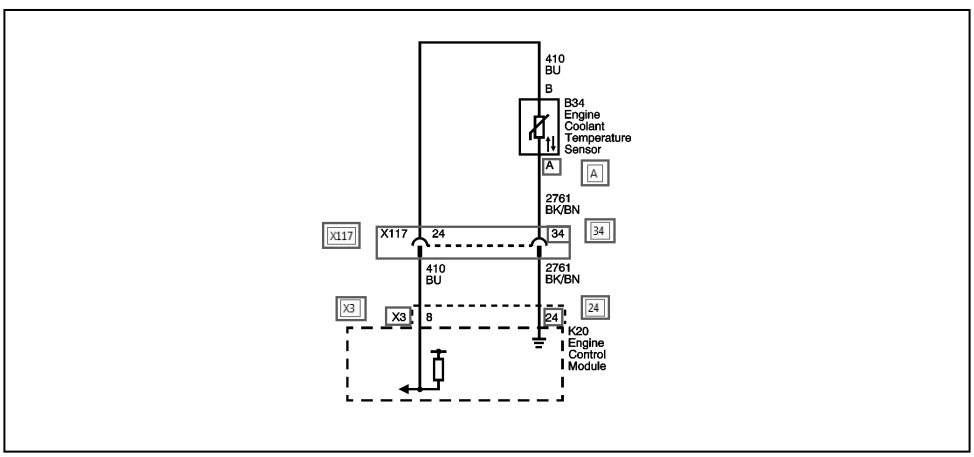
## Wire Lines




3819888

1. **Mouse-over:** Displays the circuit function of the wire as used on the vehicle. This same function is shown in the connector end view pinout table for the component the wire connects. Note if there is no circuit number shown, the circuit will not have an associated mouse-over.
2. **Hotspot Link to Information:** None at this time. A future update may include links to harness routing views to show the routing of the circuit within the vehicle harness.

## Connector Identifiers and Cavities



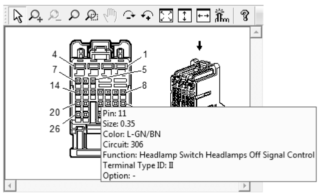

3819889

1. **Mouse-over:** Displays the cavity (pin) identifier (letter/number) for the connection at the component or inline harness connection.
2. **Hotspot Link to Information:** None at this time.

## Connector End Views

Connector end view graphics now have mouse-overs to show the wire details of each of the populated cavities. Additionally, the terminal part information has been restructured into an easier to read table.

K9 Body Control Module X1




**Connector Part Information**

- Harness Type: Instrument Panel
- OEM Connector: 13631051
- Service Connector: 13576639
- Description: 26-Way F 64 Series (NA)

**Terminal Part Information**

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool | Service Terminal | Tray | Core Crimp | Insulation Crimp |
|---|---|---|---|---|---|---|---|
| I | 13327199 | J-35616-35 (VT) | J-38125-12A | SNAC-A061T-M2.8 | 20 | E | A |
| II | 13327195 | J-35616-64B (L-BU) | J-38125-12A | SNAC3-A021T-M0.64 | 20 | J | J |
| III | 13579954 | J-35616-64B (L-BU) | J-38125-12A | Not Available | Not Available | Not Available | Not Available |

**K9 Body Control Module X1**

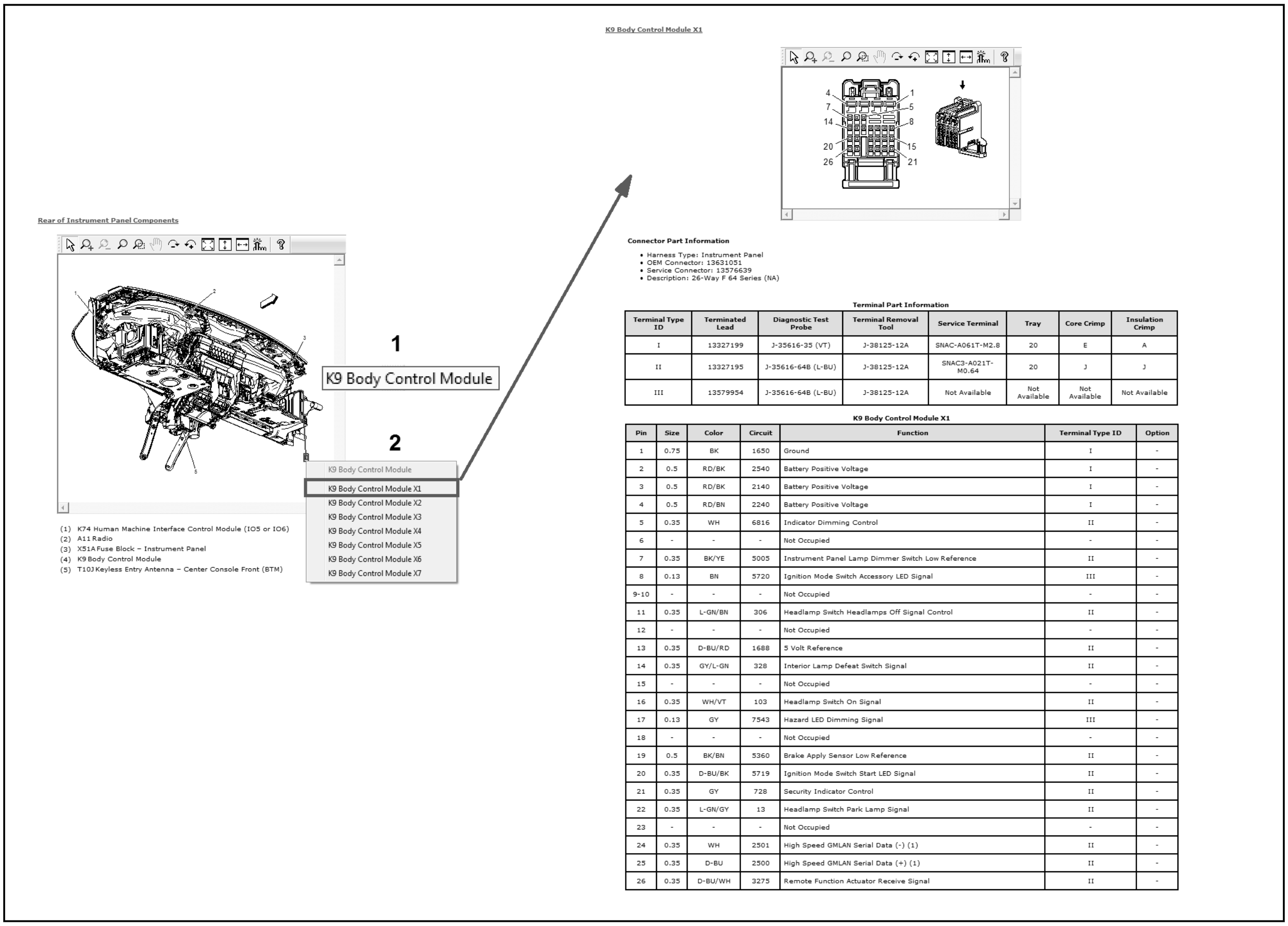
| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 | 0.75 | BK | 1650 | Ground | I | - |
| 2 | 0.5 | RD/BK | 2540 | Battery Positive Voltage | I | - |
| 3 | 0.5 | RD/BK | 2140 | Battery Positive Voltage | I | - |
| 4 | 0.5 | RD/BN | 2240 | Battery Positive Voltage | I | - |
| 5 | 0.35 | WH | 6816 | Indicator Dimming Control | II | - |
| 6 | - | - | - | Not Occupied | - | - |
| 7 | 0.35 | BK/YE | 5005 | Instrument Panel Lamp Dimmer Switch Low Reference | II | - |
| 8 | 0.13 | BN | 5720 | Ignition Mode Switch Accessory LED Signal | III | - |
| 9-10 | - | - | - | Not Occupied | - | - |
| 11 | 0.35 | L-GN/BN | 306 | Headlamp Switch Headlamps Off Signal Control | II | - |
| 12 | - | - | - | Not Occupied | - | - |
| 13 | 0.35 | D-BU/RD | 1688 | 5 Volt Reference | II | - |
| 14 | 0.35 | GY/L-GN | 328 | Interior Lamp Defeat Switch Signal | II | - |
| 15 | - | - | - | Not Occupied | - | - |
| 16 | 0.35 | WH/VT | 103 | Headlamp Switch On Signal | II | - |
| 17 | 0.13 | GY | 7543 | Hazard LED Dimming Signal | III | - |
| 18 | - | - | - | Not Occupied | - | - |
| 19 | 0.5 | BK/BN | 5360 | Brake Apply Sensor Low Reference | II | - |
| 20 | 0.35 | D-BU/BK | 5719 | Ignition Mode Switch Start LED Signal | II | - |
| 21 | 0.35 | GY | 728 | Security Indicator Control | II | - |
| 22 | 0.35 | L-GN/GY | 13 | Headlamp Switch Park Lamp Signal | II | - |
| 23 | - | - | - | Not Occupied | - | - |
| 24 | 0.35 | WH | 2501 | High Speed GMLAN Serial Data (-) (1) | II | - |
| 25 | 0.35 | D-BU | 2500 | High Speed GMLAN Serial Data (+) (1) | II | - |
| 26 | 0.35 | D-BU/WH | 3275 | Remote Function Actuator Receive Signal | II | - |

3819951

1. **Mouse-over:** Displays all of the pinout table information for each column including Pin, Size, Color, Circuit, Function, Terminal Type ID, and Option. Note, that not used/not occupied cavities will not have a mouse-over at all. For not used/not occupied cavities, the connector graphic will appear to have a mouse-over, but no information will be displayed in a pop-up menu.
2. **Hotspot Link to Information:** None at this time. A future update may include links to individual subsystem schematic(s) for each circuit.

## Component Locator Views

Component locator views now have links to component connector end views.




Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool | Service Terminal | Tray | Core Crimp | Insulation Crimp |
|---|---|---|---|---|---|---|---|
| I | 13327199 | J-35616-35 (VT) | J-38125-12A | SNAC-A061T-M2.8 | 20 | E | A |
| II | 13327195 | J-35616-64B (L-BU) | J-38125-12A | SNAC3-A021T-M0.64 | 20 | J | J |
| III | 13579954 | J-35616-64B (L-BU) | J-38125-12A | Not Available | Not Available | Not Available | Not Available |

K9 Body Control Module X1

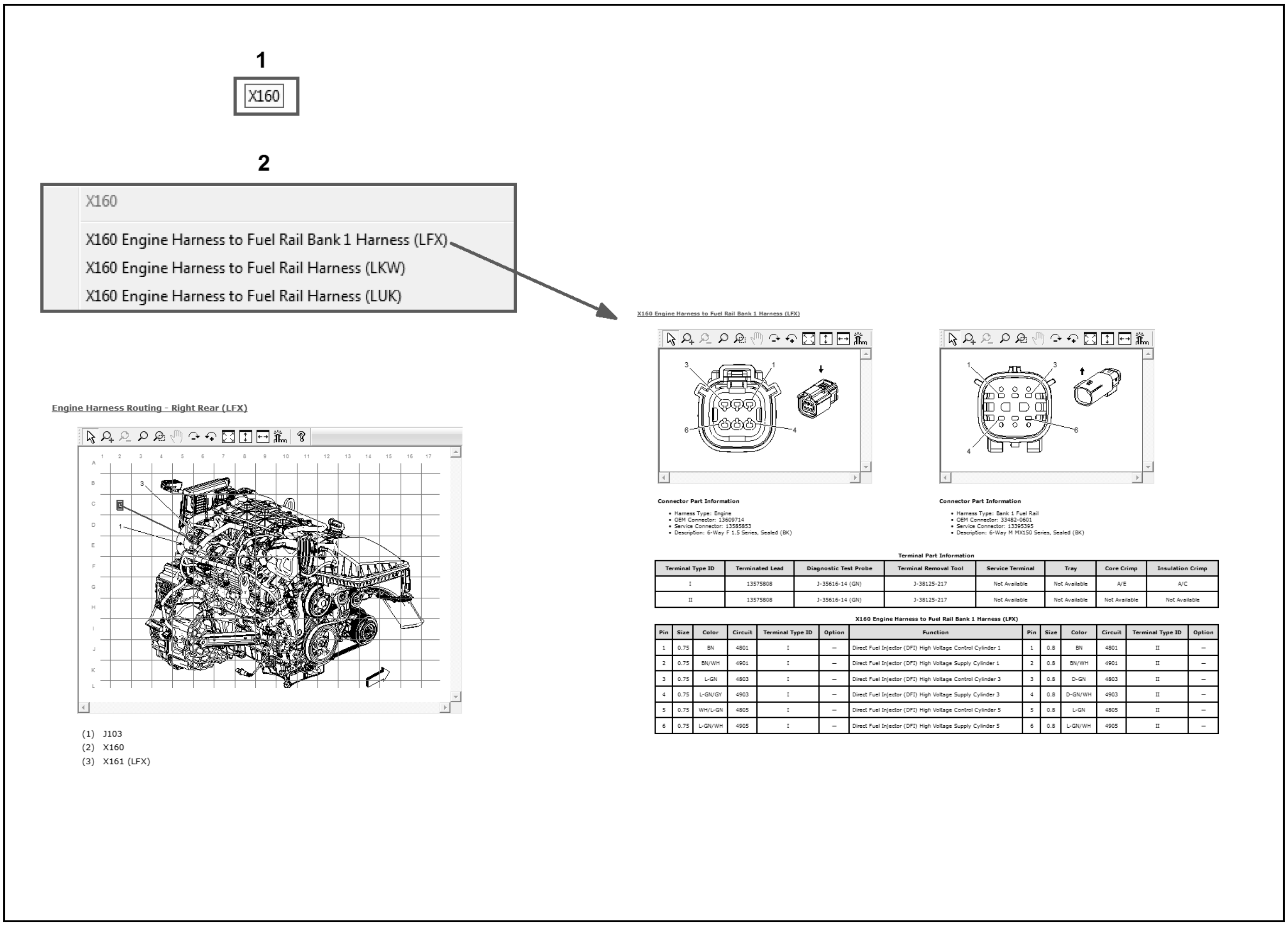
| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 | 0.75 | BK | 1650 | Ground | I | - |
| 2 | 0.5 | RD/BK | 2540 | Battery Positive Voltage | I | - |
| 3 | 0.5 | RD/BK | 2140 | Battery Positive Voltage | I | - |
| 4 | 0.5 | RD/BN | 2240 | Battery Positive Voltage | I | - |
| 5 | 0.35 | WH | 6816 | Indicator Dimming Control | II | - |
| 6 | - | - | - | Not Occupied | - | - |
| 7 | 0.35 | BK/YE | 5005 | Instrument Panel Lamp Dimmer Switch Low Reference | II | - |
| 8 | 0.13 | BN | 5720 | Ignition Mode Switch Accessory LED Signal | III | - |
| 9-10 | - | - | - | Not Occupied | - | - |
| 11 | 0.35 | L-GN/BN | 306 | Headlamp Switch Headlamps Off Signal Control | II | - |
| 12 | - | - | - | Not Occupied | - | - |
| 13 | 0.35 | D-BU/RD | 1688 | 5 Volt Reference | II | - |
| 14 | 0.35 | GY/L-GN | 328 | Interior Lamp Defeat Switch Signal | II | - |
| 15 | - | - | - | Not Occupied | - | - |
| 16 | 0.35 | WH/VT | 103 | Headlamp Switch On Signal | II | - |
| 17 | 0.13 | GY | 7543 | Hazard LED Dimming Signal | III | - |
| 18 | - | - | - | Not Occupied | - | - |
| 19 | 0.5 | BK/BN | 5360 | Brake Apply Sensor Low Reference | II | - |
| 20 | 0.35 | D-BU/BK | 5719 | Ignition Mode Switch Start LED Signal | II | - |
| 21 | 0.35 | GY | 728 | Security Indicator Control | II | - |
| 22 | 0.35 | L-GN/GY | 13 | Headlamp Switch Park Lamp Signal | II | - |
| 23 | - | - | - | Not Occupied | - | - |
| 24 | 0.35 | WH | 2501 | High Speed GMLAN Serial Data (-) (1) | II | - |
| 25 | 0.35 | D-BU | 2500 | High Speed GMLAN Serial Data (+) (1) | II | - |
| 26 | 0.35 | D-BU/WH | 3275 | Remote Function Actuator Receive Signal | II | - |

3819952

1. **Mouse-over:** Displays the code and name of the component.
2. **Hotspot Link to Information:** Links to individual connector end view(s) within Component Connector End Views.

## Harness Routing Views

Harness routing views now have links to splice pack and inline harness connector end views.



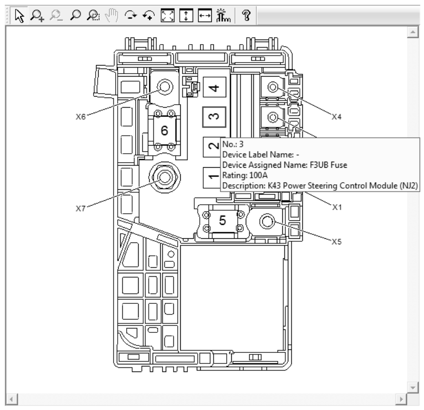

3819958

1. **Mouse-over:** Displays the code of the harness item.
2. **Hotspot Link to Information:** Links to individual splice pack connector end view(s) within Splice Pack Connector End Views for splice packs and to the individual inline harness connector end view(s) within Inline Harness Connector End Views for inline harness connectors.

## Electrical Center Identification Views

Electrical center identification views (top and bottom/ front and back) graphics now have mouse-overs to show the function details of each of utilized devices. Note that the label view will not have any mouse-overs or links at all.

X50D Fuse Block - Battery Top View




X50D Fuse Block - Battery Usage

| No. | Device Label Name | Device Assigned Name | Rating | Description |
|---|---|---|---|---|
| 1 | - | F1UB Fuse | 60A | X51A Fuse Block - Instrument Panel |
| 2 | - | F2UB Fuse | 60A | X51A Fuse Block - Instrument Panel |
| 3 | - | F3UB Fuse | 100A | K43 Power Steering Control Module (NJ2) |
| 4 | - | F4UB Fuse | 80A | K43 Power Steering Control Module (NJ1) |
| 5 | - | F5UB Fuse | 250A | X50A Fuse Block - Underhood |
| 6 | - | F6UB Fuse | 300A | G13 Generator (without HP6), M64 Starter Motor |

3820005

1. **Mouse-over:** Displays all of the usage table information for each column including No., Device Label Name, Device Assigned Name, Rating, and Description. Note, that not used/not occupied devices will not have a mouse-over at all. For not used/not occupied devices, the device graphic may appear to have a mouse-over, but no information will be displayed in a pop-up screen.
2. **Hotspot Link to Information:** None at this time.

### Master Electrical Component List

While the master electrical component list format has not changed, it will continue to have links to component locator, harness routing, and connector end views for each of the available electrical devices within the vehicle.

Master Electrical Component List

Master Electrical Component List

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| A3L | Sunshade – Left | — | In the passenger compartment, left front, mounted to the headliner at left front | — | — |
| A3R | Sunshade – Right | — | In the passenger compartment, right front, mounted to the headliner at right front | — | — |
| A4 | Hybrid/EV battery pack | HP6 | In the luggage compartment, right behind rear of the seats | Right Side of Luggage Compartment Components | — |
| A7 | Fuel Pump and Level Sensor Assembly | — | In the vehicle underbody, below rear seats, mounted to fuel tank | Fuel Tank Components | A7 Fuel Pump and Level Sensor Assembly |
| A9A | Outside Rearview Mirror – Driver | — | On outside of driver door, front middle, forward of window opening | Driver Door Components | — |
| A9B | Outside Rearview Mirror – Passenger | — | On outside of passenger door, front middle, forward of window opening | Passenger Door Components | — |
| A10 | Inside Rearview Mirror | DD8 | In the passenger compartment, front center, mounted to top of windshield | Headliner Components | A10 Inside Rearview Mirror (DD8) |
| A11 | Radio | — | In the passenger compartment, front right in instrument panel, near instrument panel courtesy lamp - right | Rear of Instrument Panel Components | • A11 Radio X1<br>• A11 Radio X2<br>• A11 Radio X4<br>• A11 Radio X6 (U2K or U2M)<br>• A11 Radio X7 (IO3)<br>• A11 Radio X8 (IO3) |
| A14D | Seat Lumbar Support Pump – Driver | — | In the passenger compartment, left forward of center, in driver seat back outboard side | Driver Seat Components | A14D Seat Lumbar Support Pump - Driver |
| A14P | Seat Lumbar Support Pump – Passenger | APH | In the passenger compartment, right forward of center, in the passenger seat back outboard side | Passenger Seat Components | A14P Seat Lumbar Support Pump - Passenger (APH) |
| A15 | Starter/Generator | HP6 | In the engine compartment, right front of engine | — | • A15 Starter/Generator X1 (HP6)<br>• A15 Starter/Generator X2 (HP6) |
| A22 | Radio Controls | — | In the passenger compartment, center front, part of the info display module, in instrument panel, above HVAC controls | Front of Instrument Panel Components | — |
| A23D | Door Latch Assembly – Driver | — | Inside the driver door, at rear below middle | Driver Door Components | A23D Door Latch Assembly - Driver |
| A23LR | Door Latch Assembly – Left Rear | — | Inside the left rear door, at rear below middle | Left Rear Door Components | A23LR Door Latch Assembly - Left Rear |
| A23P | Door Latch Assembly – Passenger | — | Inside the passenger door, at rear below middle | Passenger Door Components | A23P Door Latch Assembly - Passenger |
| A23RR | Door Latch Assembly – Right Rear | — | Inside the right rear door, at rear below middle | Right Rear Door Components | A23RR Door Latch Assembly - Right Rear |
| A24D | Door Handle Assembly – Driver Exterior | ATH | On the outside of driver door, rear middle | Driver Door Components | A24D Door Handle Assembly - Driver Exterior (ATH) |
| A24LR | Door Handle Assembly - Left Rear Exterior | ATH | On the outside of left rear door, rear middle | Left Rear Door Components | A24LR Door Handle Assembly - Left Rear Exterior (ATH) |
| A24P | Door Handle Assembly – Passenger Exterior | ATH | On the outside of passenger door, rear middle | Passenger Door Components | A24P Door Handle Assembly - Passenger Exterior (ATH) |
| A24RR | Door Handle Assembly - Right Rear Exterior | ATH | On the outside of right rear door, rear middle | Right Rear Door Components | A24RR Door Handle Assembly - Right Rear Exterior (ATH) |
| A26 | HVAC Controls | — | In the passenger compartment, front center, on instrument panel, below radio controls | Front of Instrument Panel Components | A26 HVAC Controls |
| A33 | Media Disc Player | — | In the passenger compartment, front center, on instrument panel, below and forward of radio controls | — | A33 Media Disc Player |
| B1 | A/C Refrigerant Pressure Sensor | — | At the front of vehicle, right of center, front of A/C condenser, mounted to right side near bottom | Radiator Assembly Components | • B1 A/C Refrigerant Pressure Sensor (LFX or LUK)<br>• B1 A/C Refrigerant Pressure Sensor (LKW) |
| B5LF | Wheel Speed Sensor – Left Front | — | At the left front suspension, mounted to knuckle, rearward of axle | Fuel Composition Sensor, Wheel Speed Sensors and Parking Brake | B5LF Wheel Speed Sensor - Left Front |
| B5LR | Wheel Speed Sensor – Left Rear | — | At the left rear suspension, mounted to knuckle, forward side | Fuel Composition Sensor, Wheel Speed Sensors and Parking Brake | B5LR Wheel Speed Sensor - Left Rear |
| B5RF | Wheel Speed Sensor – Right Front | — | At the right front suspension, mounted to knuckle, rearward of axle | Fuel Composition Sensor, Wheel Speed Sensors and Parking Brake | B5RF Wheel Speed Sensor - Right Front |
| B5RR | Wheel Speed Sensor – Right Rear | — | At the right rear suspension, mounted to knuckle, forward side | Fuel Composition Sensor, Wheel Speed Sensors and Parking Brake | B5RR Wheel Speed Sensor - Right Rear |
| B7D | Air Temperature Sensor – Duct Left Lower | CJ2 | In the passenger compartment, within the instrument panel, center front, left side middle of HVAC assembly | HVAC Assembly Components (CJ2) | B7D Air Temperature Sensor - Duct Left Lower (CJ2) |
| B7E | Air Temperature Sensor – Duct Right Lower | CJ2 | In the passenger compartment, within the instrument panel, center front, right side middle of HVAC assembly | HVAC Assembly Components (CJ2) | B7E Air Temperature Sensor - Duct Right Lower (CJ2) |
| B7H | Air Temperature Sensor – Duct Left Upper | CJ2 | In the passenger compartment, within the instrument panel, center front, left side top of HVAC assembly | HVAC Assembly Components (CJ2) | B7H Air Temperature Sensor - Duct Left Upper (CJ2) |
| B7J | Air Temperature Sensor – Duct Right Upper | CJ2 | In the passenger compartment, within the instrument panel, center front, right side top of HVAC assembly | HVAC Assembly Components (CJ2) | B7J Air Temperature Sensor - Duct Right Upper (CJ2) |
| B9 | Ambient Air Temperature Sensor | — | At the front of vehicle, left of center, mounted to rear of lower grille | Front of Vehicle Components | B9 Ambient Air Temperature Sensor |
| B10B | Ambient Light/Sunload Sensor | — | In the passenger compartment, center front, in instrument panel, rear of windshield defroster outlet | Front of Instrument Panel Components | B10B Ambient Light/Sunload Sensor |
| B12A | Transmission Fluid Pressure Switch | — | In the engine compartment, part of the control solenoid valve assembly, mounted to the valve body inside the transmission | — | — |
| B13 | Transmission Fluid Temperature Sensor | — | In the engine compartment, part of the control solenoid valve assembly, mounted to the valve body inside the transmission | — | — |

3820020

1. **Mouse-over:** None at this time.
2. **Hotspot Link to Information:**
   ⇒ A future update may include links to individual subsystem schematic(s) for each component/ harness item.
   ⇒ **Components**
   − Links to individual locator view within one of the eight component view categories and will show where the component is located in the vehicle.
   − Links to individual connector end view(s) within Component Connector End Views.
   ⇒ **Electrical Centers (Fuse Blocks)**
   − Links to individual locator view within one of the eight component view categories and will show where the component is located in the vehicle.
   − Links to individual connector end view(s) within Electrical Center Identification Views.
   ⇒ **Inline Harness Connectors**
   − Links to individual harness routing view(s) within Harness Routing Views and will show where the harness item is located on the vehicle harness.
   − Links to individual connector end view(s) within Inline Harness Connector End Views.
   ⇒ **Grounds**

- Links to individual locator view within Ground Views component view and will show where the ground is located in the vehicle.

⇒ **Splices**

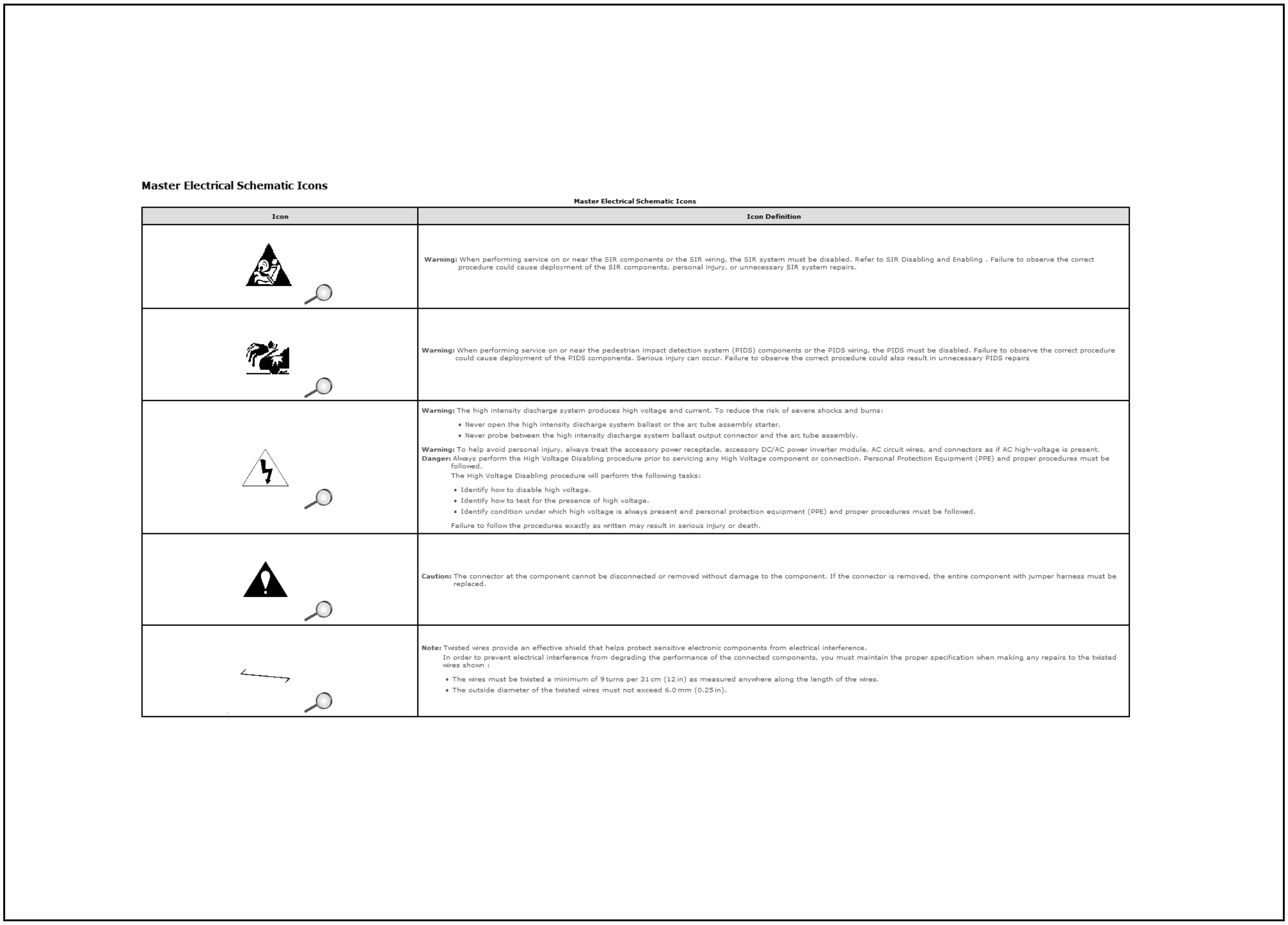
- Links to individual harness routing view(s) within Harness Routing Views and will show where the harness item is located on the vehicle harness.

⇒ **Splice Packs**

- Links to individual harness routing view(s) within Harness Routing Views and will show where the harness item is located on the vehicle harness.
- Links to individual connector end view(s) within Splice Pack Connector End Views.

## Master Electrical Schematic Icons

While the master electrical schematic icons list format has not changed, it will continue to include icons used in the vehicle schematics along with the message for the icon.



**Master Electrical Schematic Icons**

**Master Electrical Schematic Icons**

| Icon | Icon Definition |
|---|---|
| | **Warning:** When performing service on or near the SIR components or the SIR wiring, the SIR system must be disabled. Refer to SIR Disabling and Enabling . Failure to observe the correct procedure could cause deployment of the SIR components, personal injury, or unnecessary SIR system repairs. |
| | **Warning:** When performing service on or near the pedestrian impact detection system (PIDS) components or the PIDS wiring, the PIDS must be disabled. Failure to observe the correct procedure could cause deployment of the PIDS components. Serious injury can occur. Failure to observe the correct procedure could also result in unnecessary PIDS repairs |
| | **Warning:** The high intensity discharge system produces high voltage and current. To reduce the risk of severe shocks and burns:<br>• Never open the high intensity discharge system ballast or the arc tube assembly starter.<br>• Never probe between the high intensity discharge system ballast output connector and the arc tube assembly.<br>**Warning:** To help avoid personal injury, always treat the accessory power receptacle, accessory DC/AC power inverter module, AC circuit wires, and connectors as if AC high-voltage is present.<br>**Danger:** Always perform the High Voltage Disabling procedure prior to servicing any High Voltage component or connection. Personal Protection Equipment (PPE) and proper procedures must be followed.<br>The High Voltage Disabling procedure will perform the following tasks:<br>• Identify how to disable high voltage.<br>• Identify how to test for the presence of high voltage.<br>• Identify condition under which high voltage is always present and personal protection equipment (PPE) and proper procedures must be followed.<br>Failure to follow the procedures exactly as written may result in serious injury or death. |
| | **Caution:** The connector at the component cannot be disconnected or removed without damage to the component. If the connector is removed, the entire component with jumper harness must be replaced. |
| | **Note:** Twisted wires provide an effective shield that helps protect sensitive electronic components from electrical interference.<br>In order to prevent electrical interference from degrading the performance of the connected components, you must maintain the proper specification when making any repairs to the twisted wires shown :<br>• The wires must be twisted a minimum of 9 turns per 31 cm (12 in) as measured anywhere along the length of the wires.<br>• The outside diameter of the twisted wires must not exceed 6.0 mm (0.25 in). |

3820510

1. **Mouse-over:** None at this time.
2. **Hotspot Link to Information:** None at this time.

## Schematic RPO Code List

The schematic RPO code list only includes RPOs shown in schematics and also includes the country groupings for the options. This list is in addition to the vehicle RPO Code List that is included in General Information.

### Schematics RPO Code List

Schematics RPO Code List

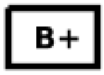
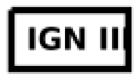
| RPO | Description | Country Group |
|---|---|---|
| A45 | MEMORY-SEAT ADJUSTER, MIRROR, POWER, DRIVER, PERSONALIZATION | U.S.A., PR and USVI (MAH) |
| A6C | ADJUSTER PASS ST-MANUAL, 4 WAY, PWR VERT | U.S.A., PR and USVI (MAH),Canada (MBC) |
| AED | WINDOW REG PASS DR-POWER OPERATED, EXPRESS DOWN | China |
| AEF | WINDOW REG PASS DR-POWER OPERATED, EXPRESS UP/DOWN | U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX), China |
| AEQ | WINDOW-POWER OPERATED, RR DRS, EXPRESS DOWN | U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX) |
| AER | WINDOW-POWER OPERATED, RR DRS, EXPRESS UP/DOWN | China |
| AF6 | CONTROL-SEAT, MASSAGE, DRIVER | China |
| AG1 | ADJUSTER FRT ST-POWER, MULTI-DIRECTIONAL, DRIVER | U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX) |
| AG2 | ADJUSTER PASS ST-POWER, MULTI-DIRECTIONAL | U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX) |
| APG | CONTROL-SEAT, POWER LUMBAR, LH | U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX) |
| APH | CONTROL-SEAT, POWER LUMBAR, RH | U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX) |
| ASV | EQUIPMENT-SENSOR AIR MOISTURE and W/S TEMP | U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX) |
| ATH | LOCK CONTROL, ENTRY-REMOTE ENTRY, EXTENDED RANGE, PASSIVE ENTRY, ALL DOORS | U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX) |
| ATS | Lock Control, Entry – Remote Entry, Standard Range, Passive Entry | China |
| AW7 | RESTRAINT SYSTEM-SEAT, INFLATABLE, DRIVER AND PASS FRT, FRT SEAT SIDE AND RR SEAT SIDE, ROOF SIDE | U.S.A., PR and USVI (MAH),Canada (MBC) |
| BTM | SWITCH-ENGINE START, KEYLESS | U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX) |
| C67 | HVAC SYSTEM-AIR CONDITIONER FRT, ELECTRONIC CONTROLS | U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX) |
| CE1 | WIPER SYSTEM-WINDSHIELD, PULSE, MOISTURE SENSITIVE | China |
| CE4 | WASHER-HEADLAMP, HIGH PRESSURE | China |
| CF5 | ROOF-SUN, GLASS, SLIDING, ELEC | U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX) |
| CJ2 | HVAC SYSTEM-AIR CONDITIONER FRT, AUTO TEMP CONT, AUX TEMP CONT | U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX) |
| CZ2 | COUNTRY-CHINA | China |
| DD8 | MIRROR I/S R/V-LT SENSITIVE | U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX) |
| EF7 | COUNTRY-UNITED STATES OF AMERICA (USA) | U.S.A., PR and USVI (MAH) |
| F45 | CHASSIS-CONTINUOUSLY VARIABLE REAL TIME DAMPING | U.S.A., PR and USVI (MAH),Canada (MBC) |
| FHS | VEHICLE FUEL-GASOLINE E85 | U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX) |
| HP6 | HYBRID PROPULSION-ELECTRIC, PARALLEL, 14KW CONTINUOUS POWER | U.S.A., PR and USVI (MAH),Canada (MBC) |
| J71 | BRAKE PARKING-POWER OPERATED | U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX) |
| KA1 | HEATER SEAT FRT-DRVR and PASS | U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX) |
| KD4 | RECEPTACLE-ELECTRICAL, FRT CONSOLE | U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX) |
| KI6 | RECEPTACLE-ELECTRICAL, FRT CONSOLE RR 110 VOLT | U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX) |
| KRJ | CONTROL-CONSOLE, INFOTAINMENT, REDUNDANT CONTROLS, JOYSTICK | U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX) |
| KTA | AUDIO INTERFACE- | China |
| KU1 | VENTILATED SEAT DRVR-FRONT | U.S.A., PR and USVI (MAH) |
| KU3 | VENTILATED SEAT PASS-FRONT | U.S.A., PR and USVI (MAH) |
| LAF | ENGINE-GAS, 4 CYL, 2.4L, SIDI,DOHC, VVT, ALUM, GM - DO NOT USE AFTER 2013, USE LEA | China |
| LDK | ENGINE-GAS, 4 CYL, 2.0L, DI, DOHC, TURBO-HO, VARIABLE CAMSHAFT PHASING - DO NOT USE AFTER 2013, USE LHU | China |
| LHU | ENGINE-GAS, 2.0L, SIDI, L4, DOHC TURBO, E85 MAX, ALUM | U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX) |
| LLU | ENGINE-GAS, 4 CYL, 1.6L, MFI, DOHC, TURBO, PT-JV, 132KW | China |
| LTD | ENGINE-GAS, 4 CYL, 2.0L, MFI, ALUM, DOHC, SGM | China |
| LUK | ENGINE-GAS, 4 CYL, 2.4L, DI, ALUM, DOHC, BAS, ECOTEC | U.S.A., PR and USVI (MAH),Canada (MBC) |
| MDK | TRANSMISSION-AUTO 6 SPD, AISIN-WARNER, A6-AF40, ELECTRONIC, GEN2 | U.S.A., PR and USVI (MAH),Canada (MBC) |
| MH8 | TRANSMISSION-AUTO 6 SPD, HMD, X23F | U.S.A., PR and USVI (MAH),Canada (MBC) |
| MHH | TRANSMISSION-AUTO 6 SPD, HMD, GM, BAS+, 6T40, HYBRID, FWD | U.S.A., PR and USVI (MAH),Canada (MBC) |
| MHK | TRANSMISSION-AUTO 6 SPD, 6T50 | U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX) |
| MR6 | TRANSMISSION-MAN 6 SPD, OPEL, 83MM, 3.92 1ST, 0.62 6TH (F40 WR), REDUCE HELIX | U.S.A., PR and USVI (MAH),Canada (MBC) |
| NJ1 | STEERING-POWER, NON-VARIABLE RATIO, ELECTRIC | U.S.A., PR and USVI (MAH),Canada (MBC) |
| NU6 | EMISSION SYSTEM-CALIFORNIA, PZEV | U.S.A., PR and USVI (MAH) |
| NV7 | STEERING-POWER, VARIABLE EFFORT | U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX) |
| NXC | STEERING-POWER, VARIABLE EFFORT, REDUCED RACK TRAVEL | U.S.A., PR and USVI (MAH),Canada (MBC) |
| T4A | HEADLAMPS-HALOGEN | U.S.A., PR and USVI (MAH),Canada (MBC) |

3820023

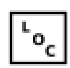
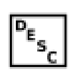
1. **Mouse-over:** None at this time.
2. **Hotspot Link to Information:** None at this time.

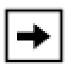
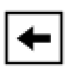
## Electrical Schematic Symbols

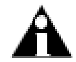
### Voltage Indicators

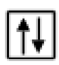
| Symbol | Description |
|---|---|
|   1988677 | Battery Voltage |
|   1988679 | Ignition Switch– Off Position |
|   1988682 | Ignition Switch– Accessory Position |
|   1988686 | Ignition Switch– Run Position |
|   1988691 | Ignition Switch– Start Position |

### General Icons

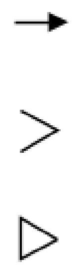
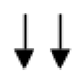
| Symbol | Description |
|---|---|
|   1990537 | Master Component List Icon<br>This icon is used on the schematic to link to the Master Electrical Component List. |
|   1990538 | Description and Operation Icon<br>This icon is used on the schematic to link to the Description and Operation of that particular system. |

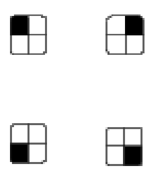
| Symbol | Description |
|---|---|
|  1988674 | Computer Programming Icon<br>This icon is used on the schematic to link to Control Module References, which identifies which components need programming upon replacement. |
|  1990541 | Next Schematic Page Icon<br>This icon is used on the schematic to navigate to the next schematic in the subsystem. |
|  1990542 | Previous Schematic Page Icon<br>This icon is used on the schematic to navigate to the previous schematic in the subsystem. |
|  1988667 | Supplemental Inflatable Restraint (SIR) or Supplemental Restraint System (SRS) Icon<br>This icon is used to alert the technician that the system contains SIR/SRS components that require certain precautions before servicing. |

| Symbol | Description |
|---|---|
|  1988670 | Information Icon<br>This icon is used to alert the technician that there is additional information that will aid in servicing a system. |
|  1988672 | Danger Icon<br>This icon is intended to alert the technician that a component within the system contains labeling with the same icon.<br>This icon is used when a source component has potential for 60 volts DC or greater or has potential for 42 volts AC or greater. |
|  1988673 | High Voltage Icon<br>This icon is intended to alert the technician that a component within the system contains labeling with the same icon.<br>This icon is used when a component/circuit has potential for 60 volts DC or greater or has potential for 42 volts AC or greater. |

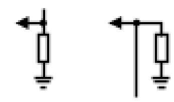
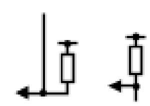
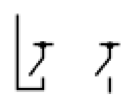
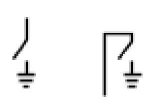
| Symbol | Description |
|---|---|
|  1990543 | Caution Icon<br>This icon is used to advise the technician to use caution when servicing this component.<br>This icon may be used when a component/circuit has a voltage range potential between 30-60 volts DC or 15-42 volts AC. |
|  1988675 | Functional Serial Data Communication<br>This icon is used to show the technician that the serial data circuit detail is shown incomplete. It also provides an active link to the Data Communication Schematics were the circuit is shown complete. |

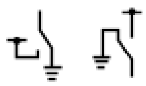
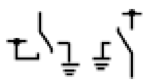
## Switch Position Icons

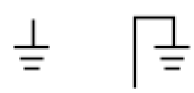
| Symbol | Description |
|---|---|
|  1989016 | Generic Up Arrows |
|  1990554 | Generic Down Arrows |
|  1990555 | Generic Left Arrows |
|  1990556 | Generic Right Arrows |
|  1990557 | Generic Express Down Arrows |
|  1990558 | On/Off Icon |

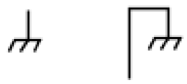
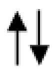
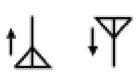
| Symbol | Description |
|---|---|
|  1990559 | Generic Lock Icon |
|  1990560 | Generic Unlock Icon |
|  1989018 | Generic Window Switch Positions– 4 Door |
|  1989020 | Generic Window Switch Positions– 2 Door |

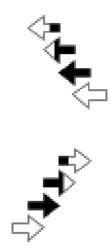
## Module Circuit Function Icons

| Symbol | Description |
|---|---|
|  1988774 | I/O Pull-Down Resistors (−) |
|  1990567 | I/O Pull-Up Resistors (+) |
|  1988775 | I/O High-Side Drive Switch (+) |
|  1990568 | I/O Low-Side Drive Switch (−) |

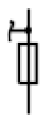
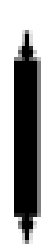
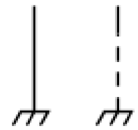
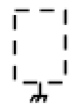
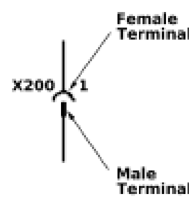
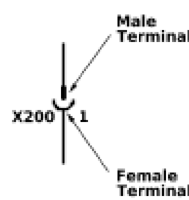
| Symbol | Description |
|---|---|
|  1990570 | I/O Bidirectional Switch (+/−) |
|  6535609 | I/O Bidirectional Switch (+/−) Neutral State |
|  1990571 | Pulse-Width Modulation Symbol |
| B+ 1990573 | Battery Voltage |

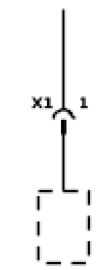
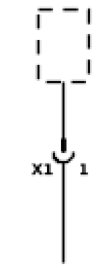
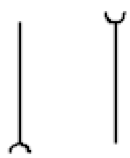
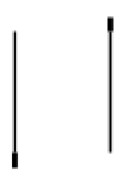
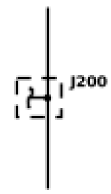
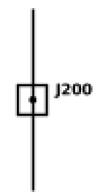
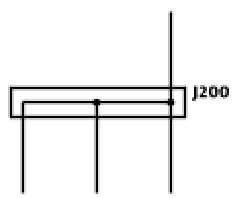
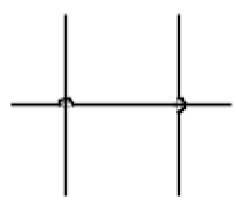
| Symbol | Description |
|---|---|
| IGN 1990574 | Ignition Voltage |
| 5V 1990576 | Voltage Reference |
| 5V AC 1990577 | A/C Voltage |
|  1988986 | Low Reference |

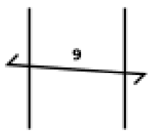
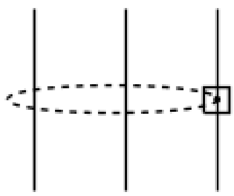
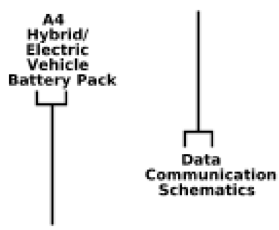
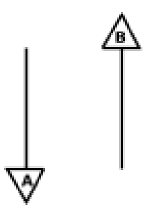
| Symbol | Description |
|---|---|
|  1990578 | Ground |
|  1990579 | Serial Data |
|  1988973 | Antenna Signal– In |
|  1988974 | Antenna Signal– Out |

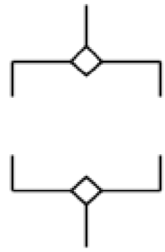
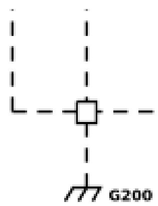
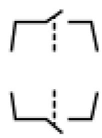
| Symbol | Description |
|---|---|
|  2161152 | Brake Apply |
|  5371975 | Bulb Out |
|  6659366 | Approach Lighting Animation |
|  6659367 | Sequential Turn Signal Animation |

## Harness Components

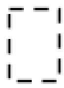
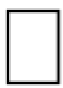
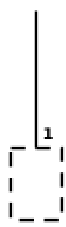
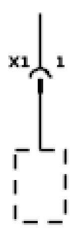
| Symbol | Description |
|---|---|
|  1988731 | Fuse |
|   1988733 | Fuse Supplied by a Relay |
|  1988740 | Circuit Breaker |
|  1988745 | Fusible Link |
|  1988987 | Ground |
|  1988746 | Case Ground |
|   1988977 | Inline Harness Connector |
|   1990974 | Inline Harness Connector |

| Symbol | Description |
|---|---|
|   1990975 | Pigtail Connection |
|   1990976 | Pigtail Connection |
|  1990977 | Provisional or Diagnostic Connector |
|  1990978 | Blunt Cut Wire |
|   1988980 | Incomplete Physical Splice |
|   1988981 | Complete Physical Splice– 2 Wires |
|   1988982 | Complete Physical Splice– 3 or more wires |
|  1990979 | Wire Crosses |

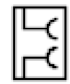
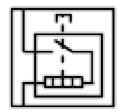
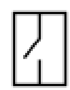
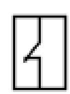
| Symbol | Description |
|---|---|
|   1988988 | Twisted Wires |
|  1988990 | Shield |
|   1990980 | Circuit References |
|   1990981 | Circuit Continuation Arrowheads |

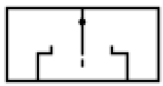
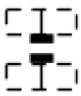
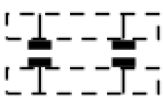
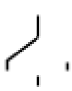
| Symbol | Description |
|---|---|
|  1988983 | Option Breakpoint |
|   1988984 | Ground Circuit Connection |
|  1988985 | Connector Shorting Clip |

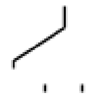
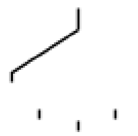
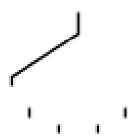
## Component Parts

| Symbol | Description |
|---|---|
|  1988694 | Partial Component<br>When a component is represented in a dashed box, the component or its wiring is not shown in its entirety. |
|  1988698 | Entire Component<br>When a component is represented in a solid box the component or its wiring is shown in its entirety. |
|  1988712 | Connector Directly Attached to Component |
|  1988715 | Pigtail Connector |

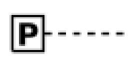
## Switches and Relays

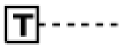
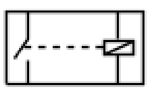
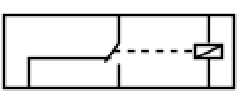
| Symbol | Description |
|---|---|
|  1991015 | Accessory Power Outlet |
|  1991016 | Cigar Lighter |
|  1988991 | Switch– 2 Position Normally Open |
|  1988992 | Switch– 2 Position Normally Closed |

| Symbol | Description |
|---|---|
|  1988993 | Switch– Rocker |
|  1991017 | Switch– Contact Plate (1 Wire) |
|  1988994 | Switch– Contact Plate (2 Wire) |
|  1991018 | Switch– 3 Position |

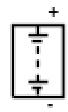
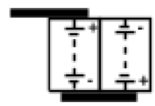
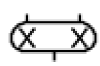
| Symbol | Description |
|---|---|
|  1988995 | Switch– 4 Position |
|  1991019 | Switch– 5 Position |
|  1991021 | Switch– 6 Position |
|  1988997 | Switch Actuator– Push (Momentary) |

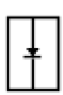
| Symbol | Description |
|---|---|
|  1988998 | Switch Actuator– Push (Latching) |
|  1988999 | Switch Actuator– Pull (Momentary) |
|  1989000 | Switch Actuator– Pull (Latching) |
|  1989001 | Switch Actuator– Rotate (Momentary) |

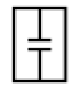
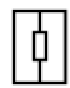
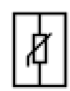
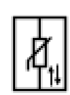
| Symbol | Description |
|---|---|
|  1989002 | Switch Actuator– Rotate (Latching) |
|  1989003 | Switch Actuator– Slide (Momentary) |
|  1989004 | Switch Actuator– Slide (Latching) |
|  1989007 | Switch Actuator– Pressure (Momentary) |

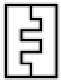
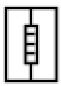
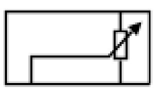
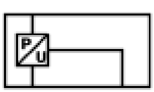
| Symbol | Description |
| --- | --- |
|  1989010 | Switch Actuator– Temperature (Momentary) |
|  1989013 | Switch Actuator– Volume (Latching) |
|  1988975 | 4-Pin Single Pole/Throw Relay– Normally Open |
|  1990539 | 5-Pin Relay– Normally Closed |

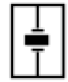
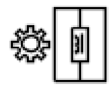
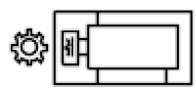
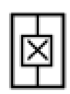
## Devices and Sensors

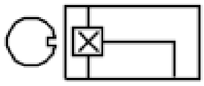
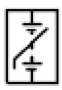
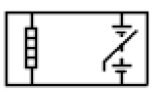
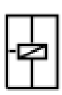
| Symbol | Description |
| --- | --- |
|  1988751 | Battery |
|  1988753 | Battery Assembly– Hybrid |
|  1988717 | Single Filament Light Bulb |
|  1988719 | Double Filament Light Bulb |

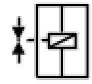
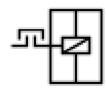
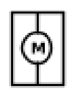
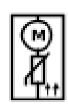
| Symbol | Description |
|---|---|
|  1988722 | Light Emitting Diode (LED) |
|  1988725 | Photo Sensor |
|  1990988 | Gauge |
|  1988776 | Diode |

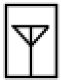
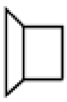
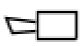
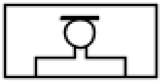
| Symbol | Description |
|---|---|
|  1988748 | Capacitor |
|  1988755 | Resistor |
|  1988759 | Variable Resistor |
|  1990991 | Variable Resistor– NTC |

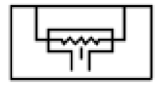
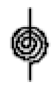
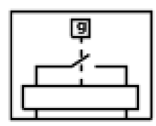
| Symbol | Description |
|---|---|
|  1990992 | Breakable Wire |
|  1988778 | Heating Element |
|  1988771 | Position Sensor |
|  1988773 | Pressure Sensor |

| Symbol | Description |
|---|---|
|  1990993 | Knock Sensor |
|  1990994 | Inductive Type Sensor– 2-Wire |
|  1990996 | Inductive Type Sensor– 3-Wire |
|  1990998 | Hall Effect Sensor– 2-Wire |

| Symbol | Description |
|---|---|
|  1990999 | Hall Effect Sensor– 3-Wire |
|  1991000 | Oxygen Sensor– 2-Wire |
|  1991001 | Heated Oxygen Sensor– 4-Wire |
|  1988970 | Solenoid– Actuator |

| Symbol | Description |
|---|---|
|  1988971 | Solenoid– Valve |
|  1988972 | Clutch |
|  1988779 | Motor |
|  1991003 | Motor with PTC |

| Symbol | Description |
|---|---|
|  1988729 | Antenna |
|  1991005 | Speaker |
|  1991006 | Horn |
|  1991007 | Microphone |

| Symbol | Description |
|---|---|
|  1991008 | Airbag |
|  1991009 | SIR Coil |
|  1991010 | SIR Impact Sensor |

## Schematics RPO Code List

### Schematics RPO Code List

| RPO | Option Name |
|---|---|
| 9L7 | EQUIPMENT-ACSRY WRG JUNC BLK |
| A2X | ADJUSTER DRIVER SEAT-8WAY, PWR RECLINE, PWR FORE/AFT, PWR HEIGHT, PWR TILT |
| A45 | MEMORY-SEAT ADJUSTER, MIRROR, POWER, DRIVER, PERSONALIZATION |

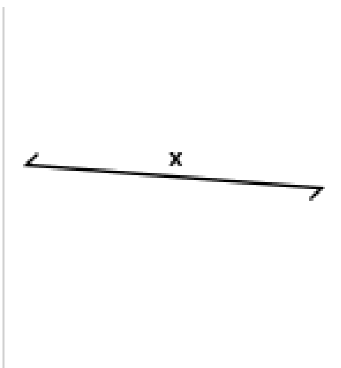
| RPO | Option Name |
|---|---|
| A48 | WINDOW RR-FULL WIDTH, SLIDING, POWER |
| A7K | ADJUSTER PASS ST-8WAY, PWR RECLINE, PWR FORE/AFT, PWR HEIGHT, PWR TILT |
| AED | WINDOW REG PASS DR-POWER OPERATED,EXPRESS DOWN (DO NOT USE NEXT NEW MAJOR) |
| AEF | WINDOW REG PASS DR-POWER OPERATED, EXPRESS UP/DOWN (DO NOT USE NEXT NEW MAJOR) |
| AEQ | WINDOW REG REAR DR-POWER OPERATED, EXPRESS DOWN (DO NOT USE NEXT NEW MAJOR) |
| AHH | BOLSTER PASS-SEAT, POWER |
| AKE | CONTROL-SEAT, MASSAGE, PASSENGER |
| AL0 | SENSOR INDICATOR-INFLATABLE RESTRAINT, FRT PASS/CHILD PRESENCE DETECTOR |
| AU3 | LOCK CONTROL-SIDE DR, ELEC |
| AVJ | LOCK CONTROL, ENTRY-REMOTE ENTRY, EXTENDED RANGE, PASSIVE ENTRY, FRONT DOORS |
| AVK | LUMBAR DRIVER-SEAT, POWER, 4 WAY |
| AVU | LUMBAR PASSENGER-SEAT, POWER, 4-WAY |
| AXG | WINDOW REG DRVR DR-POWER OPERATED, EXPRESS UP/DOWN (DO NOT USE NEXT NEW MAJOR) |
| AZ3 | SEAT-FRT SPLIT, DRIVER, PASS, FULL FEATURE CENTER |
| B3L | STEPS, RUNNINGBOARD-SIDE, RETRACTABLE, POWER, BLACK |
| BRS | STEPS, RUNNINGBOARD-SIDE, RETRACTABLE, POWER, BRIGHT |
| C32 | HEATER AIR SYSTEM-HEATING/DEFROSTER SYSTEM, REINFORCED, ELECTRIC |
| C49 | DEFOGGER-RR WINDOW, ELECTRIC |
| C67 | HVAC SYSTEM-AIR CONDITIONER FRT, ELECTRONIC CONTROLS |
| C9I | SWITCH-ROLL OVER SENSING |
| CE1 | WIPER SYS WINDSHIELD-PULSE, MOISTURE SENSITIVE |
| CF5 | ROOF-SUN, GLASS, SLIDING, ELEC (DO NOT USE NEXT NEW MAJOR) |
| CJ2 | HVAC SYSTEM-AIR CONDITIONER FRT, AUTO TEMP CONT, AUX TEMP CONT |
| D07 | CONSOLE-FRT COMPT, FLOOR, CUSTOM |
| DBG | MIRROR O/S-MAN EXT, PWR ADJ, HEAT, MAN FOLD, TURN SIG, AUX CLR, FLAT DRVR/PASS, WFOV DRVR/PASS |
| DD8 | MIRROR I/S R/V-LT SENSITIVE |
| DH6 | MIRROR I/S FRT VAN-LH and RH, SUNSHADE, ILLUM (DO NOT USE NEXT NEW MAJOR) |
| DLN | MIRROR O/S-LH and RH, ELEC REMOTE CONTROL, HEATER, MANUAL FOLD, FLAT/DRVR, FLAT/PASS |
| DRZ | MIRROR I/S R/V-LT SENSITIVE, FULL VIDEO DISPLAY |
| DWI | MIRROR O/S-LH and RH,WFOV,MAN EXT,PWR FLD,HTD,TURN SIG,R/CON,ELEC,AUX CARGO,AUX CLR,PERM LIGHT,FLAT LT SENS DR/PAS |
| DZC | MIRROR O/S-LH and RH,WFOV,PWR EXT,PWR FOLD,HTD,TURN SID,R/CON MEM,AUX CARGO,AUX CLR,PERM LT,FLAT LT SENS DR/PAS |
| E63 | BODY EQUIPMENT-FLEETSIDE PICK-UP BOX |
| FHS | VEHICLE FUEL-GASOLINE E85 |
| G94 | AXLE-RR ELECTRONIC LOCKING DIFFERENTIAL, DRIVER SELECT |
| GFF | TRIM PACKAGE-BASE |
| GFI | TRIM PACKAGE-SLE |
| HS1 | ALERT-SAFETY HAPTIC SEAT |
| IOK | RADIO-INFOTAINMENT SYSTEM - 3.X MID/HIGH HMI,ENHANCED CONNECTIVITY 2.0, VOICE RECOGNITION |
| IOR | RADIO-INFOTAINMENT SYSTEM - 3.X LOW HMI, MIDLEVEL CONNECTIVITY 3.X |

| RPO | Option Name |
|---|---|
| JBP | BRAKE LINING WEAR SY-LIFE SPAN PROGNOSTIC INDICATOR |
| JHD | BRK APL CTRL FEATURE-HILL DESCENT, GEAR HOLD |
| JL1 | BRK APL CTRL FEATURE-INTEGRATED TRAILER BRAKE |
| K34 | CRUISE CONTROL-AUTOMATIC, ELECTRONIC |
| K4C | CHARGER-INDUCTIVE PORTABLE WIRELESS DEVICE (DNU AFTER MY 26, SEE BFO) |
| K4Z | BATTERY-LN3, AGM, 12V, 70AH, 700 CCA, AUX |
| KA1 | HEATER SEAT FRT-DRVR and PASS (DNU NEXT NEW MAJOR) |
| KA6 | HEATER SEAT-REAR (DNU NEXT NEW MAJOR) |
| KC5 | RECEPTACLE-ELECTRICAL, ACCESSORY (DNU NEW/MAJOR - USE KH8) |
| KC9 | RECEPTACLE PUBX-ELECTRICAL, 110 VOLT |
| KCA | RECEPTACLE PUBX-ELECTRICAL, 230 VOLT |
| KGU | MODULE-UPFITTER, SERIAL DATA GATEWAY |
| KHF | GENERATOR-170 AMP AND 220 AMP, DUAL |
| KI3 | STEERING WHEEL HEAT-AUTOMATIC |
| KI4 | RECEPTACLE I/P-ELECTRICAL, 110 VOLT |
| KI5 | RECEPTACLE I/P-ELECTRICAL, 230 VOLT |
| KQV | HEATER-SEAT, VENTED, FRT (DO NOT USE NEXT NEW MAJOR, USE KU9) |
| KSG | CRUISE CONTROL-AUTOMATIC, ADAPTIVE, WITH STOP/GO |
| KW7 | GENERATOR-170 AMP |
| L5P | ENGINE-DIESEL, 8 CYL, 6.6L, DI, V8, TURBO, DURAMAX, GEN 5, VAR. 1 |
| L8T | ENGINE-GAS, 8 CYL, 6.6L, SIDI, VVT, CAST IRON |
| MGM | TRANSMISSION-AUTO 10 SPD, 10L1000, GRX, GEN 1, VAR 1 |
| MGU | TRANSMISSION-AUTO 10 SPD, 10L1000, GRX, GEN 2, VAR 2 |
| MKM | TRANSMISSION-AUTO 10 SPD, RWD 4.54 1ST, 2.86 2ND, 2.06 3RD, 1.71 4TH, 1.48 5TH, 1.26 6TH, 1.00 7TH, 10L1001 |
| N06 | STEERING COLUMN LOCK-ELECTRICAL |
| N2N | FUEL TANK-DUAL TANK, FRONT TANK 23.5 GAL (89L) REAR TANK 40 GAL (151L) |
| N2N | FUEL TANK-DUAL TANK, FRONT TANK 23.5 GAL (89L) REAR TANK 40 GAL (151L) |
| NQF | TRANSFER CASE-ELECTRIC SHIFT CONT, TWO SPEED, ALUM |
| NQH | TRANSFER CASE-ACTIVE, TWO SPEED, SWITCH ACTIVATED, ALUM |
| NV8 | STEERING-POWER, MAGNETIC SPEED, VARIABLE ASSIST |
| PTO | ENGINE CONTROL-POWER TAKE OFF (PTO) CONTROLS |
| QK1 | GATE TYPE-PUBX END STANDARD |
| QK2 | GATE TYPE-PUBX END ENHANCED |
| QT5 | GATE FUNCTION-MANUAL ASSIST POWER RELEASE |
| QT6 | GATE FUNCTION-POWER |
| T3U | LAMP FRT FOG-FRT FOG |
| T4L | HEADLAMPS-LED (DNU NEXT NEW MAJOR) |
| U01 | LAMP-FIVE, ROOF MARKER, TRUCK |
| U12 | LAMP-EXTR, OSRV MIRROR, TASK |
| U2K | DIGITAL AUDIO SYSTEM-S-BAND |
| U2Q | DIGITAL AUDIO SYSTEM-INTEGRATED TYPE DAB/DAB+/DMB-R |
| UBC | RECPT USB ARMREST-DUAL, CHARGE, DATA |

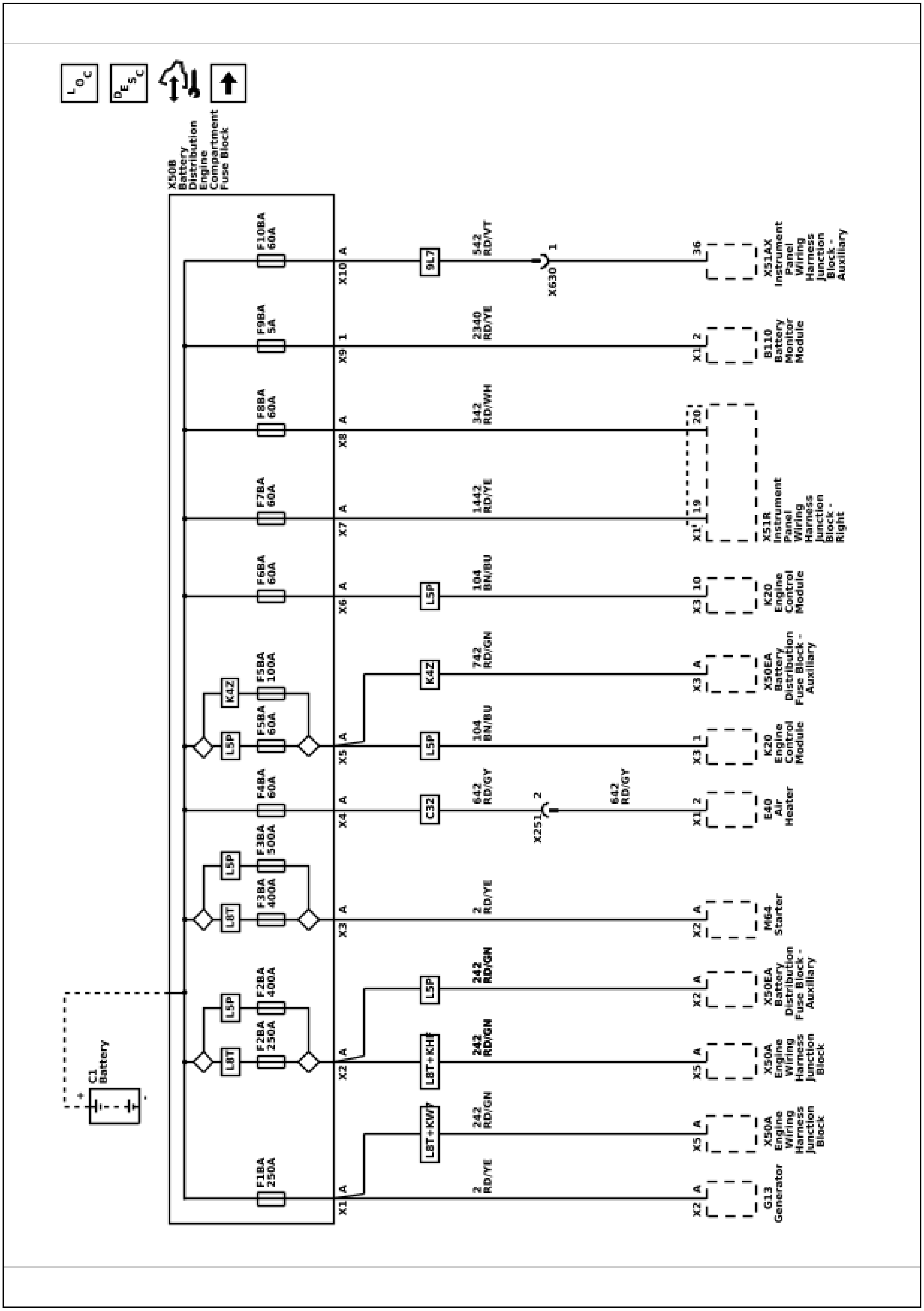
| RPO | Option Name |
|---|---|
| UBD | RECPT USB FLR CNSL F-DUAL, CHARGE, DATA |
| UBI | RECPT USB FLR CNSL R-DUAL, CHARGE |
| UBJ | RECPT USB IP LWR-DUAL, CHARGE, DATA |
| UD5 | PARK ASSIST-FRONT AND REAR |
| UDC | DISPLAY INSTRUMENT-DRIVER INFO ENHANCED (ONE COLOR GRAPHIC) |
| UDV | DISPLAY INSTRUMENT-DRIVER INFO ENHANCED, FULL CLUSTER (MULTI COLOR GRAPHIC) |
| UE1 | COMMUNICATION SYSTEM-VEHICLE, ONSTAR |
| UET | INDICATOR-SMART TRAILER INTEGRATION |
| UEU | SENSOR INDICATOR-FORWARD COLLISION ALERT |
| UF2 | LAMP-CARGO |
| UHY | COLL IMMINENT BRK-LOW SPEED, VEH FWD MOVEMENT, BRAKE PREFILL, INTEGRATED BRAKE ASSIST |
| UK3 | CONTROL-STEERING WHEEL, ACCESSORY |
| UKC | SIDE ACTIVE SAFETY-OBSTACLE DETECTION ENHANCED |
| UKV | SIDE ACTIVE SAFETY-OBSTACLE DETECTION ENHANCED, EXTENDED TRAILER VIEW |
| UQA | SPEAKER SYSTEM-PREMIUM AUDIO, BRANDED AMPLIFIER |
| UQF | SPEAKER SYSTEM-STANDARD AUDIO |
| UQS | SPEAKER SYSTEM-PREMIUM AUDIO, BRANDED SURROUND AMPLIFIER |
| URC | SWITCH-FLEXRIDE MODE SYSTEM |
| UTJ | THEFT DETERENT-ELECTRICAL, UNAUTHORIZED ENTRY |
| UV2 | VISION-360 VIEW, MONO, HD DIGITAL |
| UV6 | HEAD UP DISPLAY-WINDSHIELD |
| UVN | VISION AUXILIARY-CARGO BED |
| UVO | VISION AUXILIARY-CARGO BED BASE |
| UY2 | WIRING PROVISIONS-CAMPER and 5TH WHEEL TRAILER |
| VTI | SHUTTERS-FRONT GRILLE, ACTIVE, UPR |
| VV4 | COMMUNICATION EQUIP-MOBILE INTERNET CONNECTIVITY |
| Z6A | PROVISIONS-SPECIAL EQUIPMENT, 5TH WHEEL/ GOOSENECK TRAILER HITCH PREP PACKAGE |
| Z82 | TRAILER PROVISIONS-SPECIAL EQUIPMENT, H.D. |
| ZW9 | BODY EQUIPMENT-BASE BODY OR CHASSIS |

## Master Electrical Schematic Icons

### Master Electrical Schematic Icons

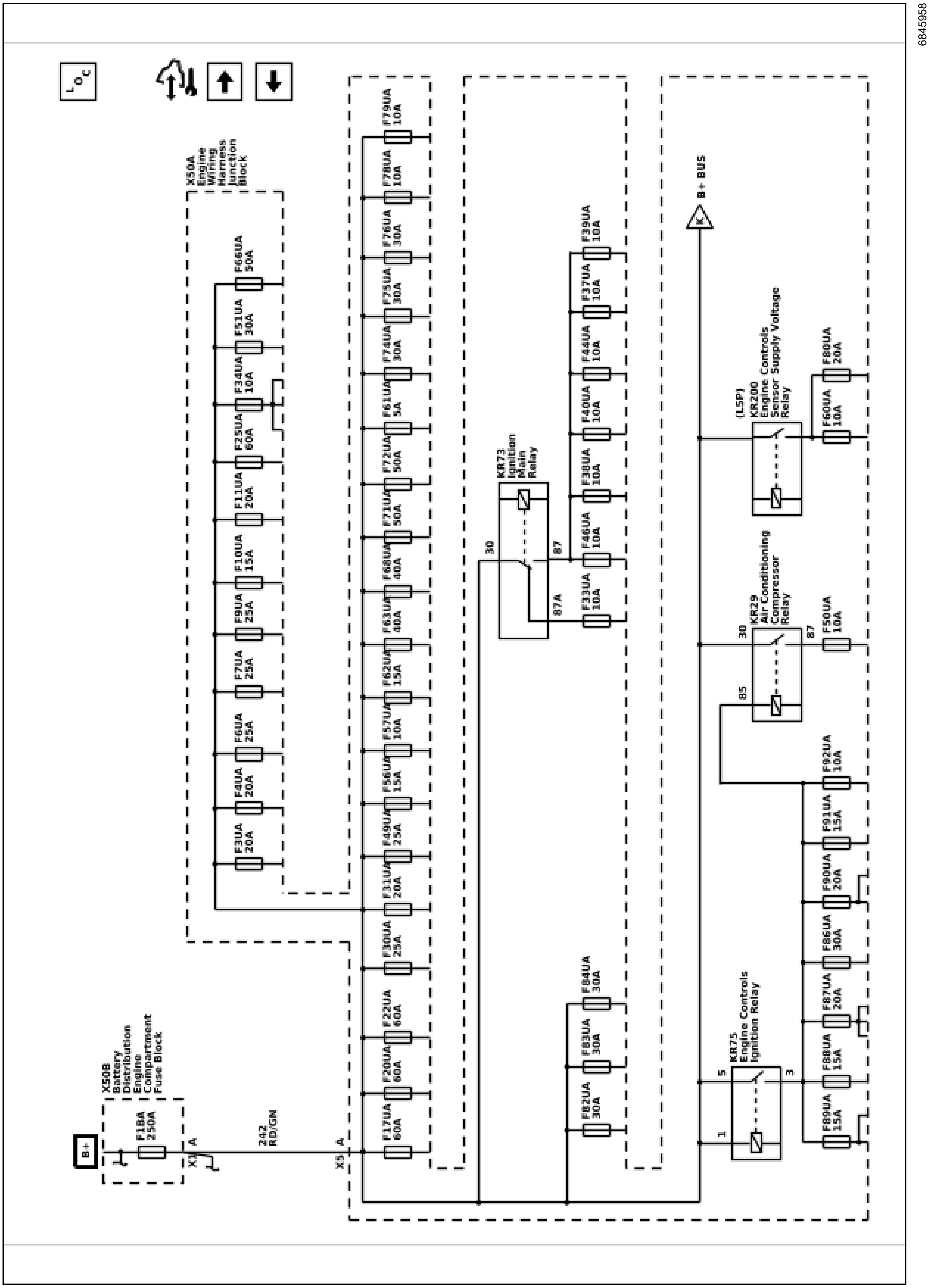
| Icon | Icon Definition |
|---|---|
|  19386 | ***Warning: When performing service on or near the SIR components or the SIR wiring, the SIR system must be disabled. Refer to SIR Disabling and Enabling . Failure to observe the correct procedure could cause deployment of the SIR components, personal injury, or unnecessary SIR system repairs.*** |
|   902886 | **Note:** Twisted-pair wires provide an effective shield that helps protect sensitive electronic components from electrical interference. If the wires were covered with shielding, install new shielding.In order to prevent electrical interference from degrading the performance of the connected components, you must maintain the proper specification when making any repairs to the twisted-pair wires shown :<br>• The wires must be twisted a minimum of 9 turns per 31 cm (12 in) as measured anywhere along the length of the wires.<br>• The outside diameter of the twisted wires must not exceed 6.0 mm (0.25 in). |

## Power Distribution Schematics (Battery Distribution Engine Compartment Fuse Block)

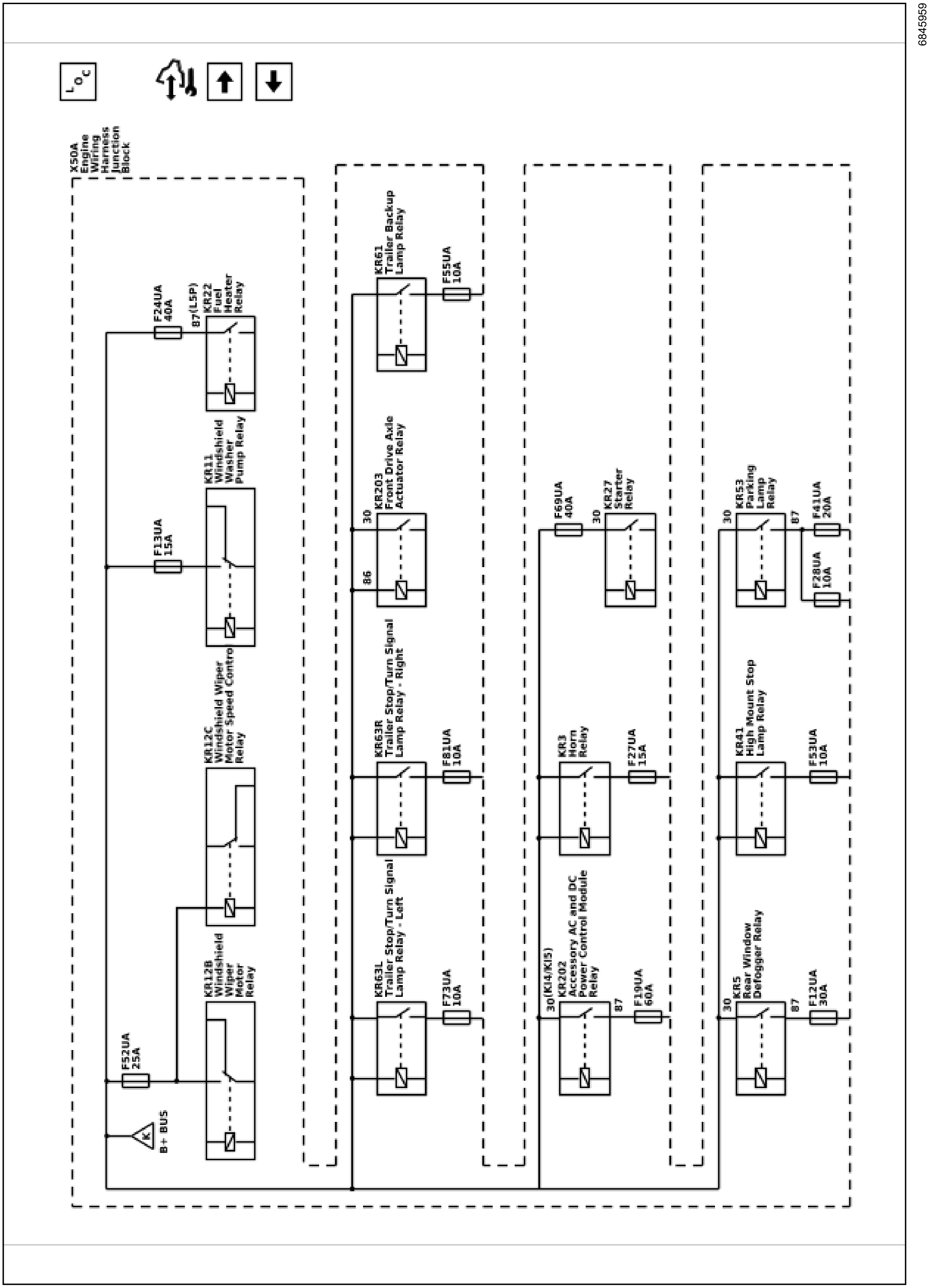



6845957

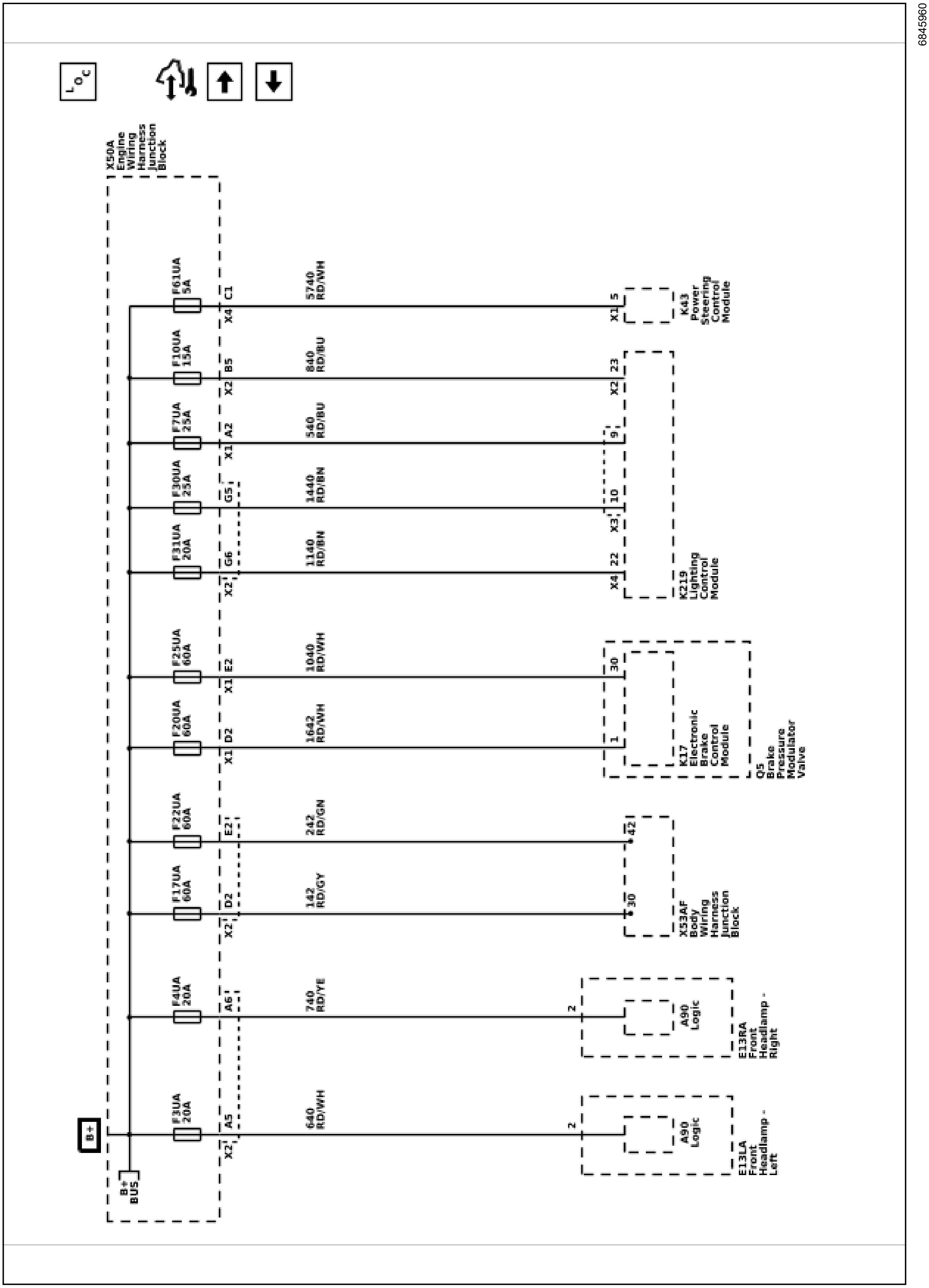
# Power Distribution Schematics (Engine Wiring Harness Junction Block - B+ Bus - 1 of 2 (K4B))



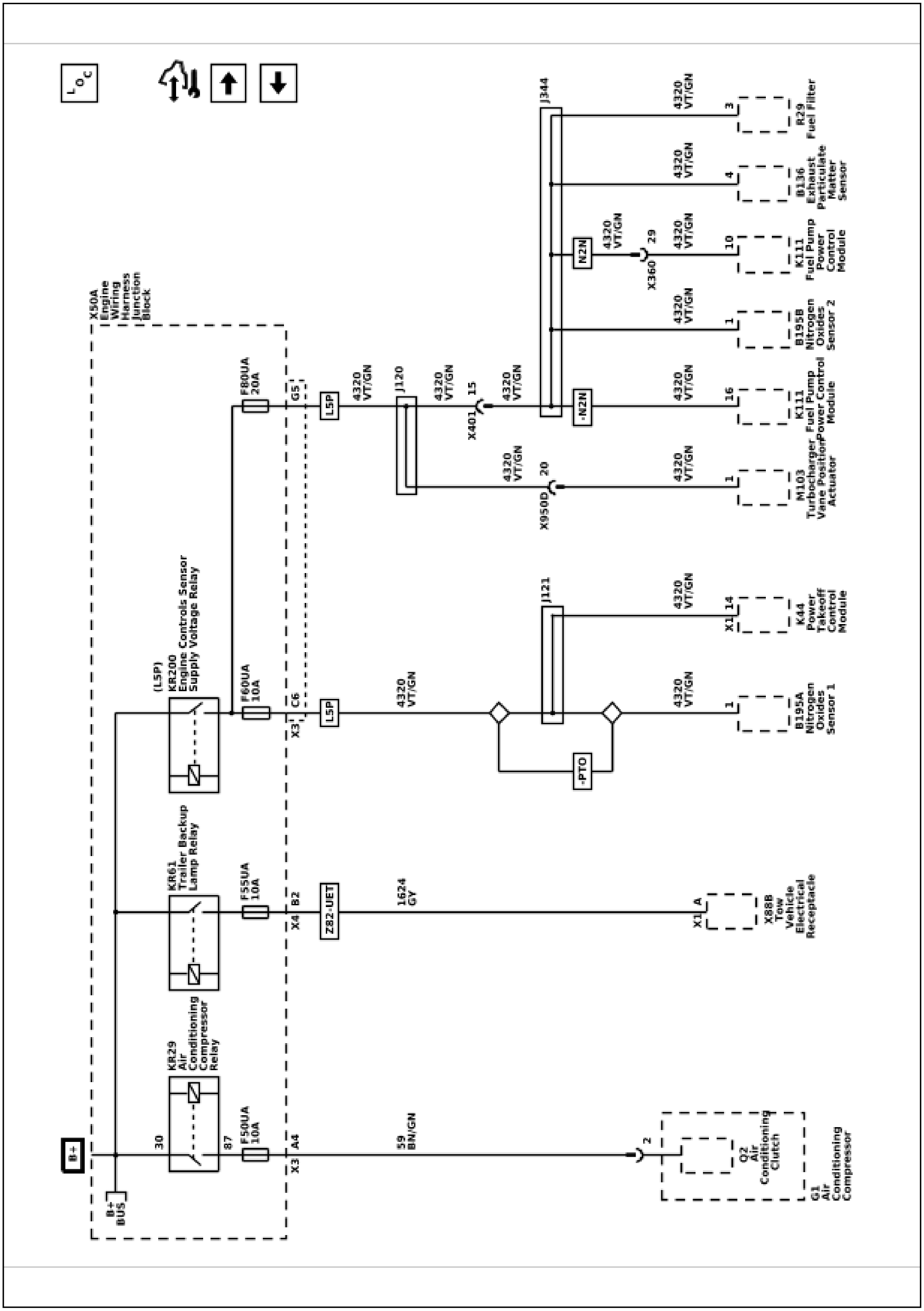
## Power Distribution Schematics (Engine Wiring Harness Junction Block - B+ Bus - 2 of 2 (L5P))



## Power Distribution Schematics (F3UA, F4UA, F7UA, F10UA, F17UA, F20UA, F22UA, F25UA, F30UA, F31UA, and F61UA Fuses)

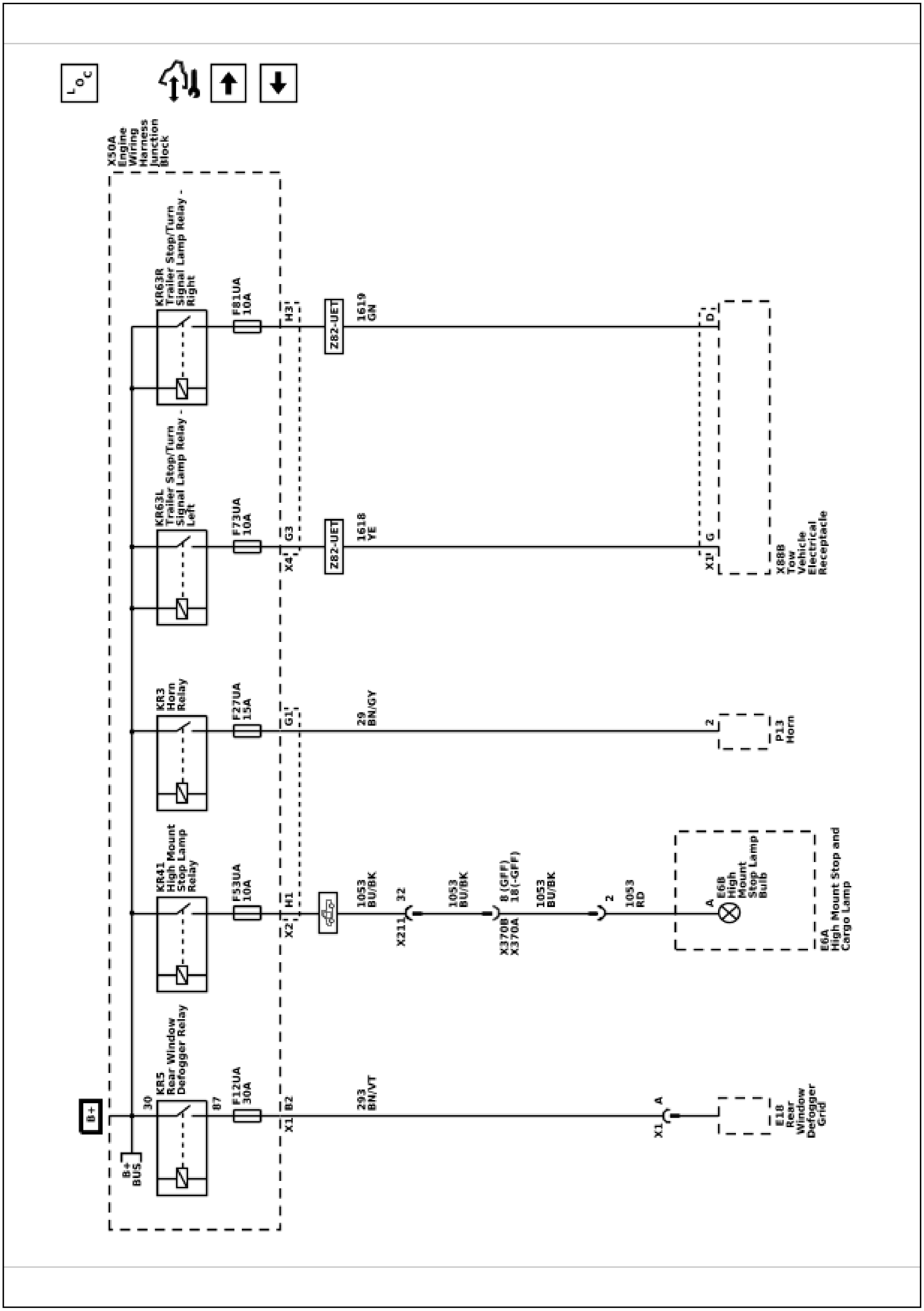


# Power Distribution Schematics (F50UA, F55UA, F60UA, and F80UA Fuses)

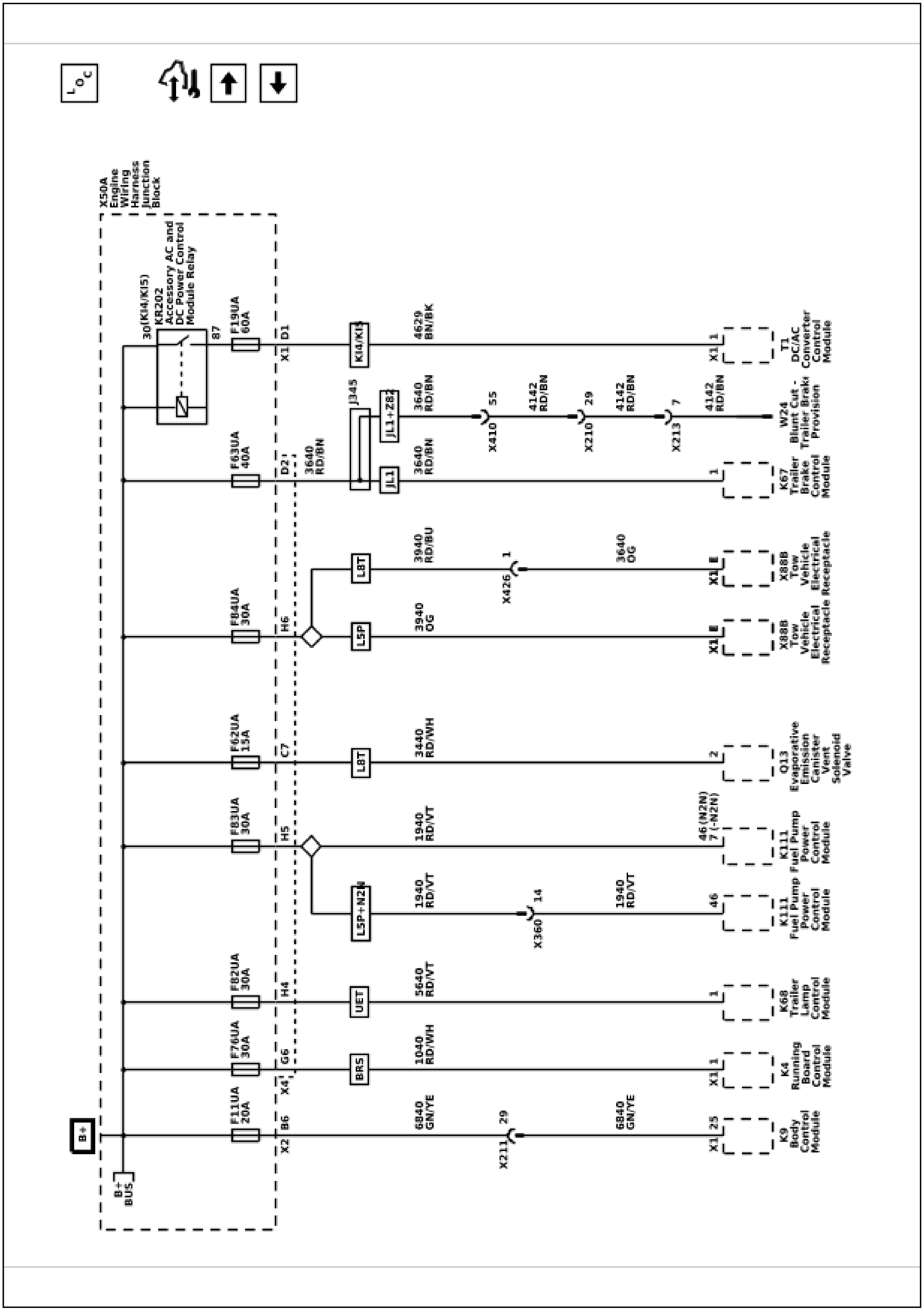



6845961

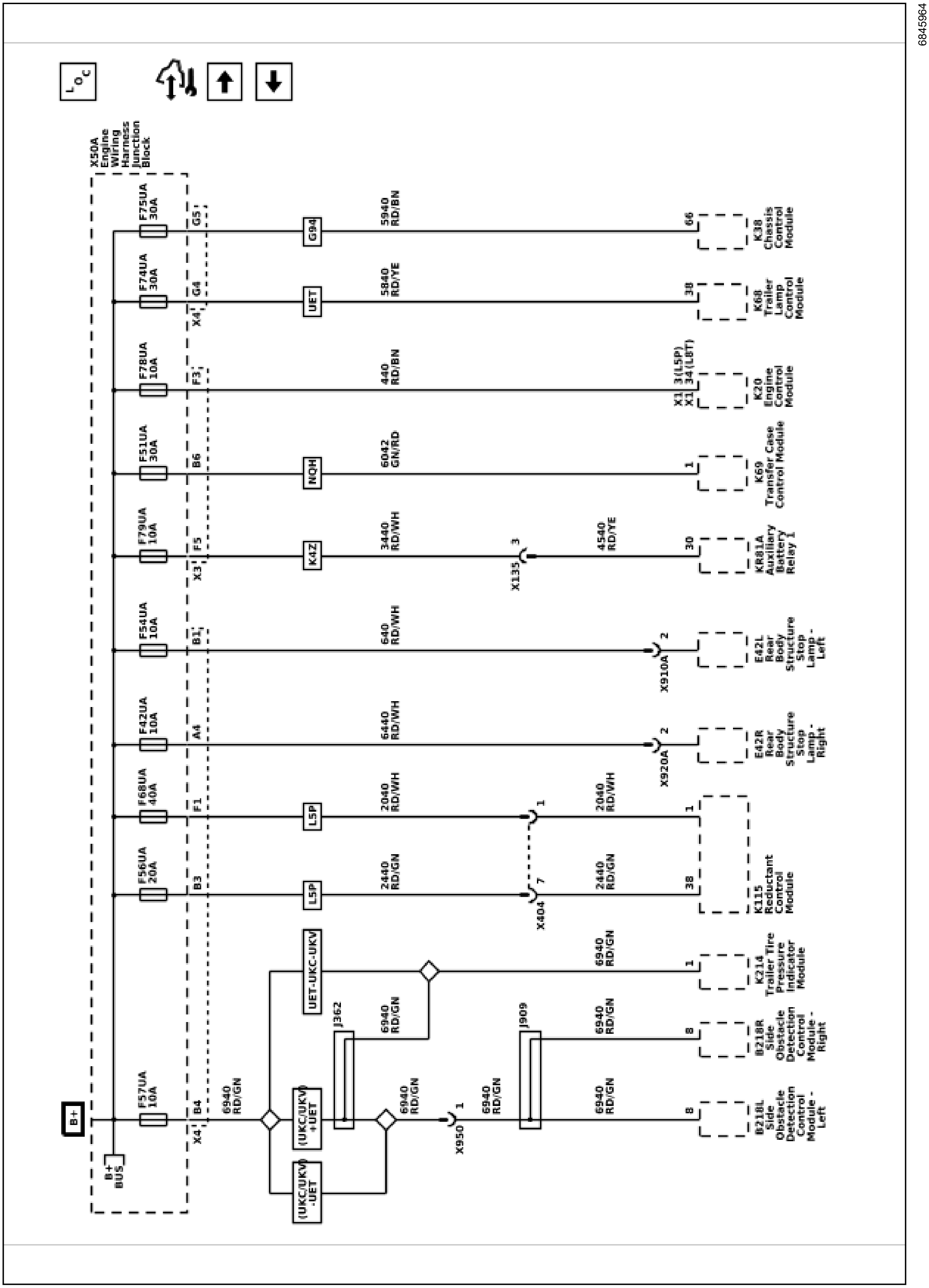
## Power Distribution Schematics (F12UA, F27UA, F53UA, F73UA, and F81UA Fuses)



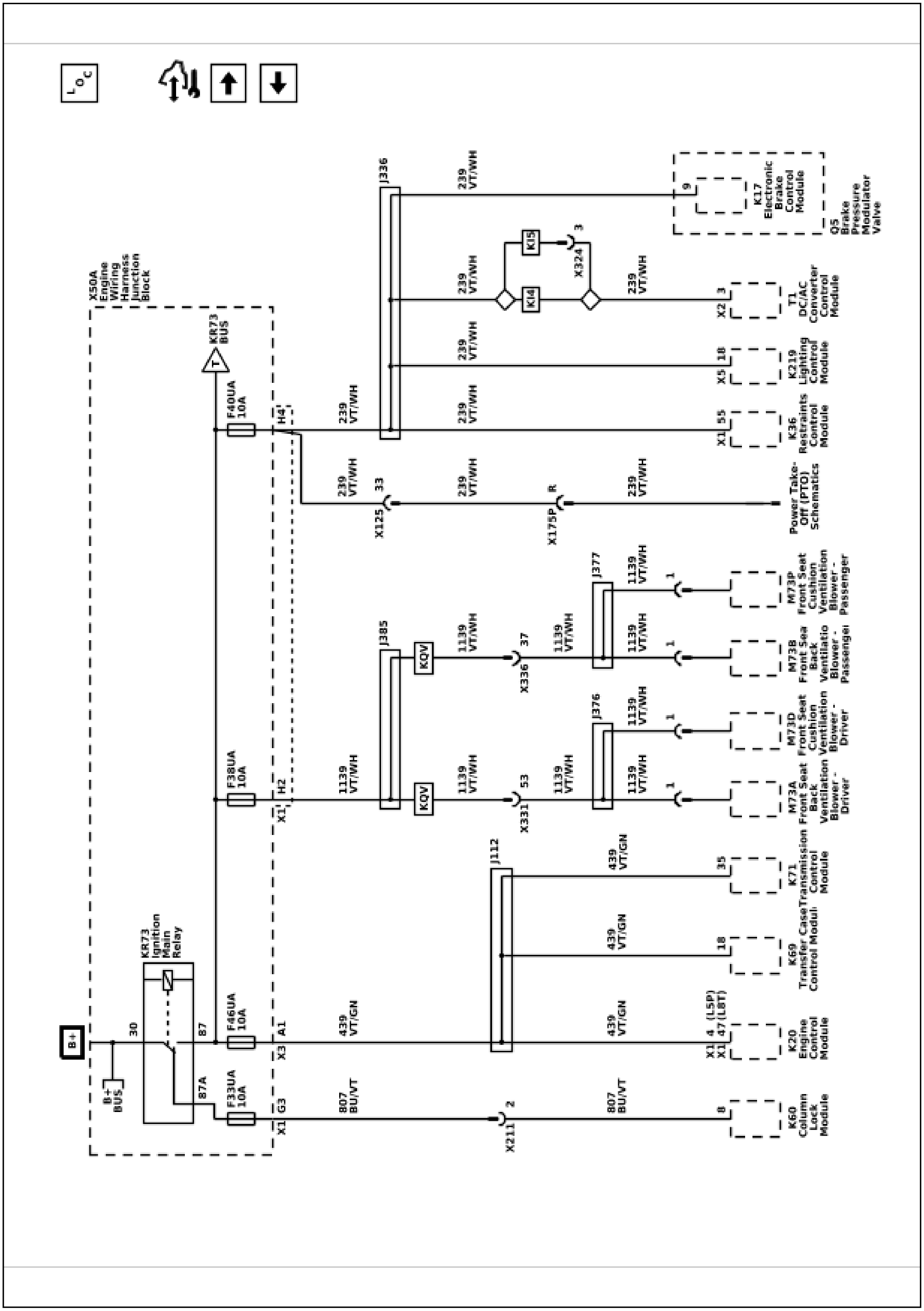
## Power Distribution Schematics (F11UA, F19UA, F62UA, F63UA, F76UA, F82UA, F83UA, and F84UA Fuses)



## Power Distribution Schematics (F42UA, F51UA, F54UA, F56UA, F57UA, F68UA, F74UA, F75UA, F78UA, and F79UA Fuses)

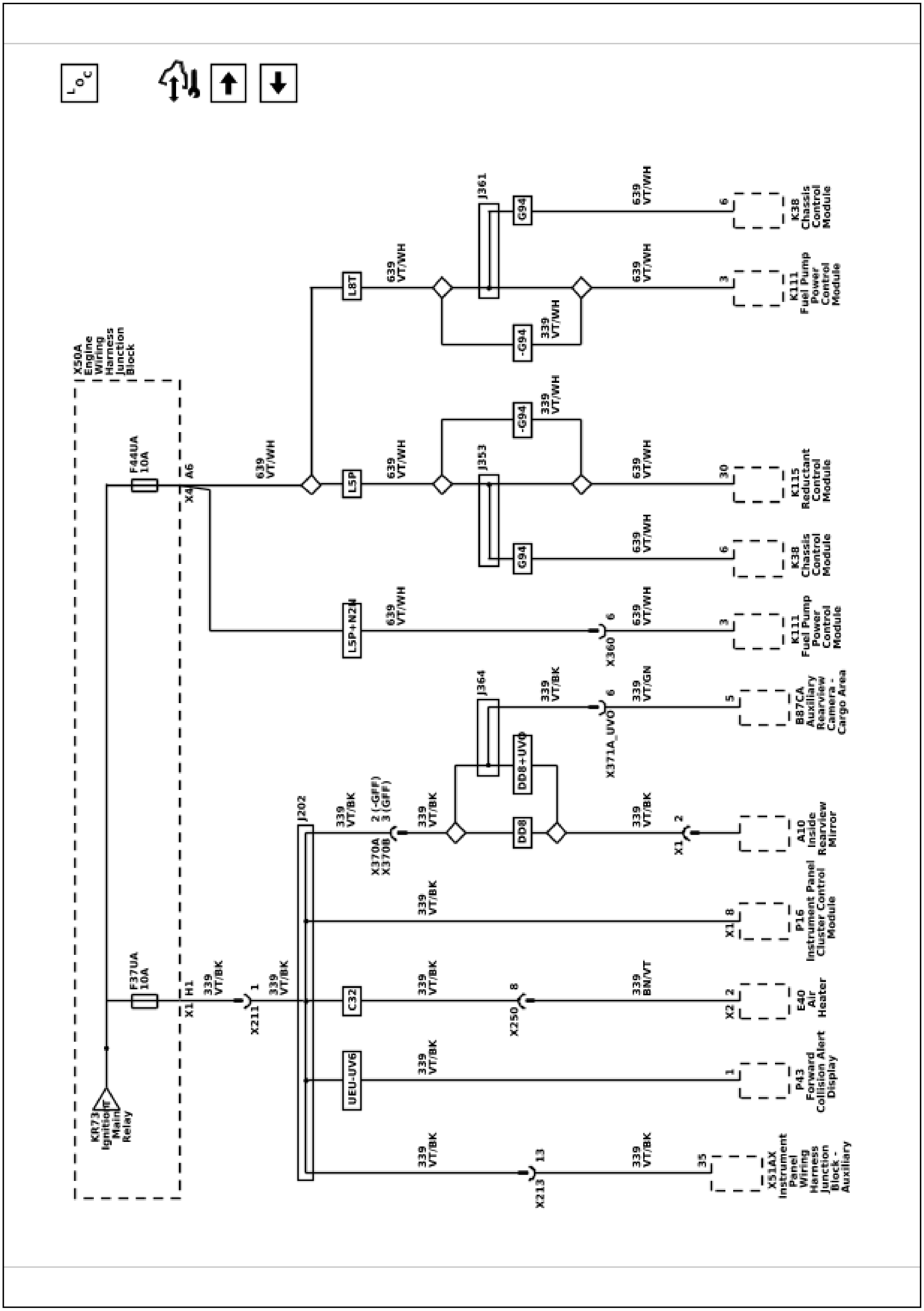


## Power Distribution Schematics (F33UA, F38UA, F40UA, and F46UA Fuses)

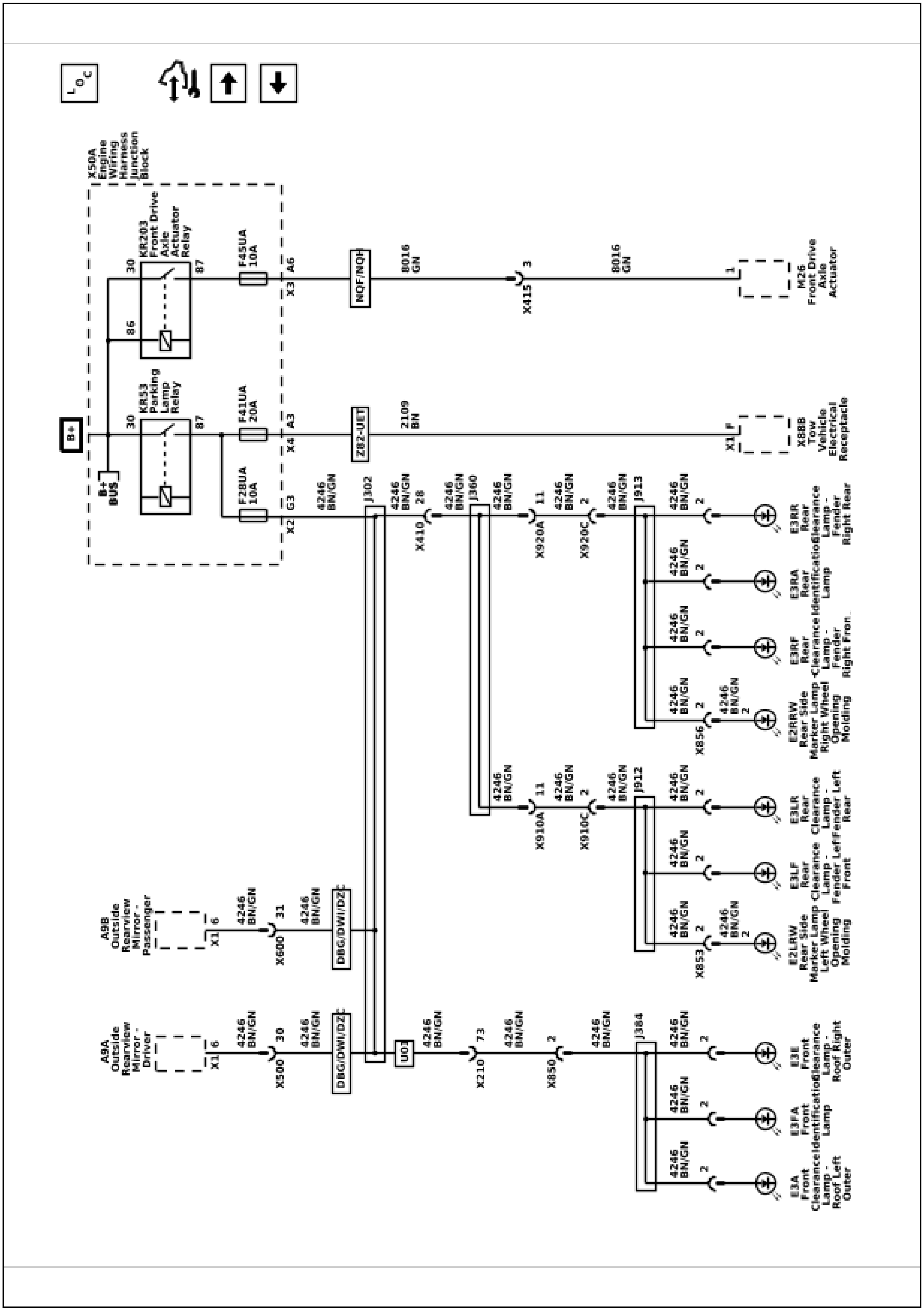



6845965

## Power Distribution Schematics (F37UA and F44UA Fuses)

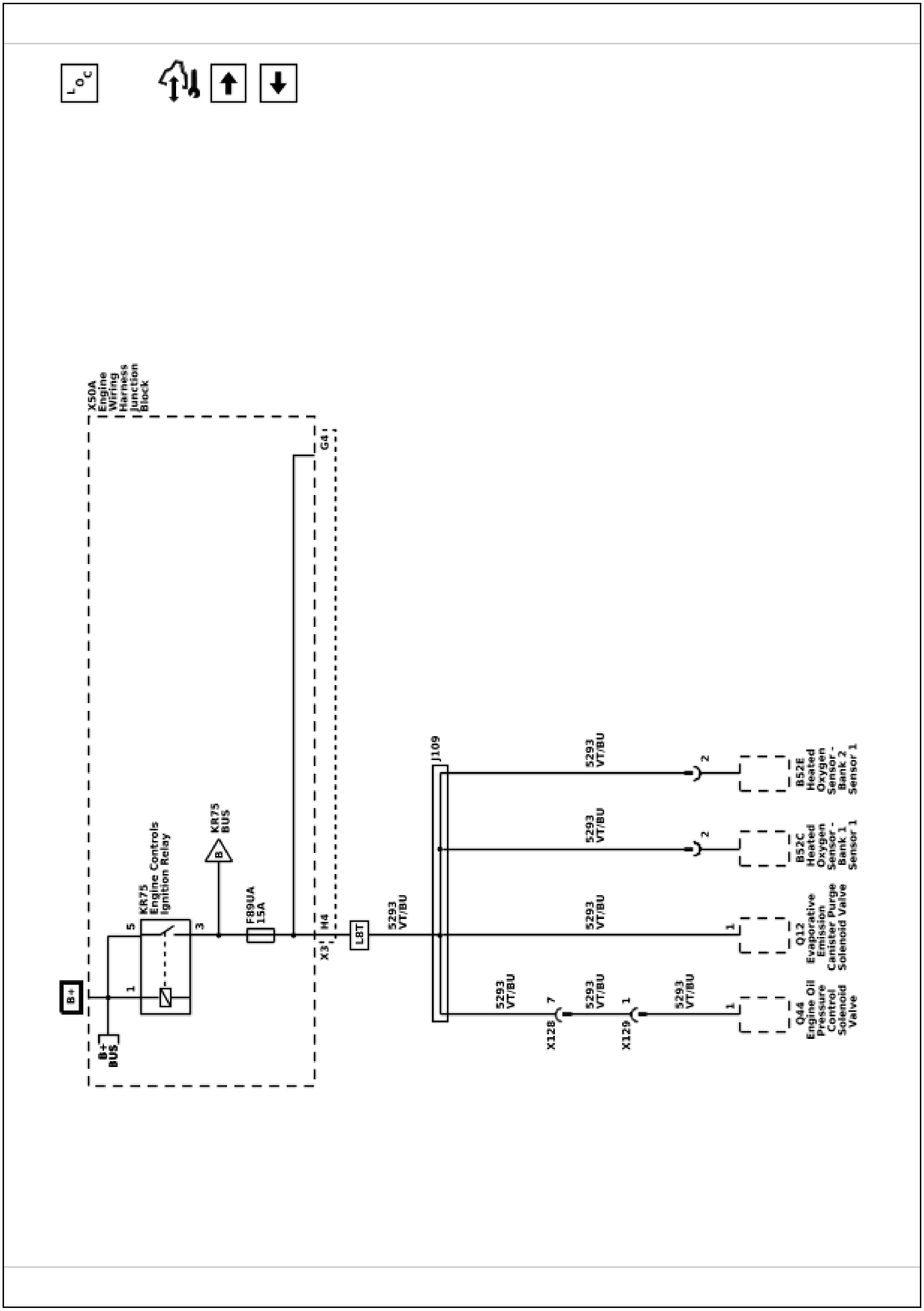


## Power Distribution Schematics (F28UA, F41UA, and F45UA Fuses)

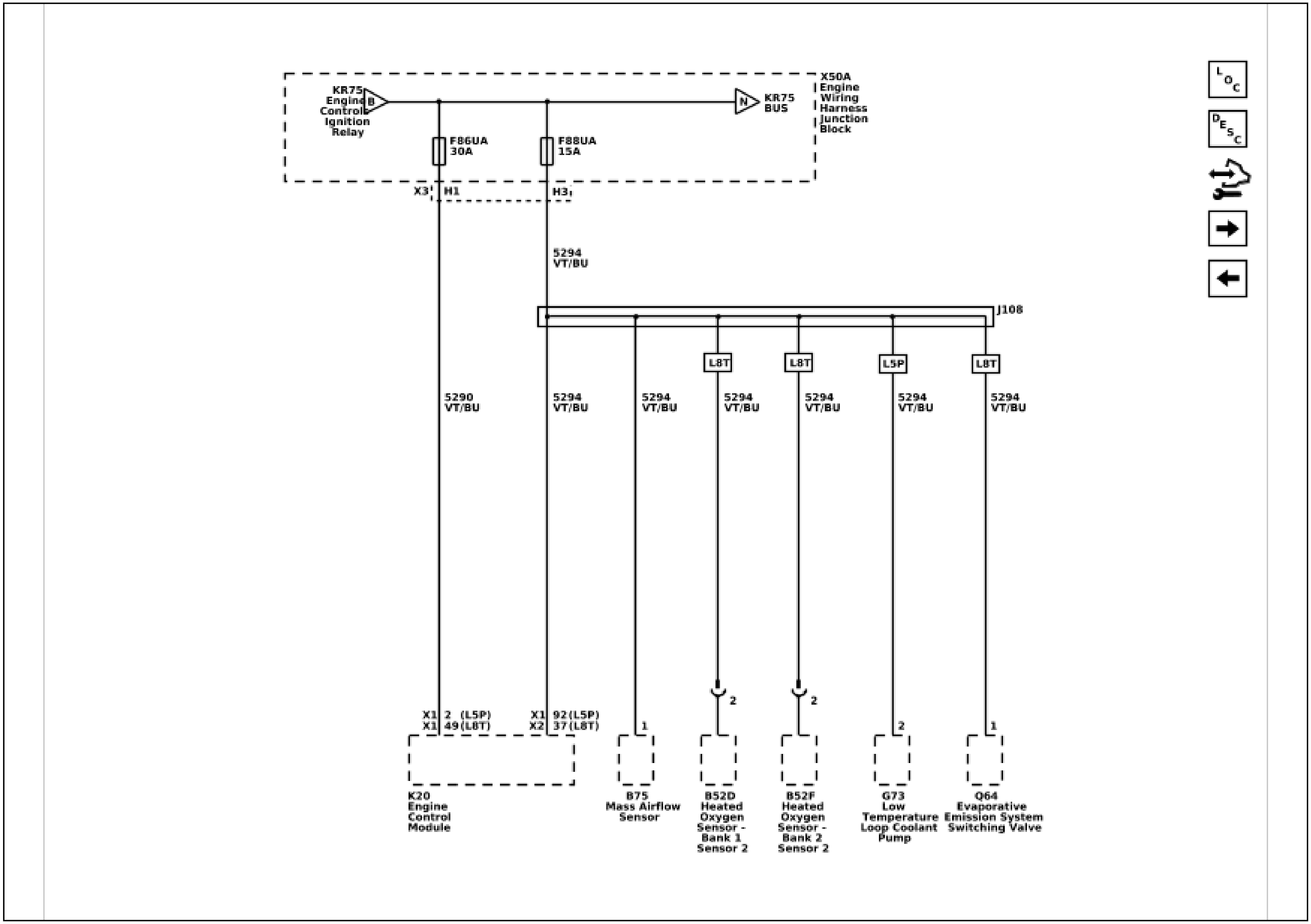



6845967

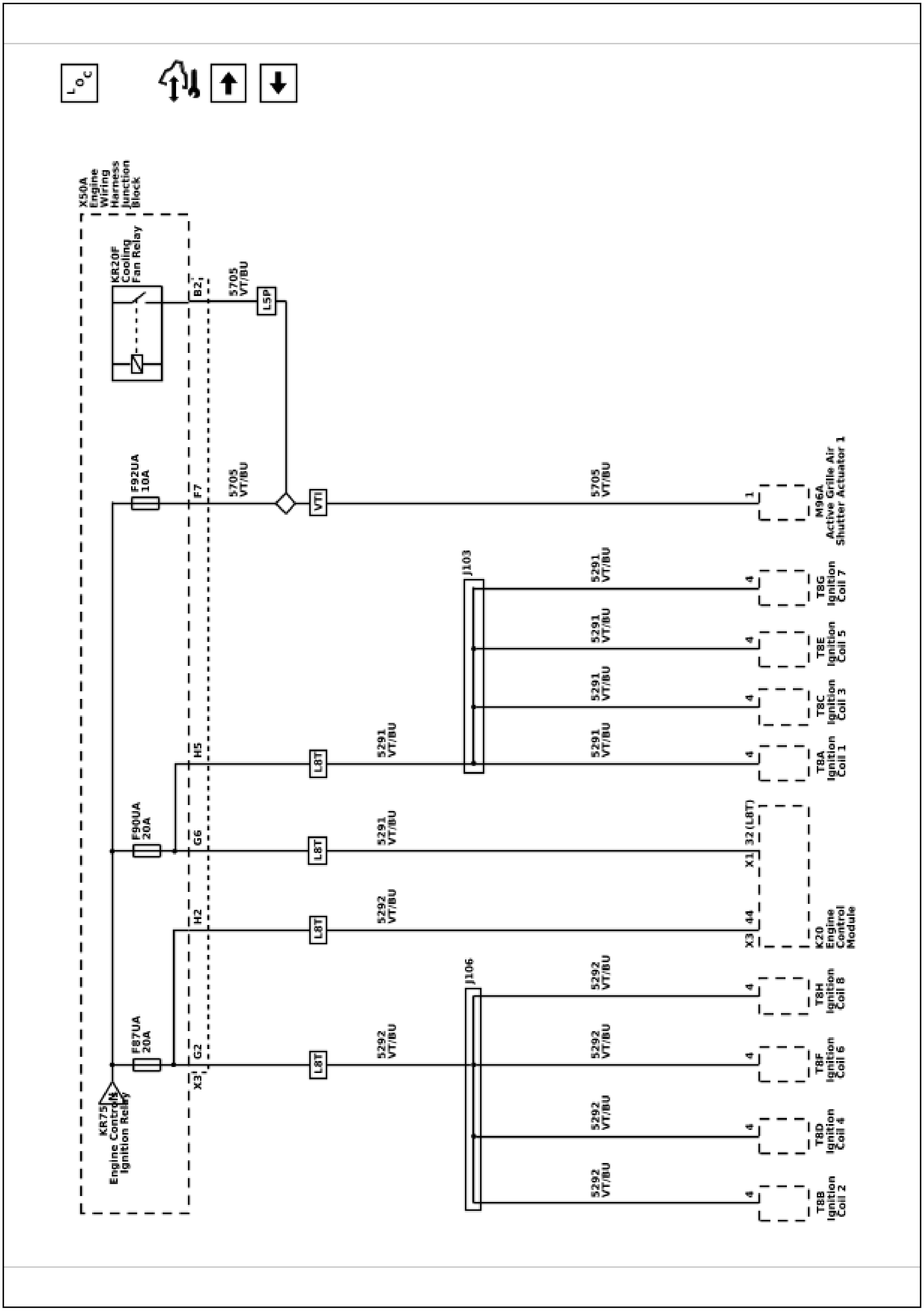
## Power Distribution Schematics (F89UA Fuse)



## Power Distribution Schematics (F86UA and F88UA Fuses)

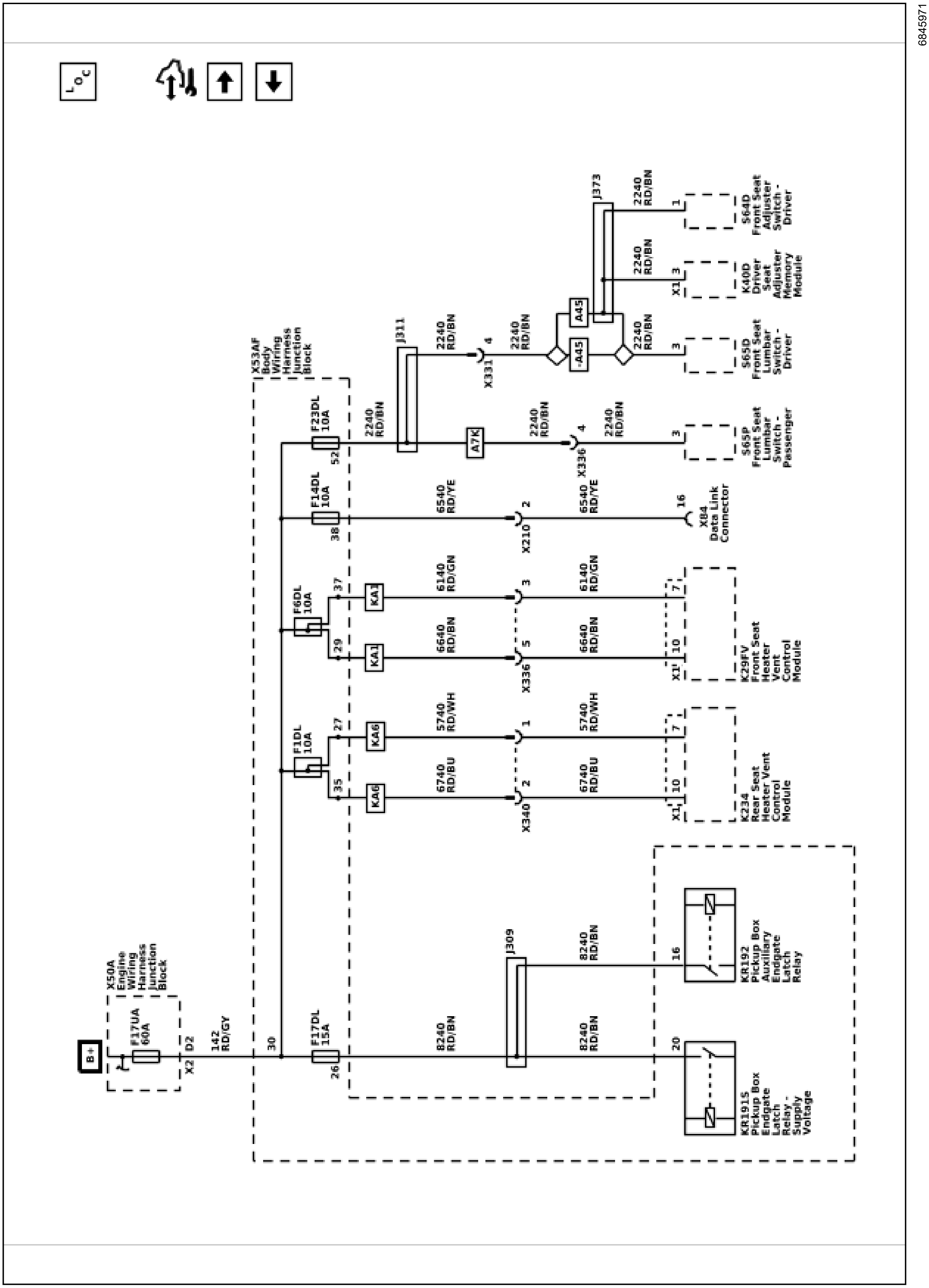


## Power Distribution Schematics (F87UA, F90UA, and F92UA Fuses)

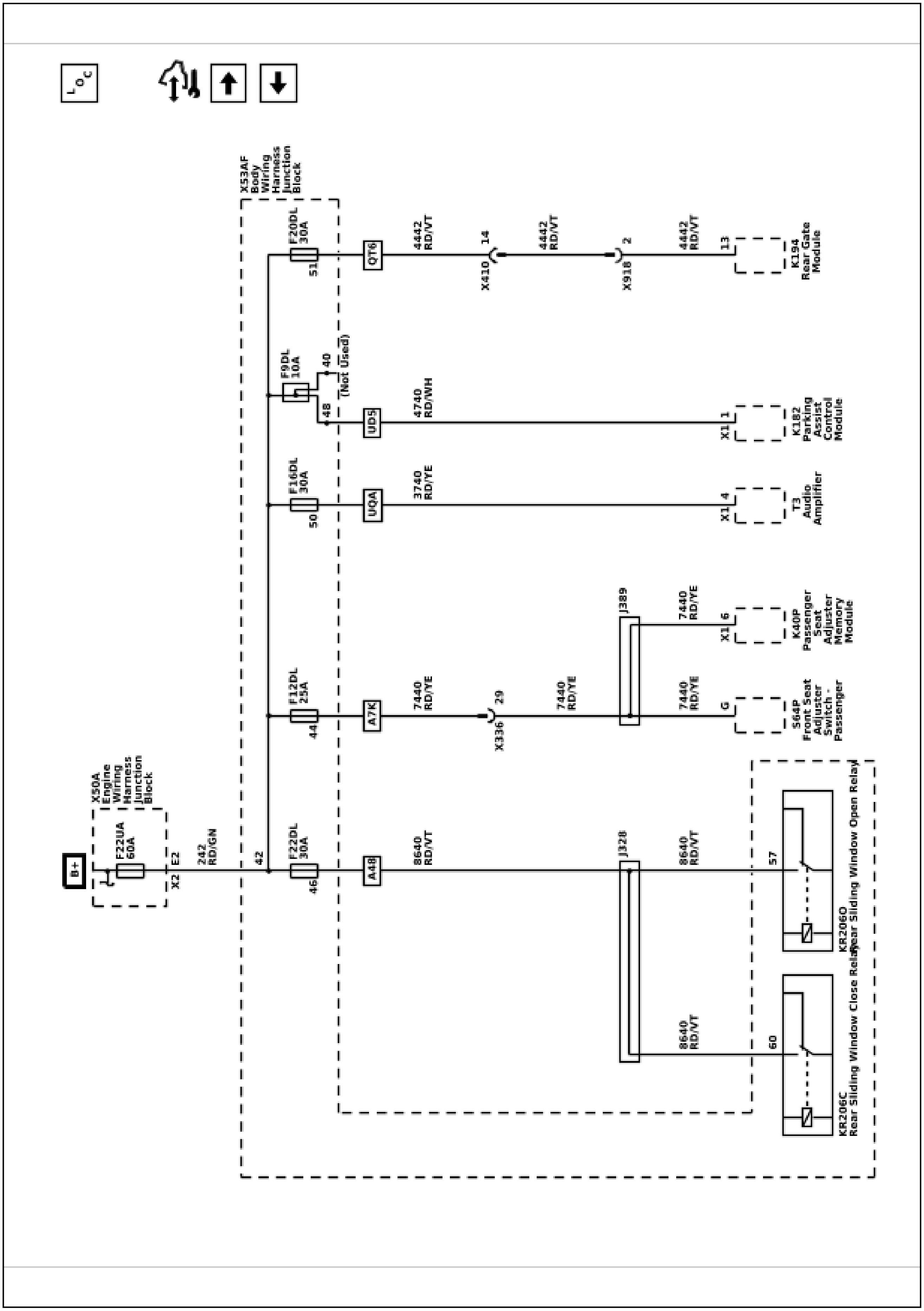



6845970

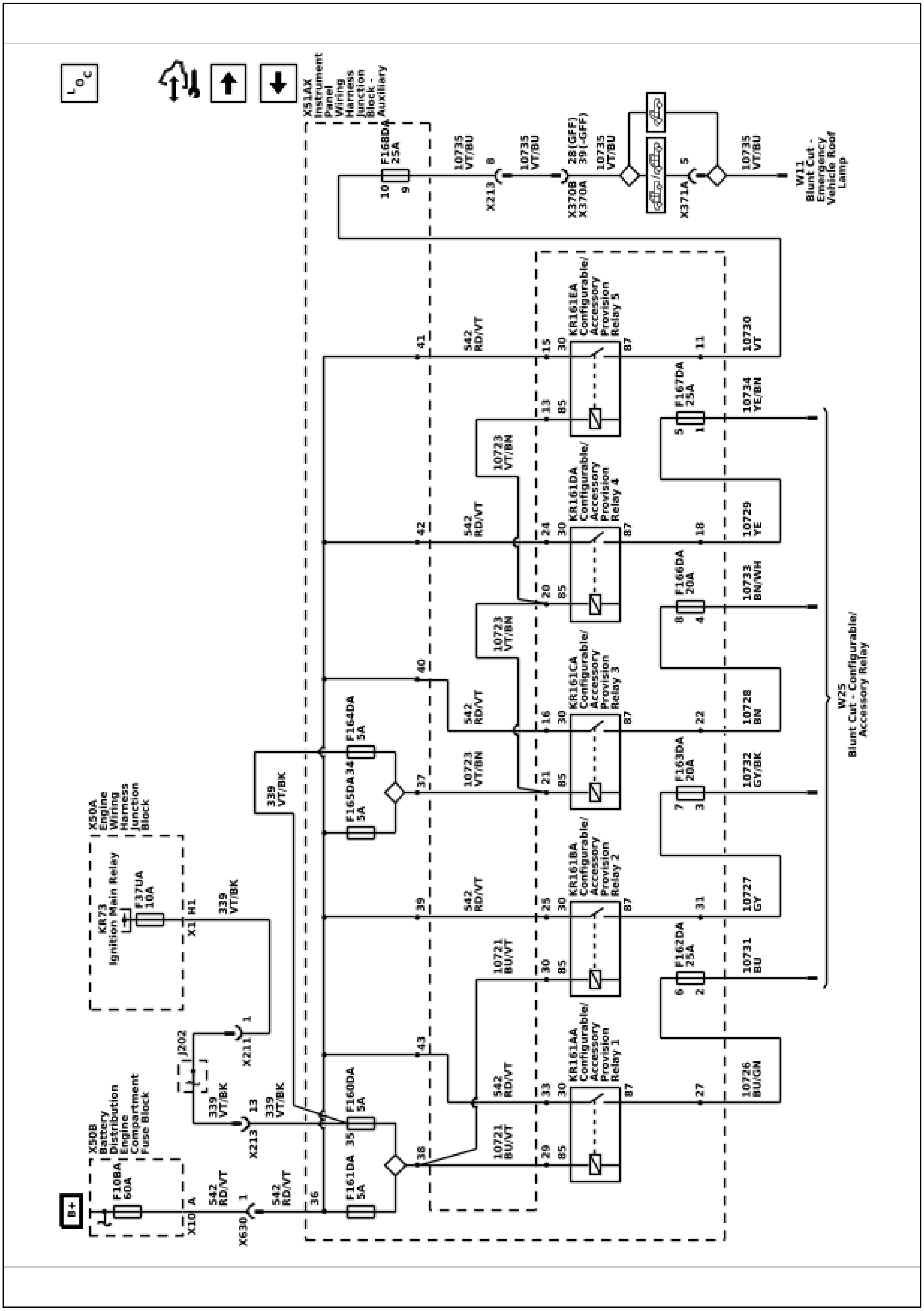
## Power Distribution Schematics (F1DL, F6DL, F14DL, F17DL, and F23DL Fuses)



## Power Distribution Schematics (F9DL, F12DL, F16DL, F20DL, and F22DL Fuses (L5P))

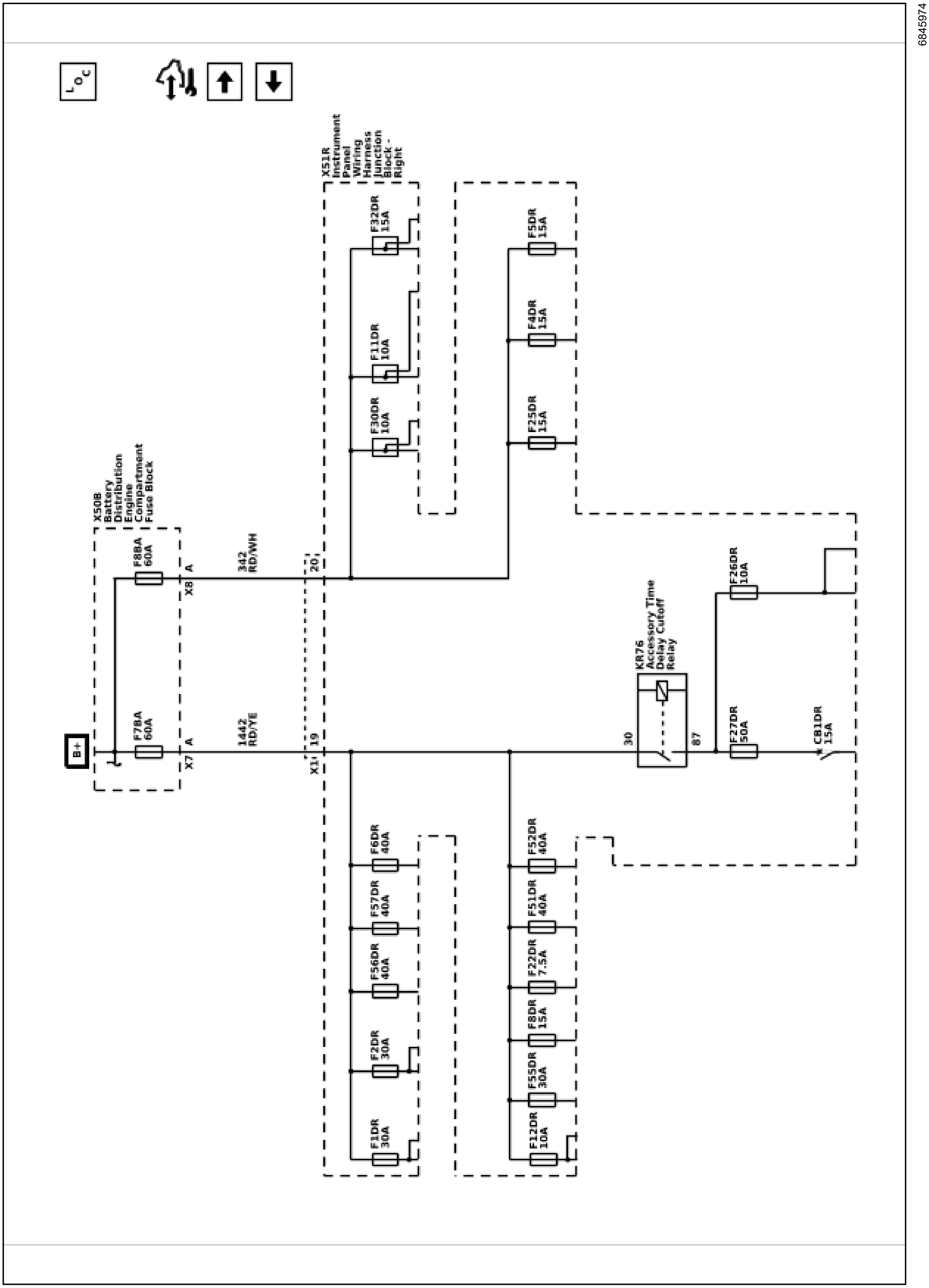


# Power Distribution Schematics (Instrument Panel Wiring Harness Junction Block - Auxiliary (L5P))

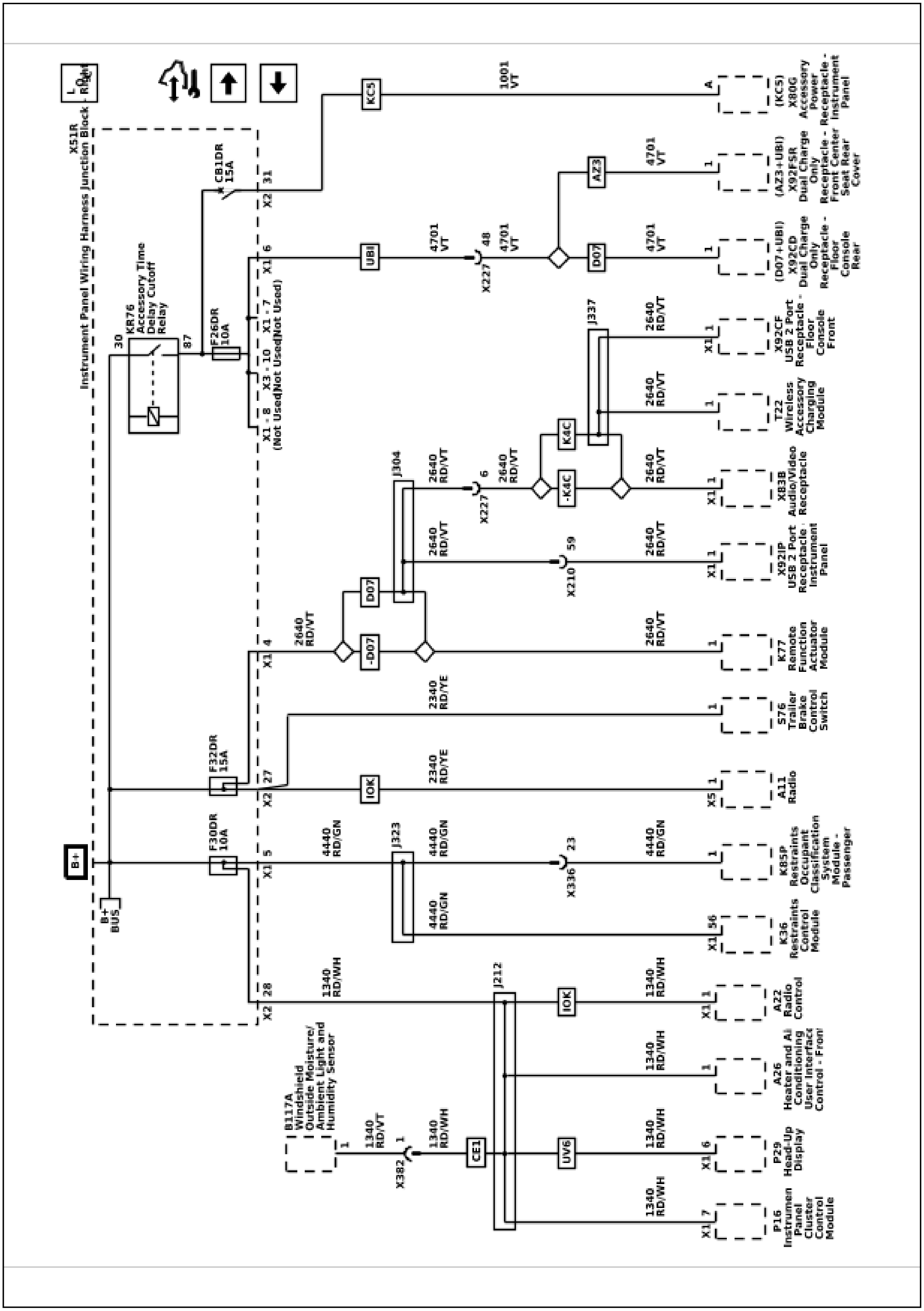



6845973

## Power Distribution Schematics (Instrument Panel Wiring Harness Junction Block - Right - B+ Bus)

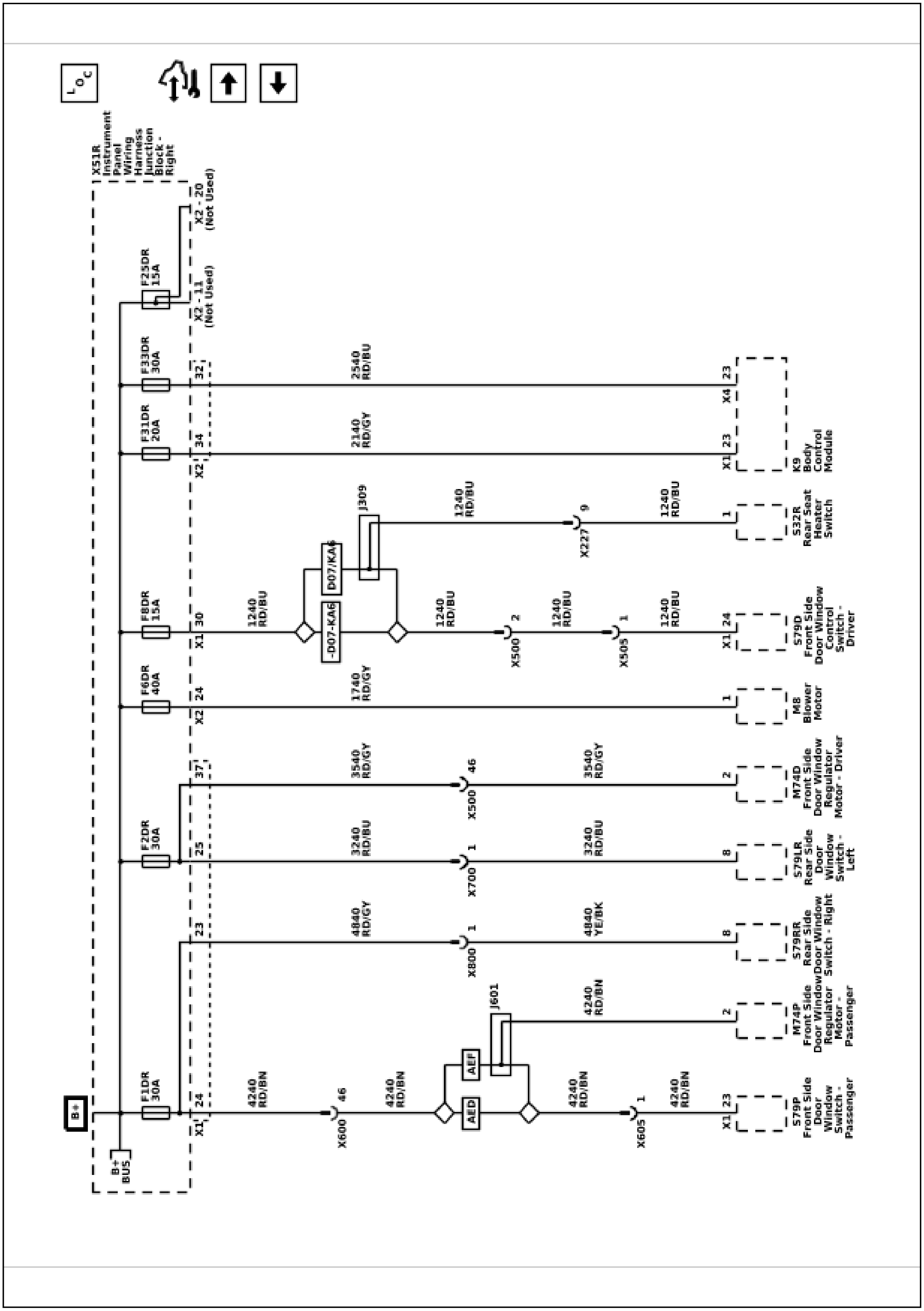


## Power Distribution Schematics (CB1DR Circuit Breaker, F26DR, F30DR, and F32DR Fuses)



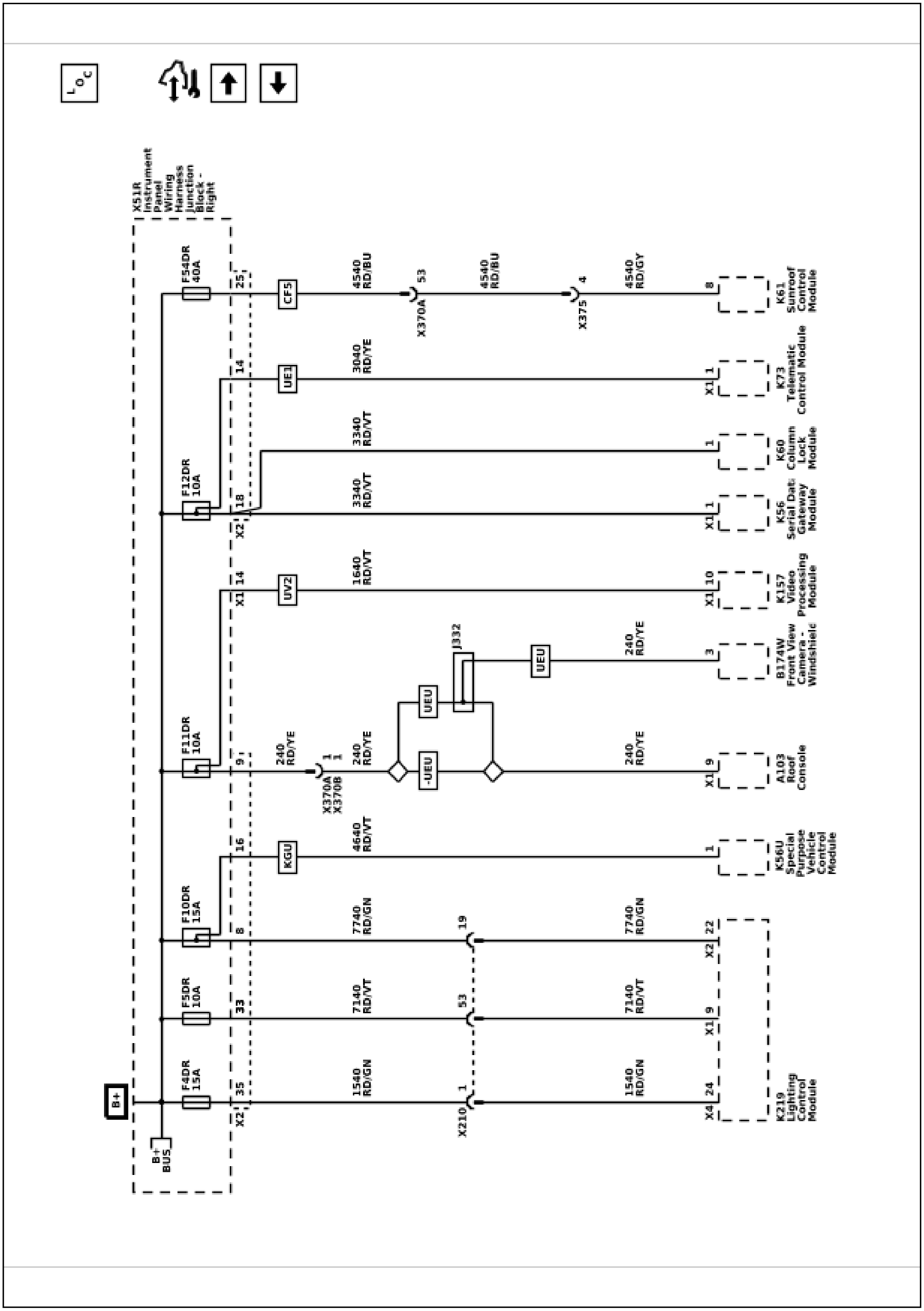

6845975

## Power Distribution Schematics (F1DR, F2DR, F6DR, F8DR, F25DR, F31DR, and F33DR Fuses (9L7))

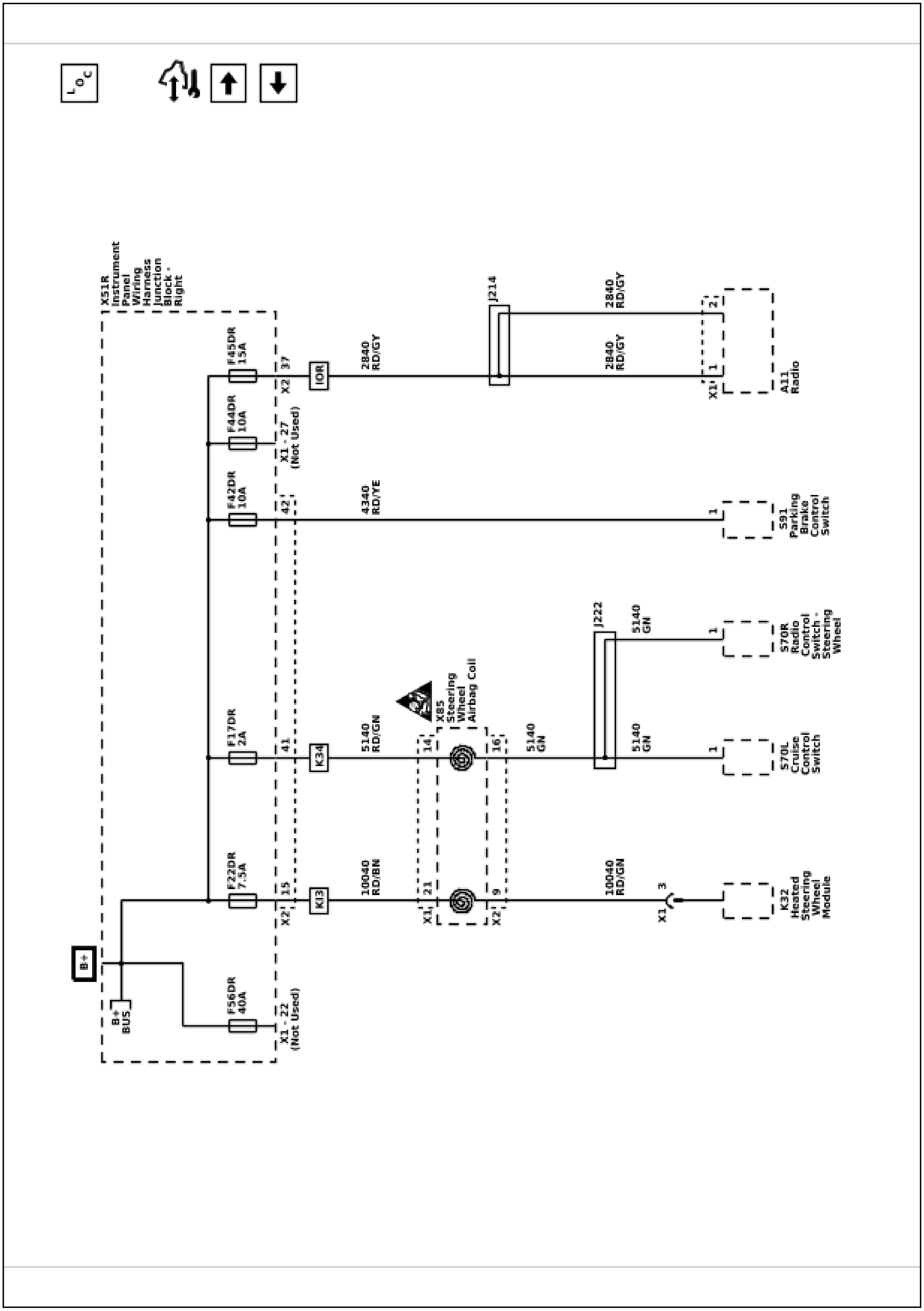



6845976

## Power Distribution Schematics (F4DR, F5DR, F10DR, F11DR, F12DR, and F54DR Fuses)

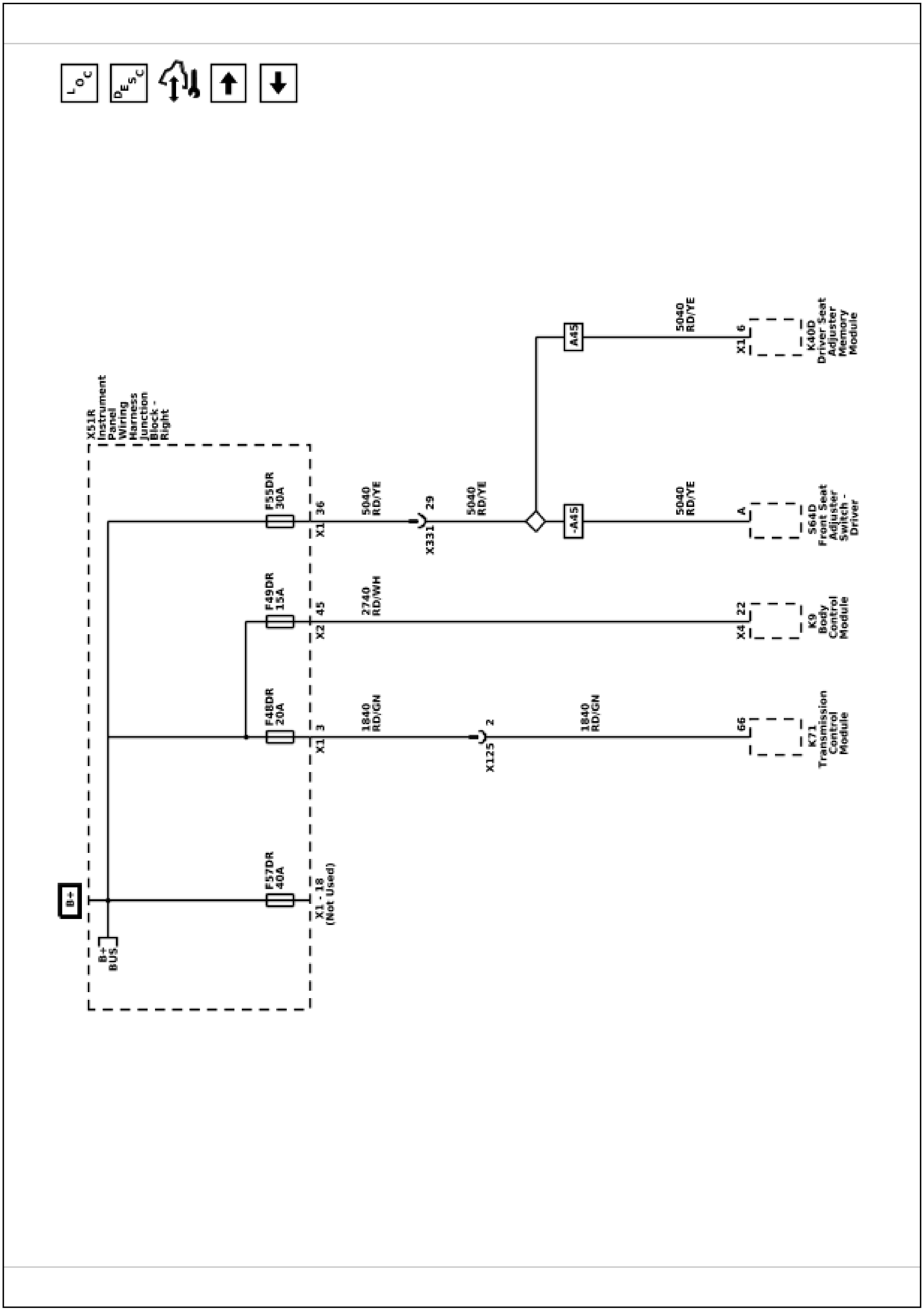


## Power Distribution Schematics (F17DR, F22DR, F42DR, F44DR, F45DR, and F56DR Fuses)

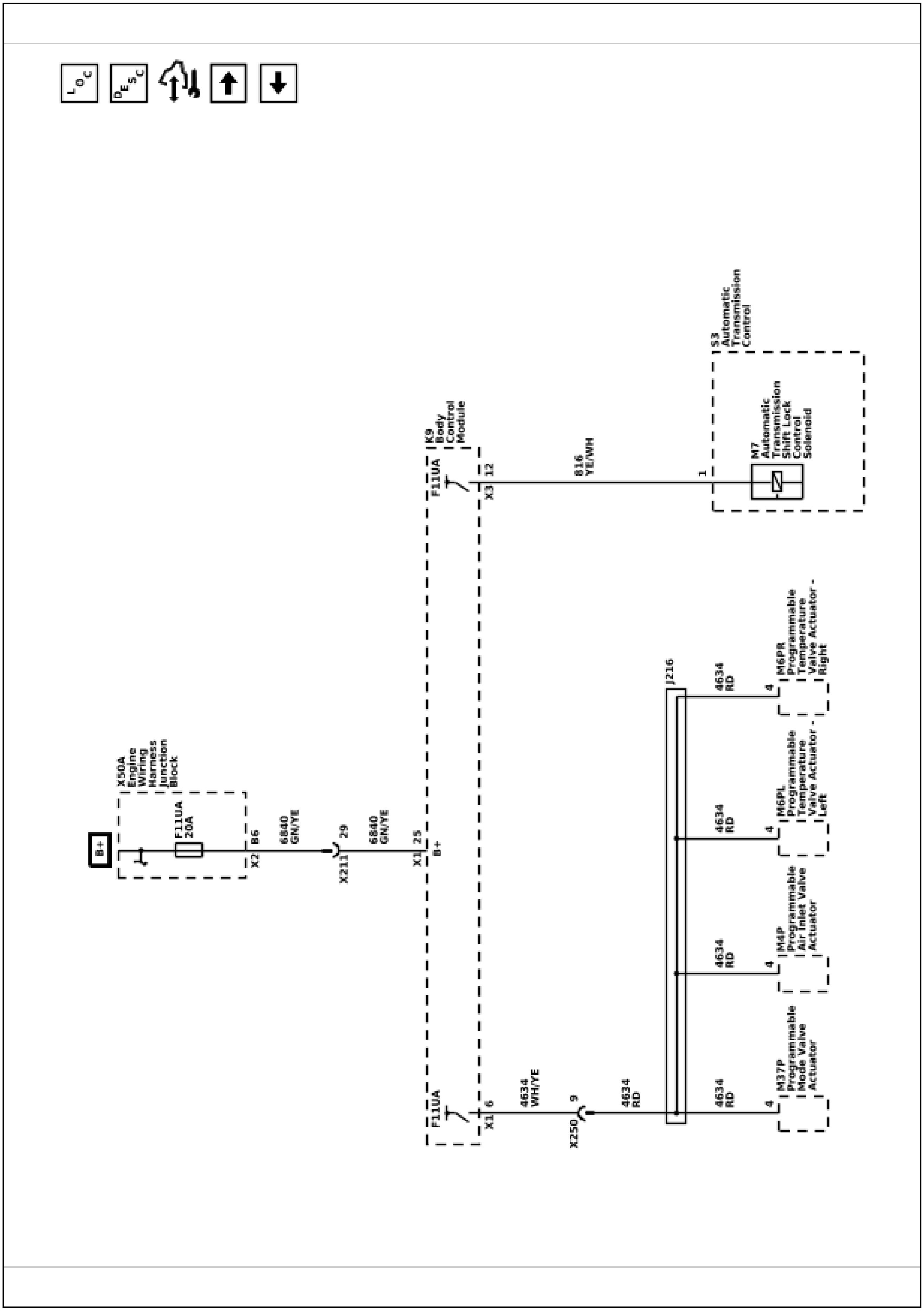



6845978

## Power Distribution Schematics (F48DR, F49DR, F55DR, and F57DR Fuses)

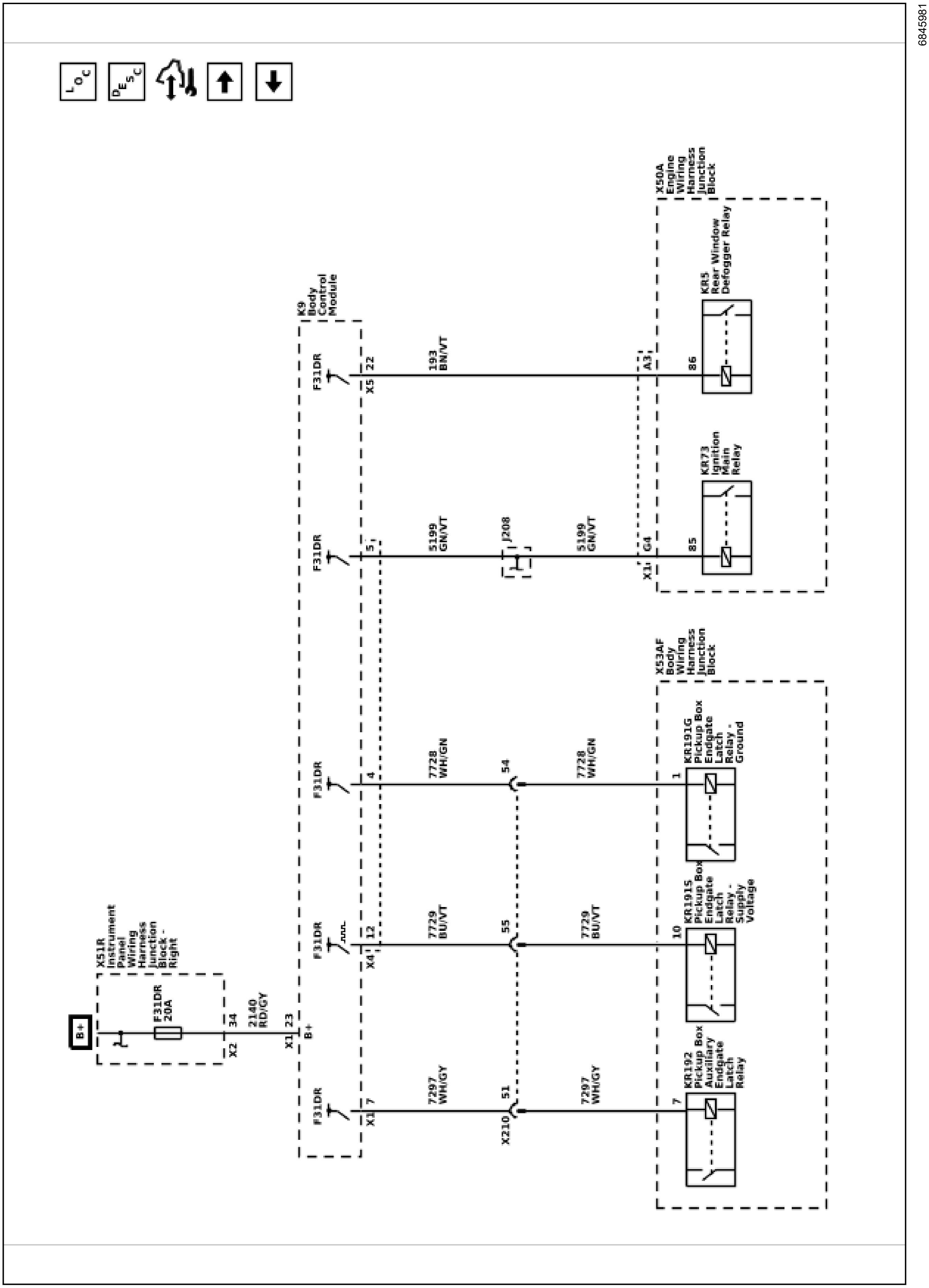


Power Distribution Schematics (Body Control Module High Side Drives - F11UA Fuse)



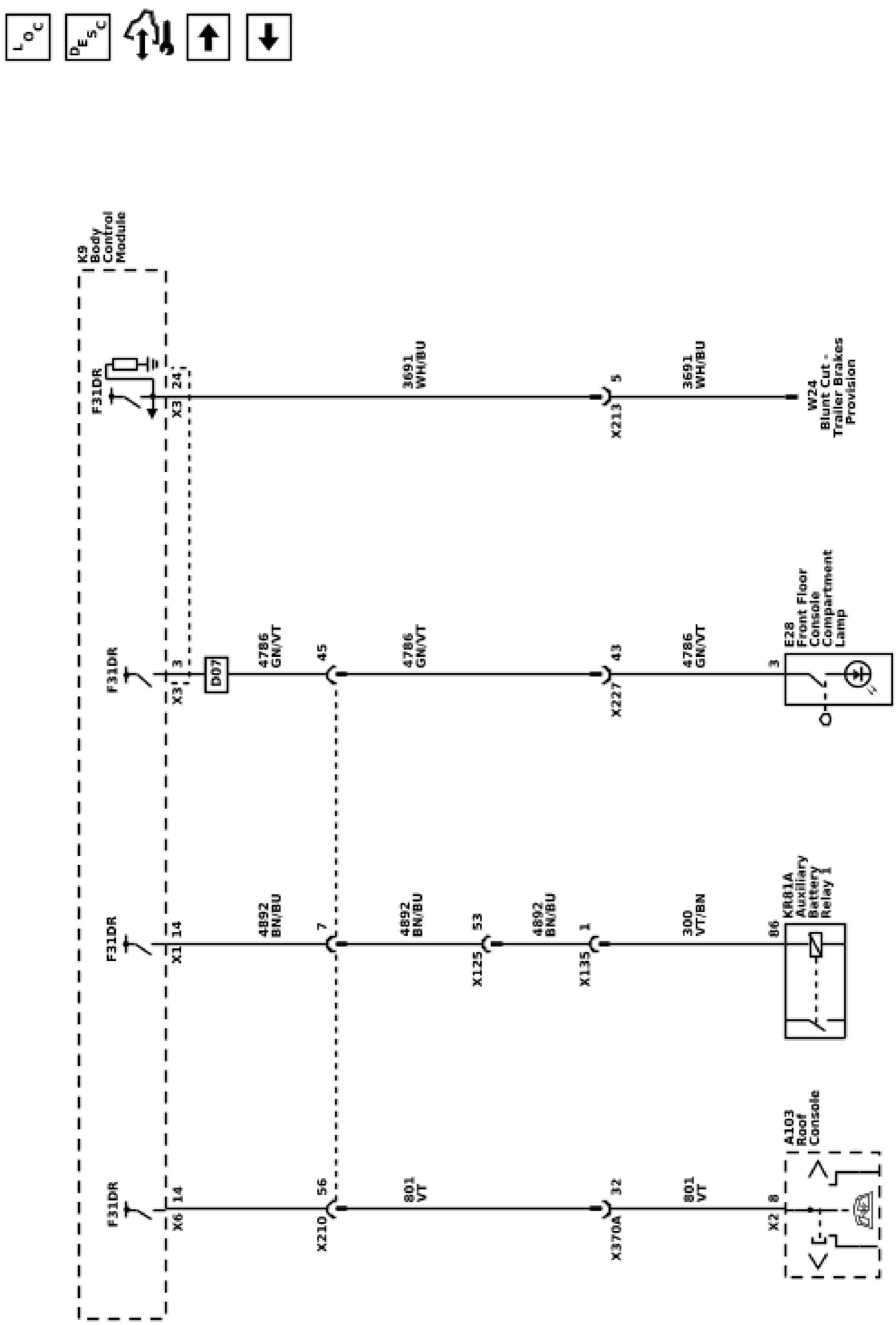

6845980

## Power Distribution Schematics (Body Control Module High Side Drives - F31DR Fuse - 1 of 2)

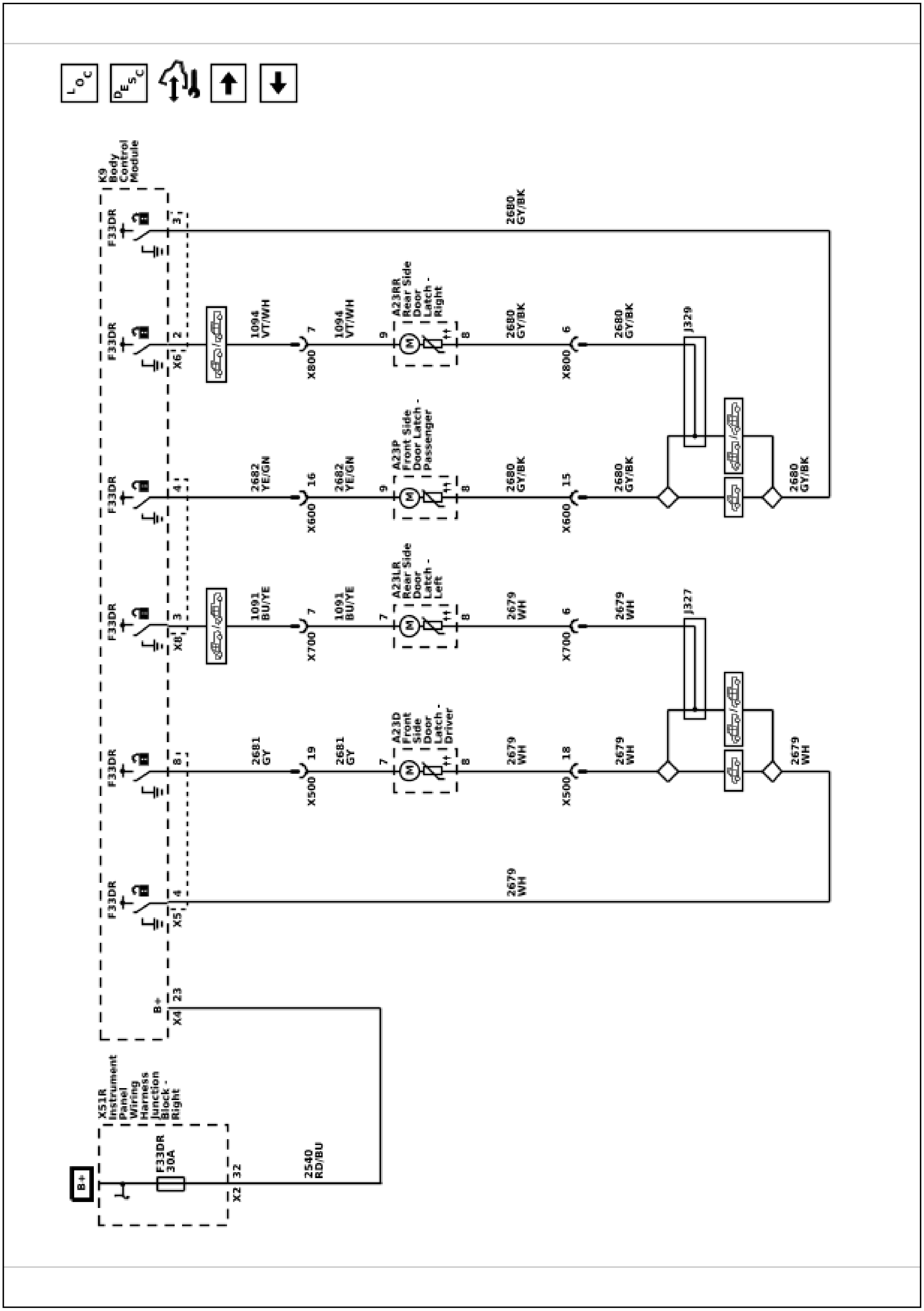


6845982

## Power Distribution Schematics (Body Control Module High Side Drives - F31DR Fuse - 2 of 2)

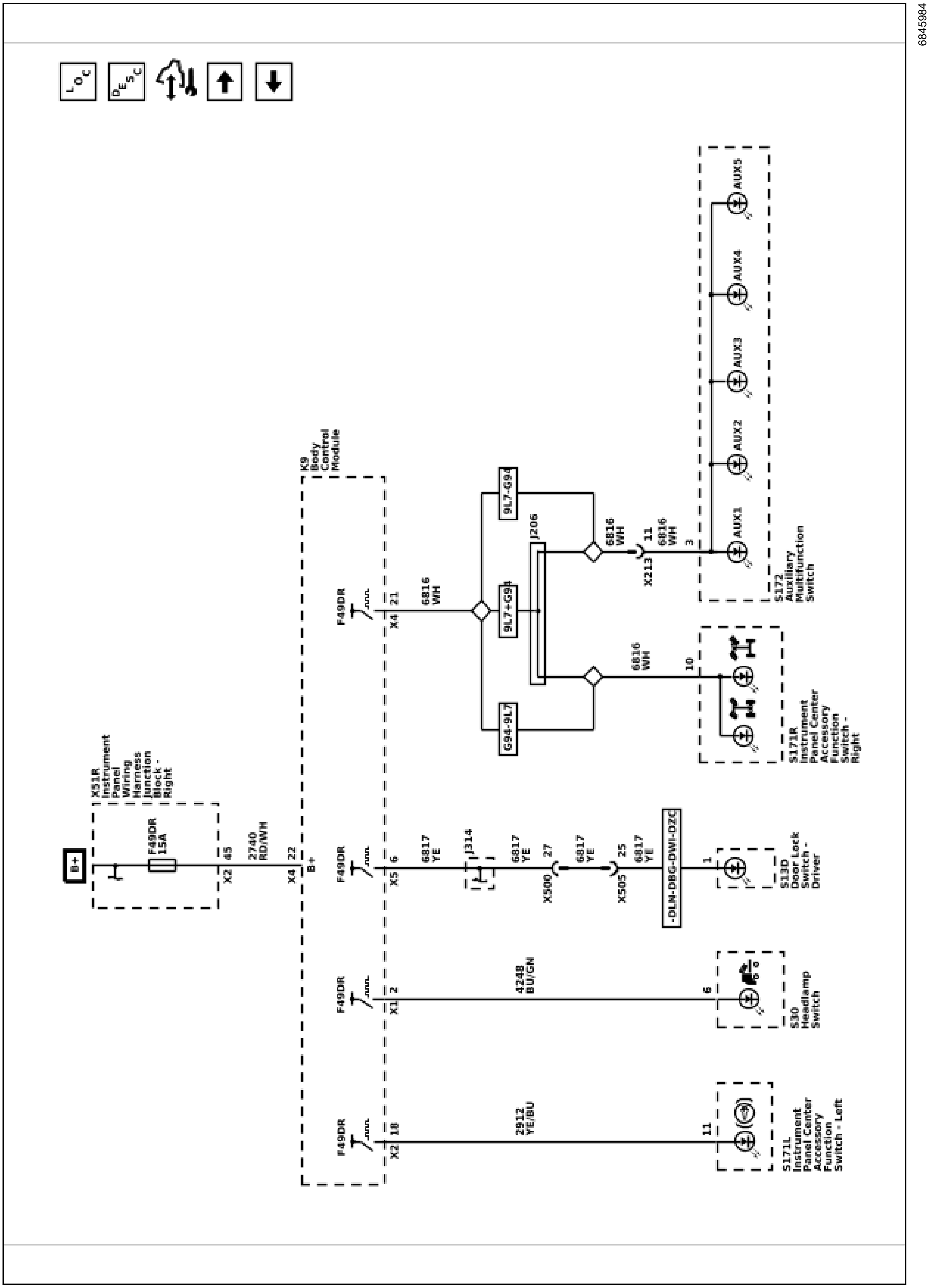


## Power Distribution Schematics (Body Control Module High Side Drives - F33DR Fuse)

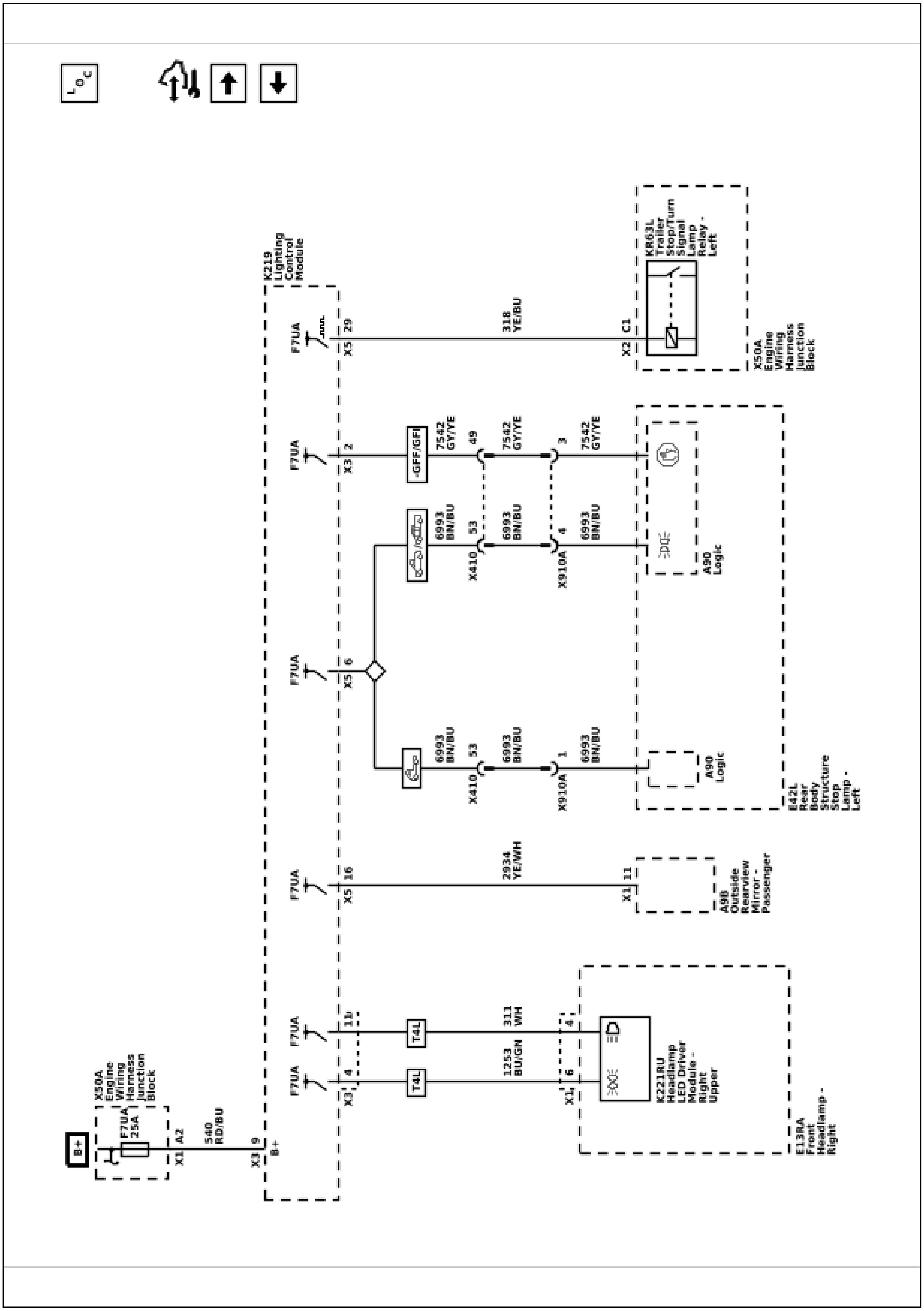



6845983

## Power Distribution Schematics (Body Control Module High Side Drives - F49DR Fuse)

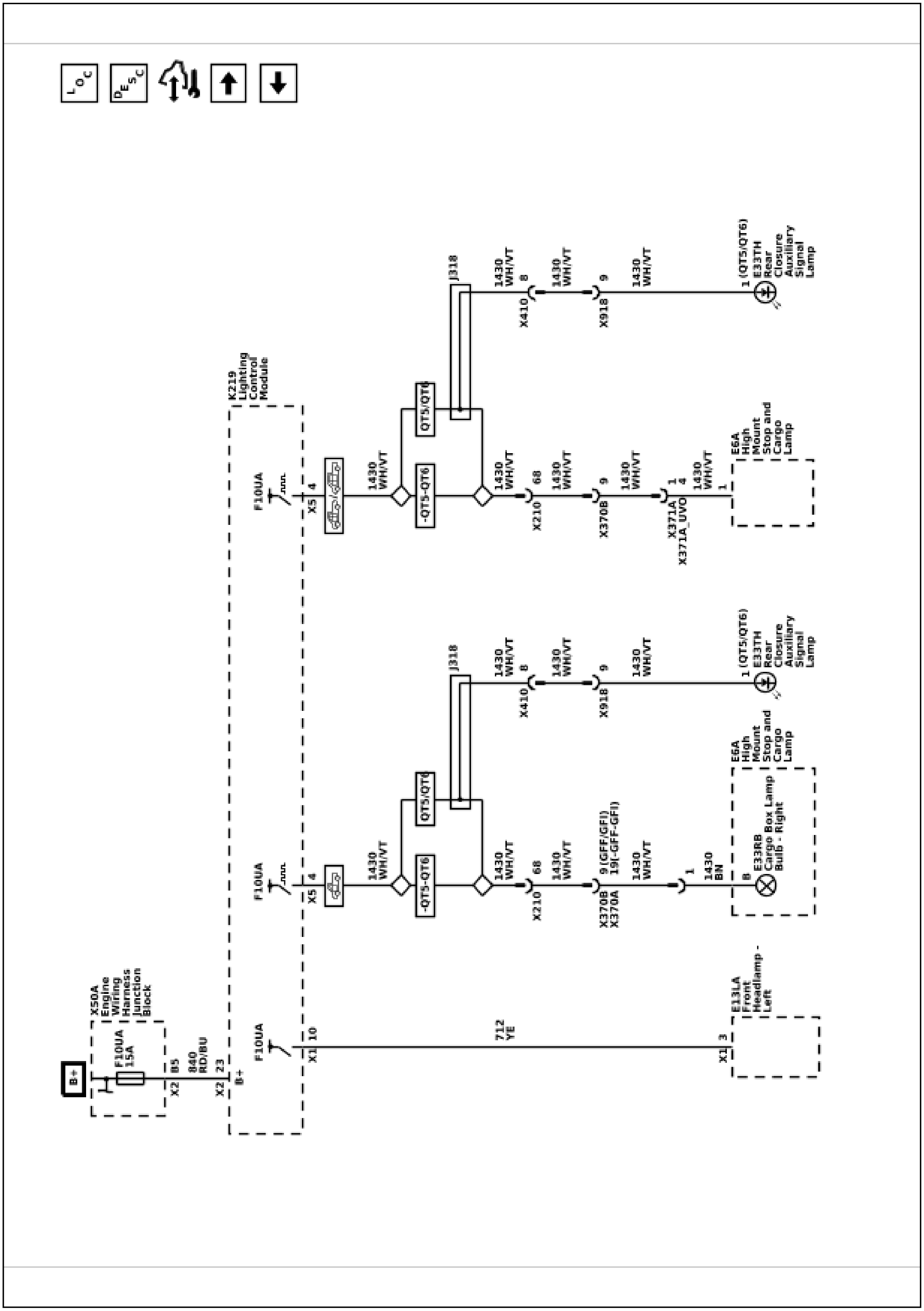


## Power Distribution Schematics (Lighting Control Module High Side Drives - F7UA Fuse)

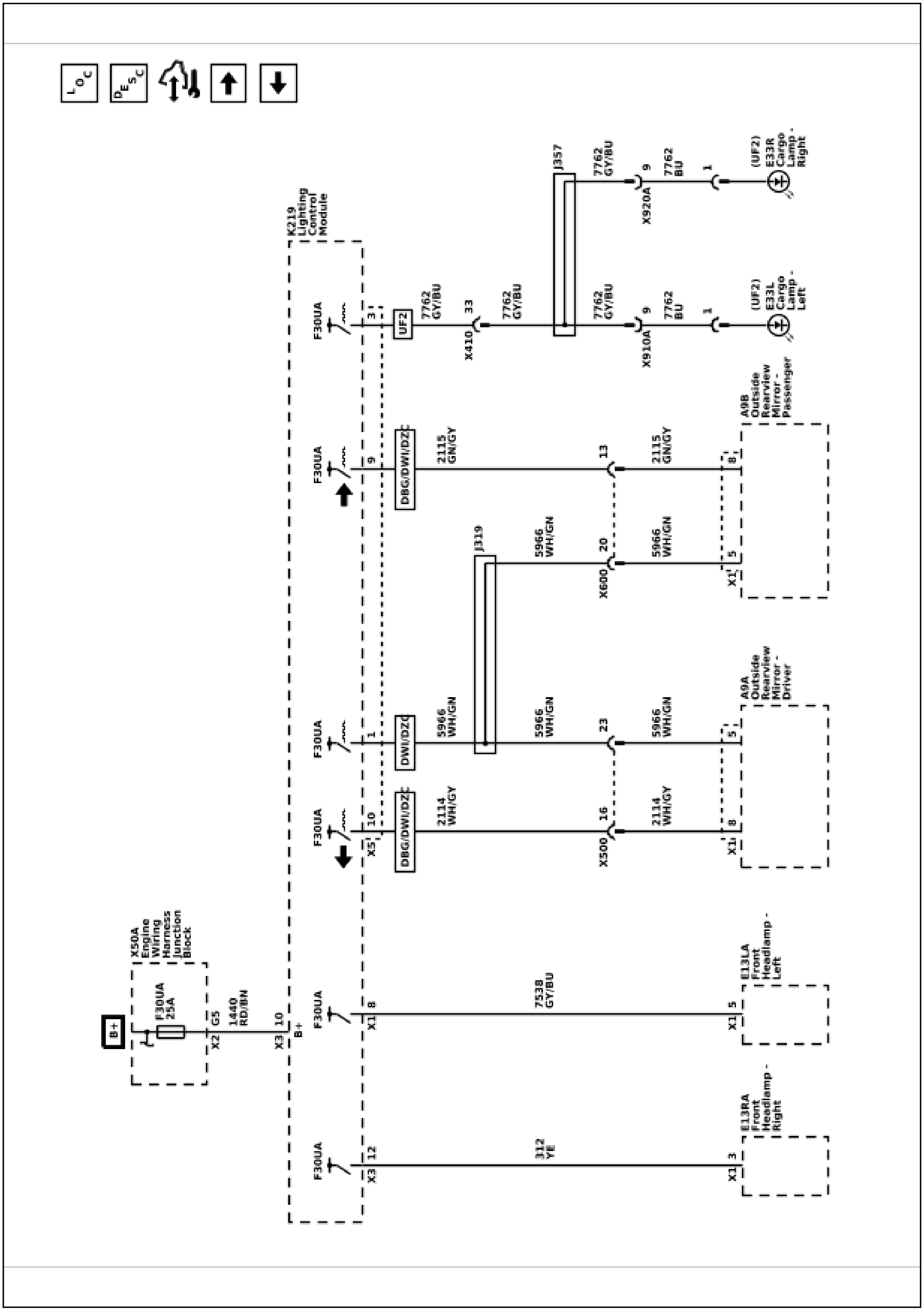



6845985

## Power Distribution Schematics (Lighting Control Module High Side Drives - F10UA Fuse)

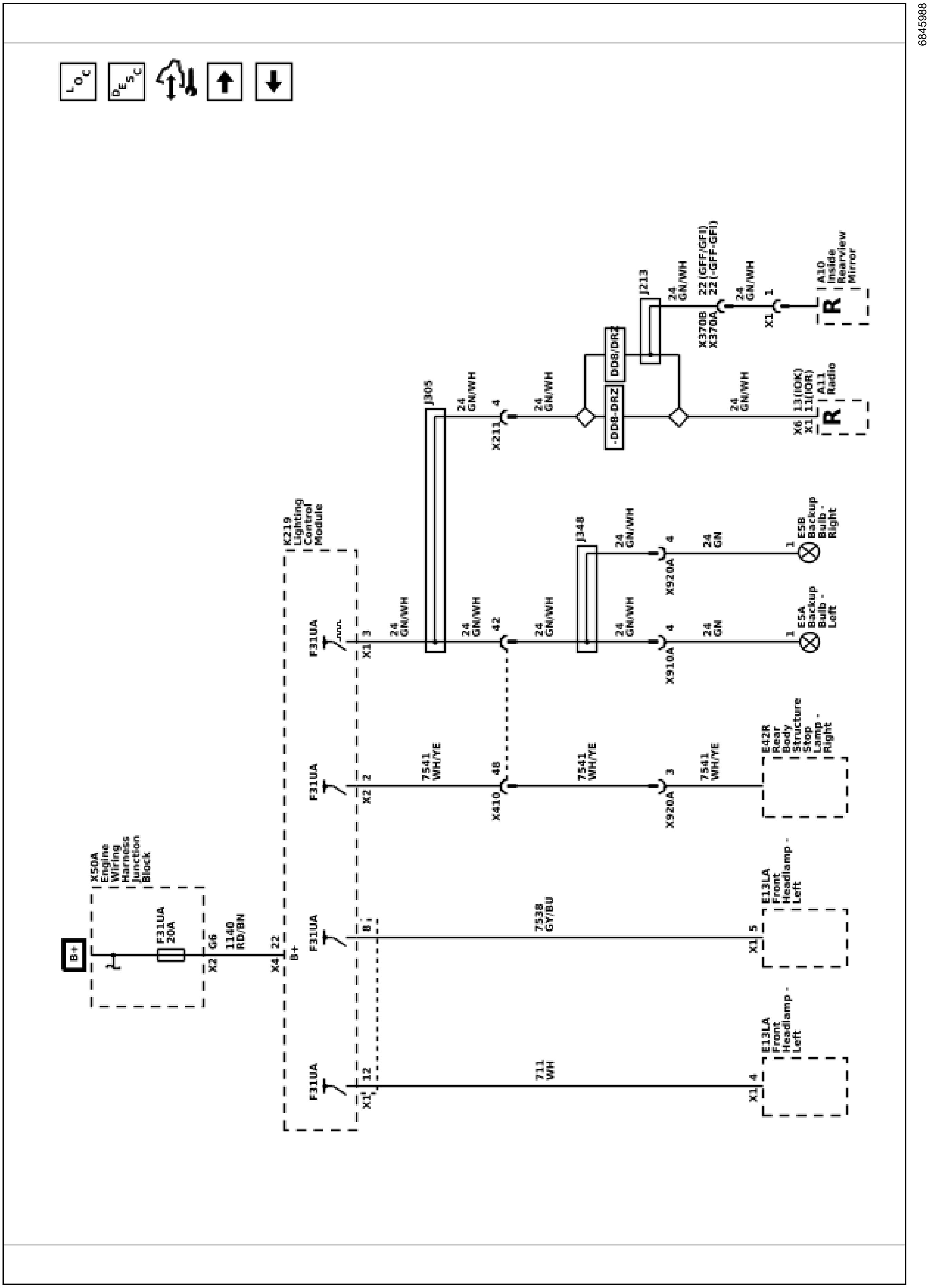


## Power Distribution Schematics (Lighting Control Module High Side Drives - F30UA Fuse)

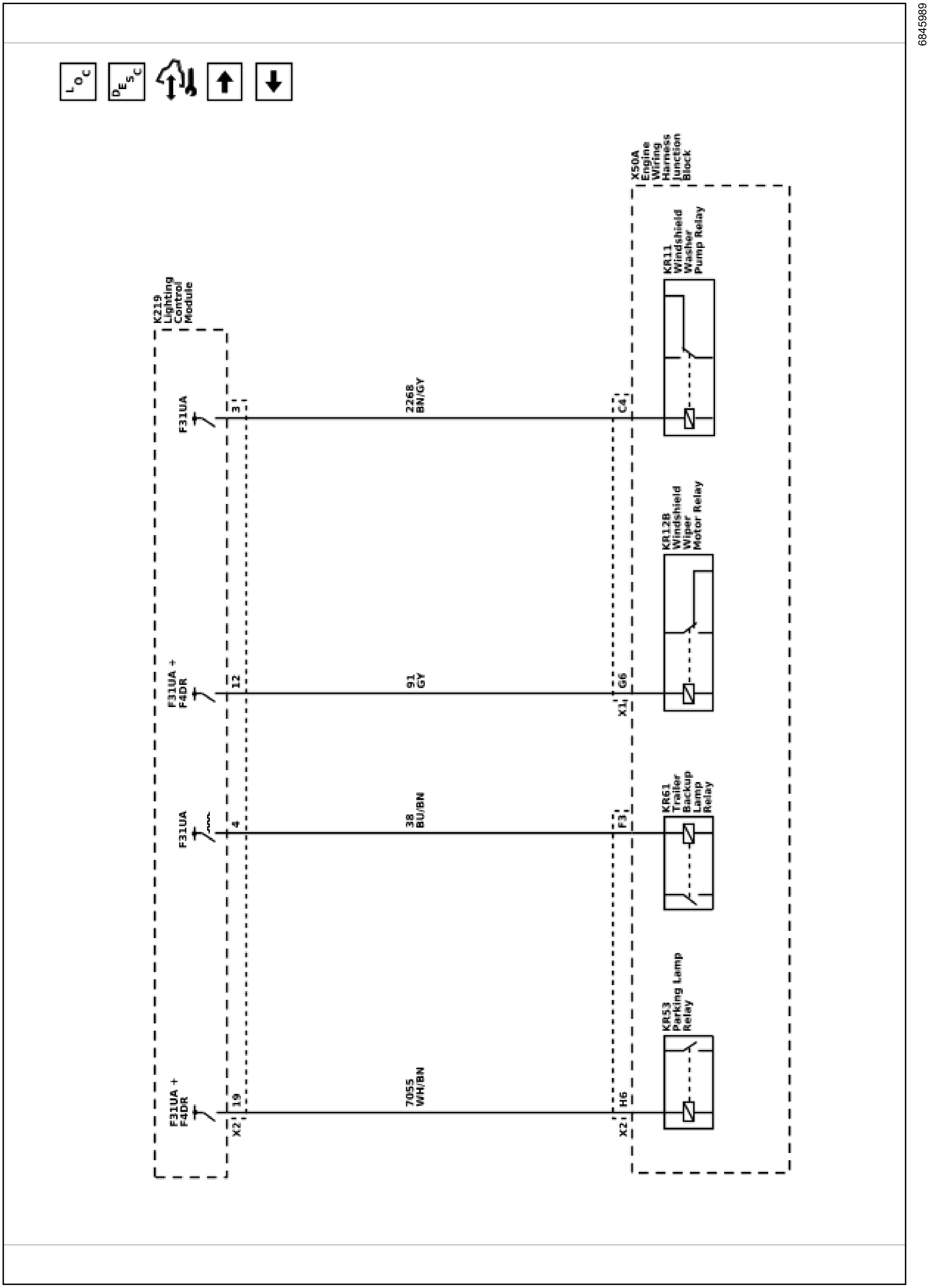



6845987

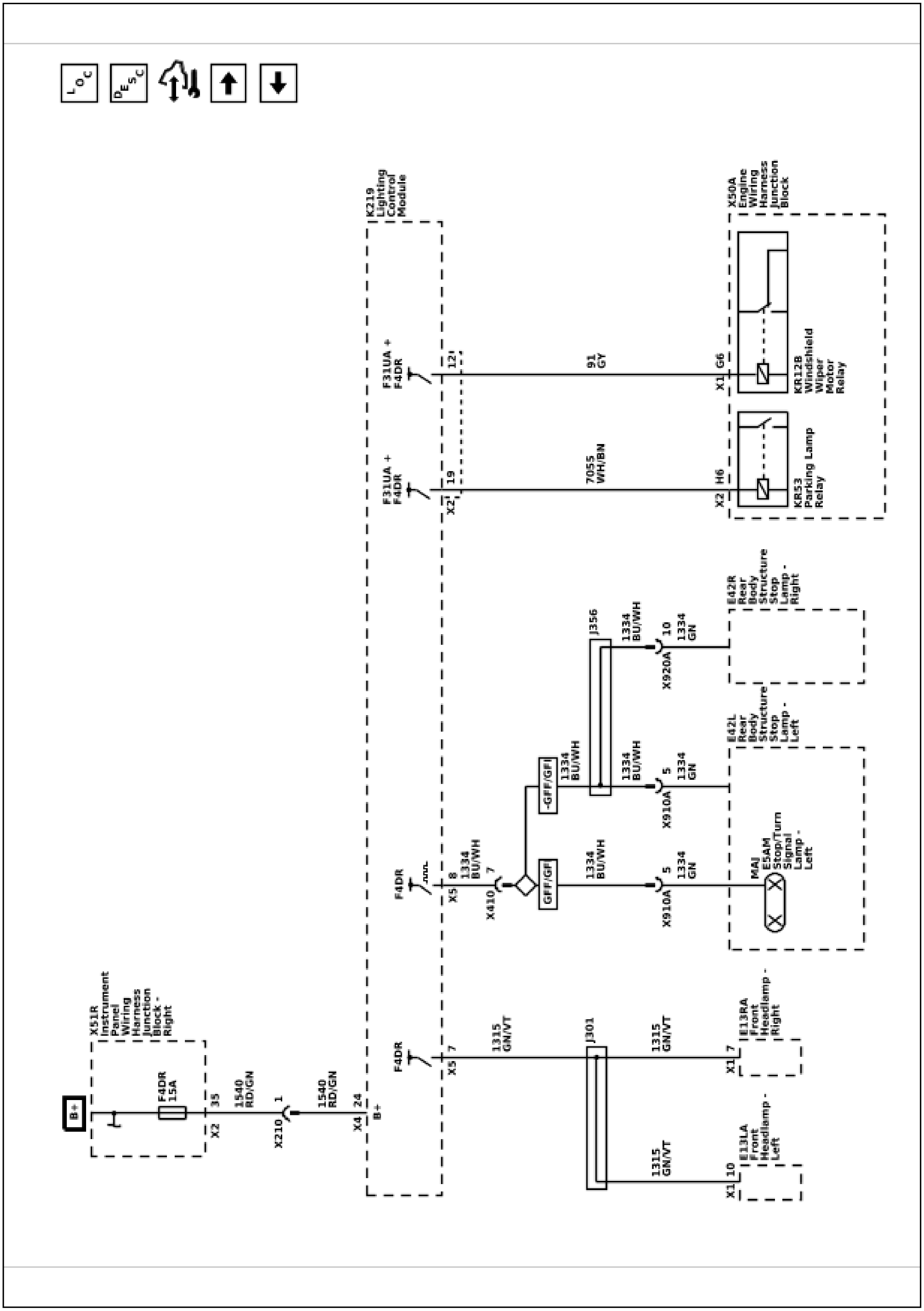
**Power Distribution Schematics (Lighting Control Module High Side Drives - F31UA Fuse - 1 of 2)**



## Power Distribution Schematics (Lighting Control Module High Side Drives - F31UA Fuse - 2 of 2)

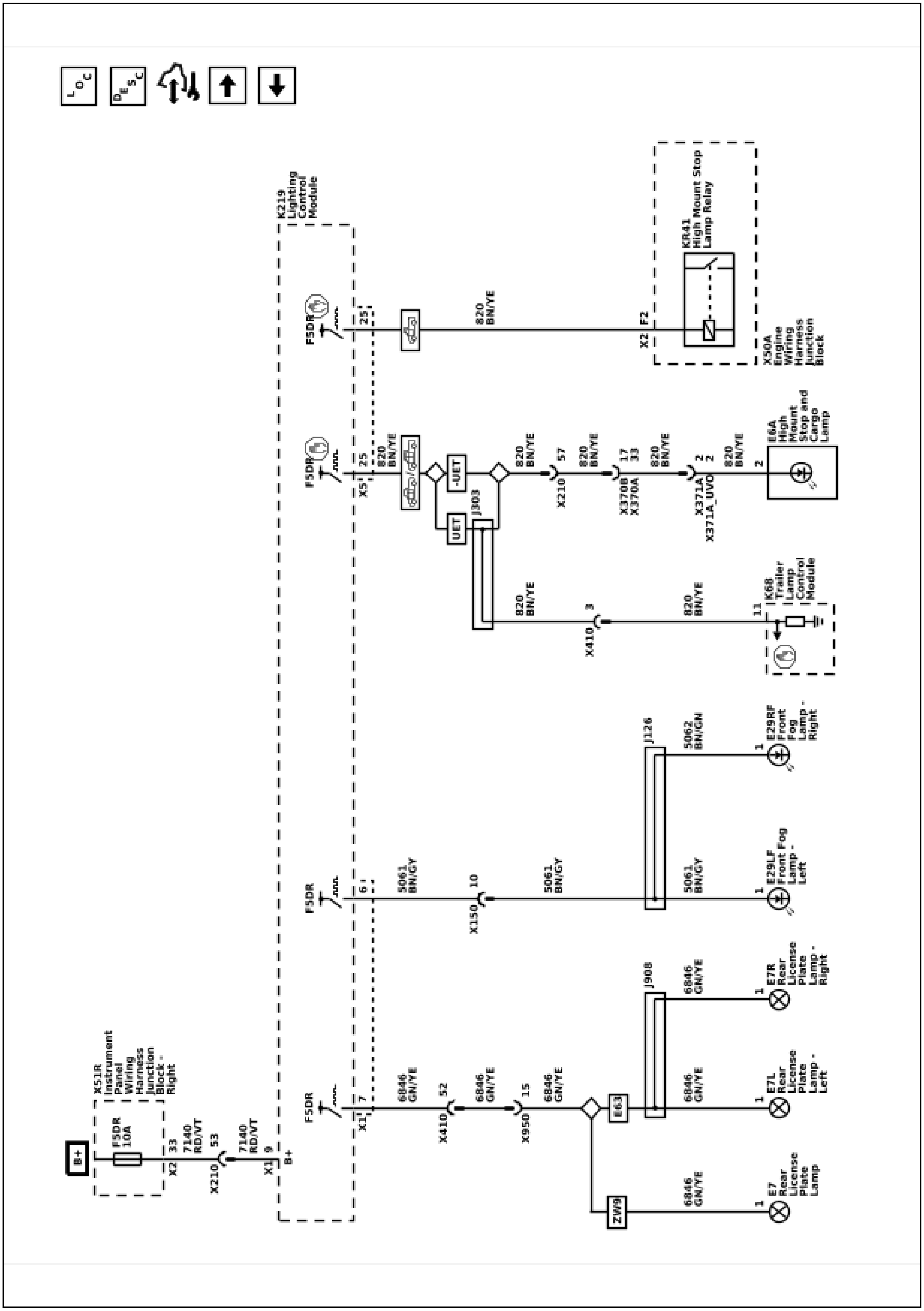


## Power Distribution Schematics (Lighting Control Module High Side Drives - F4DR Fuse)



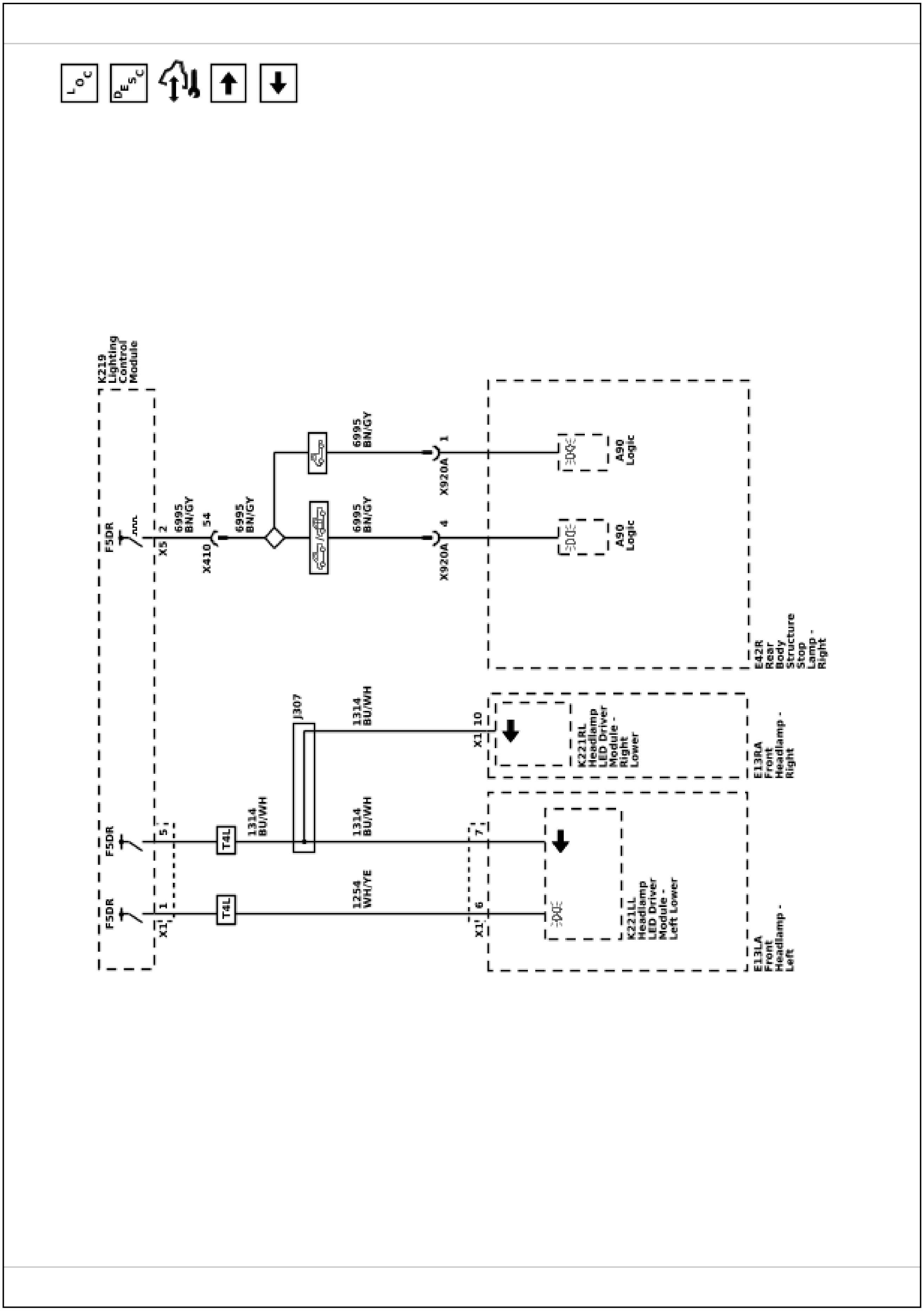

6845990

## Power Distribution Schematics (Lighting Control Module High Side Drives - F5DR Fuse - 1 of 2)

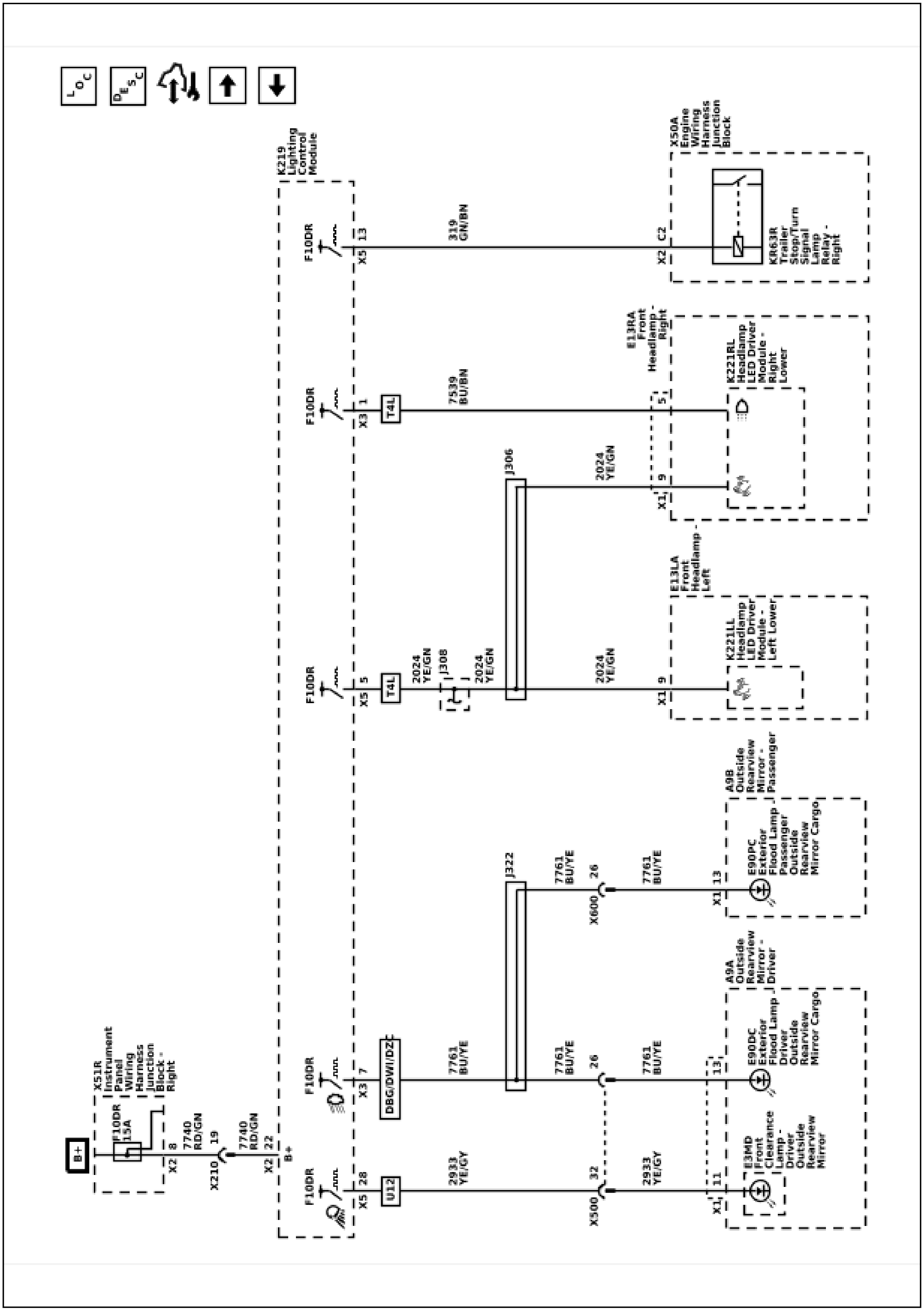


## Power Distribution Schematics (Lighting Control Module High Side Drives - F5DR Fuse - 2 of 2)

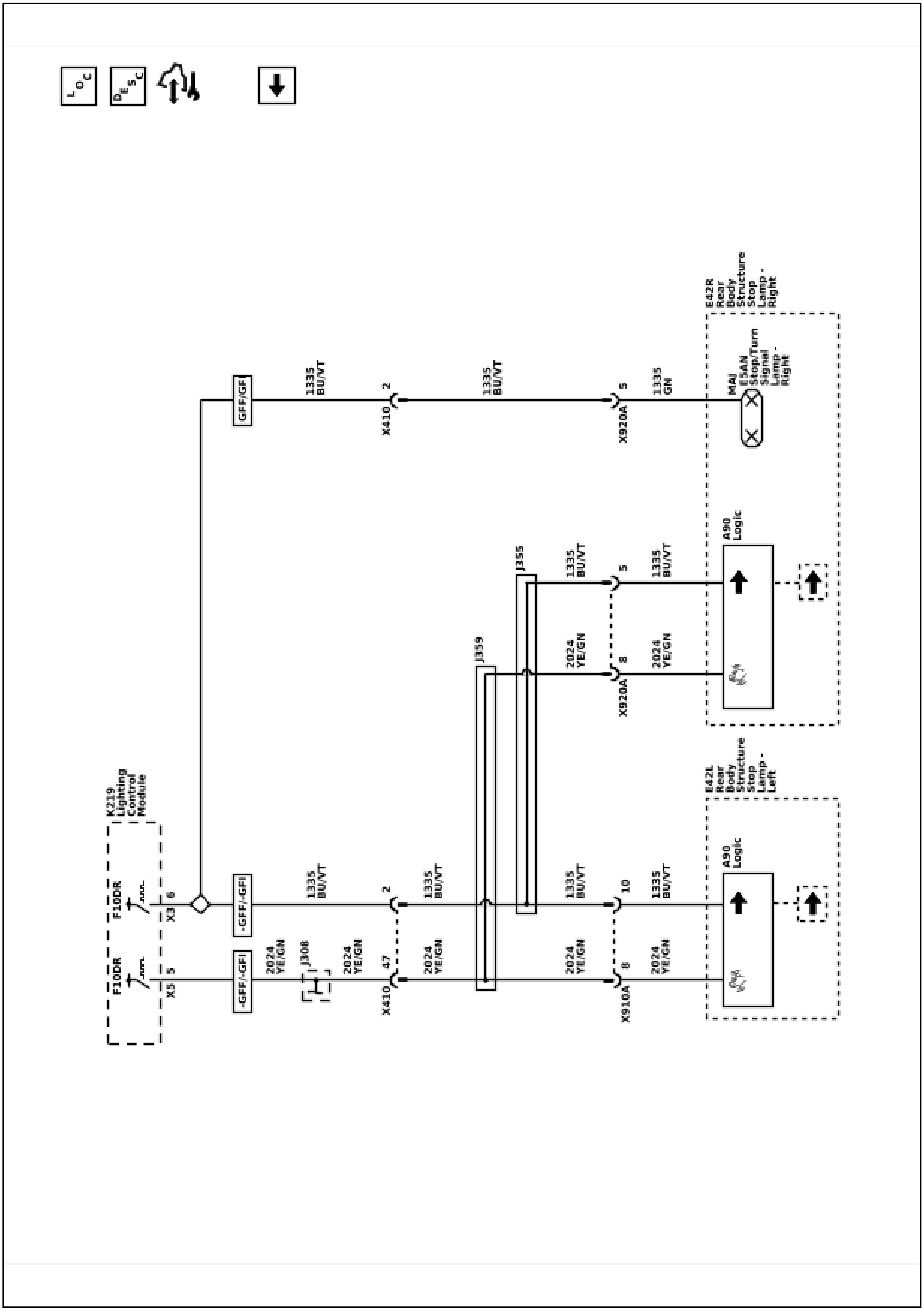
6845992



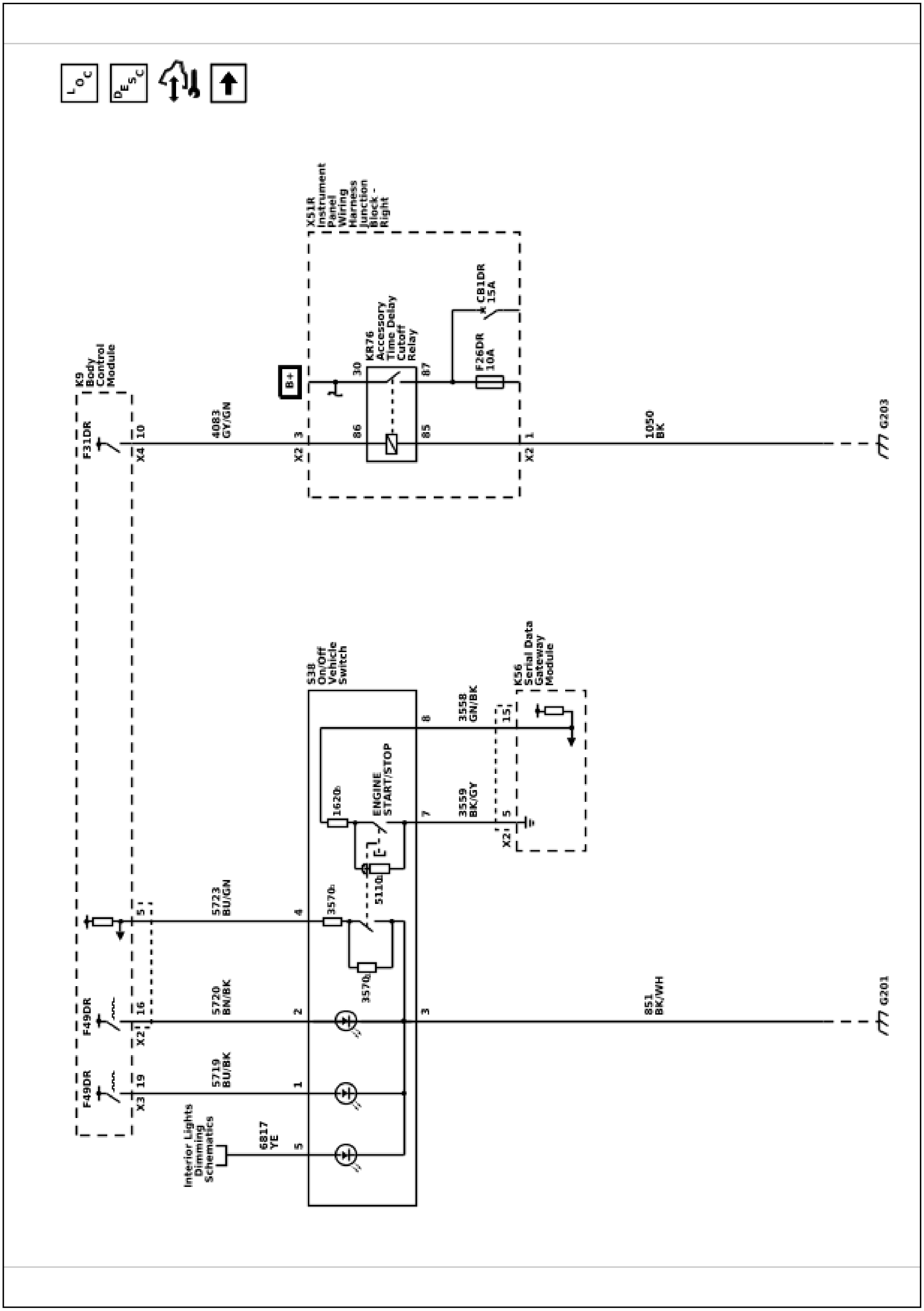
## Power Distribution Schematics (Lighting Control Module High Side Drives - F10DR Fuse - 1 of 2)



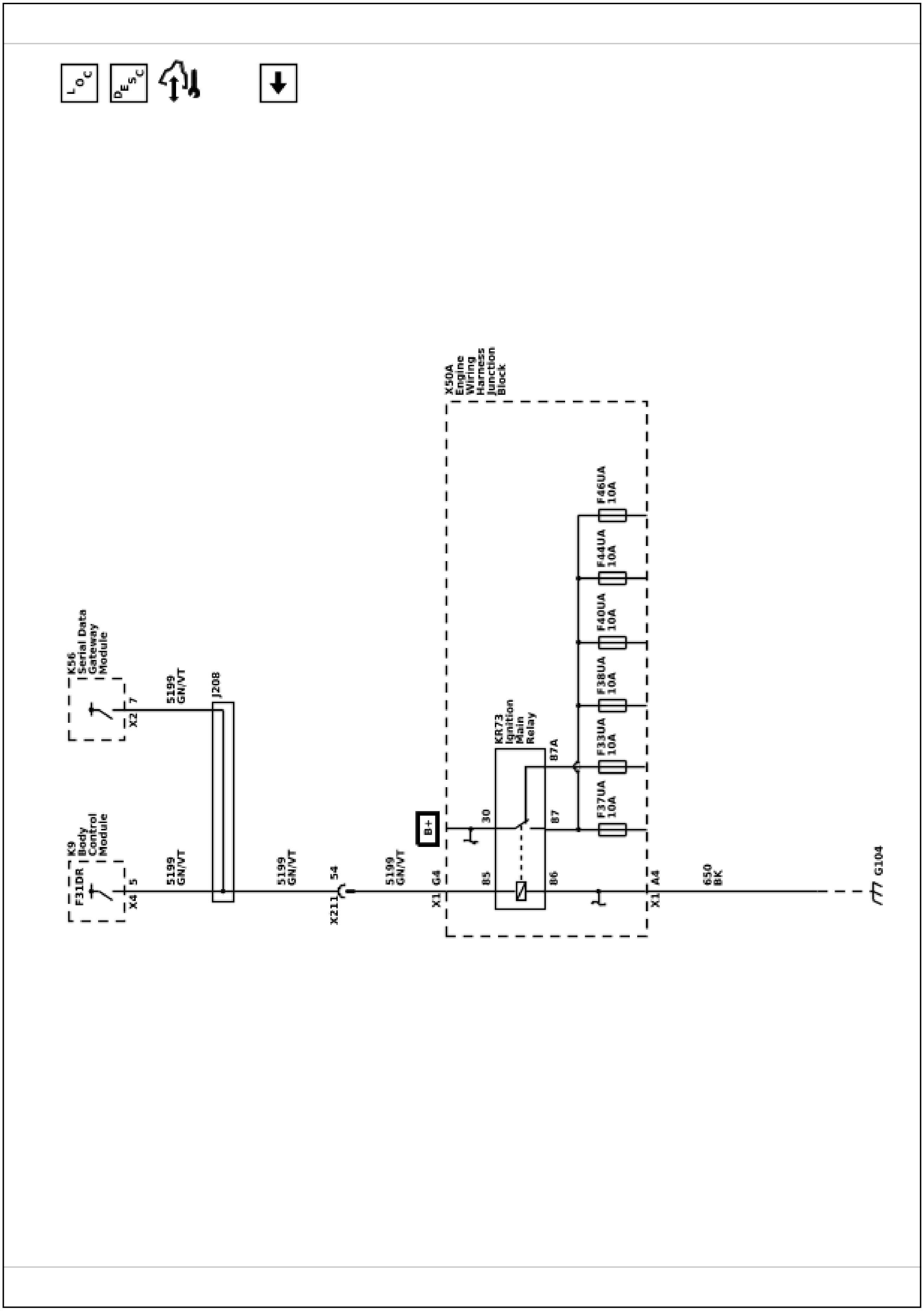
## Power Distribution Schematics (Lighting Control Module High Side Drives - F10DR Fuse - 2 of 2)



## Power Moding Schematics (On/Off Vehicle Switch and Retained Accessory Power)

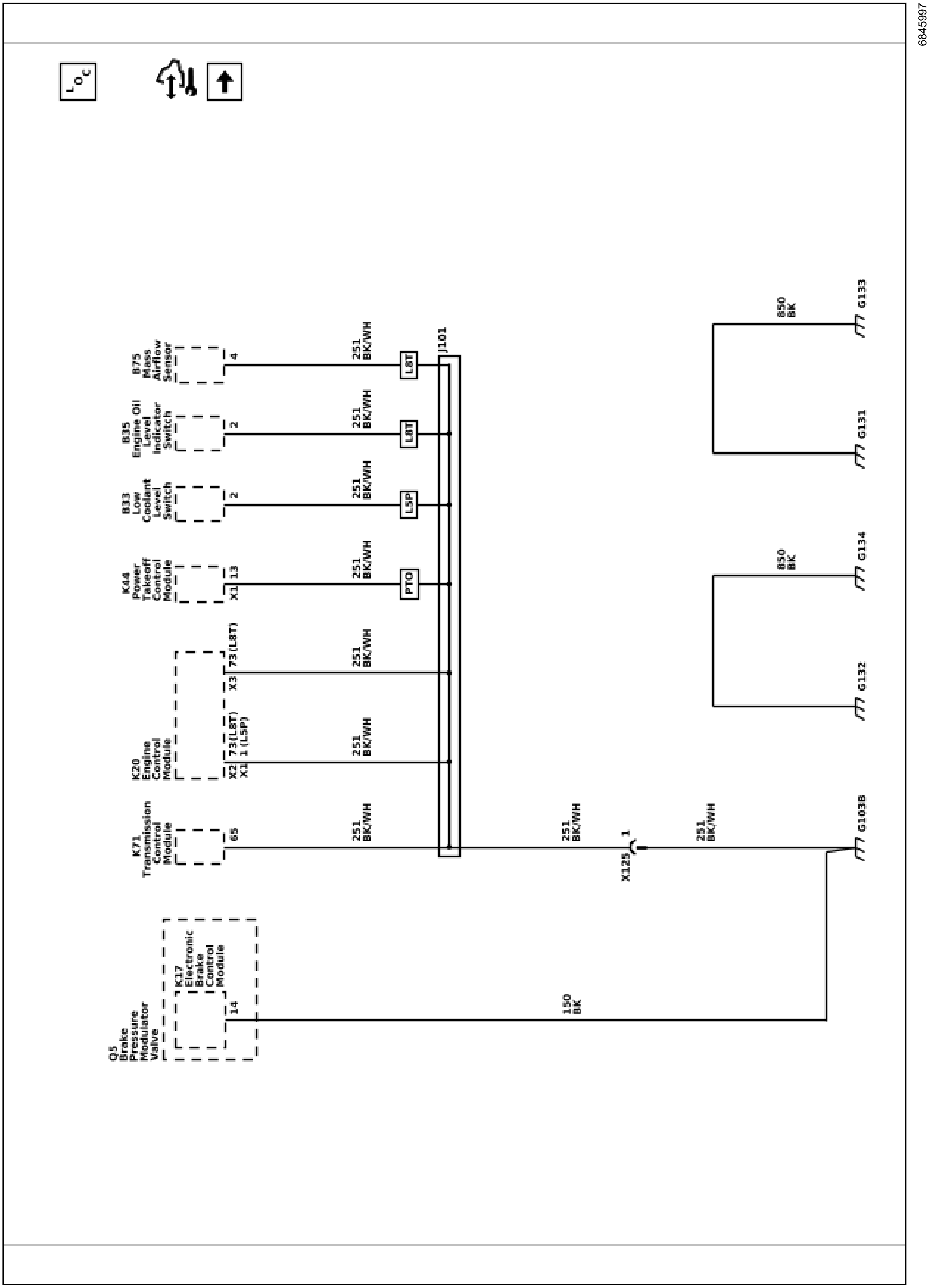


## Power Moding Schematics (Ignition Main Relay)

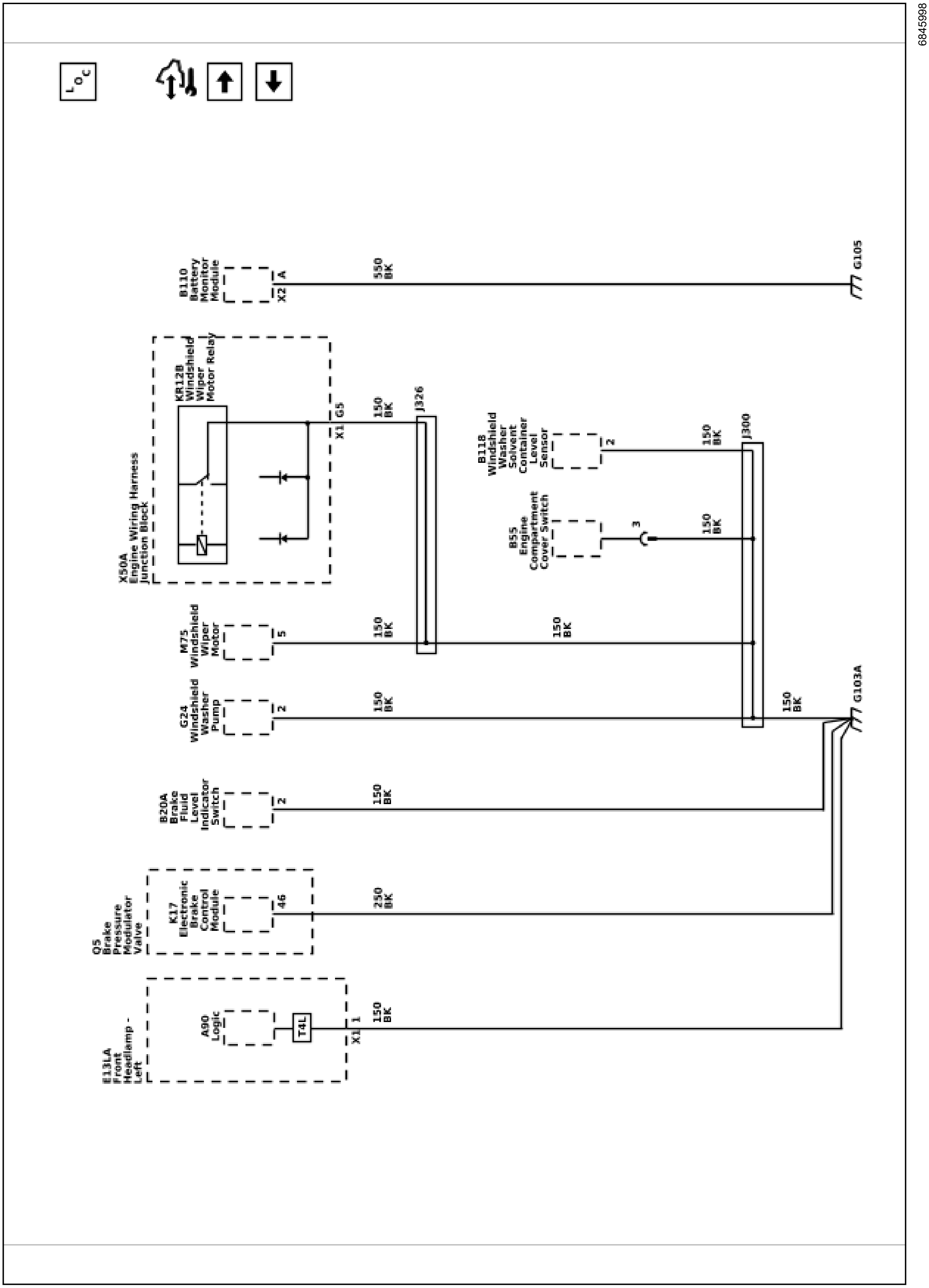



6845996

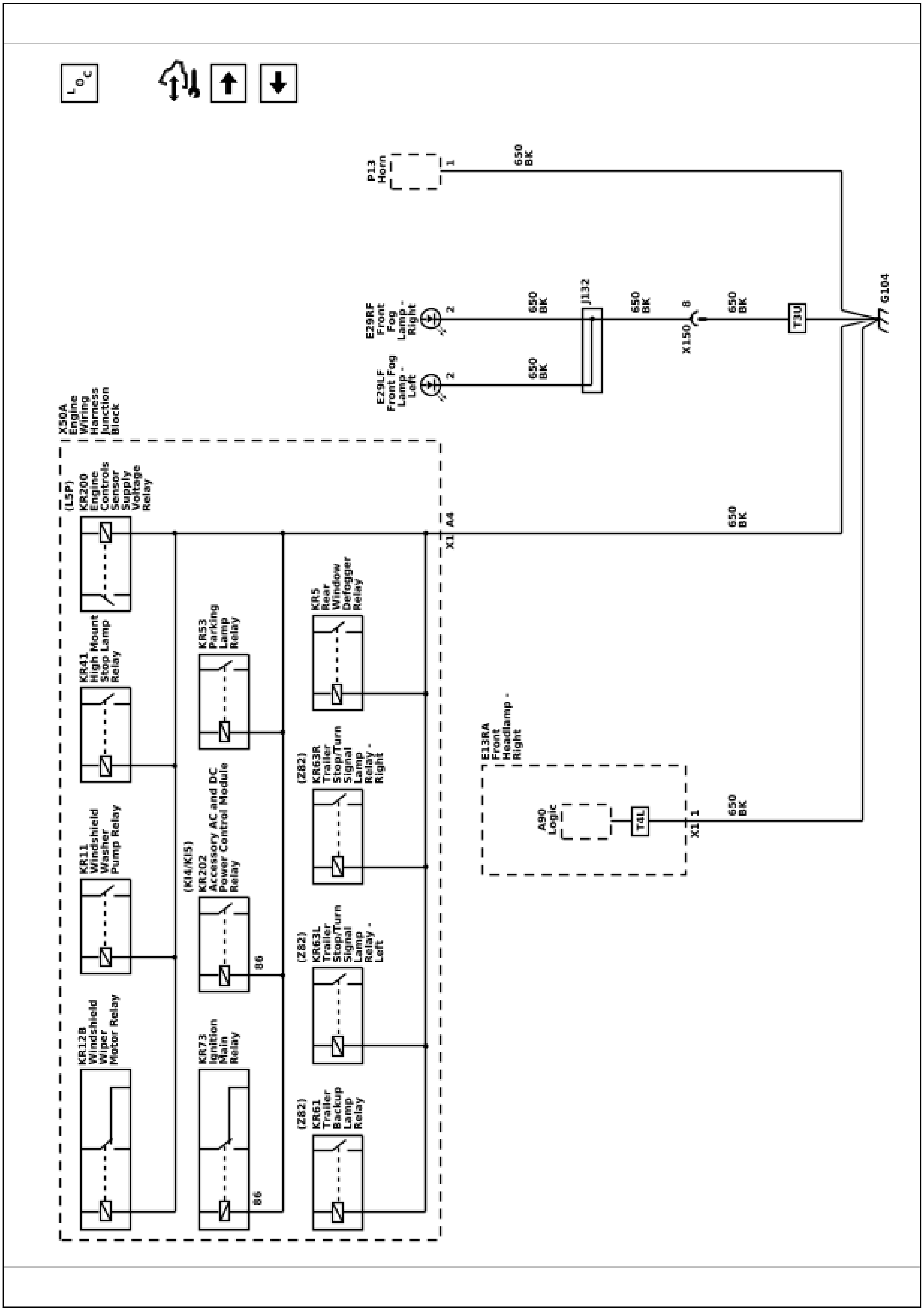
## Ground Distribution Schematics (G103B, G131, G132, G133, and G134)



## Ground Distribution Schematics (G103A and G105)

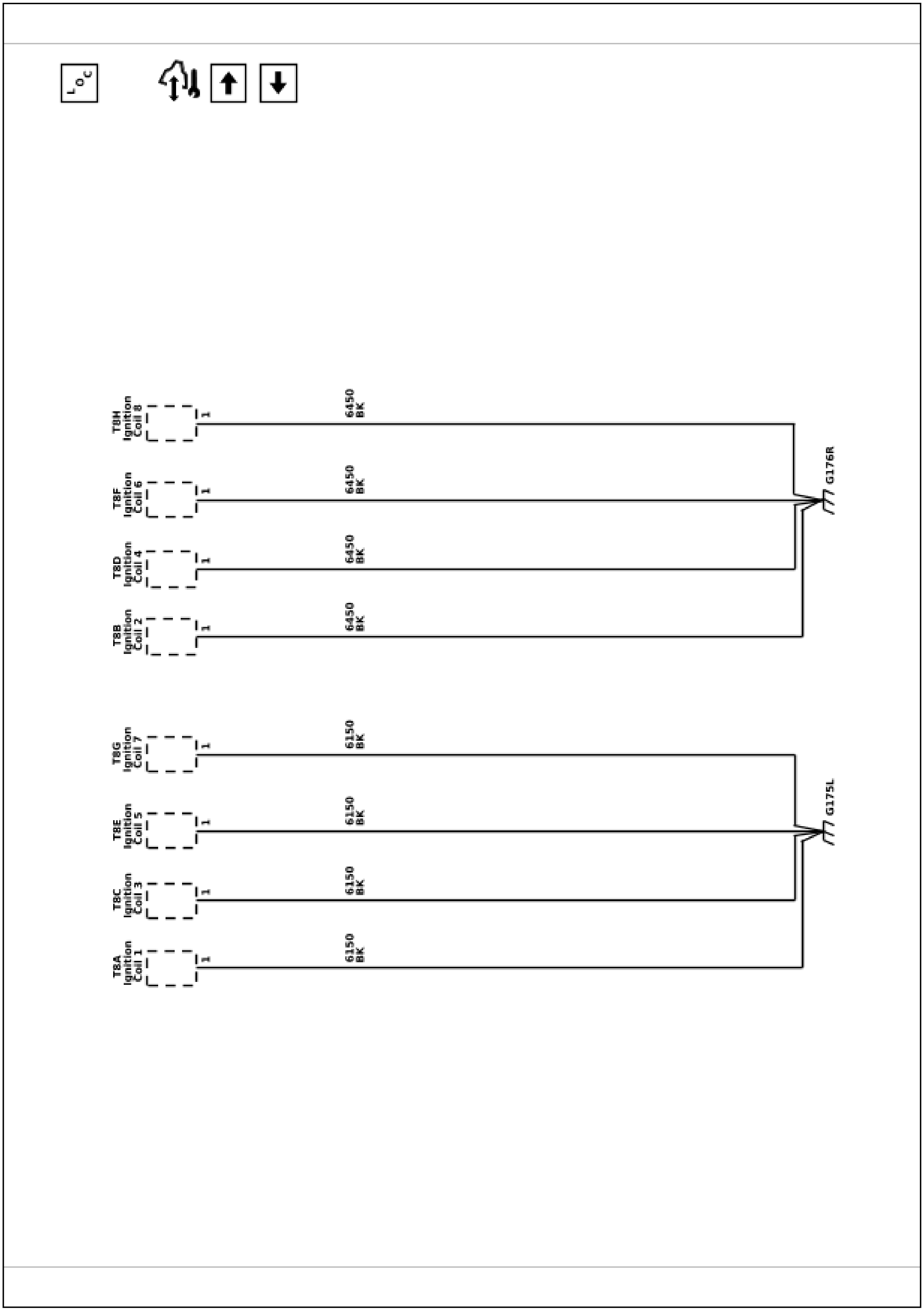


## Ground Distribution Schematics (G104)

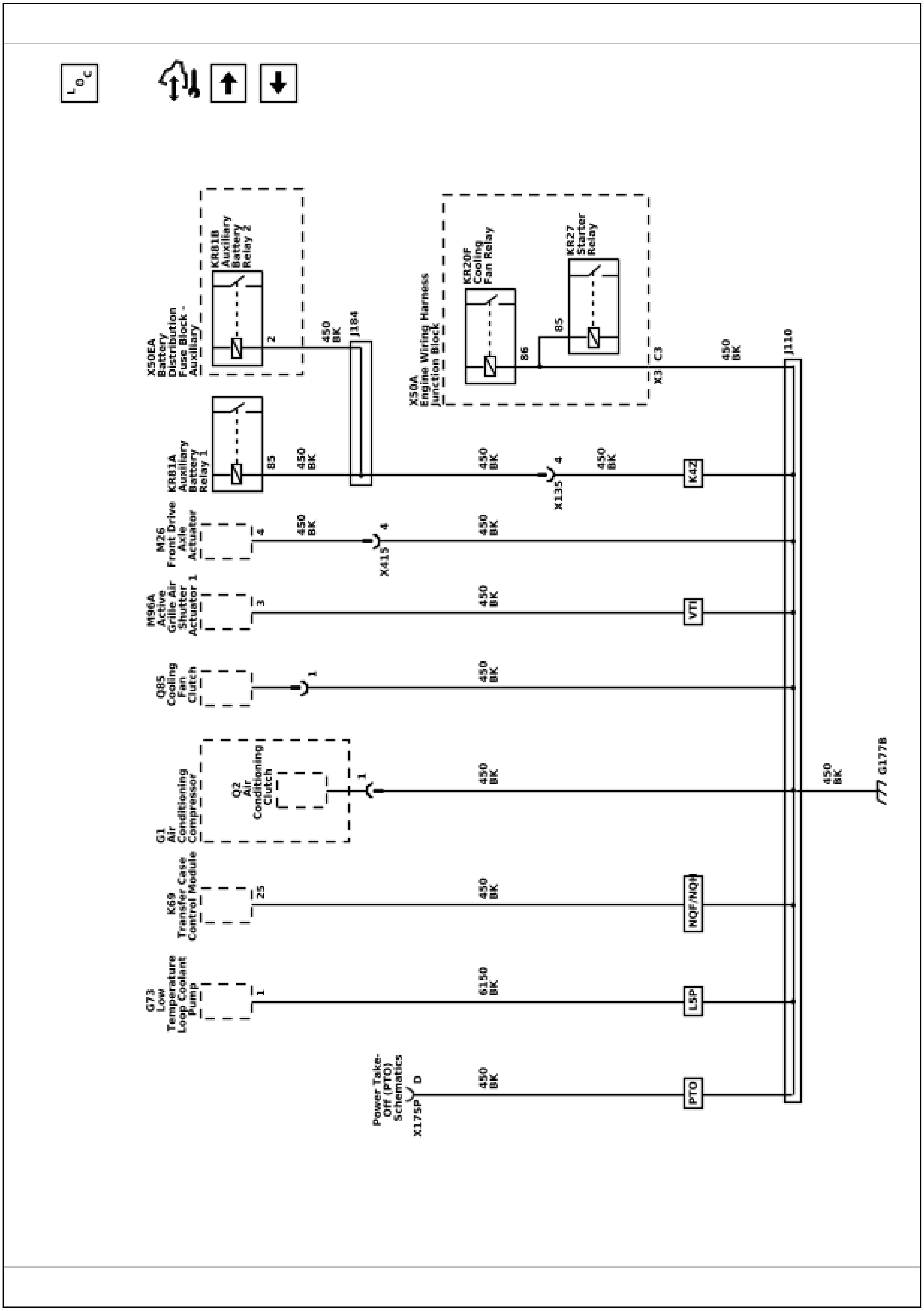


6846000

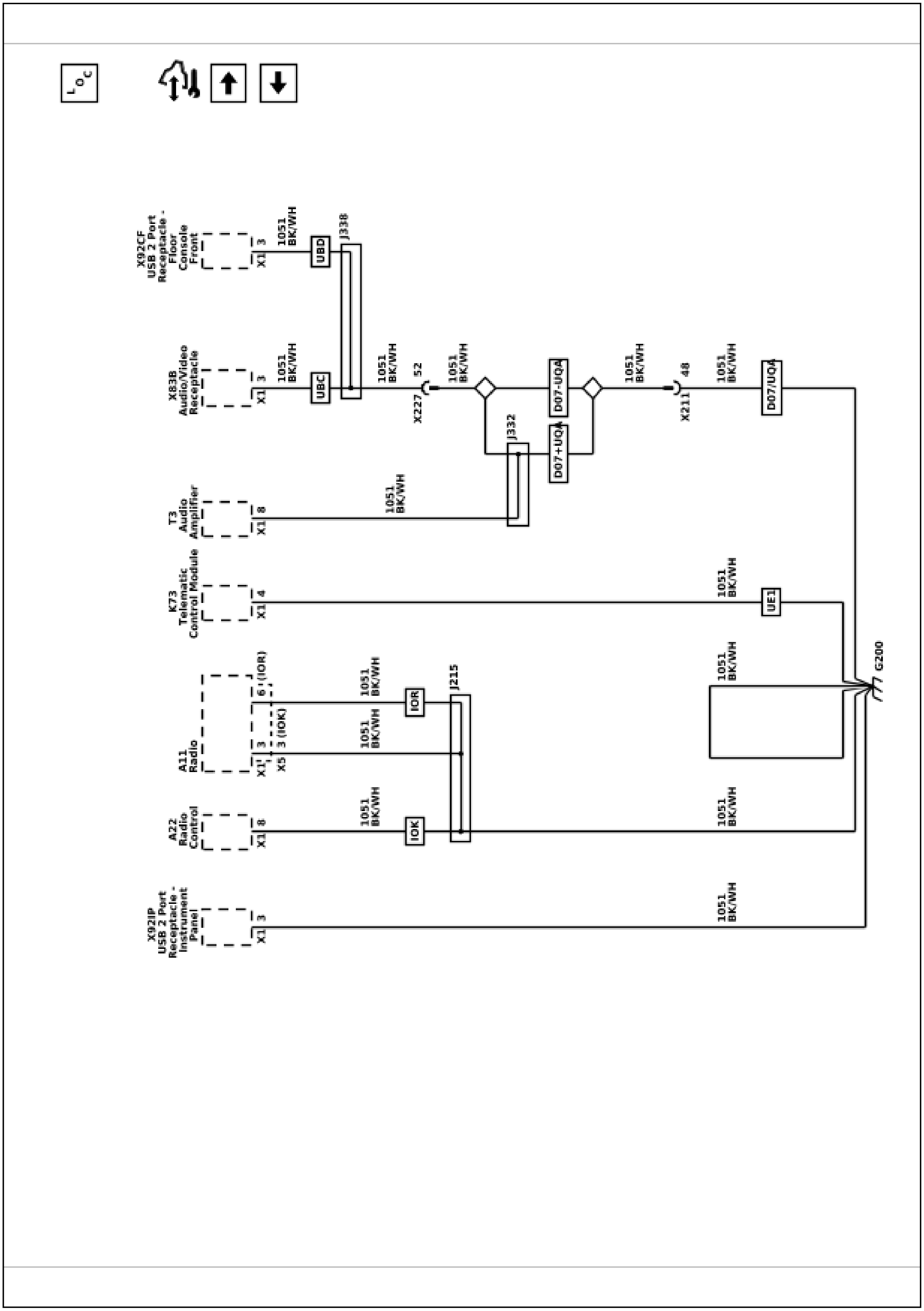
Ground Distribution Schematics (G175L and G175R)



## Ground Distribution Schematics (G177B)

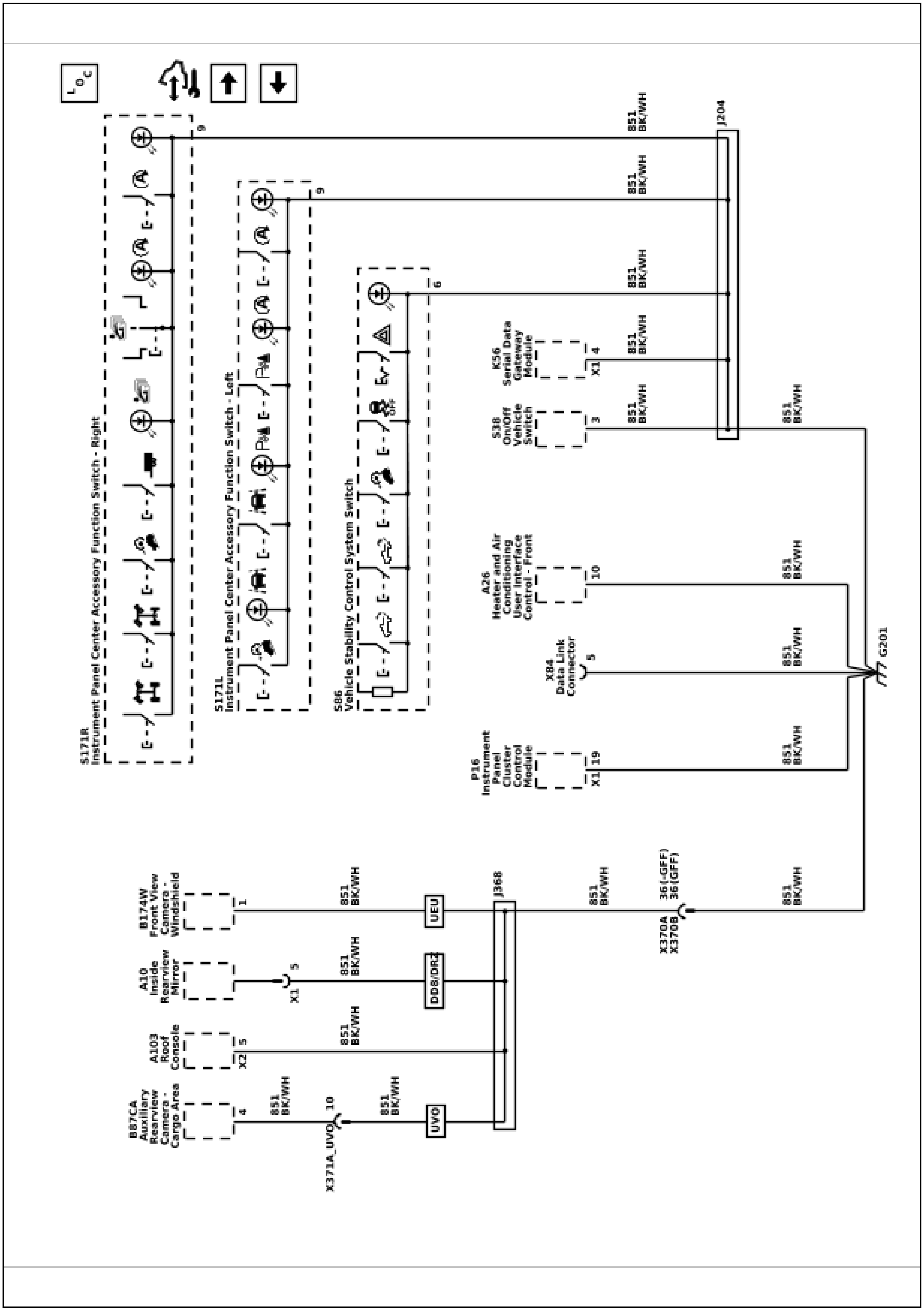


## Ground Distribution Schematics (G200)

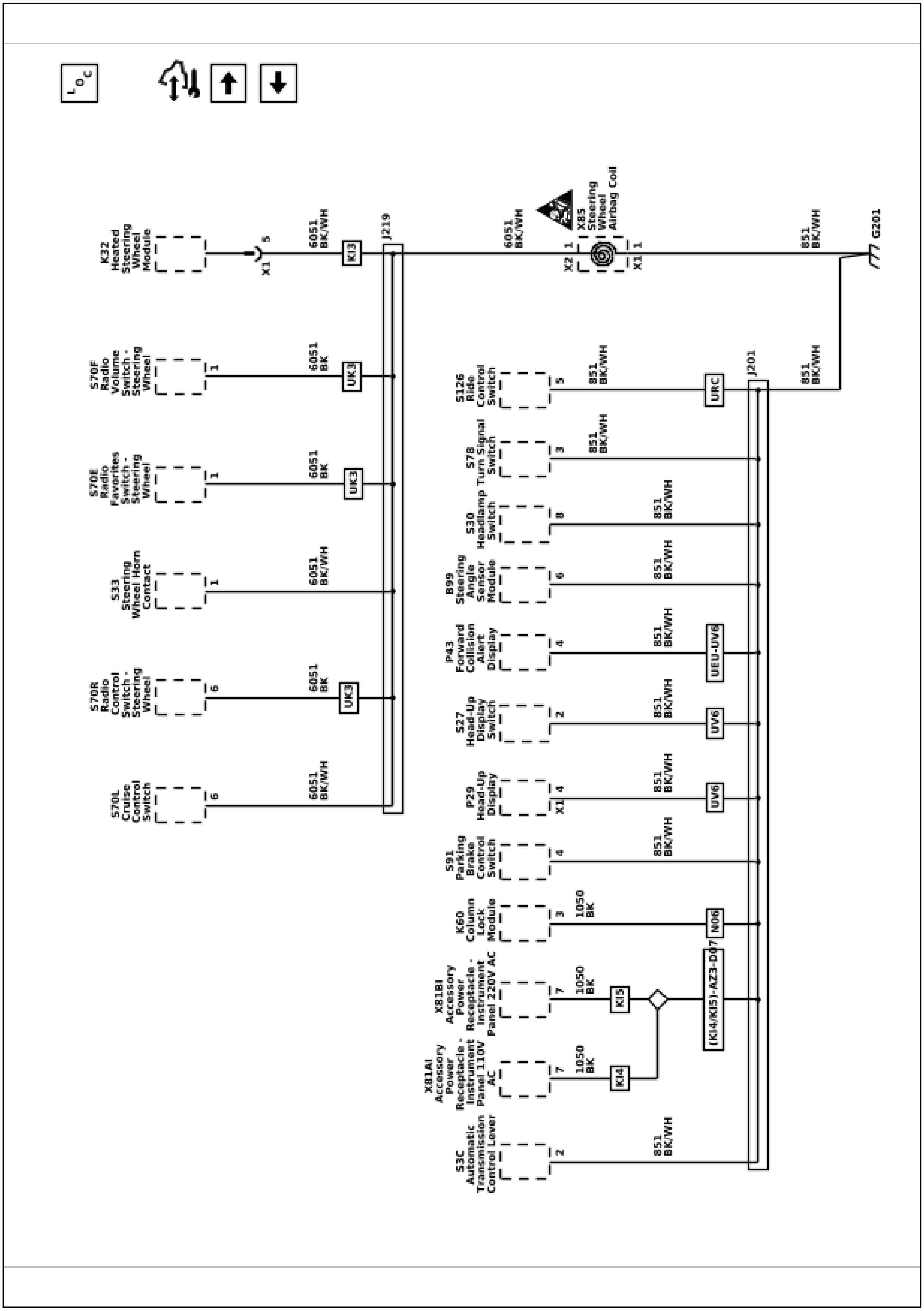



6846002

## Ground Distribution Schematics (G201 - 1 of 2)

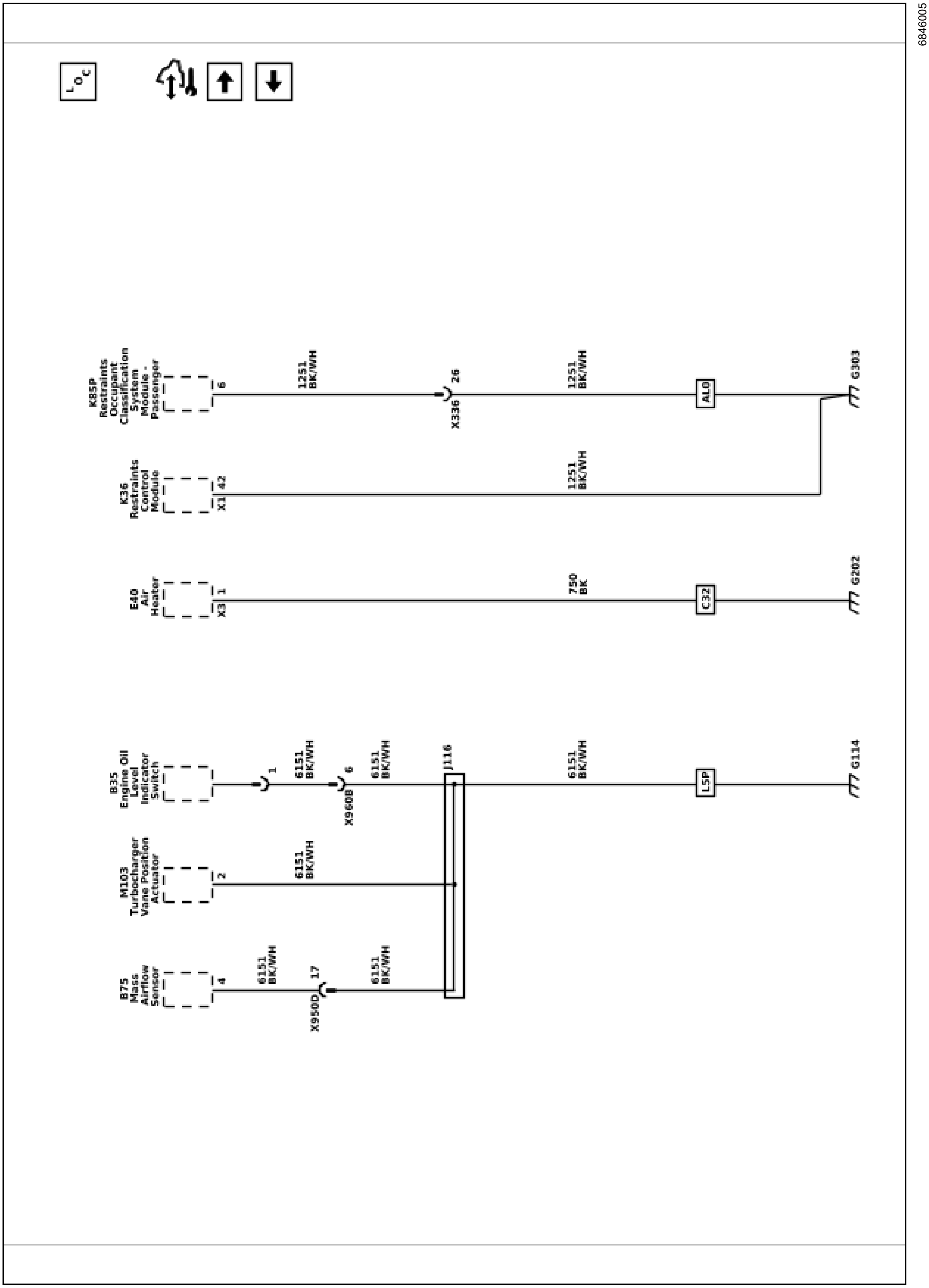


## Ground Distribution Schematics (G201 - 2 of 2)

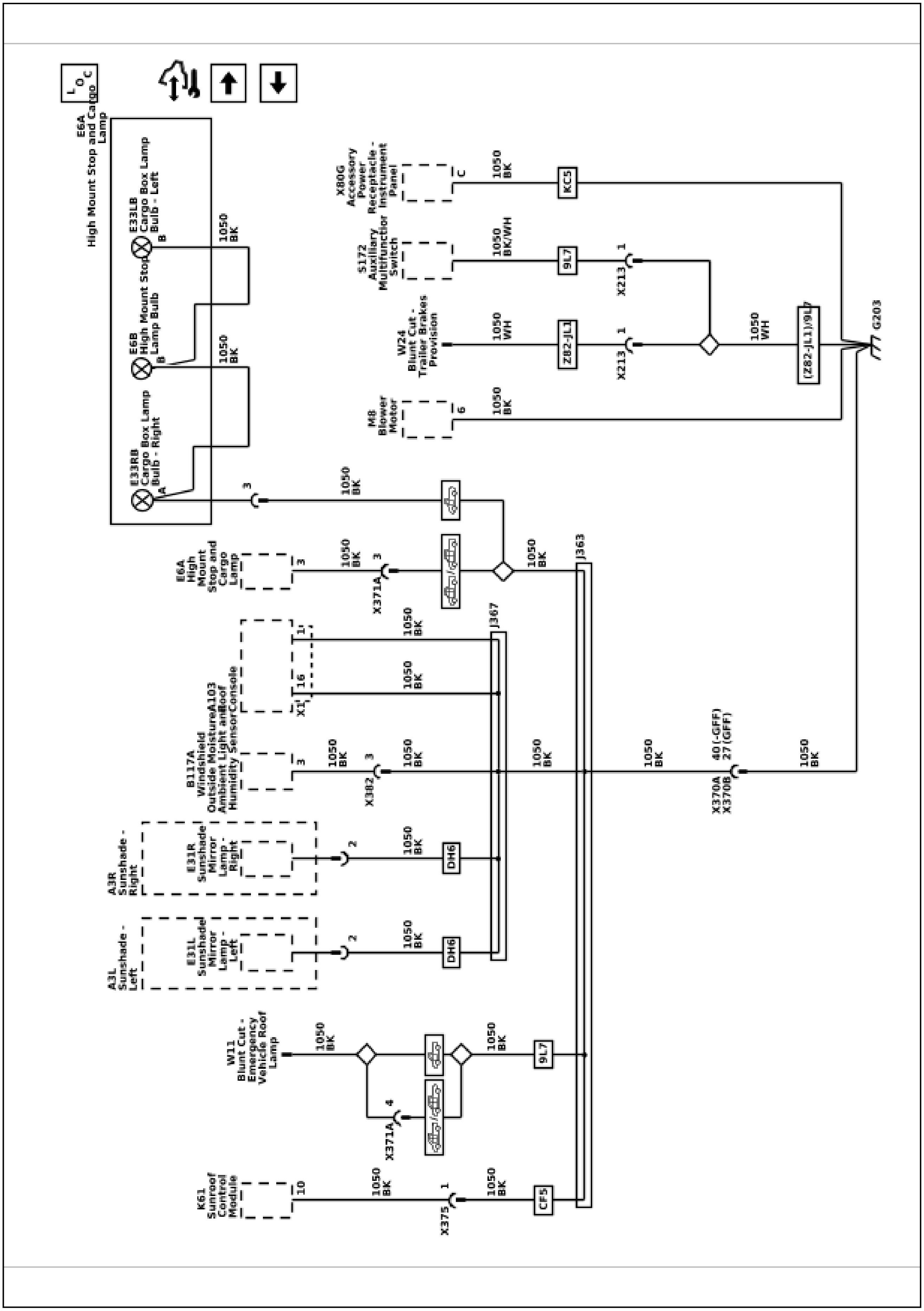



6846004

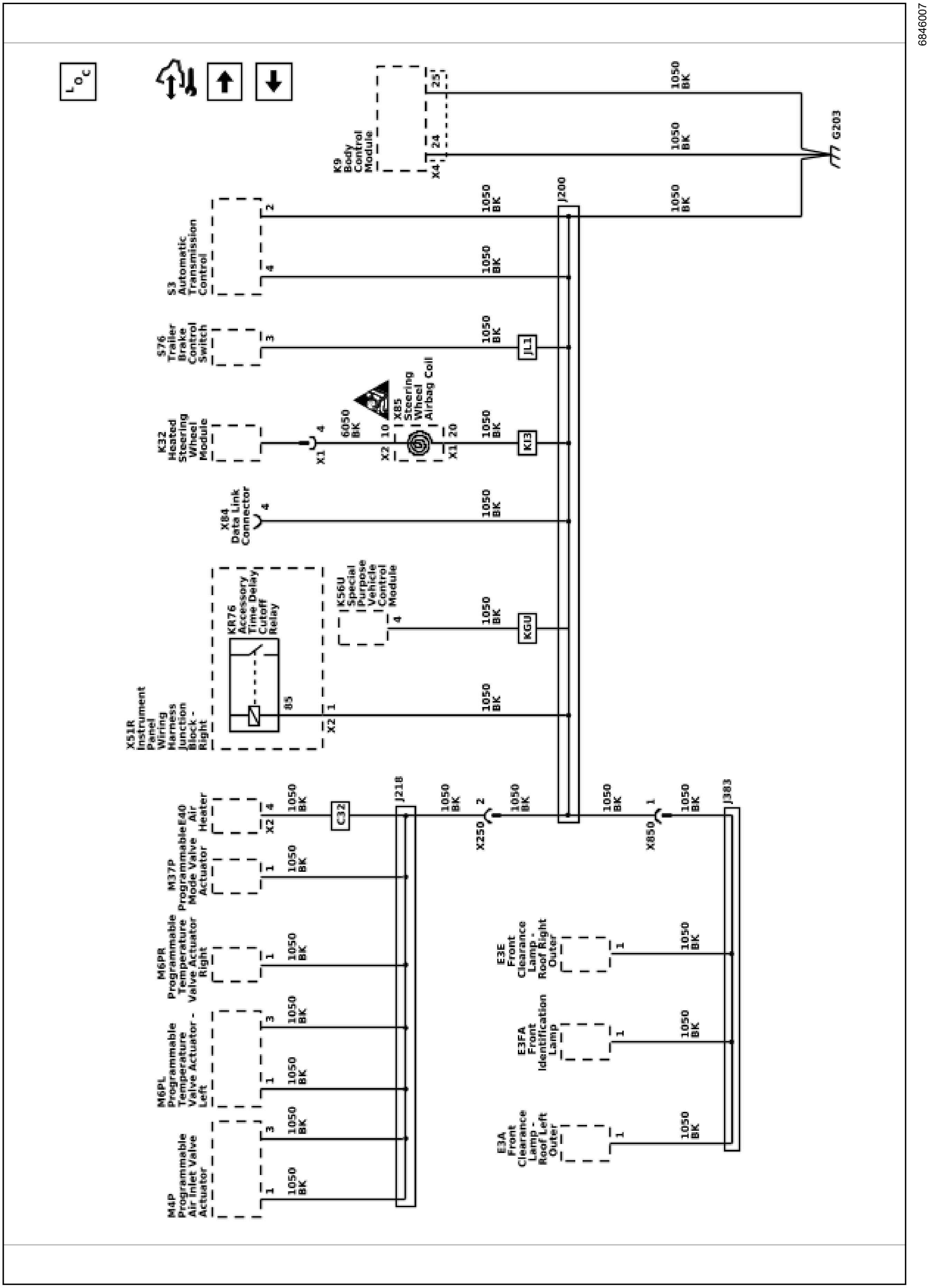
## Ground Distribution Schematics (G202, G303, and G114)



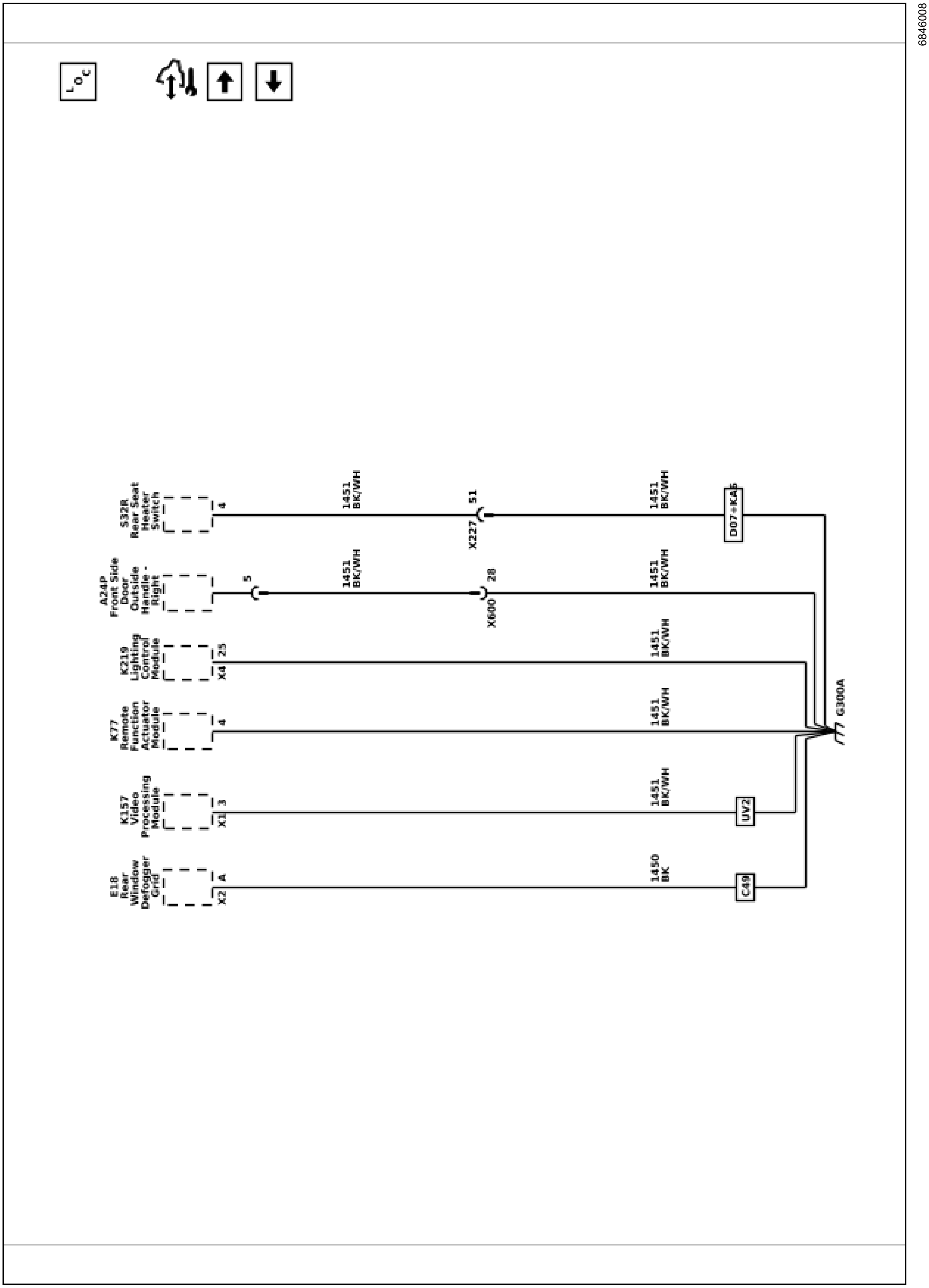
## Ground Distribution Schematics (G203 - 1 of 2)



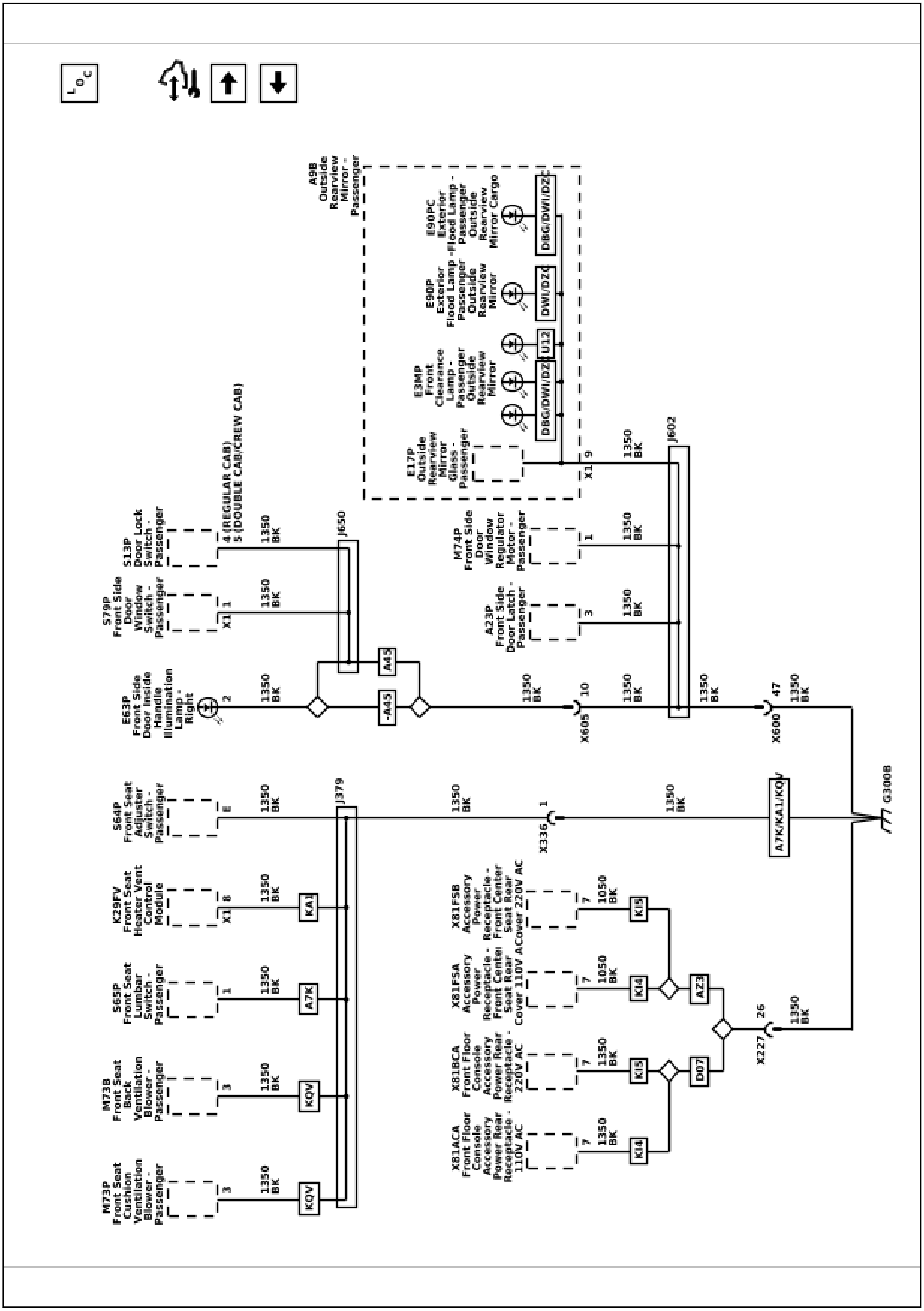
## Ground Distribution Schematics (G203 - 2 of 2)



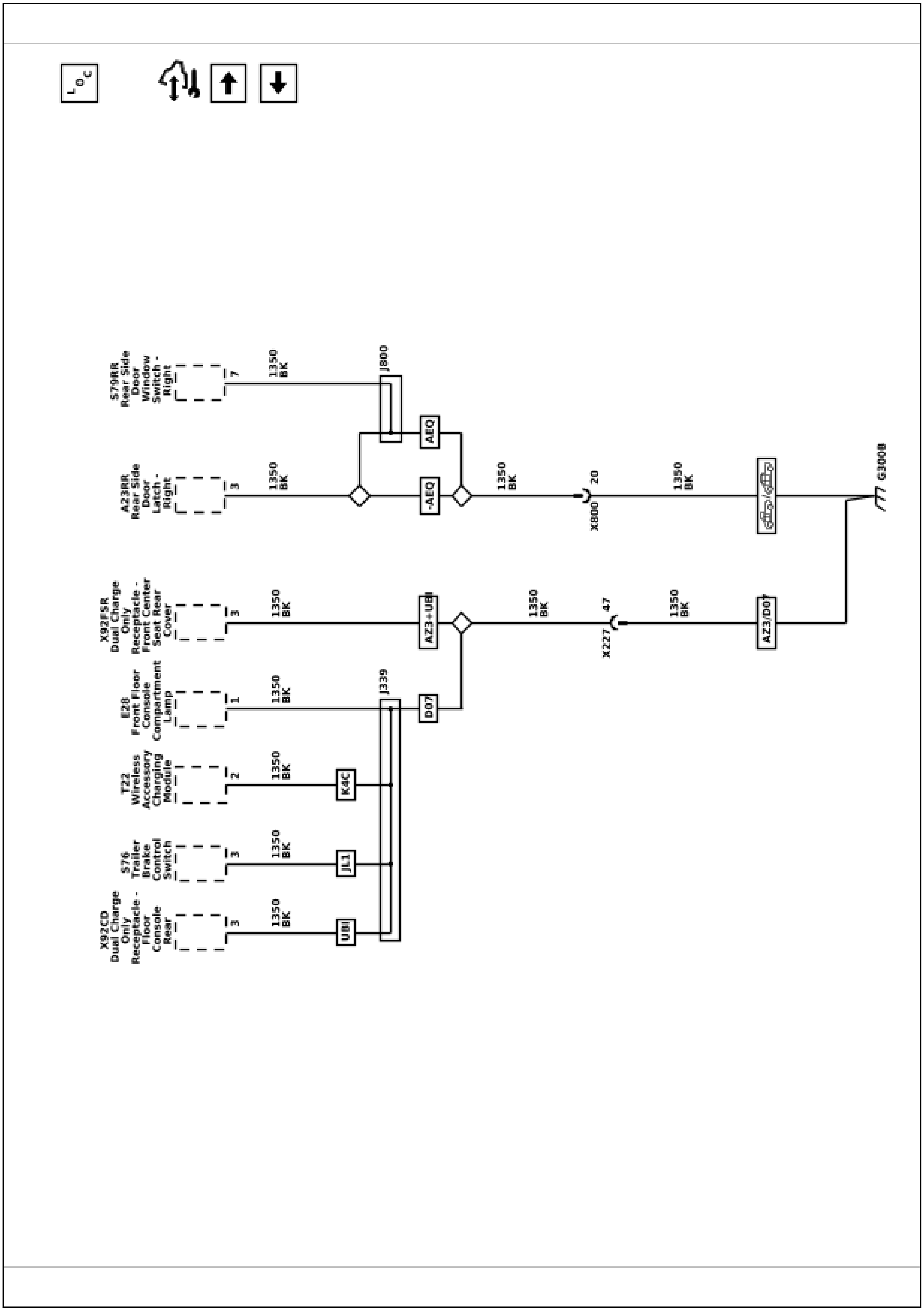
## Ground Distribution Schematics (G300A)



## Ground Distribution Schematics (G300B - 1 of 2)

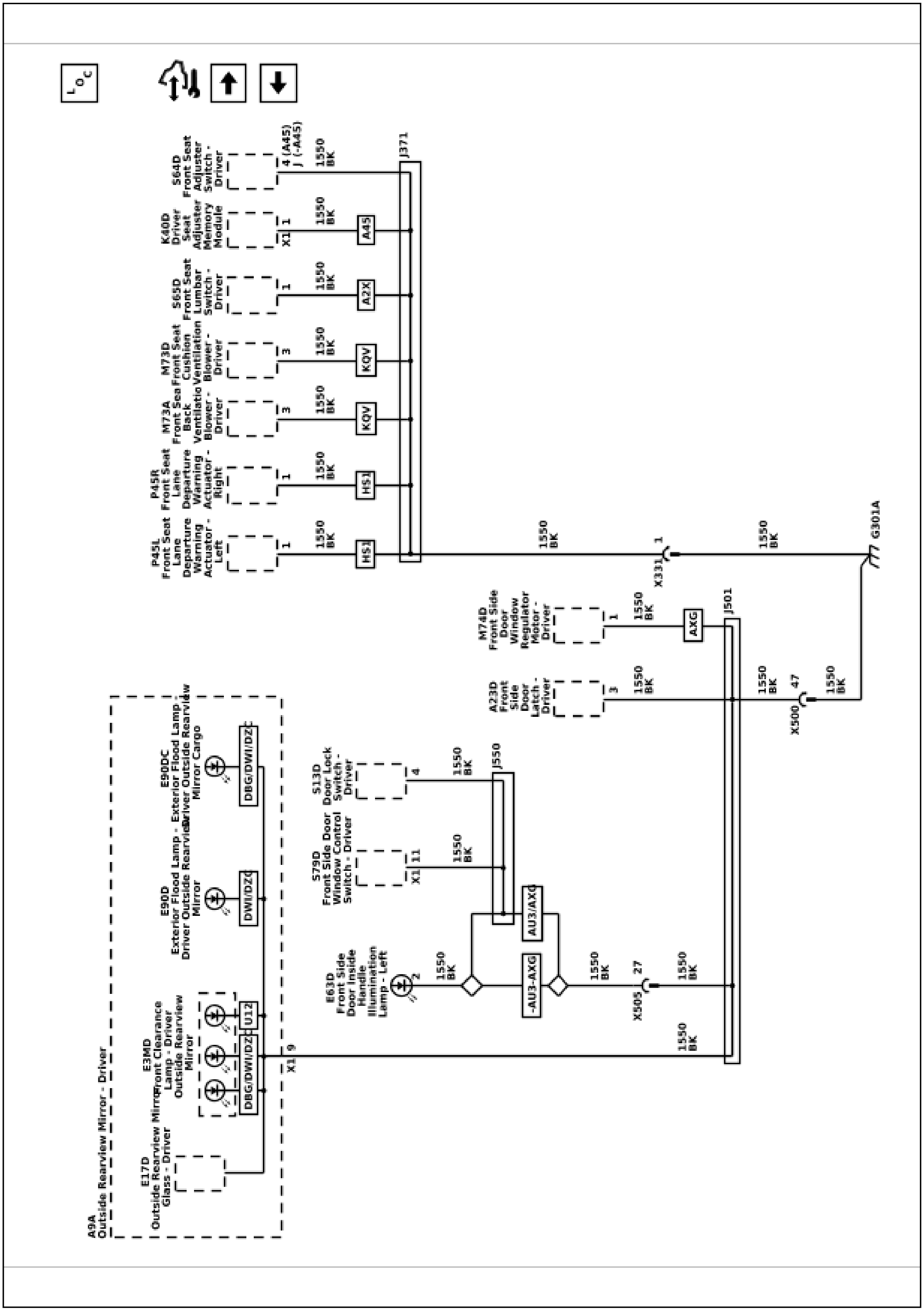


## Ground Distribution Schematics (G300B - 2 of 2)

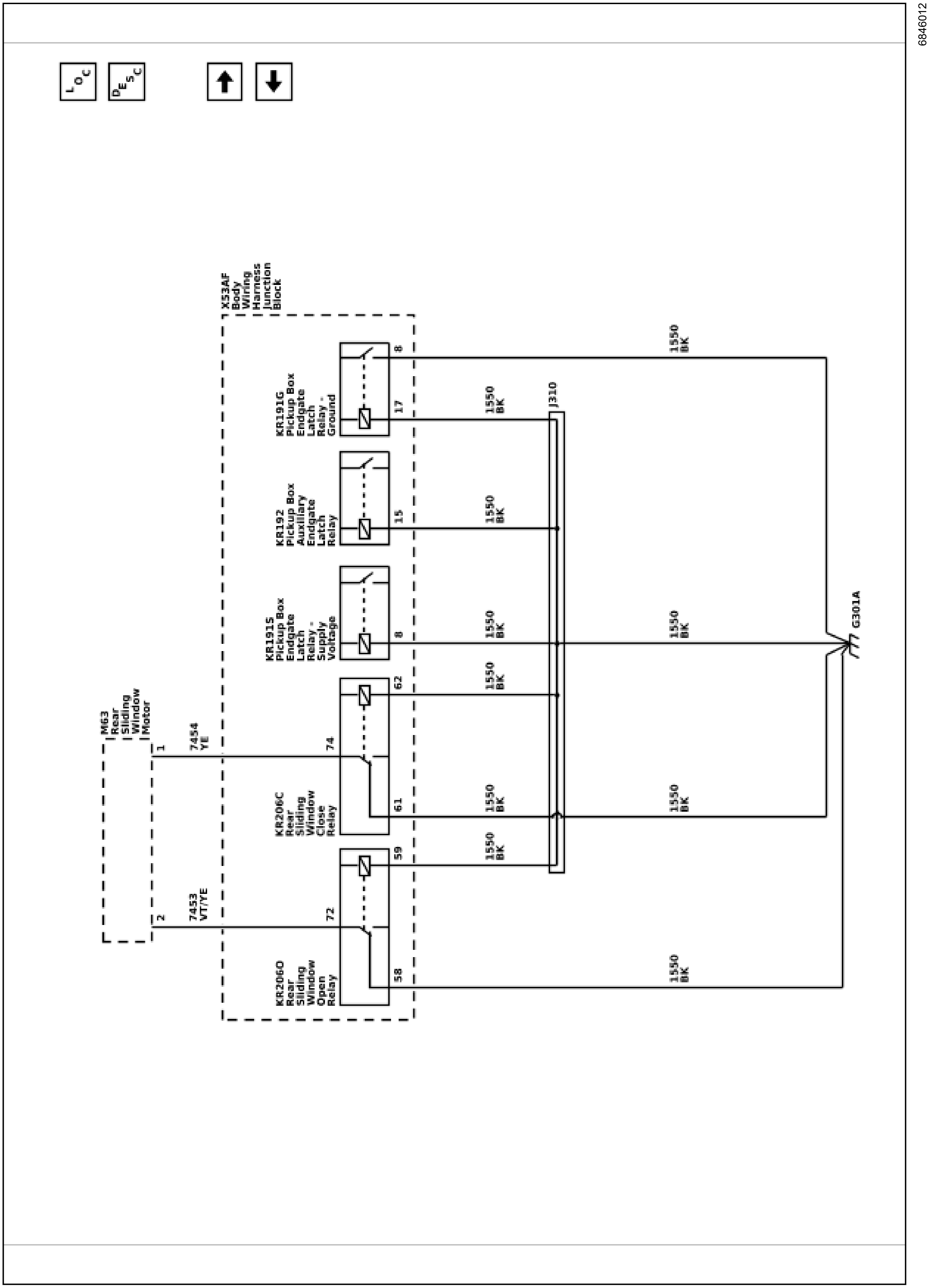



6846010

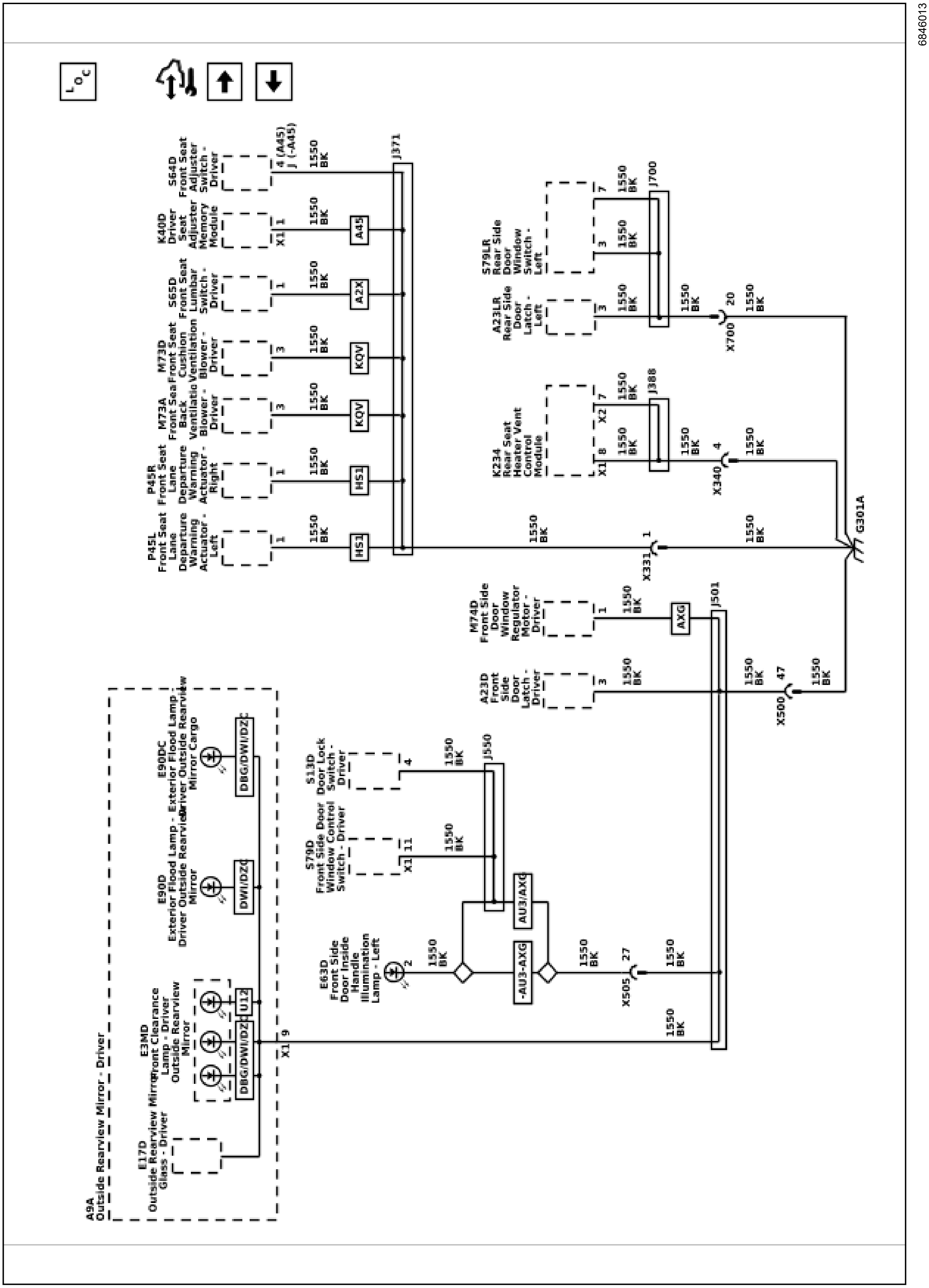
## Ground Distribution Schematics (G301A - Regular Cab - 1 of 2)



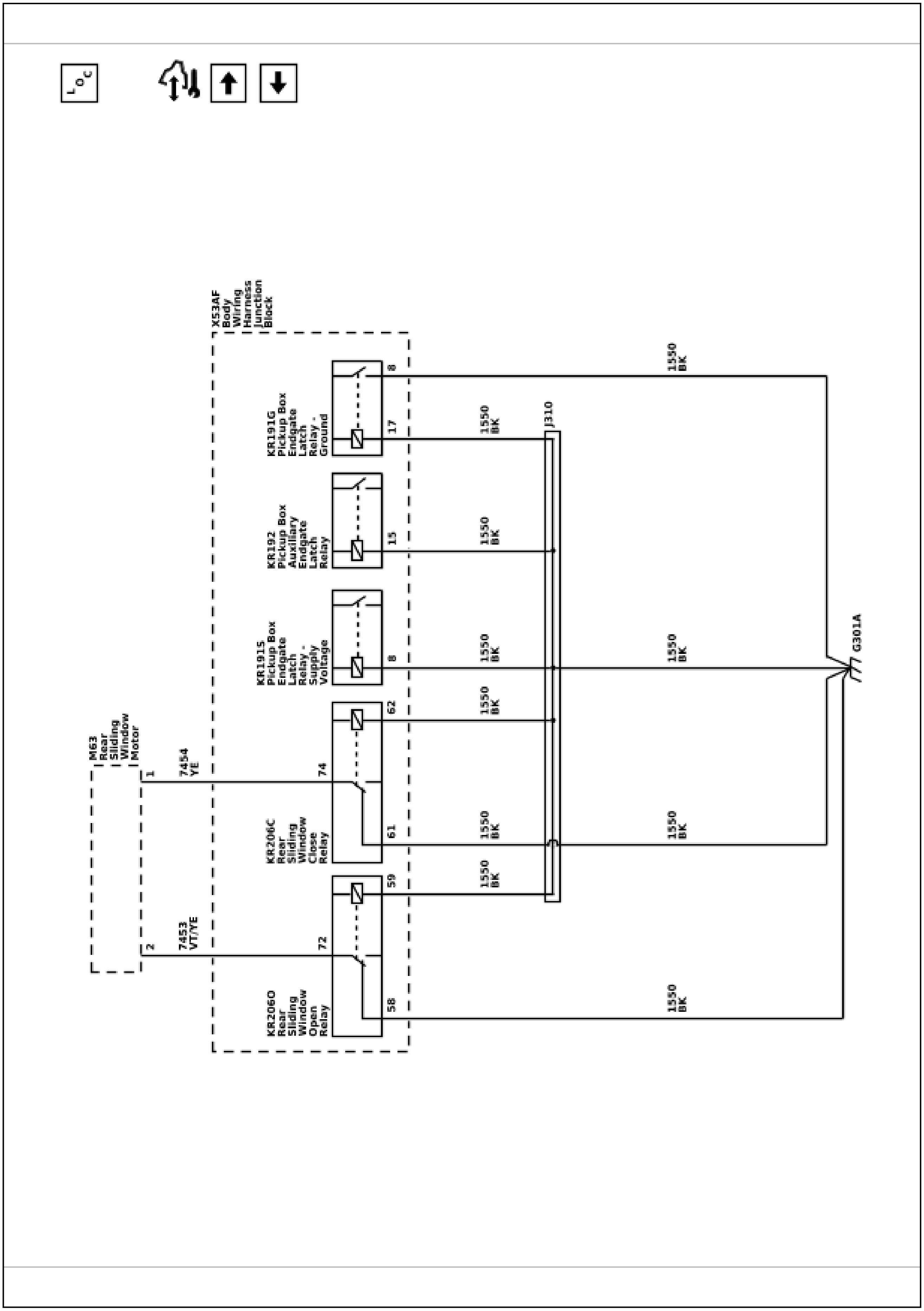
## Ground Distribution Schematics (G301A - Regular Cab - 2 of 2)



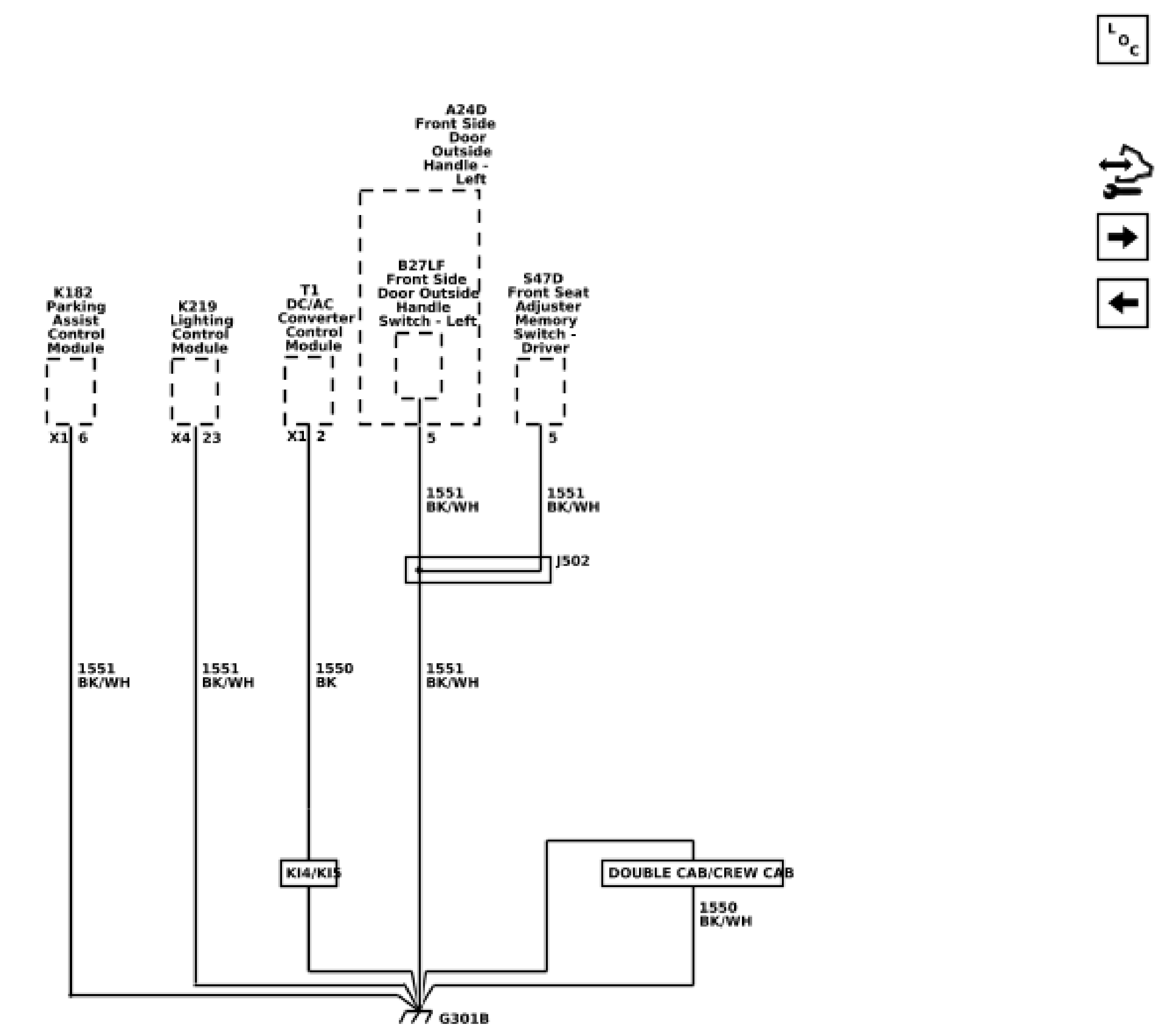
## Ground Distribution Schematics (G301A - Double Cab/Crew Cab - 1 of 2)



## Ground Distribution Schematics (G301A - Double Cab/Crew Cab - 2 of 2)



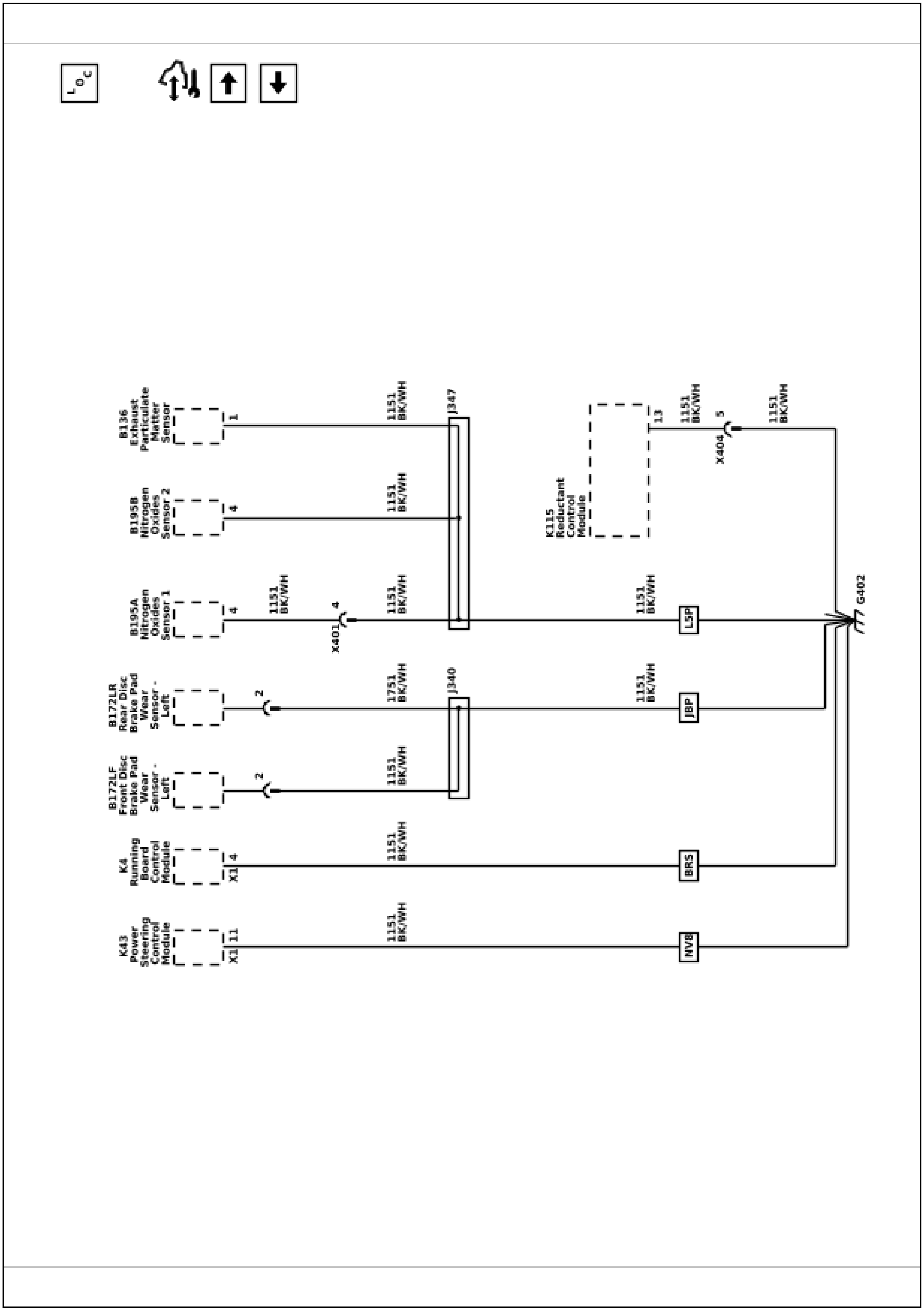
## Ground Distribution Schematics (G301B)



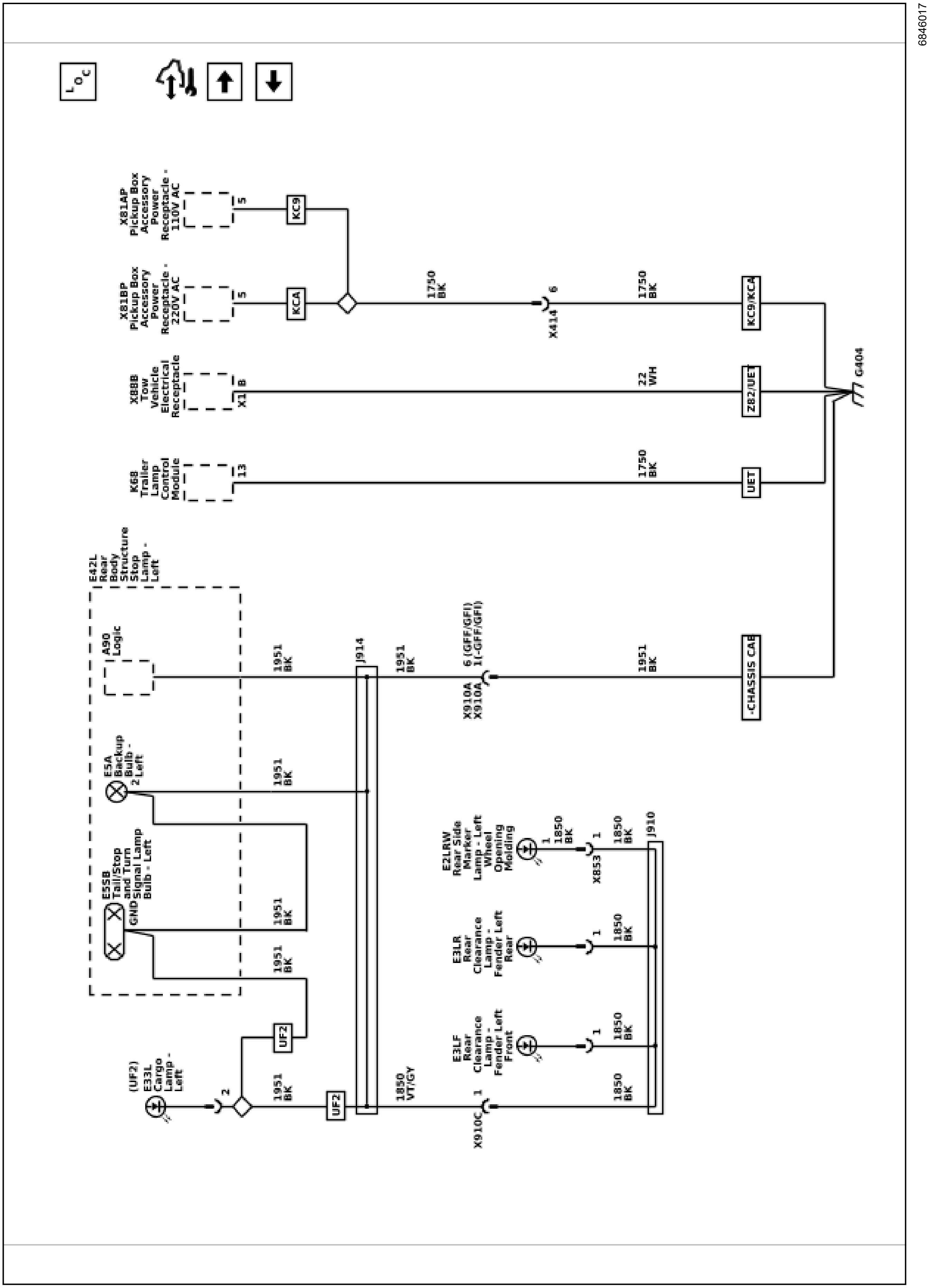

6846015

## Ground Distribution Schematics (G402)

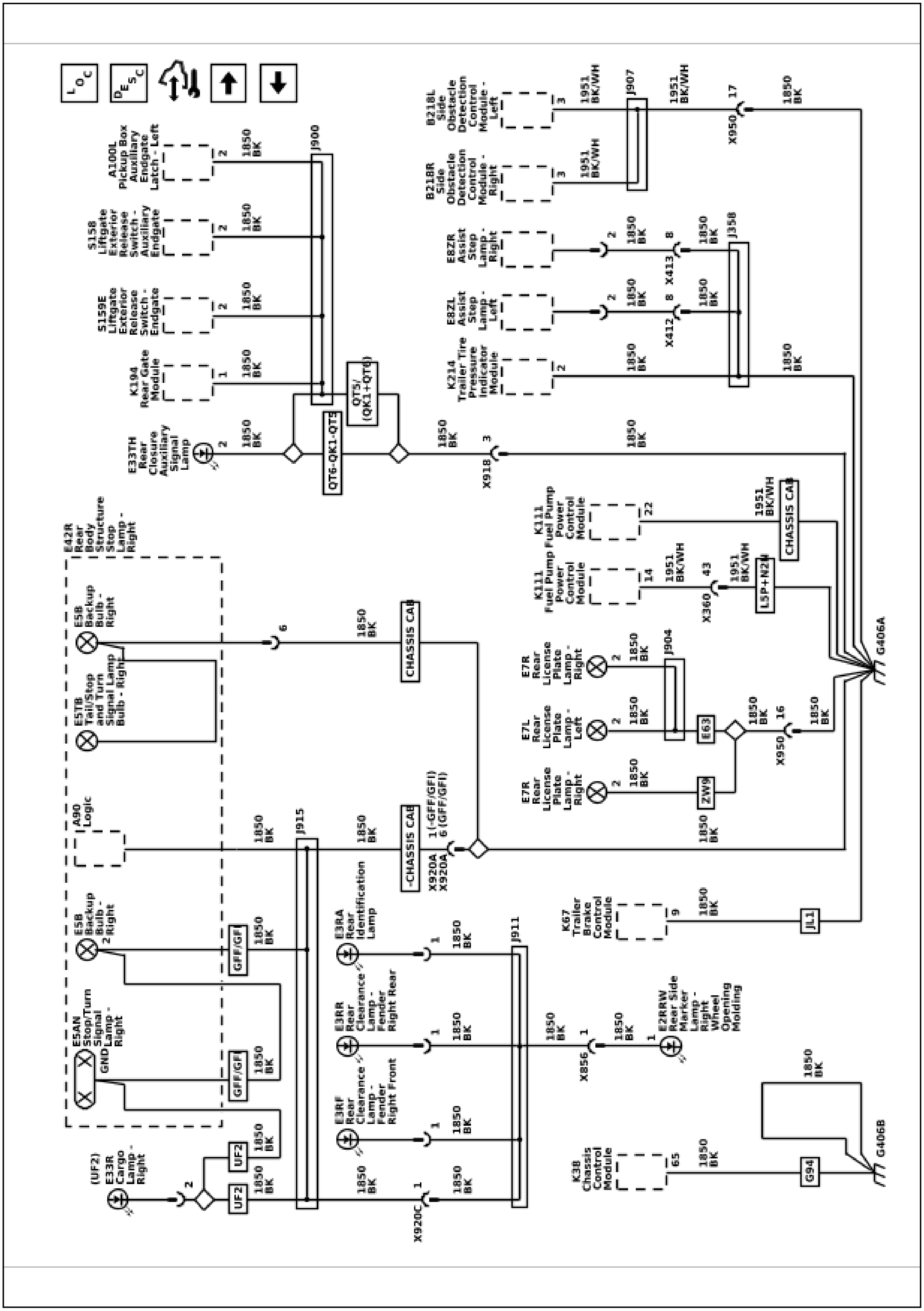
6846016



## Ground Distribution Schematics (G404)

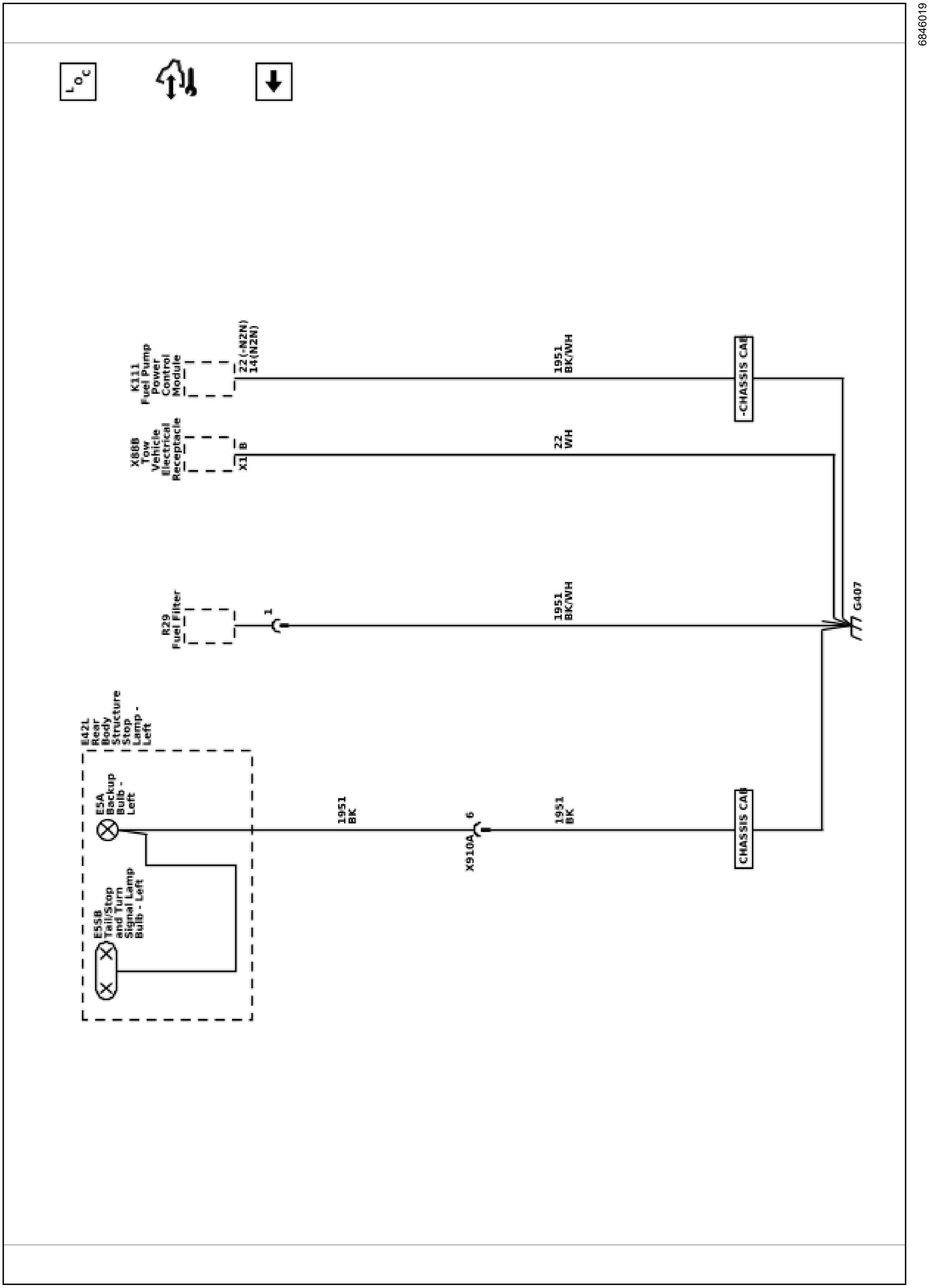


## Ground Distribution Schematics (G406A and G406B)

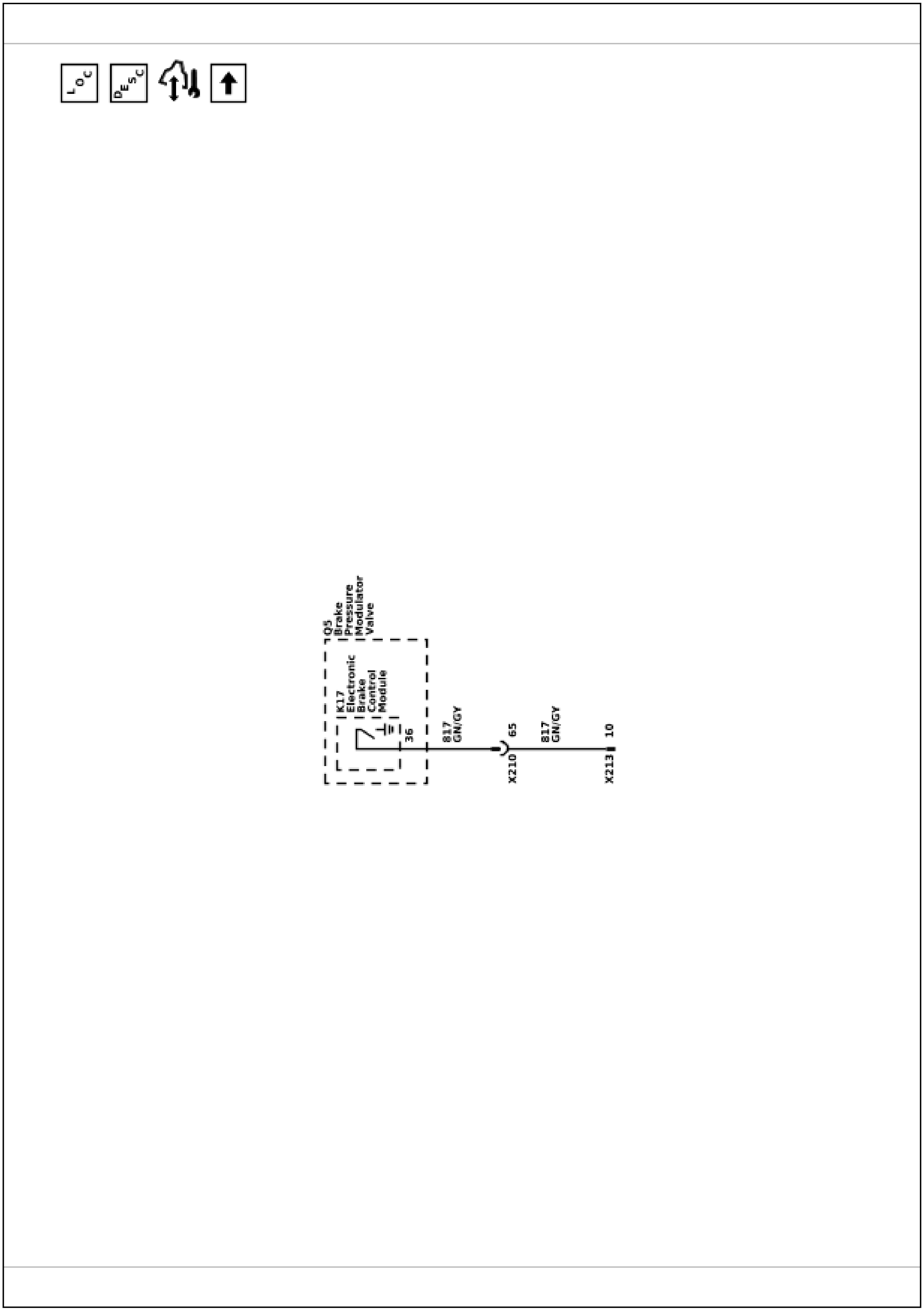



6846018

## Ground Distribution Schematics (G407)

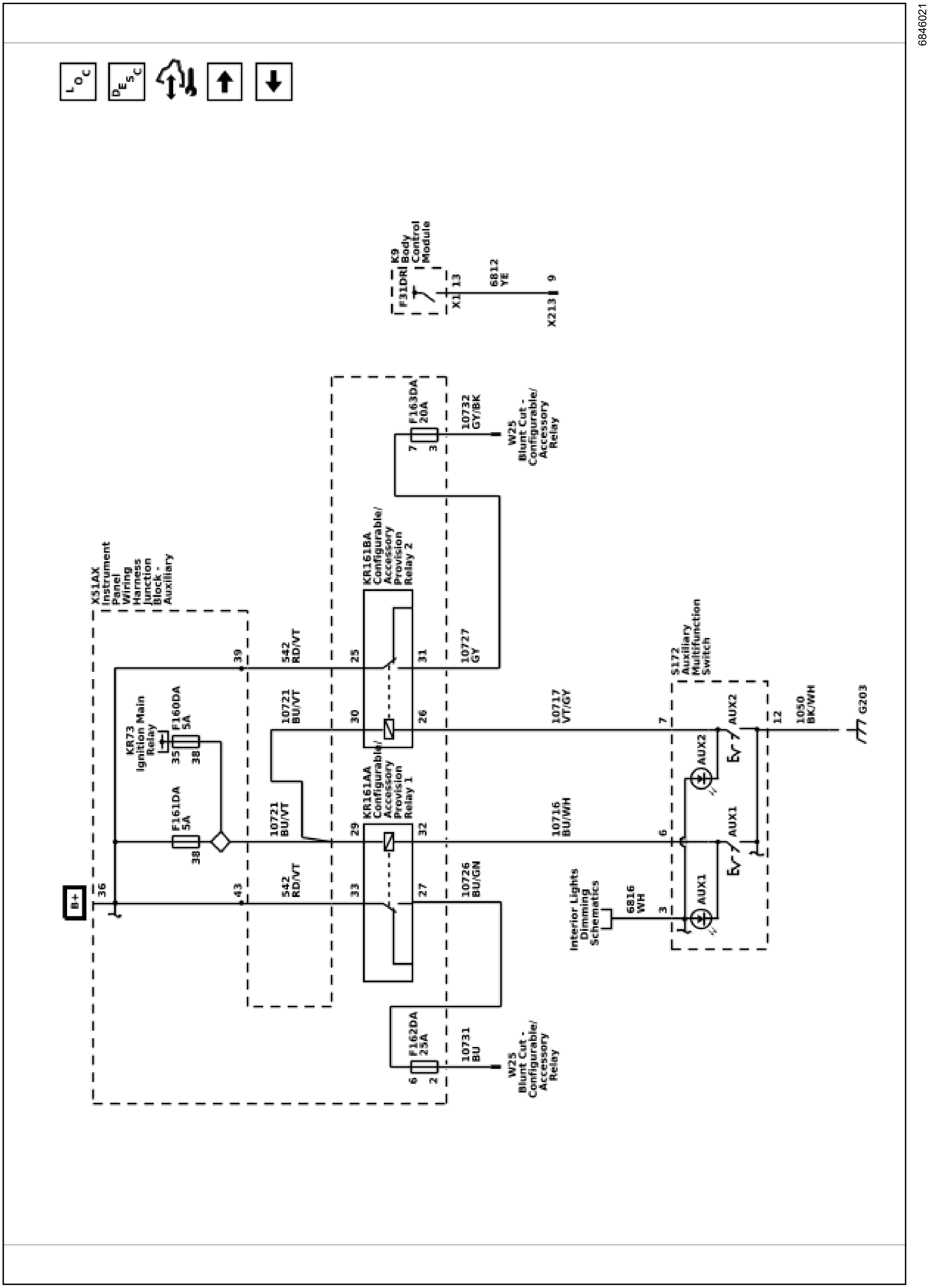


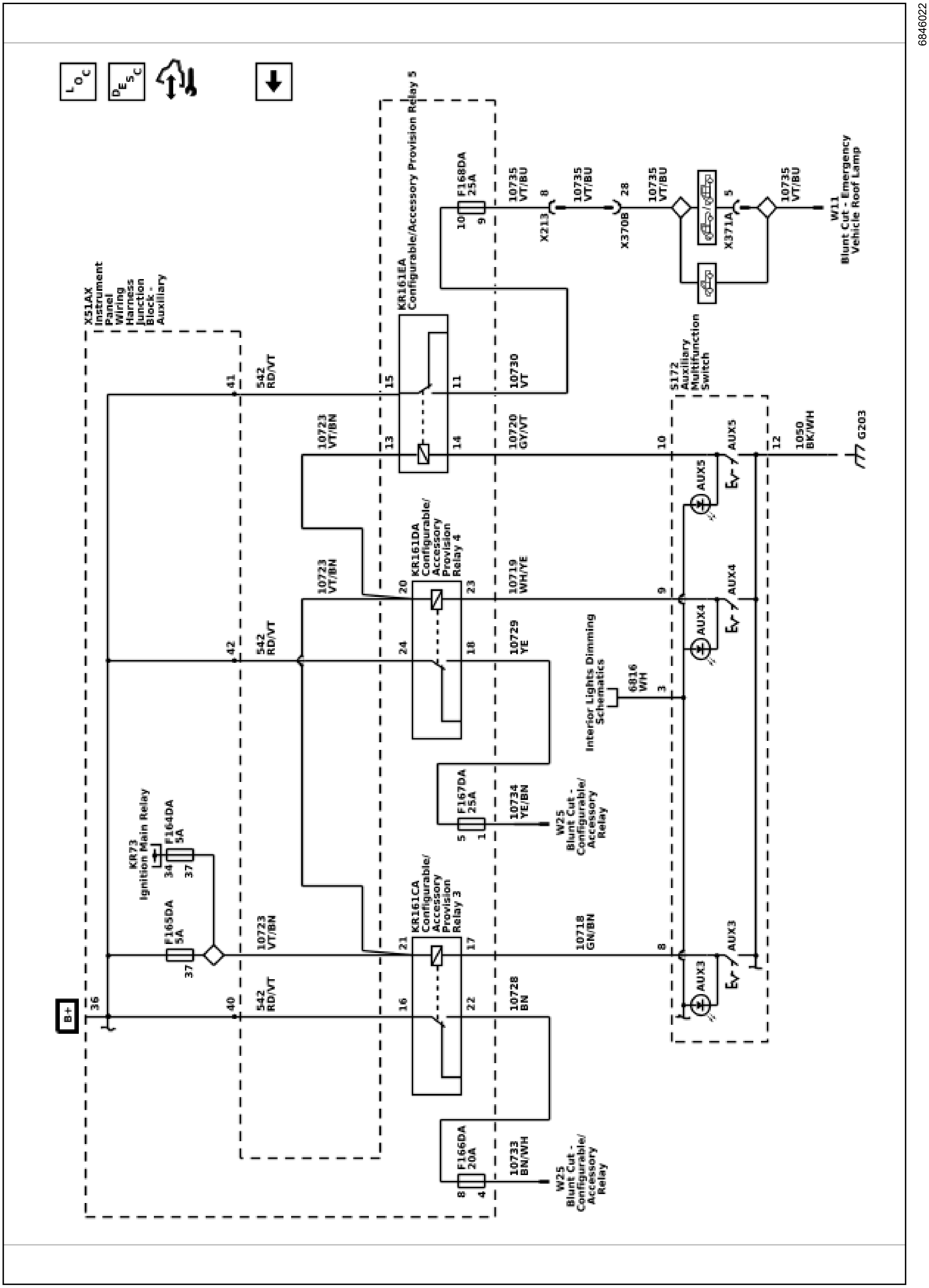
## Upfitter Provision Schematics (Upfitter Provisions - Signals)




6846020

## Upfitter Provision Schematics (Upfitter Provisions - 1 of 2 (9L7))




Upfitter Provision Schematics (Upfitter Provisions - 2 of 2 (9L7))
6846022
B+
X51AX Instrument Panel Wiring Harness Junction Block - Auxiliary
KR73 Ignition Main Relay
F164DA 5A
F165DA 5A
542 RD/VT
10723 VT/BN
KR161CA Configurable/ Accessory Provision Relay 3
KR161DA Configurable/ Accessory Provision Relay 4
KR161EA Configurable/Accessory Provision Relay 5
F166DA 20A
F167DA 25A
F168DA 25A
10733 BN/WH
10728 BN
10718 GN/BN
10734 YE/BN
10729 YE
10719 WH/YE
10720 GY/VT
10730 VT
10735 VT/BU
W25 Blunt Cut - Configurable/ Accessory Relay
Interior Lights Dimming Schematics
6816 WH
S172 Auxiliary Multifunction Switch
AUX3
AUX4
AUX5
1050 BK/WH
G203
X213
X370B
X371A
W11 Blunt Cut - Emergency Vehicle Roof Lamp

# Component Locator

## Master Electrical Component List

### Master Electrical Component List

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| A3L | Sunshade - Left | — | In the passenger compartment, at the front of the headliner, left side | — | — |
| A3R | Sunshade - Right | — | In the passenger compartment, at the front of the headliner, right side | — | — |
| A7 | Fuel Tank Fuel Pump Module | — | Under the vehicle, mounted in the front fuel tank | •<br>• | |
| A7AX | Fuel Tank Fuel Pump Module - Auxiliary | L8T or N2N | under the vehicle, mounted in the rear fuel tank | — | •<br>• |
| A9A | Outside Rearview Mirror - Driver | — | Outside the vehicle, at the front of the driver door | | •<br>• |
| A9B | Outside Rearview Mirror - Passenger | — | Outside the vehicle, at the front of the passenger door | | •<br>• |
| A10 | Inside Rearview Mirror | — | In the passenger compartment, at the top center of the windshield | — | •<br>• |
| A11 | Radio | — | In the passenger compartment, right front, below passenger a-pillar, between the instrument panel and bulkhead | •<br>• | •<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>• |
| A16 | Transfer Case Four Wheel Drive Actuator | NQF / NQH | Under the vehicle, mounted to the rear of the transfer case | | |
| A22 | Radio Control | IOK | In the passenger compartment, at the center of the Instrument Panel, part of the Info Display Module | | •<br>• |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| A23D | Front Side Door Latch - Driver | — | In the driver door, at the rear center | | |
| A23LR | Rear Side Door Latch - Left | Double Cab / Crew Cab | In the left rear door, at the rear center | | |
| A23P | Front Side Door Latch - Passenger | — | In the passenger door, at the rear center | | |
| A23RR | Rear Side Door Latch - Right | Double Cab / Crew Cab | In the right rear door, at the rear center | | |
| A24D | Front Side Door Outside Handle - Left | — | Outside of the vehicle, at the rear of the driver door | | |
| A24P | Front Side Door Outside Handle - Right | — | Outside of the vehicle, at the rear of the passenger door | | |
| A26 | Heater and Air Conditioning User Interface Control - Front | — | In the passenger compartment, at the center of the instrument panel, beneath P17 Info Display Module | | |
| A38 | Reductant Tank Fluid Supply Pump Module | L5P | Under the vehicle, right side, rearward of engine compartment bulkhead, mounted in the bottom of the reductant tank | •<br>• | |
| A99L | Pickup Box Endgate Latch - Left | QK2 & QT5 | At the rear of the vehicle, within endgate, on the left side | — | |
| A99R | Pickup Box Endgate Latch - Right | QK2 & QT5 | At the rear of the vehicle, within endgate, on the right side | — | |
| A100L | Pickup Box Auxiliary Endgate Latch - Left | QK2 | At the rear of the vehicle, within endgate, on the left side | — | |
| A100R | Pickup Box Auxiliary Endgate Latch - Right | QK2 | At the rear of the vehicle, within endgate, on the right side | — | |
| A103 | Roof Console | — | In the passenger compartment, front center, mounted to the front center of the headliner | — | •<br>• |
| B1 | Air Conditioning Refrigerant Pressure Sensor | — | In the engine compartment, left front, mounted to A/C high pressure line, near G1 A/C Compressor | — | |
| B5LF | Front Wheel Speed Sensor - Left | — | Outside the vehicle, part of the left front wheel hub assembly | | |
| B5LR | Rear Wheel Speed Sensor - Left | — | Outside the vehicle, mounted to the outboard end of the left axle tube | | •<br>• |
| B5RF | Front Wheel Speed Sensor - Right | — | Outside the vehicle, part of the right front wheel hub assembly | | |
| B5RR | Rear Wheel Speed Sensor - Right | — | Outside the vehicle, mounted to the outboard end of the right axle tube | | •<br>• |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| B9 | Ambient Air Temperature Sensor | — | Outside of the vehicle, at the bottom of A9B Outside Rearview Mirror - Passenger | — | — |
| B10D | Sun Load and Ambient Light and Security Indicator Sensor | — | In the passenger compartment, front center, in instrument panel, mounted to the instrument panel extension | | |
| B12P | Automatic Transmission Fluid Pressure Sensor - Power Take-Off | NQF / NQH | In the engine compartment, mounted to side of transmission | — | |
| B13 | Automatic Transmission Fluid Temperature Sensor | — | Under the vehicle, inside the T12 Automatic Transmission | — | |
| B14A | Automatic Transmission Output Speed Sensor | — | Under the vehicle, inside the T12 Automatic Transmission | — | |
| B14C | Automatic Transmission Input Speed Sensor | — | Under the vehicle, inside the T12 Automatic Transmission | — | |
| B14DA | Automatic Transmission Intermediate Speed Sensor 1 | — | Under the vehicle, inside the T12 Automatic Transmission | — | |
| B14DB | Automatic Transmission Intermediate Speed Sensor 2 | — | Under the vehicle, inside the T12 Automatic Transmission | — | |
| B20A | Brake Fluid Level Indicator Switch | — | In the engine compartment, left rear, mounted in the brake fluid reservoir | | |
| B22 | Brake Pedal Position Sensor | — | In the passenger compartment, in the driver side foot well, under the instrument panel | | |
| B23 | Camshaft Position Sensor | — | • (L8T) In the engine compartment, front center, mounted to timing chain cover, above crankshaft harmonic balancer<br>• (L5P) In the engine compartment, rear center, mounted to the right rear side of the engine block, above transmission bell-housing | | •<br>• |
| B24LF | Mobile Telephone Microphone - Left Front | — | In the passenger compartment, left front, attached to the headliner | — | |
| B24RF | Mobile Telephone Microphone - Right Front | IOK | In the passenger compartment, right front, attached to the headliner | — | |
| B26 | Crankshaft Position Sensor | — | In the engine compartment, mounted to side of engine block behind the M64 Starter Motor | •<br>• | •<br>• |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| B27LF | Front Side Door Outside Handle Switch - Left | — | Outside of the vehicle, at the rear of the driver door, within A24D Front Side Door Outside Handle - Left | — | — |
| B27RF | Front Side Door Outside Handle Switch - Right | — | Outside of the vehicle, at the rear of the driver door, within A24P Front Side Door Outside Handle - Right | — | — |
| B33 | Low Coolant Level Switch | — | In the engine compartment, in the engine coolant reservoir | — | |
| B34 | Engine Coolant Temperature Sensor | L8T | In the engine compartment, front center, mounted to water pump | | •<br>• |
| B35 | Engine Oil Level Indicator Switch | L8T | In the engine compartment, mounted to the right side of the engine oil pan | •<br>•<br>• | •<br>• |
| B36 | Engine Oil Temperature Sensor | L8T | In the engine compartment, left side, mounted to the engine oil filter housing | | |
| B37B | Engine Oil Pressure Sensor | — | • (L8T) In the engine compartment, front of engine, mounted below throttle body<br>• (L5P) In the engine compartment, front center, mounted to the left side of engine block | | •<br>• |
| B39 | Air Conditioning Evaporator Air Temperature Sensor | — | In the passenger compartment, behind the instrument panel, mounted in the HVAC housing | — | |
| B46 | Fuel Level Sensor | — | Under the vehicle, inside the front fuel tank, part of the fuel pump and level sensor assembly | — | — |
| B46AX | Fuel Level Sensor - Auxiliary | — | Under the vehicle, inside the rear fuel tank, part of the fuel pump and level sensor assembly | — | — |
| B47 | Fuel Pressure Sensor | — | • (L8T) Under the vehicle, left side, in front of rear axle, mounted to the top of the fuel tank<br>• (L5P) Under the vehicle, right middle, mounted to the right inboard side frame rail, rearward of R29 Fuel Filter | •<br>• | •<br>• |
| B47B | Fuel Rail Pressure Sensor | — | In the engine compartment, at the top of the engine, mounted to the fuel rail | | |
| B52C | Heated Oxygen Sensor - Bank 1 Sensor 1 | L8T | Under the vehicle, mounted in the bank 1 exhaust, upstream of the catalytic converter | — | |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| B52D | Heated Oxygen Sensor - Bank 1 Sensor 2 | L8T | Under the vehicle, mounted in the bank 1 exhaust, downstream of the catalytic converter | — | |
| B52E | Heated Oxygen Sensor - Bank 2 Sensor 1 | L8T | Under the vehicle, mounted in the bank 2 exhaust, upstream of the catalytic converter | — | |
| B52F | Heated Oxygen Sensor - Bank 2 Sensor 2 | L8T | Under the vehicle, mounted in the bank 2 exhaust, downstream of the catalytic converter | — | |
| B55 | Engine Compartment Cover Switch | — | Outside the vehicle, at the front center of the hood, part of the hood latch assembly | • <br> • | |
| B58L | Airbag Front End Discriminating Sensor - Left | — | In the engine compartment, left front, at the bottom of the radiator core support | • <br> • | |
| B58R | Airbag Front End Discriminating Sensor - Right | — | In the engine compartment, right front, at the bottom of the radiator core support | • <br> • | |
| B61P | Seat Belt Tension Sensor - Passenger | — | In the passenger compartment, at the base of the B-pillar, part of the passenger seat belt retractor pretensioner | • <br> • | |
| B63LF | Airbag Side Impact Sensor - Left Front Door | — | At the left front of the passenger compartment, mounted inside the left front door, at the bottom | | |
| B63LR | Airbag Side Impact Rear Sensor - Left Door | Double Cab / Crew Cab | At the left rear of the passenger compartment, mounted inside the left rear door, at the bottom | | |
| B63RF | Airbag Side Impact Sensor - Right Front Door | — | At the right front of the passenger compartment, mounted inside the right front door, at the bottom | | |
| B63RR | Airbag Side Impact Rear Sensor - Right Door | Double Cab / Crew Cab | At the right rear of the passenger compartment, mounted inside the right rear door, at the bottom | | |
| B66 | Intake Air Temperature Sensor | L5P | In the engine compartment, right front of engine, mounted to the intake manifold | | |
| B68A | Knock Sensor 1 | L8T | In the engine compartment, left side of engine, mounted to the rear of the engine block, below exhaust manifold | | |
| B68B | Knock Sensor 2 | L8T | In the engine compartment, right rear, mounted to right rear side of engine block, behind M64 Starter Motor | | |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| B74 | Manifold Absolute Pressure Sensor | — | • (L8T) In the engine compartment, front center, mounted to intake manifold, to the left of Q38 Throttle Body<br>• (L5P) In the engine compartment, right front, mounted to intake manifold, above the Q20 Intake Air Flow Valve | •<br>•<br>• | •<br>• |
| B75 | Mass Airflow Sensor | — | In the engine compartment, left front, mounted to the air cleaner lid | | |
| B77 | Radio Volume Compensator Interior Noise Microphone | — | In the passenger compartment, front center, mounted to the headliner, rearward of A103 Roof Console | — | |
| B81B | Automatic Transmission Control Park Position Switch | — | In the passenger compartment, left front, inside of S3 Automatic Transmission Control | — | — |
| B87 | Rearview Driver Information Camera | UVB / UV2 | Outside the vehicle, at the top middle of the tailgate, mounted in the tailgate handle | •<br>• | •<br>•<br>• |
| B87CA | Auxiliary Rearview Camera - Cargo Area | UVN | Outside of the vehicle, at the rear of the cab, back of roof, within E6 Center High Mounted Stop Lamp | — | •<br>• |
| B88D | Seat Belt Switch - Driver | — | In the passenger compartment, at the inboard side of the driver seat, part of the seat belt buckle | — | — |
| B88LR | Seat Belt Switch - Left Rear | — | In the passenger compartment, at the inboard side of the rear seat left, part of the seat belt buckle | — | — |
| B88MR | Seat Belt Switch - Rear Middle | — | In the passenger compartment, at the right side of the rear seat middle, part of the seat belt buckle | — | — |
| B88P | Seat Belt Switch - Passenger | — | In the passenger compartment, at the inboard side of the passenger seat, part of the seat belt buckle | — | — |
| B88RR | Seat Belt Switch - Right Rear | — | In the passenger compartment, at the inboard side of the rear seat right, part of the seat belt buckle | — | — |
| B99 | Steering Angle Sensor Module | — | In the passenger compartment, near the base of the steering column, near the floor | | |
| B107 | Accelerator Pedal Position Sensor | — | In the passenger compartment, in the driver side foot well, under the instrument panel | | |
| B110 | Battery Monitor Module | — | In the engine compartment, right side, near C1 Battery negative cable | | •<br>• |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| B117A | Windshield Outside Moisture/ Ambient Light and Humidity Sensor | — | In the passenger compartment, at the top center of the windshield, forward of windshield multifunction sensor mount bracket cover insert | — | |
| B118 | Windshield Washer Solvent Container Level Sensor | — | At the left front corner of vehicle, forward of the front wheelhouse liner, at the bottom of the washer fluid reservoir | | |
| B130 | Exhaust Gas Recirculation Temperature Sensor | — | In the engine compartment, right front, mounted in exhaust, in front of B345P Exhaust Pressure Differential Sensor - Particulate Filter | | |
| B136 | Exhaust Particulate Matter Sensor | L5P | On the underbody, mounted to the inboard side of the right frame rail, forward of the right rear shock | — | |
| B139 | Transfer Case Two/Four Wheel Drive Actuator Position Sensor | NQF / NQH | Under the vehicle, mounted to the transfer case | | |
| B150 | Fuel Tank Pressure Sensor | L8T | Under the vehicle, at the top of the fuel tank | | •<br>• |
| B153D | Front Seat Belt Buckle - Driver | — | In the passenger compartment, at the inboard side of the drive seat | | |
| B153LR | Rear Seat Belt Buckle - Left | — | In the passenger compartment, at the inboard side of the rear seat left | •<br>• | |
| B153P | Front Seat Belt Buckle - Passenger | — | In the passenger compartment, at the inboard side of the passenger seat | — | |
| B153RR | Rear Seat Belt Buckle - Right | — | In the passenger compartment, at the inboard side of the rear seat right | •<br>• | |
| B172LF | Front Disc Brake Pad Wear Sensor - Left | — | Under the vehicle, at left front caliper | | |
| B172LR | Rear Disc Brake Pad Wear Sensor - Left | — | Under the vehicle, at left rear caliper | — | |
| B174G | Front View Driver Information Camera - Grille | UV2 | At the front of the vehicle, front center, near the grille | | |
| B174W | Front View Camera - Windshield | ASV | In the passenger compartment, at the top middle of the windshield | — | |
| B193A | Charge Air Cooler Air Temperature Sensor - Inlet | L5P | In the engine compartment, mounted to the left side of the air charge cooler | | |
| B193B | Charge Air Cooler Air Temperature Sensor - Outlet | L5P | In the engine compartment, mounted to the front of the air charge cooler | — | |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| B194 | Reductant Pressure Sensor | L5P | Under the vehicle, right side, forward of rear axle, within reductant tank, part of A38 Reductant Tank Fluid Supply Pump Module | — | — |
| B195A | Nitrogen Oxides Sensor 1 | L5P | In the engine compartment, attached to the exhaust pipe, on the top left rear side of the engine | — | |
| B195B | Nitrogen Oxides Sensor 2 | L5P | Under the vehicle, attached to the exhaust pipe, at the middle of the diesel particulate filter | — | |
| B198 | Fuel Composition Sensor | FHS | Under the vehicle, mounted to the left side of the frame | — | |
| B212 | Reductant Tank Fluid Sensor | L5P | Under the vehicle, right side, attached to reductant tank | •<br>• | |
| B214 | Reductant Tank Temperature Sensor | L5P | Under the vehicle, right side, forward of rear axle, within reductant tank, part of A38 Reductant Tank Fluid Supply Pump Module | — | — |
| B218L | Side Obstacle Detection Control Module - Left | UKC | Outside of the vehicle, left rear corner, mounted to the inside of the rear bumper | | |
| B218R | Side Obstacle Detection Control Module - Right | UKC | Outside of the vehicle, right rear corner, mounted to the inside of the rear bumper | | |
| B225L | Side View Driver Information Camera - Left | UV2 | Outside of vehicle, left side, within A9A Outside Rearview Mirror - Driver | — | — |
| B225R | Side View Driver Information Camera - Right | UV2 | Outside of vehicle, right side, within A9B Outside Rearview Mirror - Passenger | — | — |
| B302 | Steering Gear Pressure Sensor | — | In the passenger compartment, on the steering column near the base of the shifter | — | |
| B303 | Transmission Range Sensor | — | Under the vehicle, inside the T12 Automatic Transmission | — | |
| B306A | Parking Assist Alarm Sensor - Front Left Outer | UD5 | At the front of the vehicle, left side, mounted in the front bumper | | |
| B306B | Parking Assist Alarm Sensor - Front Left Middle | UD5 | At the front of the vehicle, left of center, mounted in the front bumper | | |
| B306C | Parking Assist Alarm Sensor - Front Right Middle | UD5 | At the front of the vehicle, right of center, mounted in the front bumper | | |
| B306D | Parking Assist Alarm Sensor - Front Right Outer | UD5 | At the front of the vehicle, right side, mounted in the front bumper | | |
| B306E | Parking Assist Alarm Sensor - Rear Left Outer | UD5 / UD7 | At the rear of the vehicle, left side, mounted in the rear bumper | •<br>• | |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| B306F | Parking Assist Alarm Sensor - Rear Left Middle | UD5 / UD7 | At the rear of the vehicle, left of center, mounted in the rear bumper | • • | |
| B306G | Parking Assist Alarm Sensor - Rear Right Middle | UD5 / UD7 | At the rear of the vehicle, right of middle, mounted in the rear bumper | • • | |
| B306H | Parking Assist Alarm Sensor - Rear Right Outer | UD5 / UD7 | At the rear of the vehicle, right side, in the rear bumper | • • | |
| B310 | Fuel Pressure and Temperature Sensor | L8T | In the engine compartment, rear center, under intake manifold, at the rear of the driver side fuel rail | | |
| B321 | Crankcase Pressure Sensor | — | In the engine compartment, mounted to the left side of the engine | — | |
| B345P | Exhaust Pressure Differential Sensor - Particulate Filter | L5P | Under the vehicle, right side, near transmission cross member, mounted to the exhaust particulate filter | | |
| B352 | Video Display Inside Rearview Mirror Camera | DRZ | Outside the vehicle, at the top center of the rear window bridge, within E6 Center High Mounted Stop Lamp | | |
| B359 | Exhaust Gas Temperature Sensor Module | L5P | In the engine compartment, right rear, mounted to exhaust, just above the Q61B Reductant Fluid Injector 2 | | |
| B359B | Exhaust Gas Temperature Sensor Module 2 | L5P | Under the vehicle, right side, near transmission cross member | — | |
| B359C | Exhaust Gas Temperature Sensor Module 3 | L5P | Under the vehicle, right side, inside the frame rail near rear of cab | — | |
| B394 | Evaporative Emission Canister Purge System Pressure Sensor | — | On the underbody, at the top left side of the fuel tank | | |
| C1 | Battery | — | In the engine compartment, on the right side | — | — |
| C1B | Battery - Auxiliary | K4Z / KHF | In the engine compartment, on the left side | — | — |
| C1D | Battery 2 | — | In the engine compartment, on the left side | — | |
| E2LF | Front Side Marker Lamp - Left | -GFF / GFI | Outside the vehicle, at the left front corner, inside the E13LA Front Headlamp - Left | — | |
| E2LRW | Rear Side Marker Lamp - Left Wheel Opening Molding | — | Outside the vehicle, on the left rear wheel fender flare - Center | — | |
| E2RF | Front Side Marker Lamp - Right | -GFF / GFI | Outside the vehicle, at the right front corner, inside the E13LA Front Headlamp - Left | — | |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| E2RRW | Rear Side Marker Lamp - Right Wheel Opening Molding | — | Outside the vehicle, on the right rear wheel fender flare - Center | — | |
| E3A | Front Clearance Lamp - Roof Left Outer | — | Outside the vehicle, at the front of the roof | — | |
| E3E | Front Clearance Lamp - Roof Right Outer | — | Outside the vehicle, at the front of the roof | — | |
| E3FA | Front Identification Lamp | — | Outside the vehicle, at the front of the roof | — | |
| E3LF | Rear Clearance Lamp - Fender Left Front | DRZ | Outside the vehicle, on the left rear wheel fender flare - Front | — | |
| E3LR | Rear Clearance Lamp - Fender Left Rear | DRZ | Outside the vehicle, on the left rear wheel fender flare - Rear | — | |
| E3MD | Front Clearance Lamp - Driver Outside Rearview Mirror | — | Outside of vehicle, left side, within A9A Outside Rearview Mirror - Driver | — | — |
| E3MP | Front Clearance Lamp - Passenger Outside Rearview Mirror | — | Outside of vehicle, right side, within A9B Outside Rearview Mirror - Passenger | — | — |
| E3RA | Rear Identification Lamp | — | Outside of vehicle, above center of bumper | — | |
| E3RF | Rear Clearance Lamp - Fender Right Front | DRZ | Outside the vehicle, on the right rear wheel fender flare - Front | — | |
| E3RR | Rear Clearance Lamp - Fender Right Rear | DRZ | Outside the vehicle, on the right rear wheel fender flare - Rear | — | |
| E5A | Backup Bulb - Left | — | At the rear of vehicle, left rear corner, within E42L Rear Body Structure Stop Lamp - Left | — | |
| E5AM | Stop/Turn Signal Lamp - Left | — | At the left rear of the vehicle, within E42L Rear Body Structure Stop Lamp - Left | — | |
| E5AN | Stop/Turn Signal Lamp - Right | — | At the left rear of the vehicle, within E42R Rear Body Structure Stop Lamp - Right | — | |
| E5B | Backup Bulb - Right | — | At the rear of vehicle, right rear corner, within E42R Rear Body Structure Stop Lamp - Right | — | |
| E5SB | Tail/Stop and Turn Signal Lamp Bulb - Left | ZW9 | Outside of the vehicle, at the left rear corner of the cargo box, within E42L Rear Body Structure Stop Lamp - Left | — | — |
| E5TB | Tail/Stop and Turn Signal Lamp Bulb - Right | ZW9 | Outside of the vehicle, at the right rear corner of the cargo box, within E42R Rear Body Structure Stop Lamp - Right | — | — |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| E6A | High Mount Stop and Cargo Lamp | — | Outside the vehicle, at the top center of the rear window bridge | — | • <br> • |
| E6B | High Mount Stop Lamp Bulb | — | Outside the vehicle, at the top center of the rear window bridge | — | — |
| E7 | Rear License Plate Lamp | ZW9 | Outside the vehicle, mounted in the left frame rail | — | |
| E7L | Rear License Plate Lamp - Left | E63 | Outside the vehicle, mounted in the middle of the rear bumper | • <br> • | |
| E7R | Rear License Plate Lamp - Right | E63 | Outside the vehicle, mounted in the middle of the rear bumper | • <br> • | |
| E8ZL | Assist Step Lamp - Left | BRS | Under the vehicle, along the left frame rail, under the driver door | — | |
| E8ZR | Assist Step Lamp - Right | BRS | Under the vehicle, along the right frame rail, under the passenger door | — | |
| E12A | Glow Plug 1 | L5P | In the engine compartment, In the cylinder head at cylinder 1 | | |
| E12B | Glow Plug 2 | L5P | In the engine compartment, In the cylinder head at cylinder 2 | | |
| E12C | Glow Plug 3 | L5P | In the engine compartment, In the cylinder head at cylinder 3 | | |
| E12D | Glow Plug 4 | L5P | In the engine compartment, In the cylinder head at cylinder 4 | | |
| E12E | Glow Plug 5 | L5P | In the engine compartment, In the cylinder head at cylinder 5 | | |
| E12F | Glow Plug 6 | L5P | In the engine compartment, In the cylinder head at cylinder 6 | | |
| E12G | Glow Plug 7 | L5P | In the engine compartment, In the cylinder head at cylinder 7 | | |
| E12H | Glow Plug 8 | L5P | In the engine compartment, In the cylinder head at cylinder 8 | | |
| E13LA | Front Headlamp - Left | — | Outside the vehicle, at the left front corner | | • <br> • |
| E13RA | Front Headlamp - Right | — | Outside the vehicle, at the right front corner | | • <br> • |
| E14A | Front Seat Back Heater - Driver | KA1 / KQV | In the passenger compartment, in the driver seat back | | |
| E14B | Front Seat Cushion Heater - Driver | KA1 / KQV | In the passenger compartment, in the driver seat cushion | | |
| E14C | Front Seat Back Heater - Passenger | KA1 / KQV | In the passenger compartment, in the passenger seat back | | |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| E14D | Front Seat Cushion Heater - Passenger | KA1 / KQV | In the passenger compartment, in the passenger seat cushion | | |
| E14F | Rear Seat Cushion Heater - Left Rear | KA6 | In the passenger compartment, in the left rear seat cushion | | |
| E14H | Rear Seat Cushion Heater - Right Rear | KA6 | In the passenger compartment, in the right rear seat cushion | | |
| E15 | Steering Wheel Heater | KI3 | In the passenger compartment, left front, part of the steering wheel | — | — |
| E17D | Outside Rearview Mirror Glass - Driver | — | Outside the vehicle, at the front of the driver door, part of A9A Outside Rearview Mirror - Driver | — | — |
| E17P | Outside Rearview Mirror Glass - Passenger | — | Outside the vehicle, at the front of the passenger door, part of A9B Outside Rearview Mirror - Passenger | — | — |
| E18 | Rear Window Defogger Grid | — | At the rear of the passenger compartment, part of the rear window glass | •<br>• | •<br>• |
| E28 | Front Floor Console Compartment Lamp | D07 | In the passenger compartment, between the front seats, inside the floor console storage bin | | |
| E29LF | Front Fog Lamp - Left | T3U | Outside the vehicle, at the left front corner, in the front bumper, below E13LA Front Headlamp - Left | | |
| E29RF | Front Fog Lamp - Right | T3U | Outside the vehicle, at the right front corner, in the front bumper, below E13RA Front Headlamp - Right | | |
| E31L | Sunshade Mirror Lamp - Left | DH6 | In the passenger compartment, at the left front of the headliner, part of A3L Sunshade - Left | — | |
| E31R | Sunshade Mirror Lamp - Right | DH6 | In the passenger compartment, at the right front of the headliner, part of A3R Sunshade - Right | — | |
| E33L | Cargo Lamp - Left | — | Outside the vehicle, beneath the top of the left side of the bed left rear | — | |
| E33LB | Cargo Box Lamp Bulb - Left | — | In the rear cargo box, left side | — | — |
| E33R | Cargo Lamp - Right | — | Outside the vehicle, beneath the top of the right side of the bed right rear | — | |
| E33RB | Cargo Box Lamp Bulb - Right | — | In the rear cargo box, right side | — | — |
| E33TH | Rear Closure Auxiliary Signal Lamp | — | At the rear of the vehicle, in the center of the endgate | •<br>• | |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| E37SMC | Rear Seat Position Center Reading and Courtesy Lamp | Double Cab / Crew Cab | In the passenger compartment, rear center, mounted to headliner | — | |
| E40 | Air Heater | C32 | In the passenger compartment, at the top of the HVAC box | — | •<br>•<br>• |
| E42L | Rear Body Structure Stop Lamp - Left | — | Outside the vehicle, at the left rear corner of the cargo box | | — |
| E42R | Rear Body Structure Stop Lamp - Right | — | Outside the vehicle, at the right rear corner of the cargo box | | — |
| E52 | Reductant Heater 2 - Injector Supply Pipe | L5P | Under the vehicle, left side, forward of rear axle, attached to reductant line, near reductant tank | •<br>• | |
| E53A | Reductant Heater 1 - Tank | — | Under the vehicle, left side, forward of rear axle, within reductant tank, part of A38 Reductant Tank Fluid Supply Pump Module | — | — |
| E53C | Reductant Heater 3 - Tank | — | Under the vehicle, left side, forward of rear axle, within reductant tank, part of A38 Reductant Tank Fluid Supply Pump Module | — | — |
| E63D | Front Side Door Inside Handle Illumination Lamp - Left | — | In the passenger compartment, in the driver door handle trim panel | — | |
| E63P | Front Side Door Inside Handle Illumination Lamp - Right | — | In the passenger compartment, in the passenger door handle trim panel | — | |
| E90D | Exterior Flood Lamp - Driver Outside Rearview Mirror | DEZ | Outside of vehicle, left side, mounted to the bottom of A9A Outside Rearview Mirror - Driver | — | — |
| E90DC | Exterior Flood Lamp - Driver Outside Rearview Mirror Cargo | DPO / DQS | Outside of the vehicle, left side, at the front of A9A Outside Rearview Mirror - Driver | — | — |
| E90P | Exterior Flood Lamp - Passenger Outside Rearview Mirror | DEZ | Outside of vehicle, right side, mounted to the bottom of A9B Outside Rearview Mirror - Passenger | — | — |
| E90PC | Exterior Flood Lamp - Passenger Outside Rearview Mirror Cargo | DPO / DQS | Outside of the vehicle, right side, at the front of A9B Outside Rearview Mirror - Passenger | — | — |
| F101 | Instrument Panel Airbag | — | In the passenger compartment, behind the instrument panel upper glove box | | •<br>• |
| F105L | Front and Rear Row Roof Rail Airbag - Left | DOUBLE CAB / CREW CAB | In the passenger compartment, along the left side of the headliner | | |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| F105LF | Front Row Roof Rail Airbag - Left | REGULAR CAB | In the passenger compartment, along the left side of the headliner | | |
| F105R | Front and Rear Row Roof Rail Airbag - Right | DOUBLE CAB / CREW CAB | In the passenger compartment, along the right side of the headliner | | |
| F105RF | Front Row Roof Rail Airbag - Right | REGULAR CAB | In the passenger compartment, along the right side of the headliner | | |
| F106D | Front Seat Outboard Seat Back Airbag - Driver | — | In the passenger compartment, in the outboard side of the driver seat back | | |
| F106P | Front Seat Outboard Seat Back Airbag - Passenger | — | In the passenger compartment, in the outboard side of the passenger seat back | | |
| F107 | Steering Wheel Airbag | — | In the passenger compartment, mounted to the middle of the steering wheel | | •<br>• |
| F112D | Front Seat Belt Retractor - Driver | — | In the passenger compartment, at the base of the driver side B-pillar | •<br>• | |
| F112P | Front Seat Belt Retractor - Passenger | — | In the passenger compartment, at the base of the passenger side B-pillar | •<br>• | |
| F113D | Front Seat Belt Anchor Plate Tensioner - Driver | — | In the passenger compartment, mounted to the outboard driver seat track | •<br>• | |
| F113P | Front Seat Belt Anchor Plate Tensioner - Passenger | — | In the passenger compartment, mounted to the outboard passenger seat track | •<br>• | |
| G1 | Air Conditioning Compressor | — | In the engine compartment, left front, mounted to the left lower side of the engine | — | — |
| G12 | Fuel Pump | — | Under the vehicle, within the front fuel tank, part of A7 Fuel Tank Fuel Pump Module | — | — |
| G12AX | Fuel Pump - Auxiliary | — | Under the vehicle, within the rear fuel tank, part of A7AX Fuel Tank Fuel Pump Module Auxiliary | — | |
| G13 | Generator | — | In the engine compartment, right front, mounted to the right upper side of the engine | | •<br>•<br>• |
| G13A | Auxiliary Generator | — | In the engine compartment, right front, mounted to the left lower side of the engine | — | •<br>•<br>•<br>• |
| G18 | Fuel Pump - High Pressure | — | Under hood, mounted to top on engine | | |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| G24 | Windshield Washer Pump | — | In the engine compartment, attached to the washer fluid reservoir, behind E13LA Front Headlamp - Left | | |
| G31D | Front Seat Back Lumbar Pump - Driver | — | In the passenger compartment, left front, within in the driver seat back | — | |
| G31P | Front Seat Back Lumbar Pump - Passenger | — | In the passenger compartment, right front, within in the passenger seat back | — | |
| G33 | Reductant Pump | L5P | Under the vehicle, left side, forward of rear axle, within reductant tank, part of A38 Reductant Tank Fluid Supply Pump Module | — | — |
| G73 | Low Temperature Loop Coolant Pump | L5P | In the engine compartment, left front, attached to bracket near the front of the left lower control arm | | |
| K4 | Running Board Control Module | — | Underneath the vehicle, along the right frame rail, under the right rear door | — | •<br>•<br>• |
| K9 | Body Control Module | — | In the passenger compartment, behind the driver side of the instrument panel, outboard of the steering column | | •<br>•<br>•<br>•<br>•<br>•<br>•<br>• |
| K17 | Electronic Brake Control Module | — | In the engine compartment, left rear, mounted behind X50A Engine Wiring Harness Junction Block | | |
| K20 | Engine Control Module | — | In the engine compartment, left front, behind E13LA Front Headlamp - Left | | •<br>•<br>•<br>•<br>•<br>• |
| K29FV | Front Seat Heater Vent Control Module | KA1 / KQV | In the passenger compartment, right front, under the passenger seat cushion | | •<br>• |
| K32 | Heated Steering Wheel Module | KI3 | In the passenger compart-ment, in the steering wheel, behind the driver air bag | | •<br>• |
| K36 | Restraints Control Module | — | In the passenger compartment, bolted to the floor between the front seats or under console if equipped | •<br>•<br>•<br>• | •<br>• |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| K38 | Chassis Control Module | — | Under the vehicle, mounted to the bracket above the spare tire | — | |
| K40D | Driver Seat Adjuster Memory Module | A45 | In the passenger compartment, left front, mounted to the driver seat, beneath the front of the driver seat cushion | | •<br>•<br>• |
| K40P | Passenger Seat Adjuster Memory Module | — | In the passenger compartment, right front, mounted to the passenger seat, beneath the front of the passenger seat cushion | — | •<br>•<br>• |
| K43 | Power Steering Control Module | — | Under the vehicle, part of the steering gear assembly | | •<br>• |
| K44 | Power Takeoff Control Module | — | Under the vehicle, mounted to the left side frame rail, before transmission cross member support | — | •<br>• |
| K56 | Serial Data Gateway Module | — | In the passenger compartment, left front, between the instrument panel and bulkhead | | •<br>•<br>• |
| K56U | Special Purpose Vehicle Control Module | KGU | In the passenger compartment, left front, between the instrument panel and bulkhead | | |
| K60 | Column Lock Module | BTM | In the passenger compartment, left front, mounted on top of the steering column, underneath instrument panel | •<br>• | |
| K61 | Sunroof Control Module | CF5 | In the passenger compartment, front center, above headliner, rear of A103 Roof Console, forward of sunroof | — | |
| K67 | Trailer Brake Control Module | JL1 | Under the rear of the vehicle, right side, under the cargo box, above the right side of the spare tire | | |
| K68 | Trailer Lamp Control Module | U1D | Under the rear of the vehicle, near spare tire | | |
| K69 | Transfer Case Control Module | NQF / NQH | In the engine compartment, left rear, left of K160 Brake System Control Module | | •<br>• |
| K71 | Transmission Control Module | — | In the engine compartment, left front, behind left corner of the radiator | | |
| K73 | Telematic Control Module | UE1 | In the passenger compartment, left front, between the instrument panel and bulkhead | | •<br>•<br>• |
| K77 | Remote Function Actuator Module | — | In the passenger compartment, right rear corner, below headliner | •<br>• | |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| K85P | Restraints Occupant Classification System Module - Passenger | — | In the passenger compartment, right front, mounted to the passenger seat, beneath the front of the right front seat cushion | — | |
| K104D | Front Seat Bladder Control Module - Driver | — | In the passenger compartment, left front, under the driver seat cushion | — | |
| K104DP | Front Seat Bladder Control Module - Driver Primary | — | In the passenger compartment, left front, within driver seat back | — | |
| K104DS | Front Seat Bladder Control Module - Driver Secondary | — | In the passenger compartment, left front, within driver seat back | — | |
| K104P | Front Seat Bladder Control Module - Passenger | — | In the passenger compartment, right front, mounted in the passenger seat back | — | |
| K104PP | Front Seat Bladder Control Module - Passenger Primary | — | In the passenger compartment, right front, within passenger seat back | — | |
| K104PS | Front Seat Bladder Control Module - Passenger Secondary | — | In the passenger compartment, right front, within passenger seat back | — | |
| K111 | Fuel Pump Power Control Module | — | Under the rear of vehicle, inboard of left frame rail | | •<br>•<br>•<br>•<br>• |
| K115 | Reductant Control Module | L5P | Under the vehicle, left side, in front of rear axle, mounted to the top of reductant tank | •<br>• | |
| K157 | Video Processing Module | UV2 | In the passenger compartment, right rear, mounted behind the rear seat, below the rear window | | •<br>•<br>•<br>•<br>•<br>• |
| K174L | Rear Body Structure Stop Lamp LED Driver Module - Left | — | At the left rear of the vehicle, mounted to the rear of E42L Rear Body Structure Stop Lamp - Left | — | — |
| K174R | Rear Body Structure Stop Lamp LED Driver Module - Right | — | At the right rear of the vehicle, mounted to the rear of E42R Rear Body Structure Stop Lamp - Right | — | — |
| K182 | Parking Assist Control Module | UD5 / UD7 | In the passenger compartment, mounted to the driver side of the rear wall | •<br>• | •<br>•<br>• |
| K194 | Rear Gate Module | QT6 | At the rear of the vehicle, inside of the endgate, behind trim panel, lower left side | | |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| K214 | Trailer Tire Pressure Indicator Module | UET | At the rear of the vehicle, mounted to the center of the rear bumper, near X88B Tow Vehicle Electrical Receptacle | • <br> • | |
| K219 | Lighting Control Module | — | In the passenger compartment, within the instrument panel, left side, mounted in bracket to the left of K9 Body Control Module | — | • <br> • <br> • <br> • <br> • |
| K221L | Headlamp LED Driver Module - Left | — | At the left front of the vehicle, mounted to the rear of E13LA Front Headlamp - Left | — | — |
| K221LL | Headlamp LED Driver Module - Left Lower | — | At the left front of the vehicle, mounted to the rear of E13LA Front Headlamp - Left | — | — |
| K221LU | Headlamp LED Driver Module - Left Upper | — | At the left front of the vehicle, mounted to the rear of E13LA Front Headlamp - Left | — | — |
| K221R | Headlamp LED Driver Module - Right | — | At the right front of the vehicle, mounted to the rear of E13RA Front Headlamp - Right | — | — |
| K221RL | Headlamp LED Driver Module - Right Lower | — | At the right front of the vehicle, mounted to the rear of E13RA Front Headlamp - Right | — | — |
| K221RU | Headlamp LED Driver Module - Right Upper | — | At the right front of the vehicle, mounted to the rear of E13RA Front Headlamp - Right | — | — |
| K234 | Rear Seat Heater Vent Control Module | — | In the passenger compartment, under the left rear seat cushion | | • <br> • |
| M4P | Programmable Air Inlet Valve Actuator | — | In the passenger compartment, behind the instrument panel glove box | — | |
| M6PL | Programmable Temperature Valve Actuator - Left | — | In the passenger compartment, within the instrument panel, left of center, behind front floor console extension panel, mounted to the left side of the HVAC assembly | — | |
| M6PR | Programmable Temperature Valve Actuator - Right | — | In the passenger compartment, within the instrument panel, right of center, behind glove box, attached to the HVAC assembly | — | |
| M7 | Automatic Transmission Shift Lock Control Solenoid | — | In the passenger compartment, right side of the steering wheel, attached to transmission shift lever | — | — |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| M8 | Blower Motor | — | In the passenger compartment, under the right side of the instrument panel, above the hush panel | — | |
| M14A | Pickup Box Endgate Lock Actuator | QK1 | At the rear of the vehicle, within the pickup box endgate, top center of endgate | | |
| M26 | Front Drive Axle Actuator | NQF / NQH | Under the vehicle, mounted to the front axle | — | |
| M37P | Programmable Mode Valve Actuator | — | In the passenger compartment, right front, within instrument panel, attached to HVAC assembly | — | |
| M50D | Front Seat Tilt Adjuster Actuator - Driver | — | In the passenger compartment, under the driver seat | | |
| M50P | Front Seat Tilt Adjuster Actuator - Passenger | — | In the passenger compartment, under the passenger seat | | |
| M51D | Front Seat Adjuster Actuator - Driver | — | In the passenger compartment, under the driver seat | | |
| M51P | Front Seat Adjuster Actuator - Passenger | — | In the passenger compartment, under the passenger seat | | |
| M53D | Front Seat Back Lumbar Motor - Driver | — | In the passenger compart-ment, in the center of the driver seat back | — | |
| M53P | Front Seat Back Lumbar Motor - Passenger | — | In the passenger compartment, right front, mounted inside of the passenger seat back | | |
| M55D | Front Seat Vertical Adjuster Actuator - Driver | — | In the passenger compartment, under the driver seat | | |
| M55P | Front Seat Vertical Adjuster Actuator - Passenger | — | In the passenger compartment, under the passenger seat | •<br>• | |
| M56D | Front Seat Recliner Actuator - Driver | — | In the passenger compart-ment, in the driver seat back | | |
| M56P | Front Seat Recliner Actuator - Passenger | — | In the passenger compart-ment, in the passenger seat back | | |
| M63 | Rear Sliding Window Motor | A48 | In the passenger compartment, mounted to the passenger side of the rear wall, behind the rear seat | | |
| M64 | Starter | — | In the engine compartment, left rear, mounted to rear of engine block | •<br>• | •<br>•<br>•<br>• |
| M72 | Variable Power Steering Solenoid Valve | — | Under the vehicle, part of the steering gear assembly | — | — |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| M73A | Front Seat Back Ventilation Blower - Driver | KQV | In the passenger compart- ment, in the driver seat back | | |
| M73B | Front Seat Back Ventilation Blower - Passenger | KQV | In the passenger compart- ment, in the passenger seat back | | |
| M73D | Front Seat Cushion Ventilation Blower - Driver | KQV | In the passenger compart- ment, in the passenger seat cushion | | |
| M73P | Front Seat Cushion Ventilation Blower - Passenger | KQV | In the passenger compartment, right front, mounted in the passenger seat cushion | | |
| M74D | Front Side Door Window Regulator Motor - Driver | — | In the passenger compart- ment, in the driver door | | |
| M74LR | Rear Side Door Window Regulator Motor - Left | Double Cab / Crew Cab | In the passenger compart- ment, in the left rear door | | |
| M74P | Front Side Door Window Regulator Motor - Passenger | — | In the passenger compart- ment, in the passenger door | | •<br>• |
| M74RR | Rear Side Door Window Regulator Motor - Right | Double Cab / Crew Cab | In the passenger compart- ment, in the right rear door | | |
| M75 | Windshield Wiper Motor | — | Outside the vehicle, at the left rear of the engine compartment, below the left lower corner of the windshield | | |
| M77D | Outside Rearview Mirror Actuator - Driver | — | Outside the vehicle, at the front of the driver door, within the A9A Outside Rearview Mirror - Driver | — | — |
| M77P | Outside Rearview Mirror Actuator - Passenger | — | Outside the vehicle, at the front of the passenger door, within the A9B Outside Rearview Mirror - Passenger | — | — |
| M78D | Outside Rearview Mirror Folding Actuator - Driver | A45 | Outside the vehicle, at the front of the driver door, within the A9A Outside Rearview Mirror - Driver | — | — |
| M78ED | Outside Rearview Mirror Extend Actuator - Driver | — | Outside the vehicle, at the front of the driver door, within the A9A Outside Rearview Mirror - Driver | — | — |
| M78EP | Outside Rearview Mirror Extend Actuator - Passenger | — | Outside the vehicle, at the front of the passenger door, within the A9B Outside Rearview Mirror - Passenger | — | — |
| M78P | Outside Rearview Mirror Folding Actuator - Passenger | A45 | Outside the vehicle, at the front of the passenger door, within the A9B Outside Rearview Mirror - Passenger | — | — |
| M95L | Assist Step Motor - Left | BRS | Under the vehicle, along the left frame rail, under the driver door | — | — |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| M95R | Assist Step Motor - Right | BRS | Under the vehicle, along the right frame rail, under the passenger door | — | — |
| M96A | Active Grille Air Shutter Actuator 1 | VTI | At the front of the vehicle, center, attached to the inside of the front grille | | |
| M103 | Turbocharger Vane Position Actuator | L5P | In the engine compartment, right side, mounted to turbocharger | | |
| M104L | Parking Brake Actuator - Left | — | Under the vehicle, left rear, attached to the left rear brake caliper | | |
| M104R | Parking Brake Actuator - Right | — | Under the vehicle, right rear, attached to the right rear brake caliper | | |
| M125 | Pickup Box Endgate Power Assist Actuator | QT6 | Outside of the vehicle, within the endgate, lower right corner | | |
| M151L | Pickup Box Endgate Cinch Latch Actuator - Left | QT6 | At the rear of the vehicle, within endgate, on the left side | | |
| M151R | Pickup Box Endgate Cinch Latch Actuator - Right | QT6 | At the rear of the vehicle, within endgate, on the right side | | |
| P3 | Backup Alarm | 8S3 | Outside the vehicle, under rear frame rail | — | |
| P13 | Horn | — | At the front of the vehicle, right side, mounted to the right front of the radiator core support | | |
| P16 | Instrument Panel Cluster Control Module | — | In the passenger compartment, in the driver side of the instrument panel | | •<br>• |
| P19AFC | Front Floor Speaker - Console | — | In the passenger compartment, center, beneath floor console | •<br>• | |
| P19AG | Radio Front Side Door Speaker - Left | — | In the passenger compartment, in the driver door | | |
| P19AH | Radio Front Side Door Speaker - Right | — | In the passenger compartment, in the passenger door | | |
| P19AL | Radio Rear Side Door Speaker - Left | — | In the passenger compartment, in the left rear door | | |
| P19ALU | Radio Rear Side Door Upper Speaker - Left | — | Attached to the left rear door trim panel, towards the front, at the top | — | |
| P19AM | Radio Rear Side Door Speaker - Right | — | In the passenger compartment, in the right rear door | | |
| P19AMU | Radio Rear Side Door Upper Speaker - Right | — | Attached to the right rear door trim panel, towards the front, at the top | — | |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| P19B | Radio Front Center Speaker | — | In the passenger compartment, front center, in the center of the instrument panel, beneath the radio front center speaker grille | — | |
| P19H | Radio Windshield Side Garnish Molding Speaker - Left Front | — | Inside the vehicle, at the base of the A pillar | — | |
| P19J | Radio Front Speaker - Instrument Panel Left | — | In the passenger compartment, in the top of the left side of the instrument panel | • <br> • | • <br> • <br> • |
| P19V | Radio Windshield Side Garnish Molding Speaker - Right Front | — | Inside the vehicle, at the base of the A pillar | — | |
| P19W | Radio Front Speaker - Instrument Panel Right | — | In the passenger compartment, in the top of the right side of the instrument panel | • <br> • | • <br> • <br> • |
| P29 | Head-Up Display | UV6 | In the passenger compartment, at the left side of the instrument panel, near the windshield | • <br> • | • <br> • |
| P34D | Side Object Detection Indicator - Driver | UKC | Outside of the vehicle, left side, part of E17D Outside Rearview Mirror Glass - Driver, within A9A Outside Rearview Mirror - Driver | — | — |
| P34P | Side Object Detection Indicator - Passenger | UKC | Outside of the vehicle, left side, part of E17P Outside Rearview Mirror Glass - Passenger, within A9B Outside Rearview Mirror - Passenger | — | — |
| P43 | Forward Collision Alert Display | (UHX / UEU) - UV6 | In the passenger compartment, in the top of the instrument panel, near the windshield, in front of the driver | • <br> • | |
| P45L | Front Seat Lane Departure Warning Actuator - Left | — | In the passenger compartment, in the left side of the driver seat cushion | | |
| P45R | Front Seat Lane Departure Warning Actuator - Right | — | In the passenger compartment, in the right side of the driver seat cushion | | |
| P53 | Driver Information Display | IOR | In the passenger compartment, at the center of the instrument panel, above S192 Radio Function Switch | — | • <br> • |
| Q2 | Air Conditioning Clutch | — | In the engine compartment, left front, part of G1 A/C Compressor | | |
| Q5 | Brake Pressure Modulator Valve | — | In the engine compartment, left rear, mounted behind X50A Engine Wiring Harness Junction Block | — | — |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| Q6 | Camshaft Position Actuator Solenoid Valve | L8T | In the engine compartment, front center, mounted to timing chain cover, above crankshaft harmonic balancer | — | |
| Q9R | Differential Locking Actuator - Rear | — | Under the vehicle, rear center, mounted to the top left side of the rear differential carrier | — | |
| Q12 | Evaporative Emission Canister Purge Solenoid Valve | L8T | In the engine compartment, front center, mounted to intake manifold, to the left of Q38 Throttle Body | | |
| Q13 | Evaporative Emission Canister Vent Solenoid Valve | — | On the underbody, at the top left side of the fuel tank | | |
| Q14 | Exhaust Gas Recirculation Valve | L5P | In the engine compartment, right side, mounted above exhaust manifold | •<br>• | |
| Q17A | Fuel Injector 1 | — | • (L8T) In the engine compartment, underneath intake manifold, next to cylinder 1 intake port on the cylinder head<br>• (L5P) In the engine compartment, center, mounted to valve cover above cylinder 1 | •<br>• | •<br>• |
| Q17B | Fuel Injector 2 | — | • (L8T) In the engine compartment, underneath intake manifold, next to cylinder 2 intake port on the cylinder head<br>• (L5P) In the engine compartment, center, mounted to valve cover above cylinder 2 | •<br>• | •<br>• |
| Q17C | Fuel Injector 3 | — | • (L8T) In the engine compartment, underneath intake manifold, next to cylinder 3 intake port on the cylinder head<br>• (L5P) In the engine compartment, center, mounted to valve cover above cylinder 3 | •<br>• | •<br>• |
| Q17D | Fuel Injector 4 | — | • (L8T) In the engine compartment, underneath intake manifold, next to cylinder 4 intake port on the cylinder head<br>• (L5P) In the engine compartment, center, mounted to valve cover above cylinder 4 | •<br>• | •<br>• |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| Q17E | Fuel Injector 5 | — | • (L8T) In the engine compartment, underneath intake manifold, next to cylinder 5 intake port on the cylinder head<br>• (L5P) In the engine compartment, center, mounted to valve cover above cylinder 5 | •<br>•<br>• | •<br>• |
| Q17F | Fuel Injector 6 | — | • (L8T) In the engine compartment, underneath intake manifold, next to cylinder 6 intake port on the cylinder head<br>• (L5P) In the engine compartment, center, mounted to valve cover above cylinder 6 | •<br>• | •<br>• |
| Q17G | Fuel Injector 7 | — | • (L8T) In the engine compartment, underneath intake manifold, next to cylinder 7 intake port on the cylinder head<br>• (L5P) In the engine compartment, center, mounted to valve cover above cylinder 7 | •<br>• | •<br>• |
| Q17H | Fuel Injector 8 | — | • (L8T) In the engine compartment, underneath intake manifold, next to cylinder 8 intake port on the cylinder head<br>• (L5P) In the engine compartment, center, mounted to valve cover above cylinder 8 | •<br>• | •<br>• |
| Q18A | Fuel Pressure Regulator 1 | L5P | In the engine compartment, left rear side of engine, below Q18C Fuel Pressure Regulator 3, attached to G18 High Pressure Fuel Pump | | |
| Q18B | Fuel Pressure Regulator 2 | L5P | In the engine compartment, left side of engine, mounted to the left rear side of the valve cover | | |
| Q20 | Intake Airflow Control Valve | L5P | In the engine compartment, at the front of the engine, mounted to the intake manifold inlet | | |
| Q32P | Shift Solenoid Valve - Power Take-Off | — | Under the vehicle, mounted to the left side frame rail | — | |
| Q38 | Throttle Body | — | In the engine compartment, at the front of the engine, mounted to the intake manifold inlet | •<br>• | |
| Q44 | Engine Oil Pressure Control Solenoid Valve | — | In the engine compartment, at the front of the engine, behind the front cover | — | |
| Q46 | Air Conditioning Compressor Solenoid Valve | — | In the engine compartment, left front, part of G1 A/C Compressor | | |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| Q47 | Exhaust Gas Recirculation Cooler Bypass Solenoid Valve | — | In the engine compartment, right side, mounted on top of engine | | |
| Q61 | Reductant Fluid Injector | L5P | In the engine compartment, right front, mounted to the exhaust, in front of diesel particulate filter | | |
| Q64 | Evaporative Emission System Switching Valve | L8T | Under the vehicle, on top of primary fuel tank | | |
| Q67 | Exhaust Aftertreatment Fuel Injector | — | Under the vehicle, attached to the exhaust pipe, at the middle of the diesel particulate filter | — | •<br>• |
| Q77A | Transmission Control Solenoid Valve 1 | — | Under the vehicle, inside the T12 Automatic Transmission | — | |
| Q77B | Transmission Control Solenoid Valve 2 | — | Under the vehicle, inside the T12 Automatic Transmission | — | |
| Q77C | Transmission Control Solenoid Valve 3 | — | Under the vehicle, inside the T12 Automatic Transmission | — | |
| Q77D | Transmission Control Solenoid Valve 4 | — | Under the vehicle, inside the T12 Automatic Transmission | — | |
| Q77E | Transmission Control Solenoid Valve 5 | — | Under the vehicle, inside the T12 Automatic Transmission | — | |
| Q77F | Transmission Control Solenoid Valve 6 | — | Under the vehicle, inside the T12 Automatic Transmission | — | |
| Q77G | Transmission Control Solenoid Valve 7 | — | Under the vehicle, inside the T12 Automatic Transmission | — | |
| Q77H | Transmission Control Solenoid Valve 8 | — | Under the vehicle, inside the T12 Automatic Transmission | — | |
| Q77J | Transmission Control Solenoid Valve 9 | — | Under the vehicle, inside the T12 Automatic Transmission | — | |
| Q85 | Cooling Fan Clutch | — | In the engine compartment, front of engine, attached to fan | — | |
| R6A | Terminating Resistor - High Speed Bus | UKL / (- UKC - UKV) | At the rear of the vehicle, attached to the inside of the rear bumper | | |
| R12 | Power Take-Off Switch Diode | — | In the passenger compartment, behind the middle of the instrument panel | — | |
| R29 | Fuel Filter | L5P | Under the vehicle, mounted to the inboard side of the left frame rail | | |
| R55 | Fuel Pump Module Diode | — | Under the vehicle, inside chassis harness, near K111 Fuel Pump Power Control Module | — | — |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| S2 | Automatic Transmission Manual Shift Shaft Position Switch | MQE | Underneath the vehicle, within T12 Automatic Transmission | — | — |
| S3 | Automatic Transmission Control | — | In the passenger compartment, mounted to the steering column | — | |
| S3C | Automatic Transmission Control Lever | MHT / MQB / MQE | In the passenger compartment, left front, on the steering column shifter | | |
| S13D | Door Lock Switch - Driver | — | In the passenger compartment, in the driver door handle trim panel | — | • <br> • |
| S13P | Door Lock Switch - Passenger | — | In the passenger compartment, in the passenger door handle trim panel | — | • <br> • |
| S25 | Garage Door Opener Transmitter | — | In the passenger compartment, front center, part of A103 Roof Console | — | — |
| S27 | Head-Up Display Switch | UV6 | In the passenger compartment, left front, left of the steering column, in the instrument panel | | |
| S30 | Headlamp Switch | — | In the passenger compartment, left of the steering column, in the instrument panel | | |
| S32R | Rear Seat Heater Switch | KA6 | In the passenger compartment, center, on the rear of the floor console | | |
| S33 | Steering Wheel Horn Contact | — | In the passenger compartment, in the center of the steering wheel, behind the driver side air bag | | • <br> • |
| S38 | On/Off Vehicle Switch | BTM | In the passenger compartment, right of the steering column, in the instrument panel | — | |
| S47D | Front Seat Adjuster Memory Switch - Driver | — | In the passenger compartment, left front, on the driver door panel forward of the inside driver door handle | — | |
| S51 | Communication Center Call Switch | UE1 | In the passenger compartment, part of the inside rearview mirror | — | — |
| S64D | Front Seat Adjuster Switch - Driver | — | In the passenger compartment, mounted to the outboard side of the driver seat cushion | | • <br> • |
| S64P | Front Seat Adjuster Switch - Passenger | — | In the passenger compartment, mounted to the outboard side of the passenger seat cushion | • <br> • | • <br> • |
| S65D | Front Seat Lumbar Switch - Driver | A2X | In the passenger compartment, mounted to the outboard side of the driver seat cushion | | • <br> • |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| S65P | Front Seat Lumbar Switch - Passenger | A7K | In the passenger compartment, mounted to the outboard side of the passenger seat cushion | •<br>• | •<br>• |
| S70E | Radio Favorites Switch - Steering Wheel | — | In the passenger compartment, on the left rear side of the steering wheel | — | |
| S70F | Radio Volume Switch - Steering Wheel | — | In the passenger compartment, on the right rear side of the steering wheel | — | |
| S70L | Cruise Control Switch | — | In the passenger compartment, on the left side of the steering wheel | | •<br>• |
| S70R | Radio Control Switch - Steering Wheel | — | In the passenger compartment, on the right side of the steering wheel | | |
| S76 | Trailer Brake Control Switch | — | In the passenger compartment, center of the instrument panel, below S48C Multifunction Switch 1 - Instrument Panel | | •<br>• |
| S78 | Turn Signal Switch | — | In the passenger compartment, on the left side of the steering column | | |
| S79D | Front Side Door Window Control Switch - Driver | — | In the passenger compartment, behind the driver door trim panel, center of the door | — | •<br>• |
| S79LR | Rear Side Door Window Switch - Left | — | In the passenger compartment, at the center of the left rear door, on the door trim panel | | |
| S79P | Front Side Door Window Switch - Passenger | — | In the passenger compartment, on the passenger door trim panel, center of the door | — | •<br>• |
| S79RR | Rear Side Door Window Switch - Right | — | In the passenger compartment, on the right rear door trim panel, center of the door | | |
| S86 | Vehicle Stability Control System Switch | — | In the passenger compartment, front center, attached to instrument panel, between S171L Instrument Panel Center Accessory Function Switch - Left and S171R Instrument Panel Center Accessory Function Switch - Right | | |
| S91 | Parking Brake Control Switch | — | In the passenger compartment, left front, mounted to the left side of the instrument panel bezel, left of S126 Ride Control Switch | | |
| S126 | Ride Control Switch | URC | In the passenger compartment, left front, left side of the instrument panel, left of the S30 Headlamp Switch | | |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| S158 | Liftgate Exterior Release Switch - Auxiliary Endgate | — | At the rear of the vehicle, mounted to the rear of the pickup box endgate, top center of the endgate | | |
| S159E | Liftgate Exterior Release Switch - Endgate | QT6 / QK2 | Outside of the vehicle, at the rear of the vehicle, on the endgate | • <br> • | |
| S171L | Instrument Panel Center Accessory Function Switch - Left | — | • (IOR) In the passenger compartment, mounted to the instrument panel, beneath A26 HVAC Controls, left switch bank <br> • (IOK) In the passenger compartment, mounted to the instrument panel, beneath driver information display, left switch bank | | |
| S171R | Instrument Panel Center Accessory Function Switch - Right | — | • (IOR) In the passenger compartment, mounted to the instrument panel, beneath A26 HVAC Controls, right switch bank <br> • (IOK) In the passenger compartment, mounted to the instrument panel, beneath driver information display, right switch bank | | |
| S172 | Auxiliary Multifunction Switch | 9L7 | In the passenger compartment, mounted to the instrument panel | — | |
| S192 | Radio Function Switch | IOR | In the passenger compartment, at the center of the instrument panel, below P53 Driver Information Display | — | |
| T1 | DC/AC Converter Control Module | KI4 / KI5 | In the passenger compartment, rear center, mounted to the rear wall | • <br> • <br> • | • <br> • |
| T3 | Audio Amplifier | UQA | In the rear passenger compartment, mounted behind the rear seat, below the rear window | | • <br> • <br> • |
| T4M | Radio Antenna | — | Outside the vehicle, at the right rear of the hood | | |
| T4P | High Frequency Antenna | — | Outside of the vehicle | | • <br> • <br> • |
| T4S | Wireless Communication Antenna - Bluetooth | — | Outside the vehicle, at the rear of the right front fender | — | — |
| T4TA | Auxiliary Wireless Communication Interface Antenna | — | In the passenger compartment, front center, below instrument panel upper trim panel, behind HVAC vent | | |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| T8A | Ignition Coil 1 | L8T | In the engine compartment, at the top of the engine, above cylinder 1 | | |
| T8B | Ignition Coil 2 | L8T | In the engine compartment, at the top of the engine, above cylinder 2 | | |
| T8C | Ignition Coil 3 | L8T | In the engine compartment, at the top of the engine, above cylinder 3 | | |
| T8D | Ignition Coil 4 | L8T | In the engine compartment, at the top of the engine, above cylinder 4 | | |
| T8E | Ignition Coil 5 | L8T | In the engine compartment, at the top of the engine, above cylinder 5 | | |
| T8F | Ignition Coil 6 | L8T | In the engine compartment, at the top of the engine, above cylinder 6 | | |
| T8G | Ignition Coil 7 | L8T | In the engine compartment, at the top of the engine, above cylinder 7 | | |
| T8H | Ignition Coil 8 | L8T | In the engine compartment, at the top of the engine, above cylinder 8 | | |
| T10G | Low Frequency Rear Bumper Antenna | — | At the rear of the vehicle, center, mounted to the inside of the rear bumper | •<br>• | |
| T10J | Low Frequency Instrument Panel Antenna | (- D07) | In the passenger compartment, front center, within instrument panel, forward of radio control | — | |
| T10KA | Low Frequency Console Number 2 Antenna | D07 | In the passenger compartment, center, inside the floor console, beneath the cupholders at the rear | | |
| T10M | Low Frequency Front Side Door Outside Handle Antenna - Left | — | Outside of the vehicle, left side, within A24D Front Side Door Outside Handle - Left | — | — |
| T10N | Low Frequency Front Side Door Outside Handle Antenna - Right | — | Outside of the vehicle, right side, within A24P Front Side Door Outside Handle - Right | — | — |
| T10UA | Low Frequency Console Antenna | — | In the passenger compartment, under floor console | •<br>• | •<br>• |
| T12 | Automatic Transmission | — | Under the vehicle, mounted to the rear of the engine | | •<br>•<br>• |
| T22 | Wireless Accessory Charging Module | K4C | In the passenger compartment, forward of center, in the floor console bin lid. | | |
| W1 | Blunt Cut - Camper/5th Wheel Provision | — | On the vehicle exterior, at the rear of the vehicle, left of the license plate | — | — |
| W11 | Blunt Cut - Emergency Vehicle Roof Lamp | 9L7 | In the rear center, taped to the high mount stop lamp wiring harness | — | — |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| W24 | Blunt Cut - Trailer Brakes Provision | Z82 - JL1 | In the passenger compartment, under left side of the instrument panel | — | — |
| W25 | Blunt Cut - Configurable/ Accessory Relay | 9L7 | In the passenger compartment, under the instrument panel, left of the brake pedal | — | — |
| W30 | Blunt Cut - Snow Plow | VYU | Accessory Package Component - Location on vehicle may vary per installation | — | — |
| X50A | Engine Wiring Harness Junction Block | — | In the engine compartment, left front, behind C1 Battery | • <br>• <br>• | *Electrical Center Identification Views 7-30* |
| X50B | Battery Distribution Engine Compartment Fuse Block | — | In the engine compartment, right rear, on top of wheel well | • <br>• | *Electrical Center Identification Views 7-30* |
| X50EA | Battery Distribution Fuse Block - Auxiliary | — | In the engine compartment, left, on top of C1B Auxiliary Battery | — | *Electrical Center Identification Views 7-30* |
| X51AX | Instrument Panel Wiring Harness Junction Block - Auxiliary | 9L7 | In the passenger compartment, left front, within instrument panel, forward of driver trim panel | — | *Electrical Center Identification Views 7-30* |
| X51R | Instrument Panel Wiring Harness Junction Block - Right | — | In the passenger compartment, right side of the instrument panel, behind side trim panel | | *Electrical Center Identification Views 7-30* |
| X53AF | Body Wiring Harness Junction Block | — | In the passenger compartment, left side of the instrument panel, behind the instrument panel fuse block access hole cover | — | *Electrical Center Identification Views 7-30* |
| X54 | Accessory Wiring Junction Block - Snow Plow | — | Accessory Package Component - Location on vehicle may vary per installation | — | *Electrical Center Identification Views 7-30* |
| X55SP | Wiring Harness Fuse Holder - Snow Plow | VYU | Accessory Package Component - Location on vehicle may vary per installation | — | *Electrical Center Identification Views 7-30* |
| X80G | Accessory Power Receptacle - Instrument Panel | — | In the passenger compartment, front center, in the instrument panel, beneath A26 HVAC Controls | — | |
| X81ACA | Front Floor Console Accessory Power Rear Receptacle - 110V AC | KI4 & D07 | In the passenger compartment, center, mounted to the rear of the floor console | | |
| X81AI | Accessory Power Receptacle - Instrument Panel 110V AC | KI4 - AZ3 - D07 | In the passenger compartment, front center, in the instrument panel, beneath S171R Instrument Panel Center Accessory Function Switch - Right | — | |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| X81AP | Pickup Box Accessory Power Receptacle - 110V AC | KC9 | Outside of the vehicle, right rear corner of the truck bed | — | |
| X81BCA | Front Floor Console Accessory Power Rear Receptacle - 220V AC | KI5 & D07 | In the passenger compartment, center, mounted to the rear of the floor console | — | |
| X81BI | Accessory Power Receptacle - Instrument Panel 220V AC | KI4 - AZ3 - D07 | In the passenger compartment, front center, in the instrument panel, beneath S171R Instrument Panel Center Accessory Function Switch - Right | — | |
| X81BP | Pickup Box Accessory Power Receptacle - 220V AC | KCA | Outside of the vehicle, right rear corner of the truck bed | — | |
| X81FSA | Accessory Power Receptacle - Front Center Seat Rear Cover 110V AC | AZ3 & KI4 | In the passenger compartment, center, mounted to the lower rear portion of the front center seat | | |
| X81FSB | Accessory Power Receptacle - Front Center Seat Rear Cover 220V AC | AZ3 & KI5 | In the passenger compartment, center, mounted to the lower rear portion of the front center seat | — | |
| X83B | Audio/Video Receptacle | UBC | In the passenger compartment, front center, inside of the floor console bin, left front | | •<br>•<br>• |
| X84 | Data Link Connector | — | In the passenger compartment, at the bottom of the driver side of the instrument panel | | |
| X85 | Steering Wheel Airbag Coil | — | In the passenger compartment, behind the steering wheel | | •<br>• |
| X88B | Tow Vehicle Electrical Receptacle | — | Opening Molding | | •<br>•<br>•<br>•<br>• |
| X88GB | Tow Vehicle Electrical Receptacle - 5th Wheel/Camper | — | Rear of vehicle, mounted on left rear lower corner, of truck bed | — | |
| X92CD | Dual Charge Only Receptacle - Floor Console Rear | D07 & UBI | In the passenger compartment, center, mounted to the rear of the floor console | | |
| X92CF | USB 2 Port Receptacle - Floor Console Front | — | In the passenger compartment, front center, in console, forward and to the left of the cup holders | — | •<br>• |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| X92FSR | Dual Charge Only Receptacle - Front Center Seat Rear Cover | AZ3 & UBI | In the passenger compartment, center, mounted to the lower rear portion of the front center seat | | |
| X92IP | USB 2 Port Receptacle - Instrument Panel | — | In the passenger compartment, front center of instrument panel, mounted to the right side of the instrument panel accessory bezel | | •<br>•<br>•<br>• |
| X122 | Front View Camera Switch Wiring Harness to Body Wiring Harness | UV2 | At the front of the vehicle, right side, between the right side of the radiator core support and E13RA Front Headlamp - Right | | |
| X125 | Body Wiring Harness to Engine Wiring Harness | — | In the engine compartment, left front, near air box | •<br>•<br>•<br>• | |
| X128 | Engine Wiring Harness to Camshaft Position Sensor Wiring harness | L8T | In the engine compartment, left front, near the front of the bank 1 cylinder head | | |
| X129 | Camshaft Position Sensor Wire to Oil Pump Flow Control Solenoid Valve Wire | L8T / L5P | Under the vehicle, in right front wheel well, near frame rail | — | |
| X135 | Engine Wiring Harness to Battery Positive Cable | — | In the engine compartment, left side of engine compartment by battery | | |
| X150 | Front Object Alarm Sensor Wiring Harness to Body Wiring Harness | UKL | At the front of the vehicle, right side, between the lower right side of the radiator core support and E13RA Front Headlamp - Right | •<br>• | |
| X160 | Engine Wiring Harness to Fuel Injector Wiring Harness - Left | L8T | In the engine compartment, rear of the engine near the top center | | |
| X161 | Engine Wiring Harness to Fuel Injector Wiring Harness - Right | L8T | In the engine compartment, rear of the engine near the top right | | |
| X175P | Engine Wiring Harness Chassis to PTO Harness | — | Under the vehicle, mounted to left front of transmission | — | |
| X176 | Automatic Transmission Wiring Harness to Automatic Transmission Wiring Harness | — | Under the vehicle, inside the T12 Automatic Transmission | — | |
| X210 | Instrument Panel Wiring Harness to Body Wiring Harness | — | In the passenger compartment, left front, behind the left front trim panel beneath the A-pillar | •<br>• | |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| X211 | Instrument Panel Wiring Harness to Body Wiring Harness | — | In the passenger compartment, right front, below passenger a-pillar, behind passenger trim panel | • • • • | |
| X213 | Auxiliary Fuse Block Wiring Harness to Instrument Panel Wiring Harness | — | In the passenger compartment, left front, behind the left side of instrument panel | | |
| X217 | Body Wiring Harness to Instrument Panel Wiring Harness | — | In the passenger compartment, right front, below passenger a-pillar, behind passenger trim panel | • • • | |
| X218 | Instrument Panel Wiring Harness to Body Wiring Harness | — | In the passenger compartment, right front, below passenger a-pillar, behind passenger trim panel | • • | |
| X226 | Front Floor Console Wiring Harness to Instrument Panel Wiring Harness | D07 | In the passenger compartment, front center, beneath right front side of floor console | • • | |
| X227 | Front Seat Wiring Harness - Center to Body Wiring Harness | — | In the passenger compartment, center, beneath right rear of floor console | • • • • • • | • • |
| X237 | Instrument Panel Wiring Harness to Instrument Panel Airbag Wiring Harness | — | In the passenger compartment, right front, within instrument panel, near right side of instrument panel tie bar | — | |
| X250 | Instrument Panel Wiring Harness to Heater Wiring Harness | — | In the passenger compartment, above the gas pedal near the left side of the HVAC assembly | | |
| X251 | Air Heater Jumper Wiring Harness to Body Wiring Harness | C32 | In the passenger compartment, right front, behind passenger front kick panel | • • | |
| X309A | Body Wiring Harness to Inside Rearview Mirror Wiring Harness | — | In the passenger compartment, left rear, above the headliner | • • | |
| X324 | Body Wiring Harness to Body Rear Wiring Harness Extension Harness | KI5 | In the passenger compartment, rear center, beneath rear window | | |
| X331 | Front Seat Wiring Harness - Driver to Body Wiring Harness | — | In the passenger compartment, left side, beneath driver seat | • • • • • | |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| X336 | Front Seat Wiring Harness - Passenger to Body Wiring Harness | — | In the passenger compartment, right side, beneath passenger seat | •<br>•<br>•<br>•<br>• | |
| X340 | Body Wiring Harness to Rear Seat Heater Control Wiring Harness | KA6 | In the passenger compartment, left rear, behind rear seat, beneath rear window | •<br>•<br>• | |
| X360 | Chassis Wiring Harness to Fuel Pump Power Control Module Harness | — | Under the vehicle, near the fuel pump and level sensor assembly | — | |
| X370A | Dome Lamp Wiring Harness to Instrument Panel Wiring Harness | -GFF / GFI | In the passenger compartment, on top of the right side of the instrument panel under the top cover. | •<br>• | |
| X370B | Dome Lamp Wiring Harness to Instrument Panel Wiring Harness | GFF / GFI | In the passenger compartment, on the right side of the instrument panel under the glovebox. | — | |
| X371A | Inside Rearview Mirror Wiring Harness to Dome Lamp Wiring Harness | — | In the passenger compartment, left rear, above the headliner | | •<br>• |
| X375 | Sunroof Wiring Harness to Dome Lamp Wiring Harness | CF5 | In the passenger compartment, front center, above headliner, above A103 Roof Console | — | |
| X382 | Windshield Outside Mois-ture_Ambient Light and Humidity Sensor to Dome Lamp Wiring Harness | ASV | In the passenger compartment, front center, forward of A103 Roof Console | | |
| X401 | Chassis Wiring Harness to Engine Wiring Harness | L5P | In the engine compartment, left front, inboard of left frame rail, near engine cross member | •<br>• | |
| X402A | Body Wiring Harness to Chassis Wiring Harness | UV2 | In the engine compartment, behind left front wheel liner, rearward of suspension | | |
| X402B | Body Wiring Harness to Chassis Wiring Harness | UV2 | In the engine compartment, behind left front wheel liner, rearward of suspension | | |
| X402C | Body Wiring Harness to Chassis Wiring Harness | UV2 | In the engine compartment, behind left front wheel liner, rearward of suspension | •<br>• | |
| X404 | Chassis Wiring Harness to Emission Reduction Fluid Tank Reservoir Wire Harness | L5P | Under the vehicle, right rear, forward of rear axle, inboard of right frame rail | | |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| X410 | Body Wiring Harness to Chassis Wiring Harness | — | In the engine compartment, top left side, rear of grounds on left side of body | •<br>• | |
| X412 | Assist Step Motor jumper to Chassis Wiring Harness | BRS | Under the vehicle, left rear, forward of left front leaf spring hanger, outboard of left frame rail | | |
| X413 | Assist Step Motor jumper to Chassis Wiring Harness | BRS | Under the vehicle, right rear, forward of right front leaf spring hanger, outboard of right frame rail | — | |
| X414 | Chassis Rear Wiring Harness to Chassis Wiring Harness | KC9 / KCA | At the rear of the vehicle, right side, forward of rear bumper, inboard of right frame rail, rearward of frame cross member | | |
| X415 | Engine Wiring Harness to Transfer Case Selector Shift Control Switch Wiring Harness Extension Harness | NQF / NQH | In the engine compartment, lower left side of engine | •<br>• | |
| X420A | Chassis Rear Wiring Harness Extension Harness to Chassis Wiring Harness | — | Under the rear of the vehicle, above rear differential attached to bracket that is mounted to frame cross member | | |
| X420B | Chassis Rear Wiring Harness Extension Harness to Chassis Wiring Harness | — | Under the rear of the vehicle, above rear differential attached to bracket that is mounted to frame cross member | | •<br>• |
| X421A | Chassis Wiring Harness to Chassis Rear Wiring Harness Extension Harness | — | Outside the vehicle, mounted to the outboard end of the right axle tube | — | |
| X421B | Chassis Wiring Harness to Chassis Rear Wiring Harness Extension Harness | — | Outside the vehicle, mounted to the outboard end of the left axle tube | — | |
| X424 | Body Wiring Harness to Chassis Wiring Harness | FHS | Under the vehicle, in the left front wheel well, on top of the left front strut tower | •<br>• | |
| X426 | Chassis Wiring Harness to Chassis Wiring Harness | — | In the engine compartment, mounted next to the battery | | •<br>• |
| X480 | Chassis Wiring Harness to Trailer Rear Wiring Harness | — | At rear of vehicle, behind rear bumper | | |
| X481 | Trailer Rear Wiring Harness to Trailer Rear Wiring Harness | — | At rear of vehicle, behind rear bumper | — | |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| X500 | Front Side Door Door Wiring Harness - Left to Body Wiring Harness | — | In the passenger compartment, behind the left side of the instrument panel | •<br>• | |
| X505 | Front Side Door Door Wiring Harness - Left to Front Side Door Door Lock Door Wiring Harness - Left | — | In the driver door, behind the driver door panel | | |
| X600 | Front Side Door Door Wiring Harness - Right to Body Wiring Harness | — | In the passenger compartment, behind the right side of the instrument panel | •<br>•<br>• | |
| X605 | Front Side Door Door Wiring Harness - Right to Front Side Door Door Lock Door Wiring Harness - Right | — | In the passenger door, behind the passenger door panel | | |
| X630 | Battery Positive Cable Extension Cable to Auxiliary Fuse Block Wiring Harness | 9L7 | In the passenger compartment, left front, within instrument panel, left side, taped to the instrument panel wiring harness | — | |
| X700 | Rear Side Door Door Wiring Harness - Left to Body Wiring Harness | Double Cab / Crew Cab | In the passenger compartment, behind the left B-pillar, near the middle | •<br>•<br>• | |
| X701 | Rear Side Door Door Wiring Harness - Left to Rear Side Door Wiring Harness | UQS | Attached to the left rear door trim panel, towards the front, at the top | | |
| X800 | Rear Side Door Door Wiring Harness - Right to Body Wiring Harness | Double Cab / Crew Cab | In the passenger compartment, behind the right B-pillar, near the middle | •<br>• | |
| X801 | Rear Side Door Door Wiring Harness - Right to Rear Side Door Wiring Harness | UQS | Attached to the right rear door trim panel, towards the front, at the top | | |
| X850 | Roof Wiring Harness to Instrument Panel Wiring Harness | — | In the passenger compartment, at the top of the left A pillar | | |
| X853 | Rear Lamp Wiring Harness to Rear License Plate Lamp Wiring Harness Extension Harness - Left | — | Outside the vehicle, mounted near the left wheel opening molding | — | |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| X856 | Rear Lamp Wiring Harness to Rear License Plate Lamp Wiring Harness Extension Harness - Right | — | Outside the vehicle, mounted near the right wheel opening molding | — | |
| X910A | Tail Lamp Wiring Harness - Left to Chassis Wiring Harness | — | At the rear of the vehicle, left corner, underneath, on left frame rail | | • <br> • |
| X910C | Tail Lamp Wiring Harness - Left to Left Side Marker Lamp Harness | — | At the rear of the vehicle, left corner, underneath, on left frame rail | — | |
| X918 | Endgate Wiring Harness to Chassis Wiring Harness | — | At the rear of the vehicle, left side, beneath truck bed, forward of endgate | • <br> • | |
| X919 | Endgate Wiring Harness to Chassis Wiring Harness | — | At the rear of the vehicle, left side, beneath truck bed, forward of endgate | • <br> • | |
| X920A | Tail Lamp Wiring Harness - Right to Chassis Wiring Harness | — | At the rear of the vehicle, right corner, underneath, on right frame rail | | • <br> • |
| X920C | Tail Lamp Wiring Harness - Right to Right Side Marker Lamp Harness | — | At the rear of the vehicle, right corner, underneath, on right frame rail | — | |
| X950 | Rear Object Alarm Sensor Wiring Harness to Chassis Wiring Harness | — | At the rear of the vehicle, right side, forward of rear bumper, inboard of right frame rail, rearward of frame cross member | • <br> • | |
| X950D | Engine Wiring Harness Chassis to Engine Wiring Harness | — | In the engine compartment, left front, top of the engine | • <br> • | |
| X960A | Engine Wiring Harness to Engine Wiring Harness Extension | L5P | In the engine compartment, center, top of the engine | | |
| X960B | Engine Wiring Harness to Engine Wiring Harness Extension | L5P | In the engine compartment, center, top of the engine | | |
| X962 | Engine Wiring Harness to Engine Coolant Temperature Sensor Harness | L8T | In the engine compartment, left front, near the top of the left rocker arm cover | | |
| X977 | Engine Wiring Harness to Accessory Wiring Harness | VYU | In the engine compartment, left front, near top of G13 Generator | | |
| X985A | Rearview Driver Information Camera Rear Closure Coaxial Cable to Inside Rearview Mirror Wiring Harness | DRZ | In the passenger compartment, at the rear of the headliner | — | |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| G100 | Auxiliary Battery Negative Cable | — | In the engine compartment, left front, attached to the inboard side of the left body structure | — | — |
| G103A | Body Wiring Harness | — | In the engine compartment, left front, attached to the inboard side of the left body structure | | — |
| G103B | Body Wiring Harness | — | In the engine compartment, left front, attached to the inboard side of the left body structure | | — |
| G104 | Body Wiring Harness | — | In the engine compartment, right side, attached to the inboard side of the right body structure, rearward of X50A Engine Wiring Harness Junction Block | | — |
| G105 | Battery Negative Cable | — | In the engine compartment, right rear corner | | — |
| G114 | Engine Wiring Harness | — | In the engine compartment, mounted to engine, right front | | — |
| G131 | Ground Strap | — | Under the vehicle, right front wheel well, behind inner fender, rearward of upper control arm | | — |
| G132 | Ground Strap | — | Under the vehicle, right front wheel well, behind inner fender, rearward of lower control arm | | — |
| G133 | Ground Strap | — | Under the vehicle, right front wheel well, behind inner fender, rearward of upper control arm | | — |
| G134 | Ground Strap | — | Under the vehicle, right front wheel well, behind inner fender, rearward of lower control arm | •<br>• | — |
| G175L | Engine Wiring Harness | L8T | In the engine compartment, mounted to the rear of left cylinder head | | — |
| G176R | Engine Wiring Harness | L8T | In the engine compartment, mounted to the rear of right cylinder head | | — |
| G177B | Engine Wiring Harness | — | In the engine compartment, right rear, mounted to engine block | •<br>• | — |
| G200 | Instrument Panel Wiring Harness | — | In the passenger compartment, left front, below A-pillar, behind driver side kick panel | | — |
| G201 | Instrument Panel Wiring Harness | — | In the passenger compartment, left front, behind driver front kick panel, beneath driver side A-pillar | | — |
| G202 | Air Heater Ground Wiring Harness | C32 | In the passenger compartment, right front, behind passenger front kick panel | | — |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| G203 | Air Heater Ground Wiring Harness | C32 | In the passenger compartment, left front, behind driver front kick panel, beneath driver side A-pillar | | — |
| G300A | Body Wiring Harness | — | In the passenger compartment, right side, at the base of the B-pillar | | — |
| G300B | Body Wiring Harness | — | In the passenger compartment, right side, at the base of the B-pillar | | — |
| G301A | Body Wiring Harness | — | In the passenger compartment, left side, at the base of the left B-Pillar | | — |
| G301B | Body Wiring Harness | — | In the passenger compartment, left side, at the base of the left B-Pillar | | — |
| G303 | Body Wiring Harness | — | In the passenger compartment, left side, attached to the body beneath the driver seat | | — |
| G402 | Chassis Wiring Harness | — | Under the vehicle, left side, attached at the rear of the left front body mount | | — |
| G404 | Chassis Wiring Harness | — | Under the rear of the vehicle, forward of the hitch and endgate, attached to the rear of the frame cross member, furthest right of the 3 grounds | | — |
| G406A | Chassis Wiring Harness | — | Under the rear of the vehicle, forward of the hitch and endgate, attached to the rear of the frame cross member, middle of the 3 grounds | | — |
| G406B | Chassis Wiring Harness | — | Under the rear of the vehicle, forward of the hitch and endgate, attached to the rear of the frame cross member, middle of the 3 grounds | | — |
| G407 | Chassis Wiring Harness | — | Under the rear of the vehicle, forward of the hitch and endgate, attached to the rear of the frame cross member, furthest left of the 3 grounds | | — |
| J100 | Engine Wiring Harness | L8T | In the engine compartment, left lower side, on harness before branch to X50A Engine Wiring Harness Junction Block X3 | •<br>• | — |
| J101 | Engine Wiring Harness | L8T | In the engine compartment, left lower side, on harness before branch to X50A Engine Wiring Harness Junction Block X3 | •<br>• | — |
| J102 | Engine Wiring Harness | L8T | In the engine compartment, left lower side, in channel near breakout to B68A Knock Sensor 1 | | — |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| J103 | Engine Wiring Harness | L8T | In the engine compartment, near breakout to Q12 Evaporative Emission Canister Purge Solenoid Valve | | — |
| J104 | Engine Wiring Harness | L8T | In the engine compartment, near breakout to Q12 Evaporative Emission Canister Purge Solenoid Valve | | — |
| J105 | Engine Wiring Harness | L8T | In the engine compartment, near breakout to Q38 Throttle Body | •<br>• | — |
| J106 | Engine Wiring Harness | L8T | In the engine compartment, near breakout to connector X160 | | — |
| J107 | Engine Wiring Harness | L8T | In the engine compartment, near breakout to connector X160 | | — |
| J108 | Engine Wiring Harness | L8T | In the engine compartment, near breakout to ground G175L | •<br>• | — |
| J109 | Engine Wiring Harness | L8T | In the engine compartment, near breakout to ground G175L | | — |
| J110 | Engine Wiring Harness | — | • (L8T) In the engine compartment, left lower side, in channel near breakout to B68A Knock Sensor 1<br>• (L5P) In the engine compartment, between breakout to connector X112 and breakout to B195A Nitrogen Oxides Sensor 1 | | — |
| J111 | Engine Wiring Harness | — | • (L8T) In the engine compartment, top rear of engine, near breakout to X962<br>• (L5P) In the engine compartment, near breakout to B193A Charge Air Cooler Air Temperature Sensor - Inlet | •<br>• | — |
| J112 | Engine Wiring Harness | — | • (L8T) In the engine compartment, left side, before breakout to underhood fuse block<br>• (L5P) In the engine compartment, left side, after branch to breakout to X145 | •<br>• | — |
| J113 | Engine Wiring Harness | L5P | In the engine compartment, front, in harness near connector X950D | | — |
| J114 | Engine Wiring Harness | L5P | In the engine compartment, near breakout to B193A Charge Air Cooler Air Temperature Sensor - Inlet | | — |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| J115 | Engine Wiring Harness | L5P | In the engine compartment, near breakout to M103 Turbocharger Vane Position Actuator | | — |
| J116 | Engine Wiring Harness | L5P | In the engine compartment, near breakout to B65 Manifold Absolute Pressure and Intake Air Temperature Sensor | | — |
| J117 | PTO Wiring Harness | — | Under the vehicle, near Q32P Shift Solenoid Valve - Power Take-Off | | — |
| J118 | Engine Wiring Harness | L5P | In the engine compartment, near breakout to X401 | | — |
| J119 | Engine Wiring Harness Chassis | PTO | In the engine compartment, near breakout to X401 | | — |
| J120 | Engine Wiring Harness | L5P | In the engine compartment, near breakout to X145 | | — |
| J121 | Engine Wiring Harness | L5P | In the engine compartment, near breakout to X145 | | — |
| J122 | Engine Wiring Harness | L5P | In the engine compartment, near breakout to X145 | | — |
| J123 | Engine Wiring Harness | L5P | In the engine compartment, near breakout to X50A Engine Wiring Harness Junction Block X3 | | — |
| J124 | Engine Wiring Harness | L5P | In the engine compartment, left side of engine near bell housing | | — |
| J126 | Front Object Alarm Sensor Wiring Harness | — | In the engine compartment, left rear, near breakout to B306C Parking Assist Alarm Sensor - Front Right Middle | | — |
| J127 | Front Object Alarm Sensor Wiring Harness | — | At the front of the vehicle, attached to the inside of the front bumper, between breakout to B306B Parking Assist Alarm Sensor - Front Left Middle and breakout to B306C Parking Assist Alarm Sensor - Front Right Middle | | — |
| J128 | Automatic Transmission Wiring Harness | — | Under the vehicle, within the automatic transmission assembly | — | — |
| J129 | Front Object Alarm Sensor Wiring Harness | — | At the front of the vehicle, attached to the inside of the front bumper, between breakout to B306B Parking Assist Alarm Sensor - Front Left Middle and breakout to B306C Parking Assist Alarm Sensor - Front Right Middle | | — |
| J130 | Snow Plow Wiring Harness | VYU | In the engine compartment, near, breakout to G13A Auxiliary Generator | — | — |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| J131 | Snow Plow Wiring Harness | VYU | In the engine compartment, right front, between X55SP Fuse Holder - Snow Plow and KR181 Snow Plow Relay | — | — |
| J132 | Front Object Alarm Sensor Wiring Harness | — | At the front of the vehicle, attached to the inside of the front bumper, between breakout to B306B Parking Assist Alarm Sensor - Front Left Middle and breakout to B306C Parking Assist Alarm Sensor - Front Right Middle | | — |
| J175 | Automatic Transmission Wiring Harness | — | Under the vehicle, within the automatic transmission assembly | — | — |
| J176 | Automatic Transmission Wiring Harness | — | Under the vehicle, within the automatic transmission assembly | — | — |
| J178 | Automatic Transmission Wiring Harness | — | Under the vehicle, within the automatic transmission assembly | — | — |
| J179 | Automatic Transmission Wiring Harness | — | Under the vehicle, within the automatic transmission assembly | — | — |
| J184 | Positive Auxiliary Battery Harness | K4Z | In the engine compartment, right under auxiliary battery | — | — |
| J200 | Instrument Panel Wiring Harness | — | In the passenger compartment, in breakout to K9 Body Control Module | | — |
| J201 | Instrument Panel Wiring Harness | — | In the passenger compartment, in breakout to K9 Body Control Module | | — |
| J202 | Instrument Panel Wiring Harness | — | In the passenger compartment, in breakout to K9 Body Control Module | | — |
| J203 | Instrument Panel Wiring Harness | URC | In the passenger compartment, in breakout to X84 Data Link Connector | — | — |
| J204 | Instrument Panel Wiring Harness | — | In the passenger compartment, near breakout to X84 Data Link Connector | | — |
| J205 | Instrument Panel Wiring Harness | — | In the passenger compartment, near breakout to P19J Radio Front Speaker - Instrument Panel Left | •<br>• | — |
| J206 | Instrument Panel Wiring Harness | — | In the passenger compartment, between breakout to P43 Forward Collision Alert Display and breakout to K60 Column Lock Module | | — |
| J207 | Instrument Panel Wiring Harness | — | In the passenger compartment, between breakout to P43 Forward Collision Alert Display and breakout to K60 Column Lock Module | •<br>• | — |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| J208 | Instrument Panel Wiring Harness | — | In the passenger compartment, in breakout to K60 Column Lock Module | | — |
| J209 | Instrument Panel Wiring Harness | — | In the passenger compartment, between breakout to B10D Sun Load and Ambient Light and Security Indicator Sensor and breakout to K60 Column Lock Module | • <br> • <br> • | — |
| J210 | Instrument Panel Wiring Harness | — | In the passenger compartment, between breakout to B10D Sun Load and Ambient Light and Security Indicator Sensor and breakout to K60 Column Lock Module | • <br> • | — |
| J211 | Instrument Panel Wiring Harness | — | In the passenger compartment, between breakout to B10D Sun Load and Ambient Light and Security Indicator Sensor and breakout to K60 Column Lock Module | | — |
| J212 | Instrument Panel Wiring Harness | — | In the passenger compartment, front center, within instrument panel, approximately 12 cm (4.68 in) from breakout to T4TA Auxiliary Wireless Communication Interface Antenna | | — |
| J213 | Instrument Panel Wiring Harness | — | In the passenger compartment, front center, within instrument panel, approximately 12 cm (4.68 in) from breakout to P19W Radio Front Speaker - Instrument Panel Right | | — |
| J214 | Instrument Panel Wiring Harness | — | In the passenger compartment, front center, within instrument panel, approximately 11 cm (4.29 in) from X51R Instrument Panel Wiring Harness Junction Block - Right | — | — |
| J215 | Instrument Panel Wiring Harness | — | In the passenger compartment, front center, within instrument panel, approximately 5 cm (1.95 in) from breakout to M8 Blower Motor | | — |
| J216 | Heater Wiring Harness | — | In the passenger compartment, front center, within instrument panel, approximately 18 cm (7.02 in) from connector X250 | — | — |
| J217 | Heater Wiring Harness | — | In the passenger compartment, front center, within instrument panel, approximately 42 cm (16.38 in) from connector X250 | — | — |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| J218 | Heater Wiring Harness | — | In the passenger compartment, front center, within instrument panel, approximately 30 cm (11.7 in) from connector X250 | — | — |
| J219 | Steering Wheel Horn Switch Wiring Harness | — | In the passenger compartment, left front, within steering wheel | — | — |
| J222 | Steering Wheel Horn Switch Wiring Harness | — | In the passenger compartment, left front, within steering wheel | — | — |
| J300 | Body Wiring Harness | — | In the passenger compartment, approximately 10 cm (3.9 in) from breakout to E13LA Front Headlamp - Left | •<br>• | — |
| J301 | Body Wiring Harness | — | In the passenger compart- ment, in breakout to X50A Engine Wiring Harness Junction Block X1 | •<br>• | — |
| J302 | Body Wiring Harness | — | In the passenger compartment, approximately 15 cm (5.85 in) from breakout to B22 Brake Pedal Position Sensor | •<br>•<br>• | — |
| J303 | Body Wiring Harness | — | In the passenger compartment, approximately 14 cm (5.46 in) from breakout to B22 Brake Pedal Position Sensor | •<br>•<br>• | — |
| J304 | Body Wiring Harness | — | In the passenger compartment, approximately 23 cm (8.97 in)from breakout to B107 Accelerator Pedal Position Sensor | •<br>•<br>• | — |
| J305 | Body Wiring Harness | — | In the passenger compartment, approximately 20 cm (7.8 in) from breakout to B107 Accelerator Pedal Position Sensor | •<br>•<br>• | — |
| J306 | Body Wiring Harness | — | In the passenger compartment, approximately 16 cm (6.24 in) from breakout to B107 Accelerator Pedal Position Sensor | •<br>•<br>• | — |
| J307 | Body Wiring Harness | — | In the passenger compartment, approximately 12 cm (4.68 in) from breakout to B107 Accelerator Pedal Position Sensor | •<br>•<br>• | — |
| J308 | Body Wiring Harness | — | In the passenger compartment, approximately 18 cm (7.02 in) from breakout to B22 Brake Pedal Position Sensor | •<br>• | — |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| J309 | Body Wiring Harness | — | In the passenger compartment, in breakout to X53AF Body Wiring Harness Junction Block | | — |
| J310 | Body Wiring Harness | — | In the passenger compartment, approximately 40 cm (15.6 in) from breakout to Connector X210 | •<br>• | — |
| J311 | Body Wiring Harness | — | In the passenger compartment, approximately 42 cm (16.38 in) from breakout to Connector X210 | •<br>• | — |
| J312 | Body Wiring Harness | — | In the passenger compartment, approximately 44 cm (17.16 in) from breakout to Connector X210 | •<br>• | — |
| J313 | Body Wiring Harness | — | In the passenger compartment, approximately 12 cm (4.68 in) from breakout to K36 Restraints Control Module X2 | •<br>•<br>•<br>• | — |
| J314 | Body Wiring Harness | — | In the passenger compartment, approximately 32 cm (12.48 in) from breakout to K36 Restraints Control Module X1 | •<br>•<br>•<br>• | — |
| J315 | Body Wiring Harness | — | In the passenger compartment, approximately 23 cm (8.97 in)from breakout to G303 | •<br>•<br>•<br>• | — |
| J318 | Body Wiring Harness | — | In the passenger compartment, approximately 10 cm (3.9 in) from breakout to B58R Airbag Front End Discriminating Sensor - Right | | — |
| J319 | Body Wiring Harness | — | In the passenger compartment, approximately 26 cm (10.14 in) from breakout to right bulkhead passthrough grommet | •<br>•<br>• | — |
| J320 | Body Wiring Harness | — | In the passenger compartment, approximately 44 cm (17.16 in) from breakout to right bulkhead passthrough grommet | •<br>•<br>• | — |
| J321 | Body Wiring Harness | — | In the passenger compartment, approximately 54 cm (21.06 in) from breakout to right bulkhead passthrough grommet | •<br>•<br>• | — |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| J322 | Body Wiring Harness | — | In the passenger compartment, approximately 30 cm (11.7 in) from breakout to B107 Accelerator Pedal Position Sensor | • <br> • <br> • | — |
| J323 | Body Wiring Harness | — | In the passenger compartment, right side, approximately 30 cm (11.7 in) from breakout to connector X336 | • <br> • | — |
| J325 | Body Wiring Harness | — | In the passenger compartment, center, approximately 3 cm (1.17 in) from breakout to connector X227 | • <br> • <br> • <br> • | — |
| J326 | Body Wiring Harness | — | In the passenger compartment, in breakout to M75 Windshield Wiper Motor | • <br> • <br> • | — |
| J327 | Body Wiring Harness | — | In the passenger compartment, right side, approximately 90 cm (35.1 in) from breakout to connector X210 | • <br> • | — |
| J328 | Body Wiring Harness | — | In the passenger compartment, in breakout to X53AF Body Wiring Harness Junction Block | | — |
| J329 | Body Wiring Harness | — | In the passenger compartment, approximately 27 cm (10.53 in) from breakout to left bulkhead passthrough grommet | • <br> • | — |
| J330 | Body Wiring Harness | — | In the passenger compartment, left side, approximately 27 cm (10.53 in) from breakout to X331 | • <br> • <br> • | — |
| J331 | Body Wiring Harness | — | In the passenger compartment, left side, approximately 10 cm (3.9 in) from breakout to X331 | • <br> • <br> • | — |
| J332 | Body Wiring Harness | — | In the passenger compartment, right side, under right front door sill plate | | — |
| J333 | Body Wiring Harness | — | In the passenger compartment, center, approximately 14 cm (5.46 in) from breakout to connector X227 | • <br> • <br> • | — |
| J334 | Body Wiring Harness | — | In the passenger compartment, center, approximately 13 cm (5.07 in) from breakout to connector X227 | • <br> • <br> • | — |
| J336 | Body Wiring Harness | — | In the passenger compartment, left side, approximately 5 cm (1.95 in) from crossover bundle | • <br> • <br> • | — |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| J337 | Front Floor Console Wiring Harness | — | In the passenger compartment, center, approximately 5 cm (1.95 in) from breakout to T22 Wireless Accessory Charging Module | | — |
| J338 | Front Floor Console Wiring Harness | — | In the passenger compartment, center, approximately 9 cm (3.51 in) from breakout to T22 Wireless Accessory Charging Module | | — |
| J339 | Front Floor Console Wiring Harness | — | In the passenger compartment, center, approximately 36 cm (14.04 in) from breakout to T10KA Low Frequency Console Number 2 Antenna | | — |
| J340 | Chassis Wiring Harness | — | • (Pickup) Under the vehicle, left, approximately 21 cm (8.19 in) from breakout to G402<br>• (Chassis Cab) Under the vehicle, left side, approximately 12 cm (4.68 in) from breakout to connector X401 | | — |
| J341 | Chassis Wiring Harness | — | • (Pickup) Under the vehicle, center crossover bundle, approximately 85 cm (33.15 in) from left side breakout<br>• (Chassis Cab) Under the vehicle, left side, approximately 24 cm (9.36 in) from breakout to G402 | | — |
| J342 | Chassis Wiring Harness | — | • (Pickup) Under the vehicle, center crossover bundle, approximately 55 cm (21.45 in) from left side breakout<br>• (Chassis Cab) Under the vehicle, left side, approximately 80 cm (31.2 in) from breakout to G402 | | — |
| J344 | Chassis Wiring Harness | L5P | • (Pickup) Under the vehicle, right side, approximately 10 cm (3.9 in) from breakout to B345P Exhaust Pressure Differential Sensor - Particulate Filter<br>• (Chassis Cab) Under the vehicle, left side, approximately 12 cm (4.68 in) from breakout to G407 | | — |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| J345 | Chassis Wiring Harness | — | • (Pickup) Under the vehicle, left, forward approximately 50 cm (19.5 in) from crossover bundle<br>• (Chassis Cab) Under the vehicle, left side, approximately 43 cm (16.77 in) from breakout to connector X404 | •<br>• | — |
| J347 | Chassis Wiring Harness | L5P | • (Pickup) Under the vehicle, left side, approximately 21 cm (8.19 in) rearward from crossover bundle<br>• (Chassis Cab) Under the vehicle, left side, approximately 51 cm (19.89 in) from breakout to K111 Fuel Pump Power Control Module | | — |
| J348 | Chassis Wiring Harness | — | • (Pickup) Under the vehicle, left side, approximately 7 cm (2.73 in) from breakout to G407<br>• (Chassis Cab) Under the vehicle, left side, approximately 6 cm (2.34 in) from breakout to connector X910A | | — |
| J349 | Chassis Wiring Harness | — | • (Pickup) Under the vehicle, left side, near breakout to K38 Chassis Control Module<br>• (Chassis Cab) Under the vehicle, left side, near breakout to connector X910A | | — |
| J350 | Chassis Wiring Harness | L5P | • (Pickup) Under the vehicle, left side, approximately 15 cm (5.85 in) from breakout to B47 Fuel Pressure Sensor<br>• (Chassis Cab) Under the vehicle, left side, in breakout to B136 Exhaust Particulate Matter Sensor | | — |
| J351 | Chassis Wiring Harness | — | • (Pickup) Under the vehicle, left side, between breakout to G402 and breakout to connector X412<br>• (Chassis Cab) Under the vehicle, left side, in breakout to B136 Exhaust Particulate Matter Sensor | | — |
| J352 | Chassis Wiring Harness | — | (Pickup) Under the vehicle, left side, approximately 5 cm (1.95 in) from breakout to connector X424 | | — |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| J353 | Chassis Wiring Harness | — | • (Pickup) Under the vehicle, left side, approximately 18 cm (7.02 in) from breakout to connector X424<br>• (Chassis Cab) Under the vehicle, left side, approximately 25 cm (9.75 in) from breakout to B47 Fuel Pressure Sensor | | — |
| J354 | Chassis Wiring Harness | FHS | (Pickup) Under the vehicle, left, approximately 24 cm (9.36 in) from breakout to G402 | | — |
| J355 | Chassis Wiring Harness | — | (Pickup) Under the vehicle, left side, rearward of breakout to connector X404 | | — |
| J356 | Chassis Wiring Harness | — | (Pickup) Under the vehicle, left side, rearward of breakout to connector X404 | | — |
| J357 | Chassis Wiring Harness | — | (Pickup) Under the vehicle, left, forward approximately 28 cm (10.92 in) from breakout to K111 Fuel Pump Power Control Module | | — |
| J358 | Chassis Wiring Harness | BRS | (Pickup) Under the vehicle, left, forward approximately 20 cm (7.8 in) from breakout to K111 Fuel Pump Power Control Module | | — |
| J359 | Chassis Wiring Harness | — | (Pickup) Under the vehicle, left, forward approximately 15 cm (5.85 in) from breakout to K111 Fuel Pump Power Control Module | | — |
| J360 | Chassis Wiring Harness | — | (Pickup) Under the vehicle, left, forward approximately 10 cm (3.9 in) from breakout to K111 Fuel Pump Power Control Module | | — |
| J361 | Chassis Wiring Harness | — | (Pickup) Under the vehicle, left, forward approximately 5 cm (1.95 in) from breakout to K111 Fuel Pump Power Control Module | | — |
| J362 | Chassis Wiring Harness | — | (Pickup) Under the vehicle, left, forward approximately 20 cm (7.8 in) from breakout to connector X910A | | — |
| J363 | Dome Lamp Wiring Harness | — | In the passenger compartment, right, top of right A pillar channel | | — |
| J364 | Dome Lamp Wiring Harness | — | In the passenger compartment, right, top of right A pillar channel | | — |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| J365 | Dome Lamp Wiring Harness | — | In the passenger compartment, right side, near breakout to E31R Sunshade Mirror Lamp - Right | | — |
| J366 | Dome Lamp Wiring Harness | — | In the passenger compartment, right side, between breakout to E31R Sunshade Mirror Lamp - Right and breakout to B24RF Mobile Telephone Microphone - Right Front | | — |
| J367 | Dome Lamp Wiring Harness | — | In the passenger compartment, right side, between breakout to B24RF Mobile Telephone Microphone - Right Front and breakout to A103 Roof Console | | — |
| J368 | Dome Lamp Wiring Harness | — | In the passenger compartment, right side, between breakout to B24RF Mobile Telephone Microphone - Right Front and breakout to A103 Roof Console | | — |
| J369 | Front Seat Wiring Harness - Center | AZ3 | In the passenger compartment, center, between breakout to X81FSA Accessory Power Receptacle - Front Center Seat Rear Cover 110V AC and connector X227 | | — |
| J370 | Front Seat Wiring Harness - Driver | — | In the passenger compartment, driver seat, approximately 7 cm (2.73 in) from breakout to M55D Front Seat Vertical Adjuster Actuator - Driver | | — |
| J371 | Front Seat Wiring Harness - Driver | — | In the passenger compartment, driver seat, approximately 2 cm (0.78 in) from breakout to M73D Front Seat Cushion Ventilation Blower - Driver | | — |
| J372 | Front Seat Wiring Harness - Driver | — | In the passenger compartment, driver seat, approximately 5 cm (1.95 in) from breakout to M73D Front Seat Cushion Ventilation Blower - Driver | | — |
| J373 | Front Seat Wiring Harness - Driver | — | In the passenger compartment, driver seat, approximately 3 cm (1.17 in) from breakout to M50D Front Seat Tilt Adjuster Actuator - Driver | | — |
| J374 | Front Seat Wiring Harness - Driver | — | In the passenger compartment, driver seat, approximately 3 cm (1.17 in) from breakout to E14B Front Seat Cushion Heater - Driver | — | — |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| J375 | Front Seat Wiring Harness - Driver | — | In the passenger compartment, driver seat, approximately 5 cm (1.95 in) from breakout to E14B Front Seat Cushion Heater - Driver | | — |
| J376 | Front Seat Wiring Harness - Driver | — | In the passenger compartment, driver seat, approximately 7 cm (2.73 in) from breakout to P45R Front Seat Lame Departure Warning Actuator - Right | | — |
| J377 | Front Seat Wiring Harness - Passenger | — | In the passenger compartment, passenger seat, approximately 8 cm (3.12 in) from breakout to M73P Front Seat Cushion Ventilation Blower - Passenger | | — |
| J378 | Front Seat Wiring Harness - Passenger | — | In the passenger compartment, passenger seat, approximately 11 cm (4.29 in) from breakout to K29FV Front Seat Heater Vent Control Module | | — |
| J379 | Front Seat Wiring Harness - Passenger | — | In the passenger compartment, passenger seat harness | | — |
| J380 | Front Seat Wiring Harness - Passenger | — | In the passenger compartment, passenger seat harness | | — |
| J381 | Front Seat Wiring Harness - Passenger | — | In the passenger compartment, passenger seat harness | — | — |
| J383 | Roof Wiring Harness | — | In the passenger compartment, roof, approximately 20 cm (7.8 in) from connector X850 | — | — |
| J384 | Roof Wiring Harness | — | In the passenger compartment, roof, approximately 50 cm (19.5 in) from E3E Front Clearance Lamp - Roof Right Outer | — | — |
| J385 | Body Wiring Harness | — | In the passenger compartment, approximately 48 cm (18.72 in) from breakout to right bulkhead passthrough grommet | •<br>• | — |
| J387 | Front Floor Console Wiring Harness | — | In the passenger compartment, center, approximately 14 cm (5.46 in) from connector X227 | — | — |
| J388 | Rear Seat Heater Control Wiring Harness | — | In the passenger compartment, rear seat, approximately 7 cm (2.73 in) from K234 Rear Seat Heater Vent Control Module | | — |
| J389 | Front Seat Wiring Harness - Passenger | — | In the passenger compartment, passenger seat harness | — | — |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| J402 | Trailer Rear Wiring Harness | UY2 / Z6A | In trailer harness, approximately 22 cm (8.58 in) from X88B Tow Vehicle Electrical Receptacle | — | — |
| J403 | Trailer Rear Wiring Harness | UY2 / Z6A | In trailer harness, approximately 15 cm (5.85 in) from X88B Tow Vehicle Electrical Receptacle | — | — |
| J404 | Trailer Rear Wiring Harness | UY2 / Z6A | In trailer harness, approximately 8 cm (3.12 in) from X88B Tow Vehicle Electrical Receptacle | — | — |
| J405 | Trailer Rear Wiring Harness | UY2 / Z6A | In trailer harness, approximately 30 cm (11.7 in) from X88B Tow Vehicle Electrical Receptacle | — | — |
| J406 | Trailer Rear Wiring Harness | UY2 / Z6A | In trailer harness, approximately 7 cm (2.73 in) from X88B Tow Vehicle Electrical Receptacle | — | — |
| J407 | Trailer Rear Wiring Harness | UY2 / Z6A | In trailer harness, approximately 23 cm (8.97 in)from X88B Tow Vehicle Electrical Receptacle | — | — |
| J480 | Backup Alarm Wiring Harness | 8S3 | In the backup alarm wiring harness, approximately 11 cm (4.29 in) into breakout for P3 Backup Alarm | — | — |
| J481 | Backup Alarm Wiring Harness | 8S3 | In the backup alarm wiring harness, approximately 16 cm (6.24 in) into breakout for P3 Backup Alarm | — | — |
| J500 | Front Side Door Door Wiring Harness - Driver | — | In the driver front door, approximately 8 cm (3.12 in) from breakout to P19AG Radio Front Side Door Speaker - Left | — | — |
| J501 | Front Side Door Door Wiring Harness - Driver | — | In the driver front door, approximately 12 cm (4.68 in) from breakout to B63LF Airbag Side Impact Sensor - Left Front Door | | — |
| J502 | Front Side Door Door Wiring Harness - Driver | — | In the driver front door, approximately 15 cm (5.85 in) from breakout to A24D Front Side Door Outside Handle - Left | — | — |
| J550 | Front Side Door Door Lock Door Wiring Harness - Left | — | In the driver front door, in breakout to S79D Front Side Door Window Control Switch - Driver | — | — |
| J551 | Outside Rearview Mirror - Driver | — | In the driver outside rearview mirror | — | — |
| J600 | Front Side Door Door Wiring Harness - Passenger | — | In the passenger front door, between breakout to B63RF Airbag Side Impact Sensor - Right Front Door and breakout to A24P Front Side Door Outside Handle - Right | — | — |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| J601 | Front Side Door Door Wiring Harness - Passenger | — | In the passenger front door, between breakout to B63RF Airbag Side Impact Sensor - Right Front Door and breakout to P19AH Radio Front Side Door Speaker - Right | | — |
| J602 | Front Side Door Door Wiring Harness - Passenger | — | In the passenger front door, between breakout to B63RF Airbag Side Impact Sensor - Right Front Door and breakout to P19AH Radio Front Side Door Speaker - Right | | — |
| J650 | Front Side Door Door Lock Door Wiring Harness - Right | — | In the driver front door, in breakout to S79P Front Side Door Window Switch - Passenger | — | — |
| J651 | Outside Rearview Mirror - Passenger | — | In the passenger outside rearview mirror | — | — |
| J700 | Rear Side Door Door Wiring Harness - Left | — | In the left rear door, between breakout to M74LR Rear Side Door Window Regulator Motor - Left and breakout to B63LR Airbag Side Impact Rear Sensor - Left Door | | — |
| J800 | Rear Side Door Door Wiring Harness - Right | — | In the right rear door, between breakout to M74RR Rear Side Door Window Regulator Motor - Right and breakout to B63RR Airbag Side Impact Rear Sensor - Right Door | | — |
| J900 | Endgate Wiring Harness | — | • (QK1) At the rear of the vehicle, within endgate, approximately 15 cm (5.85 in) from M14A Pickup Box Endgate Lock Actuator<br>• (QK2) At the rear of the vehicle, within endgate, between breakout to A99L Pickup Box Endg-ate Latch - Left and breakout to A99R Pickup Box Endgate Latch - Right | | — |
| J901 | Endgate Wiring Harness | — | At the rear of the vehicle, within endgate, between breakout to A99L Pickup Box Endgate Latch - Left and breakout to A99R Pickup Box Endgate Latch - Right | — | — |
| J902 | Endgate Wiring Harness | — | At the rear of the vehicle, within endgate, between breakout to A99L Pickup Box Endgate Latch - Left and breakout to A99R Pickup Box Endgate Latch - Right | — | — |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| J903 | Endgate Wiring Harness | — | At the rear of the vehicle, within endgate, between breakout to A99L Pickup Box Endgate Latch - Left and breakout to A99R Pickup Box Endgate Latch - Right | — | — |
| J904 | Rear Object Alarm Sensor Wiring Harness | — | At the rear of the vehicle, inside of rear fascia, in breakout to E7L Rear License Plate Lamp - Left | | — |
| J905 | Rear Object Alarm Sensor Wiring Harness | — | At the rear of the vehicle, inside of rear fascia, between breakout to E7R Rear License Plate Lamp - Right and breakout to E7L Rear License Plate Lamp - Left | | — |
| J906 | Rear Object Alarm Sensor Wiring Harness | — | At the rear of the vehicle, inside of rear fascia, between breakout to E7L Rear License Plate Lamp - Left and breakout to inline connector X950 | | — |
| J907 | Rear Object Alarm Sensor Wiring Harness | — | At the rear of the vehicle, inside of rear fascia, between breakout to E7L Rear License Plate Lamp - Left and breakout to inline connector X951 | | — |
| J908 | Rear Object Alarm Sensor Wiring Harness | — | At the rear of the vehicle, inside of rear fascia, between breakout to E7L Rear License Plate Lamp - Left and breakout to inline connector X952 | | — |
| J909 | Rear Object Alarm Sensor Wiring Harness | — | At the rear of the vehicle, inside of rear fascia, between breakout to E7L Rear License Plate Lamp - Left and breakout to inline connector X953 | | — |
| J910 | Rear License Plate Lamp Wiring Harness Extension Harness - Left | DZW | At the rear of the vehicle, approximately 34 cm (13.26 in) from breakout towards E3LF Rear Fender Clarence Lamp - Left Front | — | — |
| J911 | Rear License Plate Lamp Wiring Harness Extension Harness - Right | DZW | At the rear of the vehicle, approximately 8 cm (3.12 in) from breakout towards E3RF Rear Clearance Lamp - Fender Right Front | — | — |
| J912 | Rear License Plate Lamp Wiring Harness Extension Harness - Left | DZW | At the rear of the vehicle, approximately 10 cm (3.9 in) from breakout towards E3LF Rear Fender Clarence Lamp - Left Front | — | — |
| J913 | Rear License Plate Lamp Wiring Harness Extension Harness - Right | DZW | At the rear of the vehicle, approximately 30 cm (11.7 in) from breakout towards E3RF Rear Clearance Lamp - Fender Right Front | — | — |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| J914 | Rear Lamp Wiring Harness | — | At the rear of the vehicle, in left rear tail lamp harness | — | — |
| J915 | Rear Lamp Wiring Harness | — | At the rear of the vehicle, in right rear tail lamp harness | — | — |

# Description and Operation

## Power Mode Description and Operation

### Serial Data Power Mode Master

The K9 Body Control Module (BCM) is the Power Mode Master and the K56 Serial Data Gateway Module is the Back-Up Power Mode Master.

The Power Mode Master uses various vehicle status conditions and inputs to determine the desired vehicle power mode state. The Power Mode (Off, Accessory, Run, Propulsion, Start) is communicated to other modules via Serial Data and other electrical signals in order to provide the proper feature operation for the appropriate power mode.

If the Power Mode Master cannot control or determine the correct Power Mode, the Backup Power Mode Master will take over and become the vehicle Power Mode Master and place the vehicle into the proper Power Mode by communicating with other modules via Serial Data to provide the proper electrical signals to provide the proper feature operation for the appropriate power mode.

### S38 On/Off Vehicle Switch

There are 5 power modes to convey driver intent:

- OFF – A low power mode that allows maximum stand time until next start
- ACCY – Allows use of certain features that require operator authorization (Power windows for example). Propulsion is specifically disallowed.
- RUN – All features enabled except propulsion (motive force)
- PROPULSION – All features enabled
- START - This will transition to PROPULSION, including turning off non-essential loads to provide additional power for starting.

**Power Mode States**

<table>
<tr><th>Customer Action</th><th>Expected Vehicle Power Mode</th><th>S38 Vehicle On/Off Switch BCM Scan Tool Parameter</th><th>S38 Vehicle On/Off Switch Voltages</th></tr>
<tr><td>Vehicle OFF, S38 On/Off Vehicle Switch not pressed, Transmitter in Range</td><td>Vehicle Off Mode</td><td>Inactive</td><td rowspan="5">1.4 – 3.0 V (Switch Pressed)<br>3.35 – 4.26 V (Switch Released)<br>4.5 — 5.0 V (Switch Disconnected)</td></tr>
<tr><td>Vehicle OFF, S38 On/Off Vehicle Switch not pressed, Transmitter out of Range/Away from vehicle</td><td>Vehicle Off Mode</td><td>Inactive</td></tr>
<tr><td>Vehicle in any Power Mode EXCEPT OFF, then Press the S38 On/Off Vehicle Switch Foot On or Off the Brake Pedal, Transmitter in Vehicle</td><td>Vehicle Off Mode</td><td>Active (pushed) / Inactive (not pushed)</td></tr>
<tr><td>Vehicle in Propulsion Mode, momentarily Press and Release the S38 On/Off Vehicle Switch Foot On or Off the Brake Pedal, Transmitter out of Range/Away from vehicle</td><td>Run Mode, With DIC Message No Remote Detected Press Brake to Restart</td><td>Active (pushed) Inactive (not pushed)</td></tr>
<tr><td>Vehicle Off Power Mode, then Press the S38 On/Off Vehicle Switch for less than 5 s with foot Off the Brake Pedal; Transmitter in Vehicle</td><td>Vehicle Accessory Mode</td><td>Active (pushed) / Inactive (not pushed)</td></tr>
</table>

| Customer Action | Expected Vehicle Power Mode | S38 Vehicle On/Off Switch BCM Scan Tool Parameter | S38 Vehicle On/Off Switch Voltages |
|---|---|---|---|
| Vehicle Off Power Mode, then S38 On/Off Vehicle Switch with foot On the Brake Pedal; Transmitter in Vehicle | Vehicle Start/Propulsion Mode (vehicle cranks then engine running (for Internal Combustion Engine) or Propulsion System Active for EV) power mode timeout is enabled | Active (pushed) / Inactive (not pushed) | |
| Vehicle Off Power Mode, then S38 On/Off Vehicle Switch with foot On the Brake Pedal for 5 to 10 s; Transmitter in Vehicle | Vehicle Start/Propulsion Mode (vehicle cranks then Propulsion Mode Active) power mode timeout will be disabled. | Active (pushed) / Inactive (not pushed) | |
| Vehicle OFF Power Mode, then Press and Hold the S38 On/Off Vehicle Switch for 5 s with foot Off the Brake Pedal; Transmitter in Vehicle | Vehicle Run Mode (Ignition ON without the Propulsion system Active) | Active (pushed) / Inactive (not pushed) | |
| Vehicle OFF Power Mode, then Press and Hold the S38 On/Off Vehicle Switch for 5 s with foot Off the Brake Pedal; Transmitter in Vehicle | Vehicle Start/Propulsion Mode (vehicle cranks then Propulsion Active) power mode timeout is disabled | Active (pushed) / Inactive (not pushed) | |
| Vehicle Propulsion Mode with vehicle speed detected above 4 km/h (2.5 MPH) press and hold S38 On/Off Vehicle Switch for 2 s or press and release it 2 times within 5 S. | Vehicle will transition from Propulsion Mode to Run Mode (Ignition On Propulsion system Inactive). | Active (pushed) / Inactive (not pushed) | |
| **NOTE: If the transmitter is not moved for more than 1 hour it will become inactive.** | | | |

## Service Mode

Service Mode is the Run Power Mode with power mode timeout disabled. This can only be done with the Service Tool.

## Automatic Power Mode Timeouts

**Note:** If the Transmitter/Fob remains stationary and is not moved for one hour, it will go to sleep and may create a fob not in range condition.

This system is designed to prevent batteries from going dead in the event the ignition is left on while unattended, it is also designed to shut the vehicle off if left running unattended. After a Power Mode timeout, the Power Mode Master is responsible for shutting down the or transitioning the vehicle into the low parasitic sleep state “OFF” Power Mode. This Power Mode timeout strategy uses Vehicle Speed, Vehicle Power Mode, Parked Status and other Vehicle Conditions to make the timeout determination.

### Accessory Power Mode

The Accessory Power Mode will timeout after approximately 5 minutes. The timer will Start once the system has determined it is in the Accessory Power Mode status. After the timer expires the Power Mode will change to the OFF Power Mode.

### Run Power Mode

If the conditions listed below are met the Run Power Mode will timeout after approximately 40 minutes if the transmitter is in range, or 20 minutes if the transmitter is out of range. The timer will Start once the system has determined it is in the Run Power Mode status and all of the following conditions are met. After the timer expires the Power mode will change to OFF Power Mode.

If any of the following conditions are not met and/or if there is a change in the Brake Pedal or Clutch Pedal status, the Run Mode timeout timer will be disabled, and the timer will restart after all of the conditions are met again.

- Vehicle in Run Mode (Vehicle powered up S38 On/Off Vehicle Switch Green indicator on Propulsion Mode Inactive)
- Propulsion is Inactive
- Vehicle in Park.
- Vehicle Speed is 0 KM/MPH.
- Fast Idle is inactive (If Equipped).
- PTO Remote Start Status is inactive (If Equipped).
- Particulate Filter Cleaning Status is Inactive (if Equipped)

- S38 Vehicle On/Off switch is held for more than 5 to 10 seconds while starting the vehicle. The actual time may vary based on model and/or year.

**Propulsion Power Mode**
If the following conditions listed below are met the Propulsion Power Mode will timeout after approximately 30 minutes if the transmitter is in range, or 15 minutes if the transmitter is out of range. The timer will Start once the system has determined it is in the Propulsion Power Mode status and all of the following conditions are met. After the timer expires the Power mode will change to the OFF Power Mode.

The Propulsion Power Mode timeout can be disabled with the vehicle in Off Power Mode, apply and continue to hold the brake pedal, then press and hold the S38 Vehicle On/Off switch for 5 to 10 seconds (the actual time may vary based on model and/or year). A DIC message will be displayed when Power Mode timeout is disabled.

If any of the following conditions are not met and/or if there is a change in the Brake Pedal or Clutch Pedal status, the Propulsion Mode timeout timer will be disabled, and the timer will restart after all of the conditions are met again.

- Vehicle in Propulsion Mode (Propulsion Active).
- Vehicle in Park.
- Vehicle Speed is 0 KM/MPH.
- Fast Idle is Inactive (If Equipped).
- PTO Remote Start Status is inactive (If Equipped).
- Particulate Filter Cleaning Status is Inactive (if Equipped)
- S38 Vehicle On/Off switch iss held for more than 5 to 10 seconds while starting the vehicle. The actual time may vary based on model and/or year.

## Relay Controlled Power Mode

The BCM uses discrete push button switch inputs, transmitter in range status, current power mode state, and brake pedal position state to distinguish the correct power mode (Off, Accessory Mode, Run Mode, Start/Propulsion Mode). The BCM, after determining the desired power mode, will activate the appropriate relays for that power mode.

The retained accessory power relay remains on for a timed period after the Ignition Mode is OFF. Refer to *Retained Accessory Power Description and Operation 7-944* for more information on the retained accessory power function.

## Push Button Start

The ignition mode switch has 2 LEDs that indicate the vehicle power mode Amber for Accessory Mode and Green for Run or Start/Propulsion Modes. When the vehicle is in the OFF mode, both LED's will be OFF. Momentarily pressing the S38 On/Off Vehicle Switch button once, brake pedal not applied, the vehicle will enter into the Accessory Mode and the Amber LED will illuminate. The Accessory Mode will timeout after approximately 5 min to help reduce battery drain. With the ignition OFF, brake pedal not pressed, then pressing and holding the S38 On/Off Vehicle Switch for 5 s will place the vehicle in Run Mode (Ignition ON without the Propulsion Mode Active). The vehicle will stay powered up for approximately 40 minutes if the transmitter is in range, or 20 minutes if the transmitter is out of range, and the Green LED will illuminate.

With the ignition OFF brake pedal pressed, then press and release the S38 On/Off Vehicle Switch, the vehicle will enter Start/Propulsion Mode and the Green LED will illuminate, the engine will crank and the engine will be running for Internal Combustion Engines (ICE), or Propulsion mode will go Active on Electric Vehicles (EV). The Propulsion Mode will timeout after approximately 30 minutes if the transmitter is in range, or 15 minutes if the transmitter is out of range. The timer will stop when the vehicle is shifted out of PARK or the brake pedal is pressed and released, the timer will reset after the vehicle is placed back in PARK with the Propulsion Mode Active.

Both LED's have the voltage supplied from the body control module (BCM). The ignition mode switch sends the ignition mode switch status to the passive entry passive start module (PEPS) and to the BCM. The PEPS module sends a redundant signal to the BCM with the ignition mode switch status.

## Transport Mode

Transport Mode is designed to reduce the parasitic load of some modules during shipping and/or during vehicle storage. Some features may be disabled or have reduced functionality while Transport Mode is ON. Transport Mode is enabled and disabled by either of the following methods:

- With the Scan Tool Diagnostics > Body Control Module > Control Functions > Power Mode.
- Turning the hazard flashers ON, apply and hold the brake pedal, then press and hold the ignition mode switch for greater than 15 s. For vehicles equipped with a DIC a message Transport Mode On when it is enabled and Transport Mode Off when it is disabled will be displayed for a predetermined amount of time. For vehicles equipped without a DIC, the battery indicator light will constantly flash on the Instrument Cluster when Transport Mode is enabled.

## Battery Saver Mode

There are 7 different Battery Saver Modes. Battery Saver Modes 1 to 3 occur in Accessory and Run Power Modes (vehicle on propulsion system Inactive) if the battery voltage drops below approximately 11.5 V. Battery Saver Modes 4 to 7 occur in the Off Power Mode only. Battery Saver Modes 4 to 7 may set DTC's.

- Battery Saver Mode 1: DIC message "Battery Low, Start Vehicle", 4 chimes
- Battery Saver Mode 2: DIC message "Battery Low, Start Vehicle", Load Shed Level 3 is activated
- Battery Saver Mode 3: DIC message "Battery Low, Start Vehicle", Radio/Infotainment shut off, Load Shed Level 3 active
- Battery Saver Mode 4: Battery Saver Mode Ignition Off – Parasitic Current draw of 100 mA or greater
- Battery Saver Mode 5: Battery Saver Mode Ignition Off – Parasitic Current draw of 1 A or greater
- Battery Saver Mode 6: Battery Saver Mode Ignition Off – Battery Voltage less than 12.0 V
- Battery Saver Mode 7: Battery Saver Mode Ignition Off – Battery Voltage less than 11.6 V

## Load Shedding

Prior to Load shedding Idle Boost will occur, the idle speeds will be increased by 25 to 300 RPM to help maintain a normal battery voltage. Idle Boost may be noticeable to the driver. If the battery voltage continues to drop below a normal state then load shedding will go active and it will start to reduce electric loads for components that will not impact the safe operation of vehicle. At load shed levels 2 and 3 a DIC message will be displayed "Reducing Features To Save Battery". When load shedding is active the customer may begin to notice features starting to have reduced functions or may become inoperative. Examples of affected loads are radio, HVAC blower(s) front and rear (if equipped), heated/ventilated seats, heated mirrors, rear defogger and other devices with heavy electrical draws. Idle Boost and load shed levels can be observed with the scan tool.

**Idle Boost 1**
Idle is increased by 25-100 RPM and generally is not noticeable to most drivers.

**Idle Boost 2**
Idle is increased by 50–200 RPM and generally is not noticeable to most drivers.

**Idle Boost 3**
Idle is increased by 100–300 RPM and may be noticeable to most drivers.

**Load Shed Level 1**
Reduces load current by 25%.

**Load Shed Level 2**
Reduces load current by 50%.

**Load Shed Level 3**
Electric loads for components that will not impact the safe operation of vehicle will be turned Off.

## BCM Awake/Sleep States

The BCM is able to control or perform all of the BCM functions in the awake state. The BCM enters the sleep state when active control or normal monitoring of system functions has stopped and a time limit has passed. The BCM must detect certain wake-up inputs before entering the awake state. The BCM monitors for these inputs during the sleep state.

The BCM will enter the awake state if any of the following wake-up inputs are detected:

- Activity on the serial data line
- Detection of a battery reconnect
- Any door open signal
- Headlamps ON
- Ignition ON

- Park lamps ON
- Keyless entry or remote start message

The BCM will enter a sleep state when all of the following conditions exist:

- Ignition OFF, transmitter is out of range
- No activity exists on the serial data line.
- No outputs are commanded.
- No delay timers are actively counting.
- No wake-up inputs are present.

If all these conditions are met, the BCM will enter a low power or sleep condition.

## Retained Accessory Power Description and Operation

### Retained Accessory Power

The Retained Accessory Power (RAP) & Interruptible RAP (IRAP) Circuits are controlled by the K9 Body Control Module (BCM). The BCM is the Power Mode Master, it utilizes various Vehicle inputs to determine the Vehicle Power Mode and sends this information via Serial Data and providing associated electrical signals to the entire vehicle for proper feature operation.

The BCM monitors the vehicles power modes, and door ajar/open switch status to determine whether the retained accessory power should be initiated and remain active or be terminated. The RAP output is optional based on the vehicles option contents. When utilized, the RAP Output control can be used to control a RAP Relay, it may provide direct power, or a serial data message to vehicle devices/modules from the BCM.

### Retained Accessory Power Relay Coil Control Circuit (If Equipped)

The BCM keeps the device or relay (if equipped) energized during all power modes, except Off-Awake and Crank. The device(s) remain active for approximately 10 min after the Vehicle is placed into the OFF Power Mode, provided none of the doors are opened.

Retained accessory power will end when one of the following conditions are met:

- The BCM receives an input from any door ajar switch indicating the opening of the door after the OFF Power Mode is achieved.

**Note:** If the BCM receives a door open/ajar active signal when the vehicle is placed into the OFF Power Mode, the retained accessory power will not initiate.

- The BCM internal timer for the retained accessory power expires after approximately 10 min.

Systems powered by the retained accessory power control circuit during the retained accessory power mode are as follows:

**Note:** The vehicle may not be equipped with all components as listed below.

- 12 V Accessory Power Receptacle
- Cigarette Lighter Receptacle
- Window Switches
- Sunroof Control Module (If Equipped)
- Sunroof Switch (If Equipped)
- Mobile Device Wireless Charger Module
- Mobile Telephone Control Module (If Equipped)
- Traffic Data Receiver (If Equipped)
- Transmission Shift Lever Position Indicator (w/floor mounted console gear shift)

### Serial Data Controlled Retained Accessory Power

Retained accessory power systems controlled by serial data are as follows:

**Radio**
Radio retained accessory power activation/termination is the same as relay operation with one exception; the only door that will turn the radio off during retained accessory power is the driver door open/ajar switch. The USB Ports will function the same as the radio.

**Vehicle Communication Interface Module (VCIM) (Onstar®) (If Equipped)**
VCIM RAP activation/termination is the same as radio operation with 1 exception; if there is an active call and the vehicle is placed in the OFF Power Mode, the VCIM will remain in RAP mode, and keep the radio in RAP mode until the call is terminated.

### Interruptible Retained Accessory Power

The Power Mode Master (PMM) Controls components as needed If equipped with a RAP relay, the BCM controls the Retained Accessory Power with an exception, Interruptible Retained Accessory Power (IRAP) is deactivated during transmitter authentication. During Transmitter Authentication the PMM will deactivate components including IRAP to prevent Radio Frequency (RF) Interference (RFI) that may cause a “NO REMOTE DETECTED” message to be displayed on the drivers information center.

**Note:** If transmitter Authentication occurs while in Run or Propulsion Modes, it is normal to for IRAP to be interrupted momentarily (i.e. items connected to auxiliary power ports or chargers may momentarily go off then come back on).

If a remote transmitter was not been previously detected, Transmitter Authentication can occurs under any of the following conditions:

- The drivers side front door is opened.
- The drivers side rear door is opened.
- The S38 Vehicle On/Off Switch is pressed.

## Special Purpose Vehicle Module Description and Operation

### Special Purpose Vehicle Module

The K56U Special Purpose Vehicle Module is an interface module that allows the Upfitter to interface with GM vehicle's secure CAN networks to request predefined actions and to indirectly monitor key vehicle data that is available on the vehicle network.

The module is available to be ordered by dealer or as an Accessory to be installed. If ordered by the dealer it will be installed and programmed by the assembly plant with the output controls disabled. If ordered as an Accessory it will need to be installed on the vehicle, programmed and configured.

### Input Controls

The Input Controls are Defaulted on and a GM approved Upfitter Switch must be installed to operate the appropriate Output control that must be enabled by the Upfitter. The input circuits may set a DTC if a non approved switch is installed.

**Switches**
There are 5 predefined functions that may be requested by switching analog inputs to the required input voltage range.

Refer to *https://www.gmupfitter.com/* for details on all available options

### Output Controls

The SPVM has ten outputs that can be configured with a user interface to allow outputs to be switched ON or OFF based on the data that is monitored and available from the GM vehicle network.

### Input/Output Configuration

**Inputs:**

- Battery Power
- Ground
- High Speed CAN (hi/lo)
- 10 Analog Inputs (0.5A Maximum load)

**Outputs:**

- High Speed CAN (hi/lo)
- 10 Digital Outputs

### Module Configuration

Refer to *https://www.gmupfitter.com/*

# Section 8

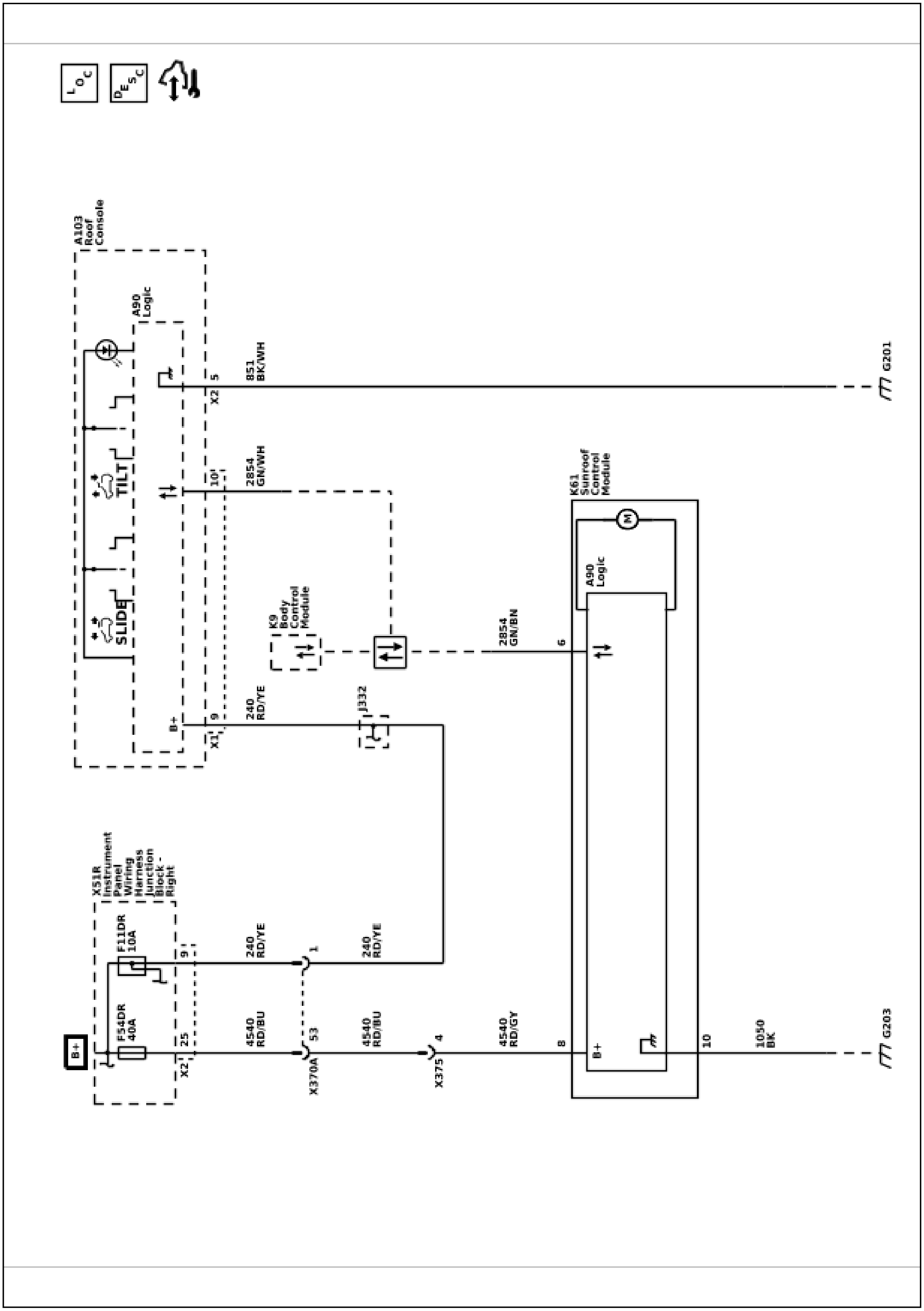
# Roof

# Roof

## Sunroof

### Schematic and Routing Diagrams

## Sunroof Schematics (Sunroof (CF5))

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# Description and Operation

## Sunroof Description and Operation

**Note:** Not all sunroof systems use an electrically controlled sunshade.

To view the locations of the sunroof system components, refer to *Master Electrical Component List 7-886*

The sunroof system consists of a glass panel, sunshade, sunroof motor/module, sunshade motor/ module or manual sunshade, sunroof slide and/or tilt switches, sunshade switch, and the body control module (BCM). The electrical portion of the system controls the movement of the sunroof and sunshade (if equipped). The BCM communicates with the sunroof and sunshade motor/module to enable or disable sunroof and sunshade operation. The sunroof and sunshade motors/modules provide system status and diagnostic information to the BCM for diagnostic reporting and operational purposes. The sunroof and sunshade are each controlled by the integrated motor/ controller containing the necessary electronics, motor, hall effect position sensors, as well as the interface to the driver control switches. Each motor/controller is capable of controlling motion based on control switch activation and commands from the BCM. The sunroof and sunshade operation is interdependent on some vehicles, in which case they are controlled by the BCM. If the system is overloaded, the power supply is temporarily cut off.

## Sunroof and Sunshade Control Switches

The sunroof slide, tilt, and sunshade slide open/close operations are controlled by switches. Some switches may support express open/close operation. Not all vehicles are equipped with all three switches and the behavior of the sunroof for each switch press is vehicle dependent. Some vehicles may have a tilt switch while others may have a vent feature linked to the slide switch. Not all vehicles are equipped with an electrically controlled sunshade, thus lacking the sunshade switch.

## System Protection

Normal operation of the sunroof system may be altered when system protection is engaged.

### Obstacle or Blockage Detection

Obstacle detection is active when moving in the closing direction and while the sunroof or sunshade opening is approximately 4–200 mm (0.16–7.87 in). When an obstacle is detected in this range, the motion in the closing direction will stop and the sunroof/sunshade will reverse direction for a short distance. The reversal will complete regardless of operating mode. If the travel is outside the range defined above, the sunroof/sunshade motor will continue closing until it detects a motor stall condition or the system is at one of the defined stops.

### Motor Stall

If the sunroof or sunshade is moving in the open or close direction and stops moving for 350 ms while a command is active, and no obstacle has been detected, the motor will be turned off to prevent overheating.

### Sunroof System Thermal Protection

The sunroof/sunshade controllers have a thermal protection algorithm to protect the sunroof/sunshade controls and motors from damage due to overheating conditions resulting from immoderate switch actuations. The thermal protection algorithm will cause any new sunroof/sunshade open commands to be ignored until the motors cool. A defined number of close requests are allowed during an over temperature condition. If the thermal protection is triggered during an obstacle detection event, the sunroof/sunshade reversal will finish first.

## Sunroof and Sunshade Coordination

For vehicles with an electrically controlled sunshade, the BCM will command the sunshade to open to predefined positions based on the requested sunroof position. This interaction may also prohibit the sunshade from closing past these points depending on the sunroof position. Faults on the sunroof or sunshade motor/module circuits will disable the system.

### Opening

If the sunroof is opened anywhere between the fully closed and vent position, the BCM will command the sunshade to a minimum open position provided that the sunshade is not opened adequately at the time of the sunroof command. If the sunroof receives an open or express open command beyond vent position, the BCM will command the sunshade to open approximately halfway if the sunshade is not opened adequately. This position corresponds to a point behind the leading edge of a fully opened sunroof glass.

### Closing

The sunshade can only be closed completely with the sunshade switch if the sunroof is completely closed. If the sunroof is opened past the vent position, the sunshade will not be allowed to close past the halfway point.

## Service Tool Commanded Open

When a service tool commands the sunshade to open, it results in the sunshade moving to the half way position or to the fully open position depending on the calibration. If the half way point is calibrated on, this position is as far as the sunshade can be opened with the service tool. To go beyond this point a switch activation must be used.

### Rear Sunshade Operation

If equipped, the rear window sunshade is controlled by a switch with open, close, express open, and express close functionality.

# Section 9

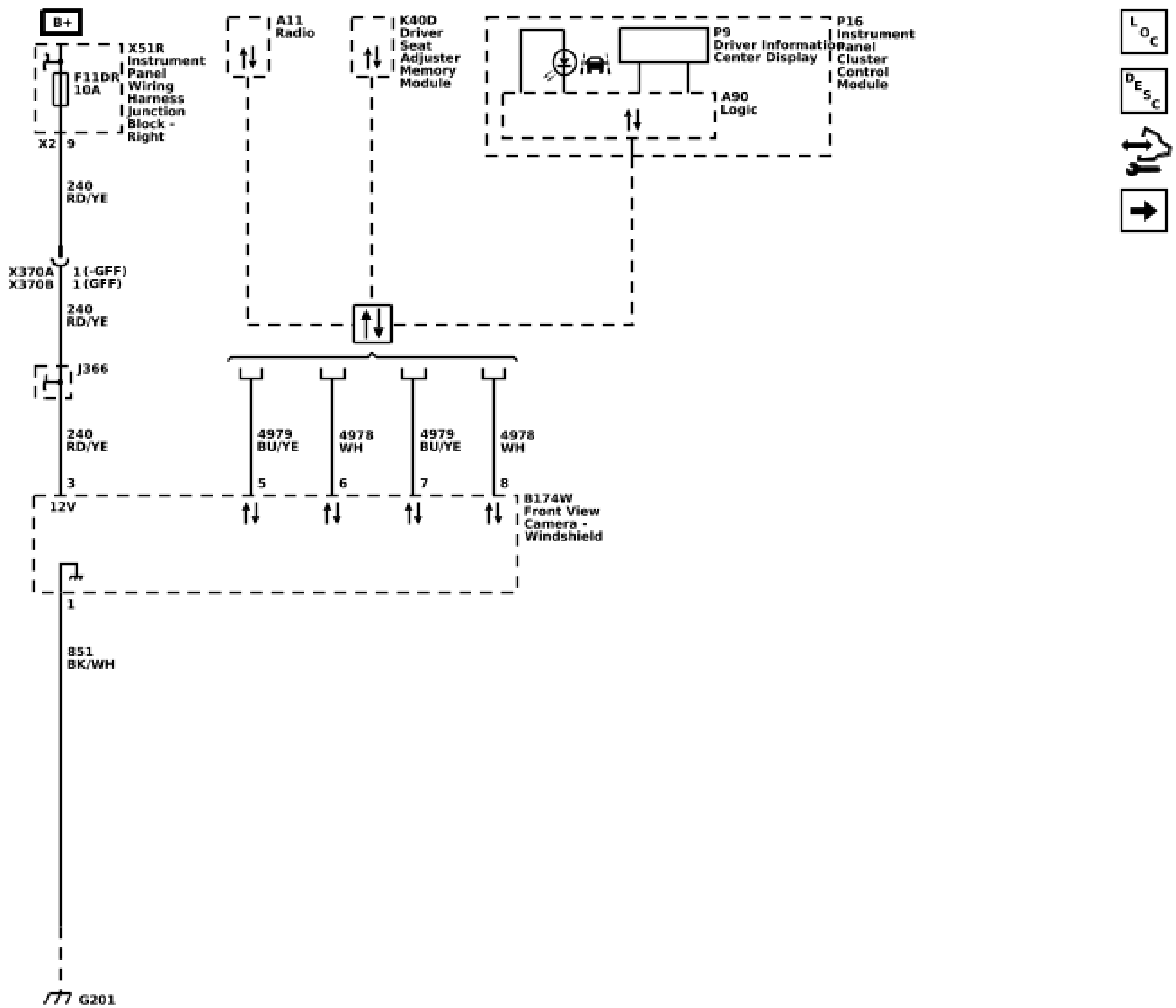
# Safety and Security

# Safety and Security

## Driver Assistance Systems

### Schematic and Routing Diagrams

## Driver Assistance Systems Schematics (Lane Keep Assist and Forward Collision Alert - Module Power, Ground, and Serial Data)

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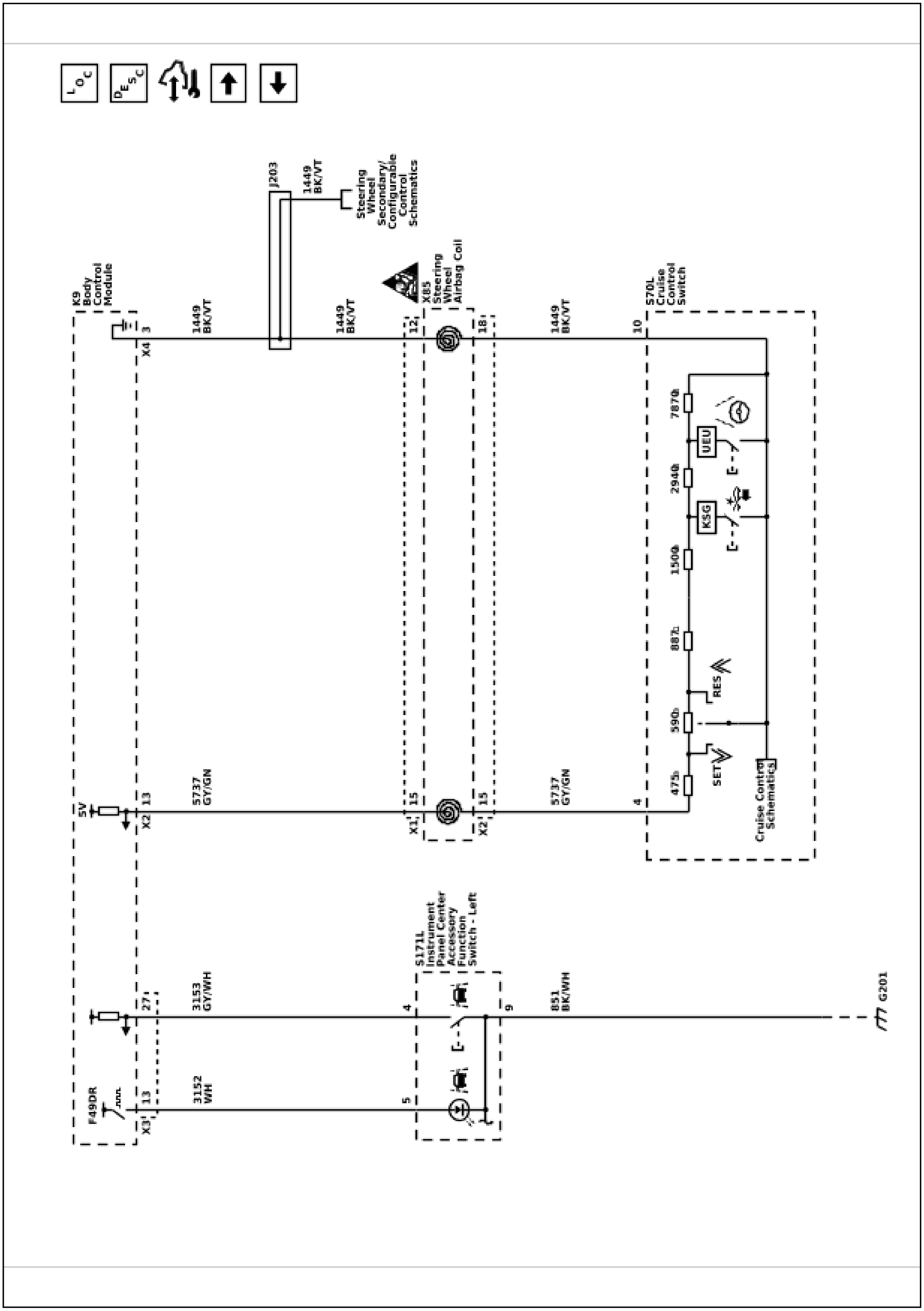
## Driver Assistance Systems Schematics (Lane Keep Assist and Forward Collision Alert - Controls (UEU))

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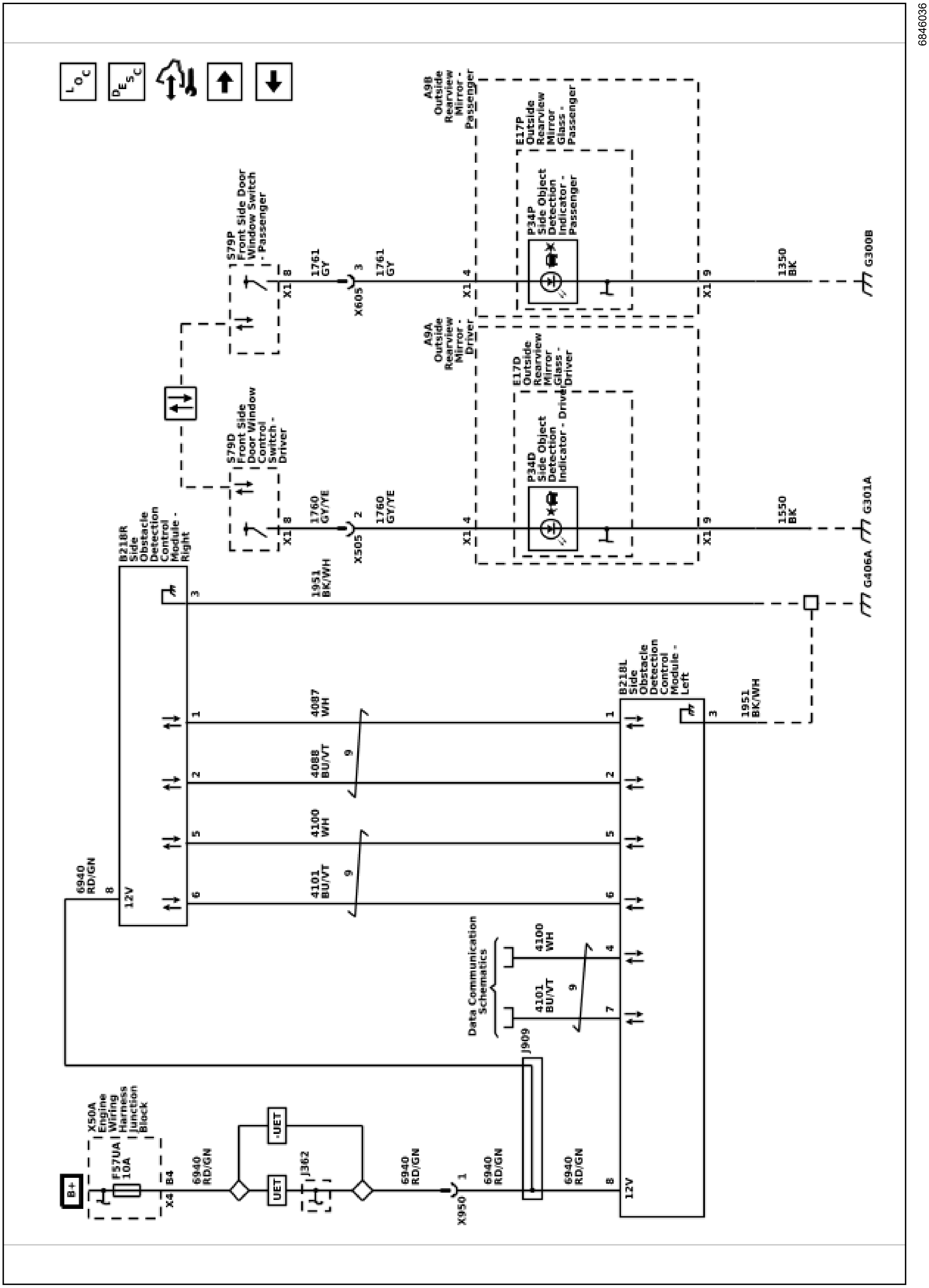
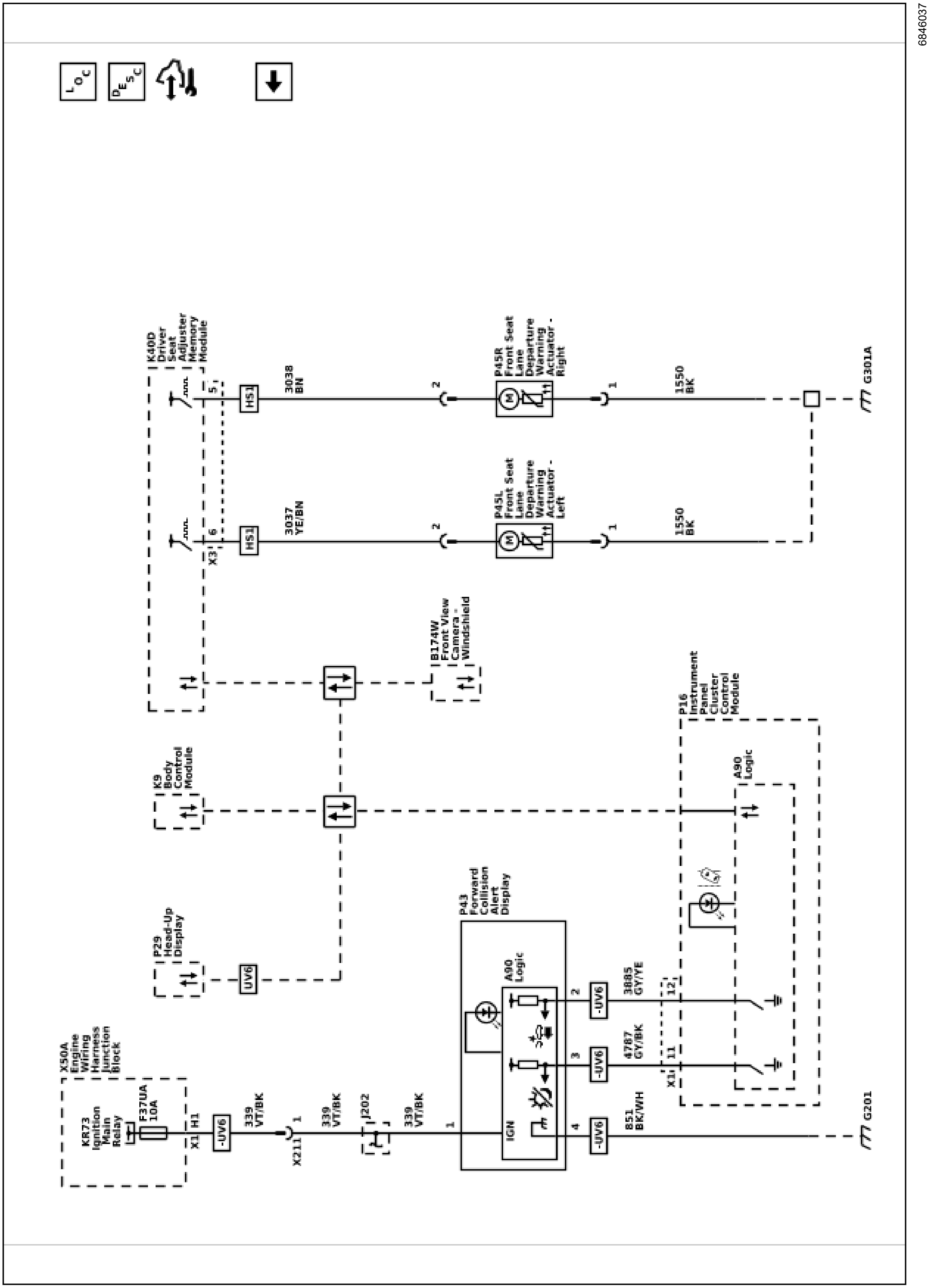
## Driver Assistance Systems Schematics (Side Object Detection (UKC / UKV))



## Driver Assistance Systems Schematics (Collision Alert Indicators)



# Description and Operation

## Forward Collision Alert Description and Operation

**Forward Collision Alert (UEU)**
The forward collision alert system is a convenience feature of the B174W Frontview Camera – Windshield that can warn drivers of a possible front-end collision situation with a vehicle they are following. The B174W Frontview Camera – Windshield is located behind the windshield, looking out at the road ahead and detecting vehicles directly ahead. When a vehicle is detected ahead, a green icon is displayed. This indicator will turn amber if the driver is following too closely. If the system detects that the driver is seconds away from a possible front-end collision, it sends an alert. The P43 Collision Alert Indicators, which includes a series of red collision alert LEDs, will flash. An audible alert sound will simultaneously sound. If the vehicle is equipped with safety alert seat (HS1), both sides of the seat will pulse. The forward collision alert system can be set to "far," "medium," or "near" timing using the forward collision alert switch and can be turned off using this control or through the vehicle personalization.

Forward collision alert does not provide a warning to help avoid a crash unless it detects a vehicle. Forward collision alert may not detect a vehicle ahead if the B174W Frontview Camera – Windshield is blocked by dirt, snow, or ice, or if the windshield is damaged. It may also not detect a vehicle on winding or hilly roads, or in conditions that can limit visibility such as fog, rain, or snow, or if the headlamps or windshield are not cleaned or in proper condition. Keep the windshield, headlamps, and B174W Frontview Camera – Windshield area clean and in good repair.

Forward collision alert may provide unnecessary alerts for turning vehicles, vehicles in other lanes, objects that are not vehicles, or shadows. These alerts are normal operation and the vehicle does not need service.

**Forward Automatic Braking (UHY)**
Forward automatic braking detects vehicles ahead in your path that are traveling in the same direction and may help reduce crash severity or avoid the crash altogether by applying the brakes automatically or enhancing the driver’s braking in some emergency front-end collision situations . It can provide braking assist, such as brake system pre-fill, or automatically brake the vehicle if an imminent collision is determined. This can help avoid or lessen the severity of crashes when driving in a forward gear. Depending on the situation, the vehicle may automatically brake moderately or hard. Forward automatic braking can only occur if a vehicle is detected. When a vehicle is detected ahead, a green icon is displayed. The forward automatic braking system works when driving in a forward gear between 8 km/h (5 mph) and 80 km/h (50 mph). It can detect vehicles up to approximately 60 m (197 ft) away.

If the system detects that the driver is seconds away from a possible front-end collision with the vehicle it is following, it will first send an alert. If the driver doesn’t respond quickly or the situation happens suddenly, forward automatic braking enhances the driver’s braking or automatically applies the brakes. Drivers can override automatic braking at any time by pressing the accelerator or by braking. If the system slows a vehicle to a complete stop, the electronic parking brake will apply. The electronic parking brake can be release in typical fashion by pressing the electronic parking brake switch.

Through vehicle personalization, the forward automatic braking can be set to the ALERT setting or turned completely off. This setting disables most automatic braking functions. The driver information center will display FORWARD COLLISION SYSTEM REDUCED or AUTOMATIC COLLISION PREP REDUCED. This is normal operation when the forward automatic braking or forward collision alert system is set to OFF or ALERT. This message is not present when the forward automatic braking or forward collision alert system are set to ALERT and BRAKE.

## Forward Collision Alert/ Forward Automatic Braking Components

- B174W Frontview Camera – Windshield
- P16 Instrument Cluster
- P43 Collision Alert Indicators (except UV6)
- P29 Head-Up Display (UV6)
- Forward Collision Alert Switch
- Infotainment System
- Safety Alert Seat (HS1)

**B174W Frontview Camera – Windshield**
The B174W Frontview Camera – Windshield detects vehicles in front of the vehicle. The B174W Frontview Camera – Windshield communicates with the P16 Instrument Cluster via serial data to illuminate the appropriate amber or green vehicle ahead indicator or P43 Collision Alert Indicators. The B174W Frontview Camera – Windshield also communicates via serial data with the infotainment system to request audible alerts.

**P16 Instrument Cluster**
The P16 Instrument Cluster communicates via serial data with the B174W Frontview Camera – Windshield and will illuminate the amber or green vehicle ahead indicator as requested by the B174W Frontview Camera – Windshield. The P16 Instrument Cluster also controls the P43 Collision Alert Indicators.

**P43 Collision Alert Indicators (except UV6)**
The P43 Collision Alert Indicators are a series of red LEDs that will flash when approaching another vehicle too rapidly. The P43 Collision Alert Indicators are located in the upper instrument panel area and reflect off the windshield when illuminated.

The P43 Collision Alert Indicators receive power and ground and are discretely controlled by the P16 Instrument Cluster through a pair of low control circuits. When requested by the B174W Frontview Camera – Windshield, the P16 Instrument Cluster will pulse the low control circuits, flashing the LEDs as a visual alert that another vehicle is being approached too rapidly.

**P29 Head-Up Display (UV6)**
The P16 Instrument Cluster controls the P29 Head-Up Display via serial data. The P16 Instrument Cluster will command the P29 Head-Up Display to flash the collision alert indicator as a visual alert when approaching another vehicle too rapidly as requested by the B174W Frontview Camera – Windshield.

**Forward Collision Alert Switch**
The forward collision alert switch provides an input to the B174W Frontview Camera – Windshield to select the alert timing sensitivity when approaching another vehicle too rapidly. The forward collision alert switch is part of the S70L Steering Wheel Controls Switch – Left and provides inputs to the K9 Body Control Module, which then communicates with the B174W Frontview Camera – Windshield via serial data.

The K9 Body Control Module applies voltage and monitors a low signal voltage from the normally open switch. When the switch is pressed, the signal circuit is pulled low through a specific series of resistors, indicating that the system has been requested to change the alert timing sensitivity. The first button press will show the current alert timing setting on the driver information center. With every subsequent button press, the alert timing sensitivity is changed.

**Infotainment System**
The infotainment system controls the audible alerts for the forward collision alert system. If the vehicle is approaching another vehicle too rapidly, the B174W Frontview Camera – Windshield will command the infotainment system issue an audible alert to the driver.

**Safety Alert Seat (HS1)**
The K40 Seat Memory Control Module controls the haptic alert provided by the seats. If the vehicle is approaching another vehicle too quickly, the B174W Frontview Camera – Windshield will command the K40 Seat Memory Control Module to pulse both sides of the seat.

## Forward Collision Alert and Forward Automatic Braking Operational Checks

If the forward collision alert system is off, inoperative, or not functioning, check the following:

- Verify there are no active driver information center messages and that no DTCs are set.
- Verify that the system is enabled through vehicle personalization. Vehicle personalization allows the system to be set to “Off,” “Beeps,” ”Alert,” “Safety Alert Seat,” or “Alert & Brake”.
- Attempt to replicate the customer concern. While driving, if the vehicle-ahead telltale display illuminates green when following a vehicle above 8 km/h (5 mph) , forward collision alert is operating properly.

If the driver is receiving false forward collision alerts, check the following:

- Verify the B174W Frontview Camera – Windshield is not blocked by dirt, snow, or ice, and the windshield is not damaged.
- The system may be identifying vehicles farther ahead than the customer is expecting. Forward collision alert detects vehicles within a distance of approximately 60 m (197 ft) and operates at speeds above 8 km/h (5 mph).
- Forward collision alert may provide unnecessary alerts to turning vehicles, vehicles in other lanes, objects that are not vehicles, or shadows. These alerts are normal operation and the vehicle does not need service.

If forward collision alert beeps, but the seat does not vibrate, check the following:

- Verify the vehicle is equipped with safety alert seat (RPO HS1).
- Verify there are no active driver information center messages and that no DTCs are set.
- Verify that the system is enabled through vehicle personalization: It may be set to “Beeps” or “Alert Only” instead of “Safety Alert Seat” or “Alert & Brake”.

If FORWARD COLLISION SYSTEM REDUCED or AUTOMATIC COLLISION PRE REDUCED is displayed on the driver information center, check the following:

- Verify that the system is enabled through vehicle personalization: It may be set to “Alert Only” instead of ”Off” or Alert & Brake”.

If SERVICE FRONT CAMERA is displayed on the driver information center, check the following:

- Verify there are no active driver information center messages and that no DTCs are set.

- If the message is only displayed upon startup, check the following:
  - Verify the B174W Frontview Camera – Windshield is not blocked by dirt, snow, or ice, and the windshield is not damaged.
  - Verify the vehicle is not parked closed to a wall or the B174W Frontview Camera – Windshield is not in an over-temperature condition, such as sitting for long periods in high ambient temperatures and direct sun.
- If the message is displayed beyond startup, check the following:
  - Verify there are no active driver information center messages and that no DTCs are set.

If FRONT CAMERA IS BLOCKED is displayed on the driver information center, check the following:

- Check for any other driver information center service messages.
- Verify the B174W Frontview Camera – Windshield is not blocked by dirt, snow, or ice, and the windshield is not damaged.

If SERVICE DRIVER ASSIST is displayed on the driver information center, check the following:

- Check for any other driver information center service messages.
- Verify there are no active driver information center messages and that no DTCs are set.

## Lane Departure Warning Description and Operation

The lane departure warning system is a convenience feature that utilizes the B174W Frontview Camera – Windshield to determine if the vehicle has unintentionally crossed a lane marking and issue a warning. The B174W Frontview Camera – Windshield is located behind the windshield, looking out at the road ahead and detecting any lane markings. When the vehicle unintentionally leaves a detected lane, visual and audible alerts are given to the driver. The visual alert cannot be changed, but the driver can select audible alerts in the vehicle personalization menus. Refer to the vehicle owner's manual for vehicle personalization options.

The lane departure warning system utilizes the following components:

## Lane Departure Warning Components

- B174W Frontview Camera – Windshield
- P16 Instrument Cluster
- Lane Departure Warning Switch
- Infotainment system
- Safety Alert Seat (HS1)

**B174W Frontview Camera – Windshield**
The B174W Frontview Camera – Windshield detects visual queues such as lane markings. When it is determined that the vehicle has unintentionally moved outside of the lane, visual and audible or haptic (if equipped) warning is given to the driver. The B174W Frontview Camera – Windshield receives an input from the lane departure warning switch and controls the lane departure warning switch indicator output. The B174W Frontview Camera – Windshield also communicates via serial data with the P16 Instrument Cluster and infotainment system to request visual and audible alerts.

**P16 Instrument Cluster**
The P16 Instrument Cluster contains green and amber lane departure warning indicators. These indicators inform the driver of the current status of the lane departure warning system and are controlled via serial data by the B174W Frontview Camera – Windshield. When the vehicle speed is above 56 km/h (35 MPH) and the system has detected the required lane markings and is ready to assist, the green indicator will be illuminated. If the vehicle has unintentionally left the lane, the amber indicator will flash.

**Lane Departure Warning Switch**
The lane departure warning switch provides an input to the B174W Frontview Camera – Windshield to turn the lane departure warning system on and off. The B174W Frontview Camera – Windshield applies voltage and monitors the lane departure warning switch signal circuit. The lane departure warning switch is a normally open switch. With the switch open, voltage seen at the B174W Frontview Camera – Windshield is high. When the lane departure warning switch is pressed, the switch is closed and the signal circuit is pulled to ground. With the switch closed, voltage seen at the B174W Frontview Camera – Windshield is low. The B174W Frontview Camera – Windshield will respond to this by activating or deactivating the lane departure warning system.

The lane departure warning switch also utilizes the lane departure warning indicator, which is part of the lane departure warning switch and is controlled by the B174W Frontview Camera – Windshield to indicate the operational status of the lane departure warning system. When the lane departure warning is enabled, the B174W Frontview Camera – Windshield will illuminate the indicator on the switch. The indicator receives voltage through a high control circuit from the K9 Body Control Module and is controlled through a low control circuit by the B174W Frontview Camera – Windshield.

**Infotainment System**

The infotainment system controls the audible alert for the lane departure warning. If the vehicle has unintentionally left the lane, the B174W Frontview Camera – Windshield will request via serial data an audible alert to the driver through the infotainment system

**Safety Alert Seat (HS1)**

The K40 Seat Memory Control Module controls the haptic alert provided by the seats. If the vehicle is approaching a lane marking, the B174W Frontview Camera – Windshield will command the K40 Seat Memory Control Module to pulse the appropriate P45 Seat Haptic Movement Motor that corresponds with the side of the vehicle approaching the lane marking..

## Lane Departure Warning Operation

**System Operational Modes**

- Off State: The system has been turned off by the driver using the lane departure warning switch. The lane departure warning indicator located on the lane departure warning switch will not be illuminated.
- Not Ready To Assist: The system is enabled and the lane departure warning indicator located on the lane departure warning switch is illuminated, but the system is not ready to assist because one of the following conditions is true:
  - Vehicle speed is less than 56 km/h (35 MPH). The system is designed to function at speeds greater than 56 km/h (35 MPH).
  - The system cannot detect lane markings. This may be because there are no lane markings or the lane markings cannot be determined due to snow, rain, or other driving conditions.
  - The windshield area in front of the camera or the camera lens is blocked by fog, dirt, damage to the windshield, or other elements that may prevent the camera from detecting lane markings.
- Ready To Assist: The system is enabled and ready to warn of the unintentional lane crossing. The system is ready to assist when the green lane departure warning indicator is illuminated on the P16 Instrument Cluster.

**Lane Crossing Alerts**

- A lane crossing alert consists of the following:
  - The amber lane departure warning indicator located on P16 Instrument Cluster will flash.
  - Three chimes are activated through the infotainment system
- When any of the following conditions occurs, the system will not give alerts:
  - The appropriate turn signal is activated. An activated turn signal is interpreted as an intentional lane crossing.
  - The operator makes an intentional steering maneuver.
  - The operator makes an intentional accelerating maneuver.
  - The operator makes an intentional braking maneuver.

## Lane Departure Warning Operational Checks

If lane departure warning is not functioning, check the following:

- Verify the vehicle is equipped with lane departure warning (RPO UFL).
- Check for a SERVICE FRONT CAMERA or SERVICE DRIVER ASSIST message on the driver information center.
  - If either message is present, an issues exists with the B174W Frontview Camera – Windshield that is affecting all camera functions, not just lane departure warning. Verify no DTCs are set and refer to the appropriate diagnostic procedure.
- Verify the lane departure warning indicator turns on and off when pressing the lane departure warning switch.
  - If the indicator does not turn on and off, verify no DTCs are set and refer to the appropriate diagnostic procedure.
- Operate the vehicle above 56 km/h (35 MPH) with good lane markings and no inclement weather (snow, rain, or low sun) and verify the green lane departure warning indicator is illuminated on the P16 Instrument Cluster.
  - Verify there are no active driver information center messages and that no DTCs are set.

## Lane Keep Assist Description and Operation

The lane keep assist system is a convenience feature that utilizes the B174W Front View Camera - Windshield maintains the vehicle location between identified lane markings. The B174W Front View Camera - Windshield is located behind the windshield, looking out at the road ahead and detecting any lane markings. If the vehicle begins to approach an identified lane marking, automatic correction will be applied by the electric power steering to move the vehicle back toward the center the lane. An integrated function of lane keep assist is lane departure warning. When the vehicle unintentionally leaves a detected lane, visual and audible or haptic (if equipped) alerts are given to the driver. The visual alert cannot be changed, but the driver can select between audible or haptic alerts in the vehicle personalization menus.

## Lane Keep Assist System Components

The lane keep assist system is made up of the following components:

- B174W Front View Camera - Windshield
- Driver Information Display
- Multi-axis acceleration sensor (part of the K36 Restraints Control Module)
- Steering wheel angle sensor (part of the K43 Power Steering Control Module)
- K43 Power Steering Control Module
- Lane keep assist switch
- Infotainment system
- Safety alert seat (with HS1)

**B174W Front View Camera - Windshield**
The B174W Front View Camera - Windshield detects visual queues such as lane markings. When it is determined that the vehicle is approach an identified lane marking, automatic correction will be applied by the electric power steering to move the vehicle back toward the center the lane. Using the multi-axis acceleration sensor and steering wheel angle sensor, the B174W Front View Camera - Windshield determines the vehicles path and compares this to it's own intended path based on lane markings. The B174W Front View Camera - Windshield will then request the K43 Power Steering Control Module to perform the appropriate steering correction. The B174W Front View Camera - Windshield receives an input via serial data from the lane keep assist switch and controls the lane keep assist switch indicator output.

**Driver Information Display**
Based on vehicle configuration, the P53 Driver Information Display, P16 Instrument Panel Cluster Control Module, or A105 Instrument Panel Multifunction Human-Machine Interface Control Module contains green and amber lane keep assist indicators. These indicate to the driver the current status of the lane keep assist system and are controlled via serial data by the B174W Front View Camera - Windshield. When the vehicle speed is above the minimum required speed (refer to owner manual) and the system has detected the required lane markings and is ready to assist, the green indicator will be illuminated on the driver information display. If the vehicle has unintentionally left the lane, the amber indicator will flash.

**Multi-axis Acceleration Sensor**
The steering intervention is based on the forward looking sensor outputs, such as lateral offset of the vehicle, relative yaw angle and time to line crossing. Over that, other vehicle dynamics signals are needed, e.g. velocity, steering angle, yaw rate for the purpose of a driver suppression. The multi-axis acceleration sensor measures vehicle dynamics signals such as velocity and yaw rate for the purpose of determining the vehicles path. The multi-axis acceleration sensor is an integrated part of the K36 Restraints Control Module.

**Steering Wheel Angle Sensor**
The steering intervention is based on the forward looking sensor outputs, such as lateral offset of the vehicle, relative yaw angle and time to line crossing. Over that, other vehicle dynamics signals are needed, e.g. velocity, steering angle, yaw rate for the purpose of a driver suppression. The steering wheel angle sensor measures vehicle dynamics signals such as steering angle for the purpose of determining the vehicles path. The steering wheel angle sensor is an integrated part of the steering gear and K43 Power Steering Control Module.

**K43 Power Steering Control Module**
The K43 Power Steering Control Module uses a torque sensor to detect driver inputs and relays that information to the B174W Front View Camera - Windshield. The electric power steering is used to maintain lane centering.

**Lane Keep Assist Switch**
The lane keep assist switch provides an input to the B174W Front View Camera - Windshield via serial data to turn the lane keep assist system on and off. The B174W Front View Camera - Windshield provides a signal voltage to the normally open momentary switch. When the switch is pressed, the signal circuit is pulled to ground, indicating to the B174W Front View Camera - Windshield that the system has been requested to turn ON or OFF. The lane keep assist switch also contains the lane keep assist switch indicator, which is controlled by the B174W Front View Camera - Windshield to indicate the ON and OFF status of the lane keep assist system. When the system has been enabled by the lane keep assist switch, the B174W Front View Camera - Windshield applies ground to the switch indicator via serial data and illuminates the LED. The location of the lane keep assist switch can vary with different vehicles. For the exact location please refer to the vehicle owner's manual.

**Infotainment system**
The radio controls the audible alert for the lane keep assist. If the vehicle has unintentionally left the lane, the radio will command three beeps as an audible alert to the driver.

**Safety Alert Seat (with HS1)**
The K9 Body Control Module (without A45) or K40D Driver Seat Adjuster Memory Module (with A45) controls the haptic alert provided by the seats. If the vehicle has unintentionally left the lane and the K43 Power Steering Control Module determines the corrective action requires an above threshold amount of effort, three pulses to the left or right side of the seat

will be commanded, depending on the lane departure direction.

### Lane Keep Assist Operation

Lane keep assist with lane departure warning provides gentle steering wheel input and alerts to help prevent drivers from unintentionally drifting out of their intended lane.

There is two stages of warning/intervention for the driver: The first stage is the steering push back, if the lane keep assist system detects that the vehicle will cross the lane marking despite it is intervening, a second stage warning shall be issued. The second stage warning is a chime or a haptic alert through the safety alert seat (if equipped). If a haptic seat vibration is used as stage 2 warning, the vibration will occur on the side of the seat, where the lane departure occurred.

System operation can be described by the following modes:

- Off State: The system has been turned off by the driver using the lane keep assist switch. The lane keep assist indicator will not be illuminated.
- Not Ready To Assist: The system is enabled and the lane keep assist indicator is illuminated, but not ready to assist when any of the following conditions is true:
    - Vehicle speed is less than required for lane keep assist operation. Refer to Owner’s Manual for operational speed.
    - The system cannot detect lane markings. This may be because there are no lane markings, as on a country road or that the lane markings cannot be determined due to snow, rain, or other driving conditions.
    - The windshield area in front of the camera or the camera lens is blocked by fog, dirt, damage to the windshield or other elements that may prevent the camera from detecting lane markings.
- Ready To Assist: The system is enabled and ready to warn of the unintentional lane crossing. The system is ready to assist when the green lane keep assist indicator is illuminated on the driver information display.

#### Lane Crossing Alerts

- When one of the following conditions are met, the system will not give alerts:
    - The correct turn signal is activated. An activated turn signal is interpreted as an intentional lane crossing.
    - The operator makes an intentional steering maneuver.
    - The operator makes an intentional accelerating maneuver.
    - The operator makes an intentional braking maneuver.
- Lane crossing alert consists of the following:
    - The amber lane keep assist indicator will flash.
    - “push-back” steering torque input (or nudge) from electric power steering to help prevent a lane departure
    - Three chimes are activated through the radio or three pulses to the left or right side of the active safety seat (if equipped).

### Hands On Lane Centering Assist (if equipped)

Hands on Lane Centering Assist operates similar to Lane Keep Assist but provides continuous lateral assistance to help keep the vehicle in the center of the lane while Adaptive Cruise Control is engaged. Hands on Lane Centering Assist utilized the steering wheel touch sensors and driver monitoring camera to ensure the driver actively has their hands on the steering wheel and has eyes on the road.

Hands on Lane Centering Assist must be enabled in infotainment vehicle settings, Adaptive Cruise Control engaged, and road lanes visible by the Front view Camera-Windshield: in order for the Hands on Lane Centering Assist to operate.

System states:

- Standby: (white Hands-On steering wheel icon with white lane keep assist lines) feature not engaged due to possible environmental or driver reasons.
- Active: (green Hands-On steering wheel icon with green lane keep assist lines) feature is active and controlling
- Lane Departure Warning: (amber Hands-On steering wheel icon with flashing amber lane keep assist lines) activated when the vehicle moves outside of a predefined threshold of the lane. The system detects that the vehicle is drifting toward or beyond the lane markings.
- Environmental degrades : (amber Hands-On steering wheel icon with white lane keep assist lines) operation degrades are currently alerting for environmental reasons such as lane line confidence low, exceeds road curvature limit, etc.
- Driver Override: (white Hands-On steering wheel icon with white lane keep assist lines) driver has taken control from Hands On Lane Centering Assist.

If the system senses the driver is not meeting necessary requirements (hands on wheel, eyes on road) driver warnings will escalate and can deactivate Hands On Lane Centering Assist. If this occurs three times, the Hands On Lane Centering Assist will be unavailable for the remainder of the Ignition/Vehicle On cycle.

## Safety Alert Seat Description and Operation

The safety alert seat uses pulsing driver seat vibrations to intuitively communicate the direction of a possible crash threat. Two P45 Seat Haptic Movement Motors are utilized to create the vibration and are located on the left and right sides of the seat cushion. Utilizing two motors allows the vibration to be localized to the left or right side of the seat, depending on the side of the vehicle generating the alert, or to vibrate both simultaneously.

**Note:** The following systems may not be available on all vehicles.

The following systems utilize the safety alert seat:

- Lane Departure Warning and Lane Keep Assist – Utilizes left or right-side pulses to alert drivers if they unintentionally drift out of their lane
- Rear Cross Traffic Alert – Utilizes left or right-side pulses to the direction of an approaching vehicle
- Forward Collision Alert – Simultaneously pulses on both sides to warn drivers of a possible collision with the vehicle that they’re following
- Front Pedestrian Braking – Simultaneously pulses on both sides to warn drivers of a possible collision with a pedestrian
- Front Parking Assist, Rear Parking Assist, and Backing Warning (part of the Rear Automatic Braking system) – Simultaneously pulses on both sides to warn drivers of a possible low-speed collision

## Safety Alert Seat Components

The active safety seat utilizes the following components:

- K40 Seat Memory Control Module
- P45LR Seat Haptic Movement Motor — Driver Left Rear
- P45RR Seat Haptic Movement Motor — Driver Right Rear

**K40 Seat Memory Control Module**
The K40 Seat Memory Control Module receives serial data messages from other modules and provides voltage to control the P45 Seat Haptic Movement Motors. The K40 Seat Memory Control Module will pulse the left, right, or both P45 Seat Haptic Movement Motors with the number of pulses requested over serial data. The K40 Seat Memory Control Module monitors the control circuits for open, short to ground, and short to voltage conditions and will set DTCs if a circuit fault is detected.

**P45 Seat Haptic Movement Motor**
The P45 Seat Haptic Movement Motor is DC motor located in the driver’s seat bottom cushion. Two P45 Seat Haptic Movement Motors are used in the seat bottom cushion, positioned on the left and right side. An offset weight is attached to the motor. When activated, the spinning offset weight creates a vibration felt by the driver through the seat cushion.

Each P45 Seat Haptic Movement Motor receives a constant chassis ground. The motor is controlled by the K40 Seat Memory Control Module by providing voltage through a dedicated control circuit. When an alert is required, the K40 Seat Memory Control Module will apply voltage, activating the P45 Seat Haptic Movement Motor

## Side Blind Zone Alert Description and Operation

The side blind zone alert system detects and reports “objects of interest" on either side of the vehicle, within a specified “blind spot” zone. The system is designed to alert the driver, with a visual display placed on the side view mirror, to the presence of objects of interest that may not be visible in the inside rearview mirror and outside rear view mirrors. Although this system is intended to help drivers avoid lane change collisions, it does not replace driver vision and therefore should be considered a lane change aid. Even with the side blind zone alert system, the driver must check carefully for objects outside of the reporting zone (e.g., a fast approaching vehicle) before changing lanes. In the event that the system senses a malfunction through its diagnostic routines, the system will be disabled and the driver will be visually notified.

When the system detects a vehicle in the side blind zone while driving forward, an amber warning symbol will light up in the appropriate outside mirror. This indicates that it may be unsafe to change lanes. If the driver then activates the turn signal, the amber warning symbol starts flashing as an extra warning not to change lanes.

Side blind zone alert is active when the vehicle is out of park, or the parking brake is off on manual transmission vehicles and at speeds up to approximately 140 km/h (87 MPH). If a vehicle is detected in the blind zone, the warning symbols will turn illuminate on the appropriate side. When the vehicle is started, both outside mirror displays will briefly come on to indicate that the system is operating. The warning symbols will vary brightness based on the ambient light conditions.

The side blind zone alert system is made up of the following components:

- B218L Side Object Sensor Module – Left
- B218R Side Object Sensor Module – Right
- A9A Outside Rearview Mirror – Driver
- A9B Outside Rearview Mirror – Passenger
- Safety Alert Seat (HS1)

**B218 Side Object Sensor Module**
The B218L Side Object Sensor Module – Left and B218R Side Object Sensor Module – Right are located on each side of the vehicle behind the rear fascia and are not directly visible from outside the vehicle. The B218 Side Object Sensor Modules use radar to determine the presence of objects nearby. When an object is detected in the side blind zone, the appropriate B218 Side Object Sensor Module supplies voltage to illuminate the visual indicator on the A9 Outside Rearview Mirror. Each B218 Side Object Sensor Module is supplied B+ and ground. Both B218 Side Object Sensor Modules communicates with the vehicle via serial data.

**A9 Outside Rearview Mirror**
The A9A Outside Rearview Mirror – Driver and A9B Outside Rearview Mirror – Passenger each contain an icon that is backlit with high intensity, amber-colored LED's located on the mirror surface. The display brightness adapts to day/night conditions. The side blind zone alert indicator icon in the appropriate A9 Outside Rearview Mirror is illuminated if the specific B218 Side Object Sensor Module detects a vehicle in the side blind zone to inform the driver that there is a vehicle driving in the blind spot zone.

**Safety Alert Seat (HS1)**
The K40 Seat Memory Control Module controls the P45 Seat Haptic Movement Motors. The P45 Seat Haptic Movement Motors provide haptic alert to the driver. If an object is detected, the K40 Seat Memory Control Module will command pulses to the P45LR Seat Haptic Movement Motor – Driver Left Rear or P45RR Seat Haptic Movement Motor – Driver Right Rear, depending on the location of the object, as an alert to the driver.

## Side Blind Zone Alert Operation

When the vehicle is started, both A9 Outside Rearview Mirror indicators will briefly come on to indicate that the system is operating. The system is designed to detect objects of interest as small as a 125cc motorcycle with rider. The detection zone starts at the outside rearview mirror and extends out to 3.5 m (11 ft) at the back corner of the vehicle and 3 m (10 ft) behind the vehicle at a height of 0.5 m (1.5 ft) and 2.0 m (6 ft) above the ground. The system may illuminate an indicator due to guardrails, signs, trees, shrubs, and other non-moving objects. This is normal system operation; the vehicle does not need service.

When the system detects a vehicle in the side blind zone or lane change alert area while driving forward, independent if passing a vehicle or being passed, an amber warning symbol will light up in the appropriate A9 Outside Rearview Mirror. This indicates that it may be unsafe to change lanes. If the driver then activates the turn signal, the amber warning symbol starts flashing as an extra warning not to change lanes.

Foul weather may affect the operation of the side blind zone and lane change alert systems. Occasional missed alerts can occur under normal circumstances and will increase in wet conditions. The number of missed alerts will increase with increased rainfall or road spray. Heavy rainfall, as well as mud, dirt, snow, ice, or slush build-up on the rear fascia, can completely disable the system.

If the vehicle is towing a trailer or has an object such as a bicycle rack attached to the rear of the vehicle, the side blind zone and lane change alert systems may not function properly and the indicators may illuminate intermittently or remain illuminated all the time.

## Lane Change Alert Operation

An integrated function of the side blind zone alert system is lane change alert. Lane change alert supplements the side blind zone alert system by detecting approaching vehicles on either side of the vehicle that may not yet be in the side blind zone alert area. The detection zone for lane change alert starts at the outside rearview mirror and extends out to 3.5 m (11 ft) at the back corner of the vehicle and 70 m (230 ft) behind the vehicle at a height between 0.5 m (1.5 ft) and 2.0 m (6 ft) above the ground.

## Rear Cross Traffic Alert Operation

Rear cross traffic alert displays a red warning triangle with a left or right pointing arrow on the infotainment display to warn of traffic coming from the left or right. This system detects objects coming from up to 20 m (65 ft) from the left or right side of the vehicle. When an object is detected, either three beeps sound from the left or right or three safety alert seat pulses occur on the left or right side, depending on the direction of the detected vehicle.

## Driver Information Center Messages

### SIDE BLIND ZONE ALERT OFF

This message indicates that the system has been disabled through the driver information center. Refer to the vehicle owner’s manual for instructions on how to set personalization options on the driver information center.

### SERVICE SIDE DETECTION SYSTEM

This message indicates that the system requires service. When the message is displayed, the indicators will remain illuminated at all times, notifying the driver that the side blind zone system should not be relied upon when changing lanes. Since the sensors are also used for rear cross traffic alert, this feature will also be inoperative.

### SIDE DETECTION SYSTEM TEMPORARILY UNAVAILABLE

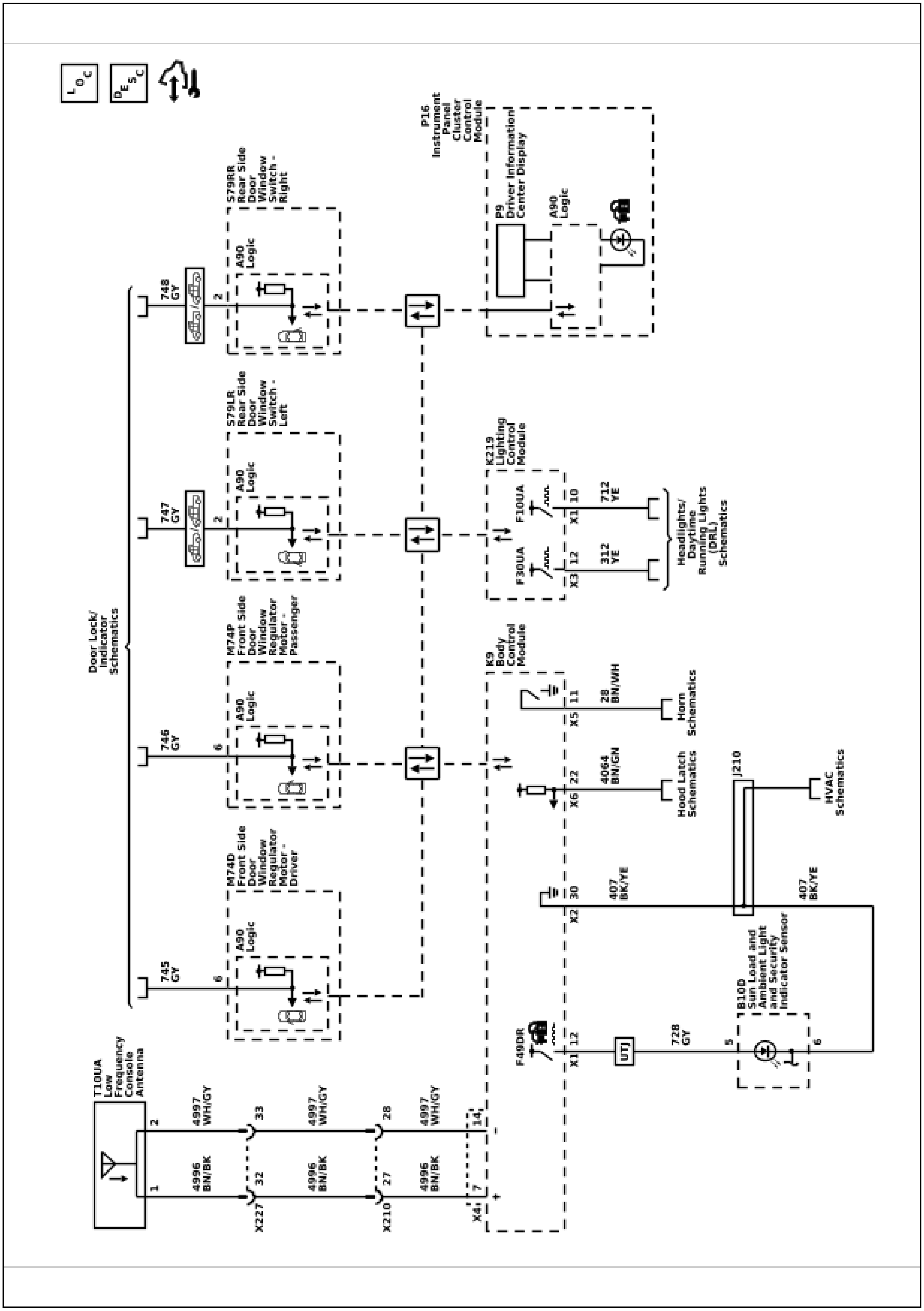
This message indicates that the system has been temporarily disabled because the sensor is blocked or can otherwise not accurately detect vehicles or objects. Examples are snow, ice, or slush build-up or mud or dirt packed into the sensor area. A “Side Detection System Temporarily Unavailable” message will be displayed on the driver information center. The side blind zone system transitions back to the normal operating state when the blockage is removed. Bumper stickers, fascia damage, labels, and heavy rain may also cause this condition. The blockage determination is performed with the vehicle in a drive gear. After the blockage is removed, it may take 3-4 hours of driving to establish normal system function. Do not replace any components if a “Side Detection System Temporarily Unavailable” message is displayed until it is confirmed that clearing a blockage did not correct the concern.

The rear cross traffic alert system will read the GPS latitude and longitude on the serial data bus and calculate if the vehicle is within a Radio Astronomy zone. These zones are located in Europe and Japan and require the sensors to be turned off. The “Side Detection System Unavailable” message will be displayed to the driver when this occurs.

# Immobilizer

## Schematic and Routing Diagrams

## Immobilizer Schematics (Immobilizer)

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# Repair Instructions

## Immobilizer System Component Programming

This procedure will learn the immobilizer function. If the battery voltage is low, charge the battery before proceeding with the learn. If the body control module (BCM) or engine control module (ECM) have been replaced, they must be programmed before performing this learn procedure.

Depending on the immobilizer function being learned or the component replaced, different learn functions are required to be performed. These learn functions are as follows:

**Immobilizer System Component Programming**

| When the function should be used: | Function name on SPS tool: | Function description: | Notes: |
|---|---|---|---|
| The BCM has been replaced and the existing vehicle keys are being reused or a diagnostic has instructed to perform the learn | Body Control Module IMMO Function with Existing Transponder or Remote Key | The BCM will relearn the immobilizer passwords and data while reusing the existing vehicle keys | — |
| The BCM has been replaced and new vehicle keys are being reused | Body Control Module IMMO Function with New Transponder or Remote Key | The BCM will relearn the immobilizer passwords and data while using new vehicle keys | — |
| The ECM has been replaced or a diagnostic has instructed to perform the learn | Engine Control Module IMMO Learn | The ECM will relearn the immobilizer passwords and data | — |
| Both the ECM and BCM have been replaced (this selection will REQUIRE new vehicle keys be used) | Engine Control Module and Body Control Module IMMO Learn | The ECM and BCM will learn new immobilizer passwords and data | Because both the ECM and BCM have been replaced and are learning new immobilizer passwords and data, all vehicle keys must also be replaced |
| A new vehicle key is being added (does not affect other vehicle keys) | Program Transponder or Remote Key (Add) | A new vehicle key will learn the immobilizer passwords and data | This function may not be available in all sales regions |
| All vehicle keys are desired to be invalidated and certain keys relearned or a diagnostic has instructed to perform the learn | Program Transponder or Remote Key (Delete) | All existing vehicle keys will be invalidated and any desired keys are relearned | This procedure may be used if a customer has had their keys lost or stolen and wishes to invalidate the keys, making them unable to start the vehicle |

**Note:** To prevent errors or immobilizer learn failure, the vehicle must be in Park (for automatic transmission) or Neutral with park brake applied (for manual transmission).

1. Connect a scan tool to the vehicle and access SPS.
2. Turn ON the ignition, with the engine OFF.
3. Ensure that all power consuming devices are turned OFF on the vehicle.
4. Select SPS application and follow the on-screen instructions.
5. Select Reprogram ECU.
6. Select IMMO Immobilizer Learn.
7. Select the appropriate programming function based on the component that was replaced or is being programmed. Refer to the table at the top of this document for assistance in choosing the correct programming function.

**Note:**

- At multiple times during the learn procedure, SPS will instruct you to turn the ignition to the run position. Make sure the vehicle is actually in the run mode before continuing on the SPS terminal. If the ignition is not in run mode, the learn procedure will fail. To verify the vehicle is in Run mode, verify the green LED is illuminated on the ignition mode switch.
- For the transmitter pocket location refer to [Link target (target-id 346024-) not found]

8. Follow the on-screen instructions.
9. When the SPS procedure has completed, press and hold the ignition mode switch for 15 seconds.
10. With a scan tool, clear any DTCs.

### Unable to Complete Programming

When attempting to program immobilizer components, various conditions may prevent the programming operation from completing. These conditions may be caused by normal system operation, a system malfunction, or an external influence. Common symptoms of a incomplete programming is receiving an error message during the attempt or having the SPS application become unresponsive.

- DTCs are set in the body control module (BCM)

  The immobilizer system is a function of the BCM software. If immobilizer DTCs are set in the BCM, such as DTC B2955, a fault has been identified in the immobilizer system. If this is not corrected before attempting to program components, the programming may not complete. Correct all immobilizer DTCs before attempting to program any immobilizer components.

- The key has been programmed to another vehicle or is not the correct type for the vehicle

  A key can only be programmed to a single vehicle. Once a key is programming to a vehicle, it is paired for the life of the key. The key can be learned to the same vehicle again and again, but it is not able to be programmed to a different vehicle.

  Many vehicle are available with both a base keyless entry system and an optional passive entry system. These keys typically look identical but cannot be substituted for one another. To verify the key is correct, compare the part number that is etched on the key to the part number identified in the parts catalog. The key should be correct for the system installed in the vehicle.

- The theft deterrent module is not properly secured or the key is not properly positioned in the pocket/ slot.

  A theft deterrent module that is not fully seated or is otherwise not properly secured may prevent a coupling between the transponder located in the key and the theft deterrent module. Being out of place by as little as 1 mm may prevent programming from completing. Make sure the theft deterrent module is properly installed and fully seated in it’s clip.

  The key shank must be fully extended so that the entire key shank fits into the programming slot.

  To determine if the theft deterrent module is properly secured, remove the battery from the key and place the key into the pocket/slot. Attempt to change the vehicle mode by pressing the vehicle ON/OFF switch. The vehicle should change modes. If the NO REMOTE DETECTED message is displayed on the DIC, the theft deterrent module may not be properly secured.

- External interference is interrupting the programming operation

  External RF interference and EMI may interrupt the low frequency coupling between the key and theft deterrent module. This interference may come from many different locations. Devices plugged into the vehicle power outlets such as cell phone chargers, laptop computers, GPS devices, etc. may cause interference. Vehicle location may also cause interference. Locations near airports and military installations may causer interference. Remove all customer installed devices and, if necessary, move the vehicle if interference is suspected.

## Description and Operation

### Immobilizer Description and Operation

The immobilizer system functions are provided by the Steering Column Lock Module, the Body Control Module (BCM), and the Engine Control Module (ECM), as well as any control modules which store and report the environment identifier. The Body Control Module uses low frequency antennas in different locations on the vehicle to determine the location of the transmitter. Multiple transmitting antennas are used to ensure complete coverage of the vehicle interior and rear compartment. These antennas transmit to the keyless entry transmitter.

When the vehicle Stop/Start switch is pressed, the low frequency antennas emit a challenge to the keyless entry transmitter. The transmitter receives this challenge and emits it's response as an RF message. The BCM then compares this value to a value stored in memory. The BCM also monitors various control modules to determine if the stored environment identifiers match.

If the correct transponder is detected, the electric steering column is unlocked, and there is no start disable from OnStar the BCM will send the prerelease allowed message via serial data to the ECM. The vehicle will be allowed up to 3 seconds run time. If the theft check is incorrect, the environment identifier check fails, the incorrect transponder is detected, the electric steering column is locked, or there is a start disable from OnStar, the BCM will send a negative response and the ECM will not start the vehicle or will immediately shut off the vehicle if prerelease allowed the vehicle to start.

If RF communication is interrupted, a "No Remote Detected" message will be displayed on the DIC. In these cases, the transmitter can be placed in the transmitter pocket. The immobilizer coil antenna is located in the immediate vicinity of the transmitter pocket. Placing the transmitter in the pocket/slot will create a low powered coupling between the transmitter and immobilizer coil antenna, allowing communications to occur and enabling vehicle starting.

The components of the immobilizer system are as follows:

- BCM
- ECM
- Steering column lock control module
- Immobilizer coil antenna
- Low frequency antenna
- Ignition key/Keyless entry transmitter
- Security indicator
- Various control modules which store and report the environment identifier

### Body Control Module (BCM)

The immobilizer system is an integral part of the BCM and is controlled internally within the BCM. The BCM can learn up to 8 keys (transponder values). The BCM uses low frequency antennas in three different locations on the vehicle to determine the location of the transmitter. Multiple antennas are used to ensure complete coverage of the vehicle interior and rear compartment. The BCM monitors the ignition mode switch. When the ignition mode is changed, the BCM will command, or “ping”, the low frequency antenna.

The BCM uses the following inputs:

- Environment identifier exchange with various modules
- Encrypted code from the vehicle key, received by the immobilizer coil antenna if the keyless entry transmitter signal isn’t detected as indicated by the “No Remote Detected” message
- Encrypted code from the vehicle key

The BCM uses the following outputs:

- Prerelease Allowed signal communication with ECM
- Challenge/Response with ECM

When a transponder value is received by the BCM, the BCM will compare this value to the learned key code stored in memory. The BCM then performs one of the following functions:

- If the encrypted code value matches the values stored in the BCM memory, the BCM will send the Prerelease Allowed signal to the ECM via serial data.
- If the encrypted code unique value does not match the value stored in the BCM, the BCM will send the start disable message to the ECM via serial data.
- If the BCM is unable to receive the vehicle key encrypted code value, the BCM will not send any messages to the ECM.

### Engine Control Module (ECM)

The ECM receives the BCM Prerelease Allowed signal and simultaneously the ECM sends a challenge to the BCM via the serial data circuit upon seeing the vehicle transition from OFF to any other power mode. Both the ECM and BCM perform a calculation on this challenge. If the calculated response from the BCM equals the calculation performed by the ECM, the ECM will allow vehicle starting.

### Low Frequency Antenna

When commanded, or “pinged”, the low frequency antenna broadcast a challenge to the keyless entry transmitter. Because of the low power of the antenna, this challenge is only broadcast in an approximate three meter range of the antenna. Multiple antenna are used to ensure complete coverage of the vehicle interior and rear compartment.

### Steering Column Lock Control Module

On vehicles with electronic steering column lock that use a steering column lock control module the immobilizer system will prevent vehicle starting if there is a fault or no communication with the steering column lock control module.

### Keyless Entry Transmitter

Each keyless entry transmitter contains a transponder with a unique encrypted value. The transponder's encrypted value is fixed and unable to be changed. The immobilizer system uses the keyless entry transmitter transponder value to determine if a valid keyless entry transmitter is being used to start the vehicle.

### Security Indicator

The BCM will command the Instrument Cluster to illuminate the security indicator when the vehicle is ON to indicate a fault has occurred within the immobilizer system.

## Remote Vehicle Speed Limiting Description and Operation

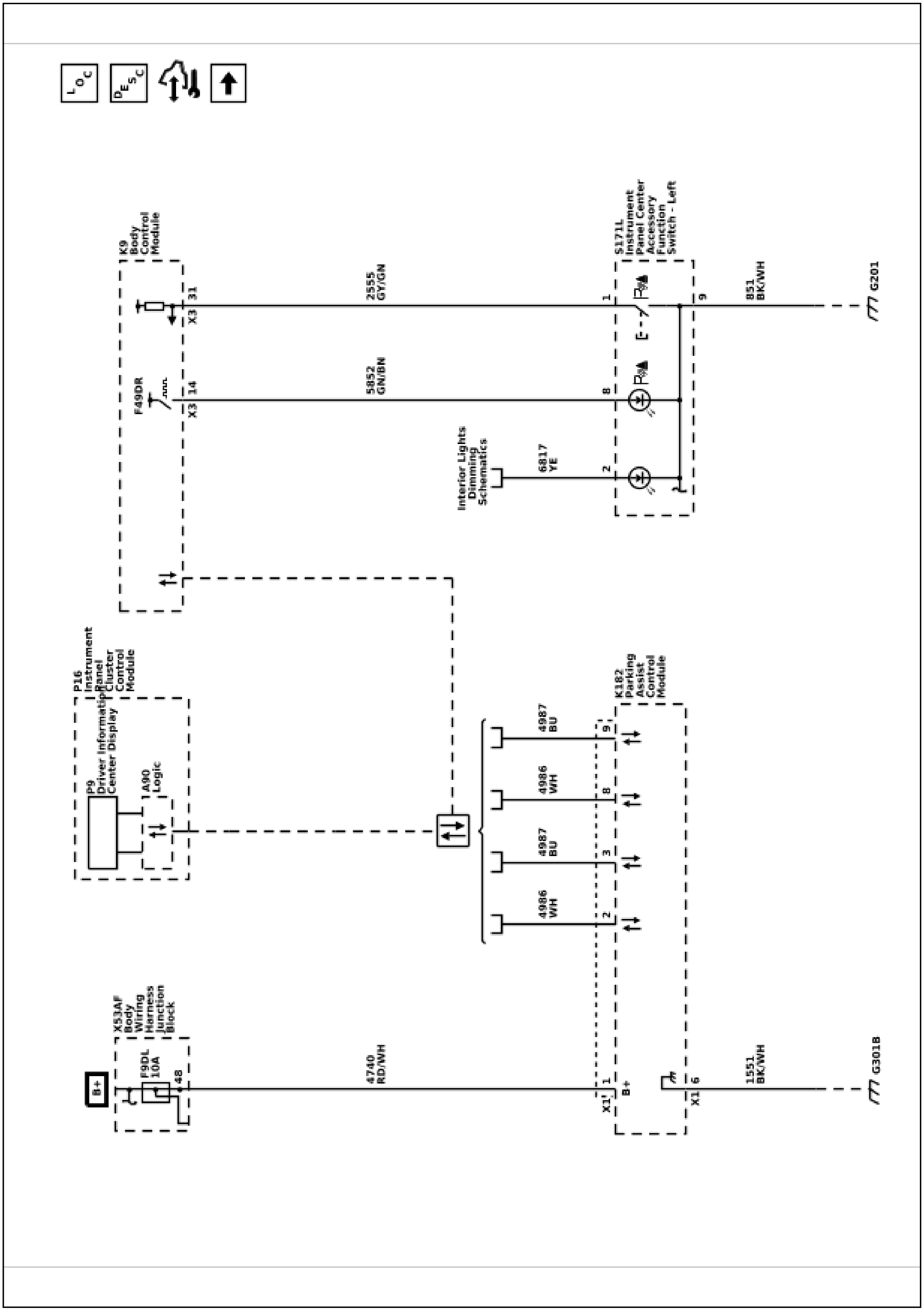
Certain vehicles equipped with OnStar® now have an additional feature that allows for remote limiting of the vehicle's speed. This OnStar® feature is called Stolen Vehicle Slow-Down and is now part of the OnStar® Stolen Vehicle Assistance service. This feature, when used in conjunction with local law enforcement and strict guidelines at the OnStar® Call Center, will slow the vehicle by interacting with the engine control system.

When the engine control system receives a valid request from the OnStar® telematics communications interface module, it will enter into a reduced engine power/vehicle speed limiting mode, which will decelerate the vehicle. Once the request is active the engine control module begins reducing engine torque to match requested vehicle speed and a REDUCED ENGINE POWER indication is displayed. No DTCs will be set during this process.

# Parking Assistance Systems

## Schematic and Routing Diagrams

## Parking Assistance Systems Schematics (Park Assist - Power, Ground, Serial Data, and Control (UD5))

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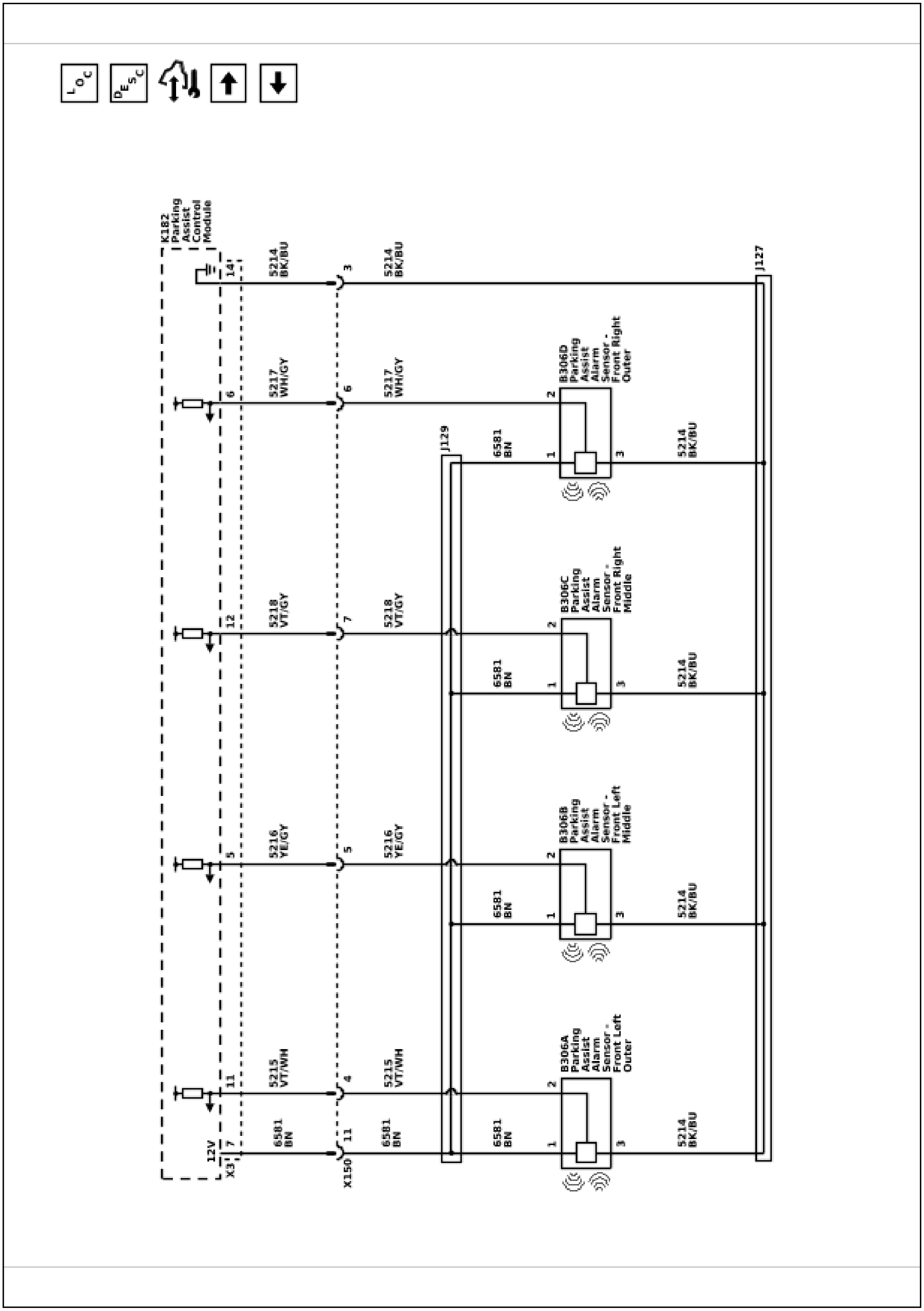
## Parking Assistance Systems Schematics (Park Assist - Front Sensors (UD5))

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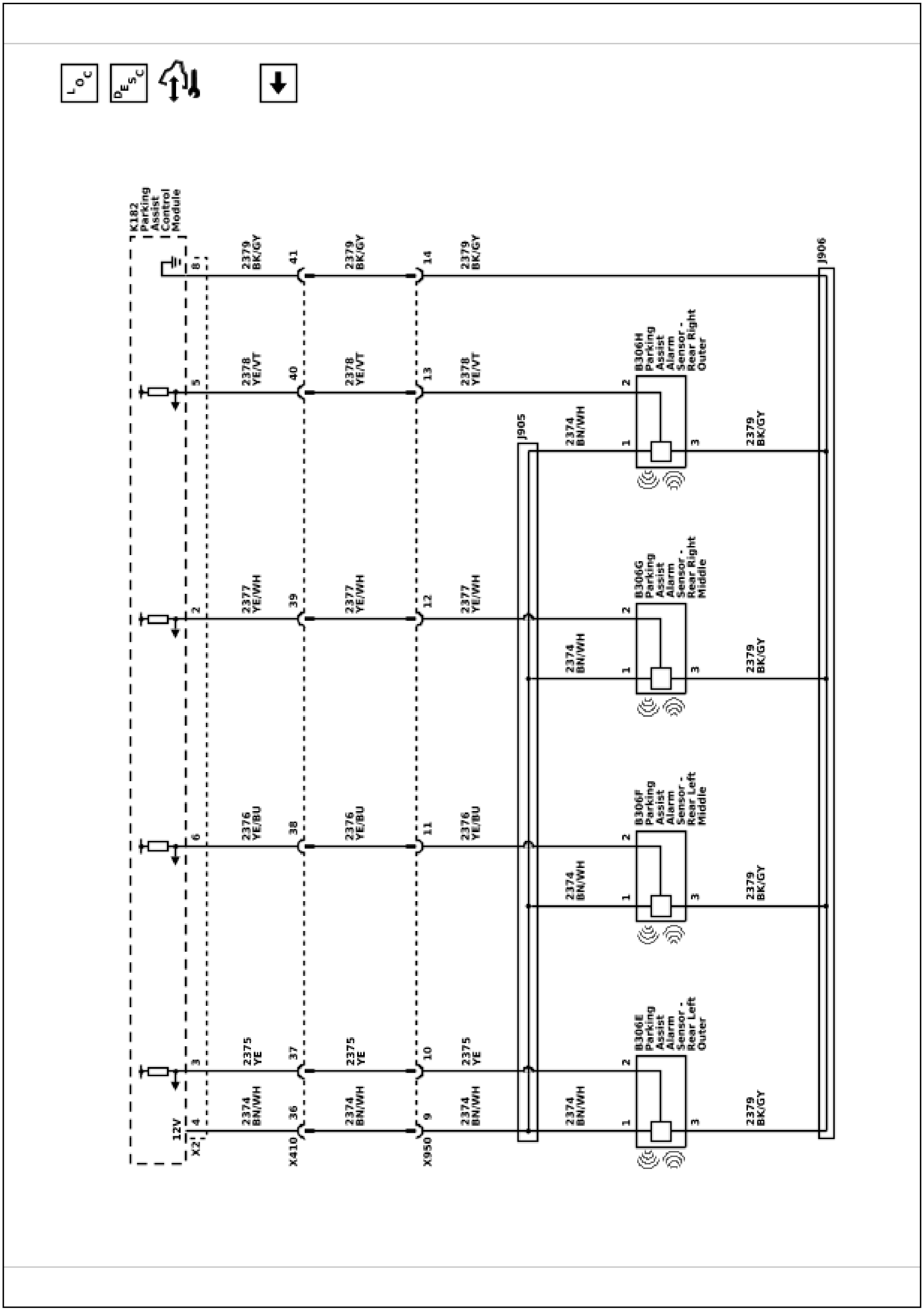
## Parking Assistance Systems Schematics (Park Assist - Rear Sensors (UD5))



# Description and Operation

## Parking Assist Description and Operation (UD5)

The parking assist system can help drivers avoid certain objects in their path during low-speed parking. The distance and location of the object is determined by four object sensors located in the rear fascia. The parking assist system may not detect all children, pedestrians, bicyclists, animals or objects below the bumper. Drivers should remember to always check the area around the vehicle before shifting into REVERSE. The parking assist system will not stop or slow down a vehicle. It does not engage a vehicle’s throttle or braking. No safety system can take the place of an alert and engaged driver.

The parking assist system is made up of the following components:

- K182 Parking Assist Control Module
- B306 Parking Assist Alarm Sensors
- Infotainment system

**K182 Parking Assist Control Module**
The K182 Parking Assist Control Module provides a reference voltage and a low reference to the B166/B306 Parking Assist Alarm Sensors. The K182 Parking Assist Control Module receives individual signals from each of the four B166/B306 Parking Assist Alarm Sensors and determines the location and distance of an object based on these inputs. When an object is detected, the K182 Parking Assist Control Module will send a serial data message to the infotainment system requesting an audible alert.

**B166/B306 Parking Assist Alarm Sensors**
The B166/B306 Parking Assist Alarm Sensors are located in the rear fascia of the vehicle. The sensors are used to determine the distance between an object and the bumper. Each sensor emits an ultrasonic frequency which is reflected off any object located behind the vehicle. These reflections are received by the sensors. The time difference between the emission of the frequency and when the reflection is received is known as sensor echo time; it is used to determine the distance to the object. The sensors report this information to the K182 Parking Assist Control Module.

**Infotainment System**
The infotainment system controls the audible alert for the parking assist system. If the an object is detected the infotainment system will command beeps as an audible alert to the driver.

### Rear Parking Assist Operation

The rear parking assist system uses four B166/B306 Parking Assist Alarm Sensors located on the rear fascia and functions when the transmission is in REVERSE. When a driver is backing up at a low speed, up to about 11 km/h (7 mph), the B166/B306 Parking Assist Alarm Sensors may detect objects up to 1.8 m (6 ft) behind the vehicle. When an object is within the measuring range of the B166/B306 Parking Assist Alarm Sensors, the ultrasonic pulse is reflected and is received by the sending or a neighboring sensor. The sensor converts this signal into a voltage signal and sends this signal to the K182 Parking Assist Control Module. The K182 Parking Assist Control Module evaluates the received sensor signals.

When an object is within 0.6 m (2 ft) of the rear bumper, 5 repeating low-pitched beeps are played from the rear speakers, followed by a continuous tone. If the vehicle is equipped with the Safety Alert Seat (HS1), it will pulse 5 times on both sides.

Some vehicles may have a park assist display on the P16 Instrument Panel Cluster Module with bars that show "distance to object," driving direction, and object location information for the parking assist system. As the vehicle gets closer to the detected object, distance-to-object information and caution triangles may be displayed that changes from yellow to amber to red.

The parking assist system can be turned on and off using the parking assist switch.

The K182 Parking Assist Control Module carries out a self test and monitors the sensors for electrical and mechanical faults. Monitored is the power supply of each sensor and the sensor signals. Mud, ice and snow may cause obstruction of the function of the sensors. The K182 Parking Assist Control Module also determines if the correct type of sensor is installed. If any of these tests fails, a DTC with corresponding symptom is set and the parking assist system is deactivated.

### Parking Assist System Messages

**SERVICE PARKING ASSIST or SERVICE DRIVER ASSIST**
The driver information center displays SERVICE PARKING ASSIST or SERVICE DRIVER ASSIST when the K182 Parking Assist Control Module detects a malfunction in the parking assist system and the system is disabled.

**PARK ASSIST OFF**
The PARK ASSIST OFF message is displayed in the driver information center when the parking assist system is disabled due to conditions that disable or inhibit the system. The K182 Parking Assist Control Module requests the driver information center display PARK ASSIST OFF when it detects such a condition.

### Parking Assist System Operational Checks

The scan tool Parking Assist Disable History 1–8 data can be used to diagnose a malfunction within the parking assist system or an intermittent concern. The following is a brief description of potential causes which may aid in diagnosis. For each potential issue, perform an appropriate inspect of the component or system and refer to the specific service information subsection related to that system for further diagnosis:

- Disable by Switch – The parking assist system has been disabled through the parking assist switch.
- Disabled by Customization Menu – The parking assist system has been disabled through the vehicle personalization menu.
- Vehicle Speed Too High – The vehicle is travelling too fast in reverse at speeds of greater than 8 km/h (5 mph).
- Vehicle Speed Invalid – The vehicle is unable to determine the vehicle speed.
- Steering Angle Signal Invalid – The vehicle is unable to determine the steering angle.
- Front Attached Object Detected – An object has been determined to be attached to the front of the vehicle. Common items such as a brush guards, light bars, and license plates may cause this concern. Additionally, damage to the front of the vehicle or a misaligned sensor may cause this concern. If the vehicle is damaged in a manner that causes the sensor to detect the bumper itself, the parking assist control module will interpret this as an attached object and disable the system. Carefully inspect the bumper, bumper mounting surface, and sensor retainers before continuing with normal diagnosis. After the detected cause has been addressed the vehicle must be driven at speed greater than 40 km/h (25 MPH).
- Rear Attached Object Detected – An object has been determined to be attached to the rear of the vehicle. Common items such as a hitch receiver, trailer, or a bicycle rack may cause this concern. Additionally, damage to the rear of the vehicle or a misaligned sensor may cause this concern. If the vehicle is damaged in a manner that causes the sensor to detect the bumper itself, the parking assist control module will interpret this as an attached object and disable the system. Carefully inspect the bumper, bumper mounting surface, and sensor retainers before continuing with normal diagnosis. After the detected cause has been addressed the vehicle must be driven at speed greater than 40 km/h (25 MPH).
- Front And Rear Attached Object Detected – An object has been determined to be attached to the front and rear of vehicle.
- Parking Assist Alarm Sensor Blocked – One of the following conditions may be present:
  - One or more of the sensors may be blocked by snow, mud, ice, or other debris. This might happen after going through a car wash in cold weather.
  - Silicone insulator surrounding sensor maybe missing, cut, or twisted.
  - Improperly installed sensor, sensor maybe be crooked due to a tight wire harness.
  - One or more of the sensors may be scratched or the paint maybe chipped.
  - Excessive paint thickness on a sensor may cause an excessive sensor ring time. When replacing or refinishing a sensor, do not apply an excessive amount of paint or clear coat.
- Haptic Seat Malfunction – A fault exists with the safety alert seat. Check for DTCs.
- Chime Malfunction – A fault exists with the vehicle chime. Check for DTCs.
- Parking Assist Switch Malfunction – A fault exists with the parking assist switch. Check for DTCs.
- Invalid Gear – The vehicle has determine a plausibility fault exists with the transmission range.
- Incorrect Power Mode – The vehicle is in an incorrect power mode for parking assist operation.

### Parking Assist Description and Operation (UKZ)

**Note:** The automatic parking assist system can steer the vehicle automatically. Be aware that, in some unlikely situations, the vehicle steering wheel and wheels/tires may move without warning. Please be especially aware of situations when vehicle front tires are lifted above the ground on a vehicle hoist as the wheels could move without warning. Please exercise special care if any work is performed with the vehicle running and in gear while elevated on a hoist.

In addition to the eight B166/B306 Parking Assist Alarm Sensors used for front and rear park assist, the automatic parking assist system uses two additional B166/B306 Parking Assist Alarm Sensors located on the front fascia and two additional B166/B306 Parking Assist Alarm Sensors located on the rear fascia. These sensors face toward the side of the vehicle and are used to aid the driver in positioning the vehicle in a parallel parking maneuver.

**Note:** Any malfunction in the parking assist system may disable automatic parking assist. Automatic parking assist will not operate if the parking assist system is disabled.

## Automatic Parking Assist Components

The parking assist system is made up of the following components:

- K182 Parking Assist Control Module
- K124 Image Processing Module
- B166/B306 Parking Assist Alarm Sensors
- K9 Body Control Module
- Parking Assist Switch
- Parking Assist Switch Indicator
- Automatic Parking Assist Switch
- Safety Alert Seat (with HS1)
- Infotainment System

**K182 Parking Assist Control Module**
The K182 Parking Assist Control Module provides a reference voltage and a low reference to the B166/B306 Parking Assist Alarm Sensors. The K182 Parking Assist Control Module receives individual signals from each of the four B166/B306 Parking Assist Alarm Sensors and determines the location and distance of an object based on these inputs. When an object is detected, the K182 Parking Assist Control Module will send a serial data message to the infotainment system requesting an audible alert.

**B166/B306 Parking Assist Alarm Sensors**
The B166/B306 Parking Assist Alarm Sensors are located in the front and rear fascia of the vehicle. The sensors are used to determine the distance between an object and the bumper. Each sensor emits an ultrasonic frequency which is reflected off any object located behind the vehicle. These reflections are received by the sensors. The time difference between the emission of the frequency and when the reflection is received is known as sensor echo time; it is used to determine the distance to the object. The sensors report this information to the K182 Parking Assist Control Module.

**K9 Body Control Module**
The K9 Body Control Module monitors the parking assist switch and control the parking assist switch indicator. When the parking assist switch is pressed, a serial data message is sent to the K182 Parking Assist Control Module indicating the driver is requesting the system be enabled or disabled. The K182 Parking Assist Control Module responds with a message that the system has been enabled or disabled. The K9 Body Control Module will respond by turning the parking assist switch indicator on or off.

The K9 Body Control Module also monitors the automatic parking assist switch. When the automatic parking assist switch is pressed, a serial data message is sent to the K182 Parking Assist Control Module indicating the driver is requesting the advance parking assist function. The K182 Parking Assist Control Module responds by beginning to search for a suitable parking space if conditions are correct.

On vehicles with HS1, without A45, the K9 Body Control Module also controls the P45 Seat Haptic Movement Motors for Safety Alert Seat operation.

**Parking Assist Switch**
The parking assist system can be activated and deactivated by pressing the parking assist switch. The K9 Body Control Module applies voltage and monitors the parking assist switch signal circuit. The parking assist switch is a normally open switch. With the switch open, voltage seen at the K9 Body Control Module is high. When the parking assist switch is pressed, the switch is closed and the signal circuit is pulled to ground. With the switch closed, voltage seen at the K9 Body Control Module is low. The K9 Body Control Module will respond to this by sending a serial data message to the K182 Parking Assist Control Module to enable or disable the system.

**Parking Assist Switch Indicator**
When the parking assist system is enabled, the K124 Image Processing Module will illuminate the indicator on the switch. The indicator is controlled through a low control circuit by the K124 Image Processing Module.

**Automatic Parking Assist Switch**
The automatic parking assist system can be activated and deactivated by pressing the automatic parking assist switch. The K9 Body Control Module applies voltage and monitors the automatic parking assist switch signal circuit. The automatic parking assist switch is a normally open switch. With the switch open, voltage seen at the K9 Body Control Module is high. When the automatic parking assist switch is pressed, the switch is closed and the signal circuit is pulled to ground. With the switch closed, voltage seen at the K9 Body Control Module is low. The K9 Body Control Module will respond to this by sending a serial data message to the K182 Parking Assist Control Module to enable or disable the system.

**Safety Alert Seat (with HS1, without A45)**
The K9 Body Control Module controls the P45 Seat Haptic Movement Motors. The P45 Seat Haptic Movement Motors provide haptic alert to the driver. If an object is detected, the K9 Body Control Module will command pulses to the P45 Seat Haptic Movement Motors as an alert to the driver.

**Safety Alert Seat (with HS1 and A45)**
The K40D Driver Seat Adjuster Memory Module controls the P45 Seat Haptic Movement Motors. The P45 Seat Haptic Movement Motors provide haptic alert to the driver. If an object is detected, the K40D Driver Seat Adjuster Memory Module will command pulses to the P45 Seat Haptic Movement Motors as an alert to the driver.

**Infotainment System**
The infotainment system controls the audible alert for the parking assist system. If the an object is detected the infotainment system will command beeps as an audible alert to the driver.

## Parking Assist Operation

The rear parking assist system uses four B166/B306 Parking Assist Alarm Sensors located on the rear fascia and functions when the transmission is in REVERSE. When a driver is backing up at a low speed, up to about 11 km/h (7 mph), the B166/B306 Parking Assist Alarm Sensors may detect objects up to 1.8 m (6 ft) behind the vehicle. When an object is within the measuring range of the B166/B306 Parking Assist Alarm Sensors, the ultrasonic pulse is reflected and is received by the sending or a neighboring sensor. The sensor converts this signal into a voltage signal and sends this signal to the K182 Parking Assist Control Module. The K182 Parking Assist Control Module evaluates the received sensor signals.

When an object is within 0.6 m (2 ft) of the rear bumper, 5 repeating low-pitched beeps are played from the rear speakers, followed by a continuous tone. If the vehicle is equipped with the Safety Alert Seat (HS1), it will pulse 5 times on both sides.

The front parking assist system uses four B306 Parking Assist Alarm Sensors located on the front fascia and functions when the vehicle is moving forward at low speeds. When a driver is driving forward at a low speed, up to about 11 km/h (7 mph), the B166/B306 Parking Assist Alarm Sensors may detect objects up to 1.8 m (6 ft) in front of the vehicle. When an object is within the measuring range of the B166/B306 Parking Assist Alarm Sensors, the ultrasonic pulse is reflected and is received by the sending or a neighboring sensor. The sensor converts this signal into a voltage signal and sends this signal to the K182 Parking Assist Control Module. The K182 Parking Assist Control Module evaluates the received sensor signals.

When an object is within 0.3 m (1 ft) of the front bumper, 5 repeating low-pitched beeps are played from the front speakers, followed by a continuous tone. If the vehicle is equipped with the Safety Alert Seat (HS1), it will pulse 5 times on both sides. The tone for front parking assist is higher pitched than the tone for rear parking assist.

Some vehicles may have a park assist display on the P16 Instrument Panel Cluster Module with bars that show "distance to object," driving direction, and object location information for the parking assist system. As the vehicle gets closer to the detected object, distance-to-object information and caution triangles may be displayed that changes from yellow to amber to red.

The parking assist system can be turned on and off using the parking assist switch.

The K182 Parking Assist Control Module carries out a self test and monitors the sensors for electrical and mechanical faults. Monitored is the power supply of each sensor and the sensor signals. Mud, ice and snow may cause obstruction of the function of the sensors. The K182 Parking Assist Control Module also determines if the correct type of sensor is installed. If any of these tests fails, a DTC with corresponding symptom is set and the parking assist system is deactivated.

## Automatic Parking Assist Operation

The automatic parking assist system aids the driver when attempting a parking maneuver. The K182 Parking Assist Control Module uses the four additional side-facing B306 Parking Assist Alarm Sensors located in the front and rear fascia, along with the eight typical forward and rearward-facing B306 Parking Assist Alarm Sensors, to guide the driver into a parking space.

**Note:** The driver seat belt must be buckled for the Automatic Parking Assist to operate. Unbuckling the seat belt during Automatic Parking Assist operation can cause the system to stop and not complete the parking maneuver.

The automatic parking assist switch is used to initiate the parking assist system when traveling at speeds below approximately 30 km/h (18 mph) (refer to owners manual for exact speed). While driving along a row of vehicles in which the driver wishes to park, the parking assist is activated by a switch or the infotainment screen. This will enable the automatic parking assist system and the K182 Parking Assist Control Module will begin seeking potential parking spots using the B306 Parking Assist Alarm Sensors.

When a parking spot of suitable size is found, the K182 Parking Assist Control Module will display a stop message on the driver information center. The driver accepts the decision by stopping the vehicle. The system calculates the optimal path into the parking spot and will then guide the vehicle into the chosen spot by taking over the shifting, steering, and braking control from the driver. Once in the parking spot, the K182 Parking Assist Control Module will center the vehicle in the spot.

If the automatic parking assist system is unable to complete a parking maneuver, a message indicating that the maneuver has been aborted will be displayed on the driver information center. Vehicle control will be given back to the driver once the brake or parking brake is applied.

## Parking Assist System Messages

**SERVICE PARKING ASSIST or SERVICE DRIVER ASSIST**

The driver information center displays SERVICE PARKING ASSIST or SERVICE DRIVER ASSIST when the K182 Parking Assist Control Module detects a malfunction in the parking assist system and the system is disabled.

**PARK ASSIST OFF**

The PARK ASSIST OFF message is displayed in the driver information center when the parking assist system is disabled due to conditions that disable or inhibit the system. The K182 Parking Assist Control Module requests the driver information center display PARK ASSIST OFF when it detects such a condition.

## Parking Assist System Operational Checks

The scan tool Parking Assist Disable History 1–8 data can be used to diagnose a malfunction within the parking assist system or an intermittent concern. The following is a brief description of potential causes which may aid in diagnosis. For each potential issue, perform an appropriate inspect of the component or system and refer to the specific service information subsection related to that system for further diagnosis:

- Disable by Switch – The parking assist system has been disabled through the parking assist switch.
- Disabled by Customization Menu – The parking assist system has been disabled through the vehicle personalization menu. Note: the Parking Assist system customization menu may not be available on all vehicles based on vehicle option content.
- Vehicle Speed Too High – The vehicle is travelling too fast in reverse at speeds of greater than 8 km/h (5 mph).
- Vehicle Speed Invalid – The vehicle is unable to determine the vehicle speed.
- Steering Angle Signal Invalid – The vehicle is unable to determine the steering angle.
- Front Attached Object Detected – An object has been determined to be attached to the front of the vehicle. Common items such as a brush guards, light bars, and license plates may cause this concern. Additionally, damage to the front of the vehicle or a misaligned sensor may cause this concern. If the vehicle is damaged in a manner that causes the sensor to detect the bumper itself, the parking assist control module will interpret this as an attached object and disable the system. Carefully inspect the bumper, bumper mounting surface, and sensor retainers before continuing with normal diagnosis. After the detected cause has been addressed the vehicle must be driven at speed greater than 40 km/h (25 MPH).
- Rear Attached Object Detected – An object has been determined to be attached to the rear of the vehicle. Common items such as a hitch receiver, trailer, or a bicycle rack may cause this concern. Additionally, damage to the rear of the vehicle or a misaligned sensor may cause this concern. If the vehicle is damaged in a manner that causes the sensor to detect the bumper itself, the parking assist control module will interpret this as an attached object and disable the system. Carefully inspect the bumper, bumper mounting surface, and sensor retainers before continuing with normal diagnosis. After the detected cause has been addressed the vehicle must be driven at speed greater than 40 km/h (25 MPH).
- Front And Rear Attached Object Detected – An object has been determined to be attached to the front and rear of vehicle.
- Parking Assist Alarm Sensor Blocked – One of the following conditions may be present:
  - One or more of the sensors may be blocked by snow, mud, ice, or other debris. This might happen after going through a car wash in cold weather.
  - Silicone insulator surrounding sensor maybe missing, cut, or twisted.
  - Improperly installed sensor, sensor maybe be crooked due to a tight wire harness.
  - One or more of the sensors may be scratched or the paint maybe chipped.
  - Excessive paint thickness on a sensor may cause an excessive sensor ring time. When replacing or refinishing a sensor, do not apply an excessive amount of paint or clear coat.
- Haptic Seat Malfunction – A fault exists with the safety alert seat. Check for DTCs.
- Chime Malfunction – A fault exists with the vehicle chime. Check for DTCs.
- Parking Assist Switch Malfunction – A fault exists with the parking assist switch. Check for DTCs.
- Invalid Gear – The vehicle has determine a plausibility fault exists with the transmission range.
- Incorrect Power Mode – The vehicle is in an incorrect power mode for parking assist operation.

### Automatic Parking Assist System Operational Checks

The scan tool Automatic Parking Assist Disable History 1–8 data can be used to diagnose a malfunction within the parking assist system or an intermittent concern. The following is a brief description of potential causes which may aid in diagnosis. For each potential issue, perform an appropriate inspect of the component or system and refer to the specific service information subsection related to that system for further diagnosis:

- Automatic Parking Assist Switch Pressed – The automatic parking assist switch has been pressed a second time, aborting the function.
- Automatic Parking Assist Switch Malfunction – The automatic parking assist is stuck closed or has been held down.
- Interrupted by Driver – The Automatic parking assist operation has been aborted by the driver by interfacing with the steering, brake, or accelerator.
- Info Display Control Malfunction – The Automatic parking assist system is not able to provide instructions on the driver information center
- Door Open – A door has been opened.
- Parking Brake Malfunction – A malfunction has been detected in the electric parking brake system.
- Vehicle Dynamics System Status Not Plausible – An implausible scenario between the steering angle sensor, yaw sensor, and lateral/longitudinal accelerometer has been determined.
- Steering Response Malfunction – The steering system has not responded as expected to a steering command.
- Automatic Brake Response Malfunction
- Transmission Response Malfunction – The transmission has not responded as expected to a shift command.
- Automatic Braking Apply Response Not Plausible – An implausible scenario between a brake apply command and vehicle deceleration has been determined.
- Vehicle Movement Detected During Brake Applied Request – Vehicle movement has occurred while the brakes are commanded to apply.
- Chime Malfunction – A fault exists with the vehicle chime. Check for DTCs.
- Wheel Speed Direction Signal Invalid – Identified wheel directional travel does not match intended travel direction.
- Vehicle Speed Invalid – The vehicle is unable to determine the vehicle speed.
- Attached Object Detected – An object has been determined to be attached to the front and rear of vehicle.
- Parking Maneuver Vehicle Speed Exceeded – The vehicle has exceeded the maximum allowable speed for the parking maneuver.
- Vehicle Speed Too High to Search for a Parking Space – The vehicle has exceeded the maximum allowable speed to search for a suitable parking spot.
- Number of Parking Maneuvers Exceeded – The maximum number of parking attempts for a single maneuver has been exceeded.
- Parking Space Too Small – The vehicle has determined the space for the attempted parking maneuver is too small.
- Vehicle Not Following Parking Space Path – The vehicle is unable to follow the intended path of the parking maneuver.
- Yaw Angle Above Threshold – The expected yaw angle for the parking maneuver has been exceeded.
- Steering Angle Deviation Above Threshold – The expected steering angle for the parking maneuver has been exceeded.
- Object Detected on Both Sides of Vehicle – An object has been detected on both the left and right side of the vehicle.
- Object Detected in Alert Zone – An object has been detected in the vehicle's path.
- Sensor Blocked – One of the following conditions may be present:
  - One or more of the sensors may be blocked by snow, mud, ice, or other debris. This might happen after going through a car wash in cold weather.
  - Silicone insulator surrounding sensor maybe missing, cut, or twisted.
  - Improperly installed sensor, sensor maybe be crooked due to a tight wire harness.
  - One or more of the sensors may be scratched or the paint maybe chipped.
  - Excessive paint thickness on a sensor may cause an excessive sensor ring time. When replacing or refinishing a sensor, do not apply an excessive amount of paint or clear coat.
- Steering Angle Signal Invalid – The vehicle is unable to determine the steering angle.
- Invalid Gear – The vehicle has determine a plausibility fault exists with the transmission range.
- Incorrect Power Mode – The vehicle is in an incorrect power mode for parking assist operation.

## Parking Assist Description and Operation (UD7)

The parking assist system can help drivers avoid certain objects in their path during low-speed parking. The distance and location of the object is determined by four object sensors located in the rear fascia. The parking assist system may not detect all children, pedestrians, bicyclists, animals or objects below the bumper. Drivers should remember to always check the area around the vehicle before shifting into REVERSE. The parking assist system will not stop or slow down a vehicle. It does not engage a vehicle's throttle or braking. No safety system can take the place of an alert and engaged driver.

The parking assist system is made up of the following components:

- K182 Parking Assist Control Module
- B306 Parking Assist Alarm Sensors
- K9 Body Control Module
- Parking Assist Switch
- Parking Assist Switch Indicator
- Safety Alert Seat (with HS1)
- Infotainment system

**K182 Parking Assist Control Module**
The K182 Parking Assist Control Module provides a reference voltage and a low reference to the B306 Parking Assist Alarm Sensors. The K182 Parking Assist Control Module receives individual signals from each of the four B306 Parking Assist Alarm Sensors and determines the location and distance of an object based on these inputs. When an object is detected, the K182 Parking Assist Control Module will send a serial data message to the infotainment system requesting an audible alert.

**B306 Parking Assist Alarm Sensors**
The B306 Parking Assist Alarm Sensors are located in the rear fascia of the vehicle. The sensors are used to determine the distance between an object and the bumper. Each sensor emits an ultrasonic frequency which is reflected off any object located behind the vehicle. These reflections are received by the sensors. The time difference between the emission of the frequency and when the reflection is received is known as sensor echo time; it is used to determine the distance to the object. The sensors report this information to the K182 Parking Assist Control Module.

**K9 Body Control Module**
The K9 Body Control Module monitors the parking assist switch and control the parking assist switch indicator. When the parking assist switch is pressed, a serial data message is sent to the K182 Parking Assist Control Module indicating the driver is requesting the system be enabled or disabled. The K182 Parking Assist Control Module responds with a message that the system has been enabled or disabled. The K9 Body Control Module will respond by turning the parking assist switch indicator on or off.

On vehicles with HS1, without A45, the K9 Body Control Module also controls the P45 Seat Haptic Movement Motors for Safety Alert Seat operation.

**Parking Assist Switch**
The parking assist system can be activated and deactivated by pressing the parking assist switch. TheK9 Body Control Module applies voltage and monitors the parking assist switch signal circuit. The parking assist switch is a normally open switch. With the switch open, voltage seen at the K9 Body Control Module is high. When the parking assist switch is pressed, the switch is closed and the signal circuit is pulled to ground. With the switch closed, voltage seen at the K9 Body Control Module is low. The K9 Body Control Module will respond to this by sending a serial data message to the K182 Parking Assist Control Module to enable or disable the system.

**Parking Assist Switch Indicator**
When the parking assist system is enabled, the K9 Body Control Module will illuminate the indicator on the switch. The indicator receives a constant ground and is controlled through a PWM voltage control circuit by the K9 Body Control Module.

**Safety Alert Seat (with HS1, without A45)**
The K9 Body Control Module controls the P45 Seat Haptic Movement Motors. The P45 Seat Haptic Movement Motors provide haptic alert to the driver. If an object is detected, the K9 Body Control Module will command pulses to the P45 Seat Haptic Movement Motors as an alert to the driver.

**Safety Alert Seat (with HS1 and A45)**
The K40D Driver Seat Adjuster Memory Module controls the P45 Seat Haptic Movement Motors. The P45 Seat Haptic Movement Motors provide haptic alert to the driver. If an object is detected, the K40D Driver Seat Adjuster Memory Module will command pulses to the P45 Seat Haptic Movement Motors as an alert to the driver.

**Infotainment System**
The infotainment system controls the audible alert for the parking assist system. If the an object is detected the infotainment system will command beeps as an audible alert to the driver.

## Rear Parking Assist Operation

The rear parking assist system uses four B306 Parking Assist Alarm Sensors located on the rear fascia and functions when the transmission is in REVERSE. When a driver is backing up at a low speed, up to about 11 km/h (7 mph), the B306 Parking Assist Alarm Sensors may detect objects up to 1.8 m (6 ft) behind the vehicle. When an object is within the measuring range of the B306 Parking Assist Alarm Sensors, the ultrasonic pulse is reflected and is received by the sending or a neighboring sensor. The sensor converts this signal into a voltage signal and sends this signal to the K182 Parking Assist Control Module. The K182 Parking Assist Control Module evaluates the received sensor signals.

When an object is within 0.6 m (2 ft) of the rear bumper, 5 repeating low-pitched beeps are played from the rear speakers, followed by a continuous tone. If the vehicle is equipped with the Safety Alert Seat (HS1), it will pulse 5 times on both sides.

Some vehicles may have a park assist display on the P16 Instrument Panel Cluster Module with bars that show "distance to object," driving direction, and object location information for the parking assist system. As the vehicle gets closer to the detected object, distance-to-object information and caution triangles may be displayed that changes from yellow to amber to red.

The parking assist system can be turned on and off using the parking assist switch.

The K182 Parking Assist Control Module carries out a self test and monitors the sensors for electrical and mechanical faults. Monitored is the power supply of each sensor and the sensor signals. Mud, ice and snow may cause obstruction of the function of the sensors. The K182 Parking Assist Control Module also determines if the correct type of sensor is installed. If any of these tests fails, a DTC with corresponding symptom is set and the parking assist system is deactivated.

## Parking Assist System Messages

### SERVICE PARKING ASSIST or SERVICE DRIVER ASSIST

The driver information center displays SERVICE PARKING ASSIST or SERVICE DRIVER ASSIST when the K182 Parking Assist Control Module detects a malfunction in the parking assist system and the system is disabled.

### PARK ASSIST OFF

The PARK ASSIST OFF message is displayed in the driver information center when the parking assist system is disabled due to conditions that disable or inhibit the system. The K182 Parking Assist Control Module requests the driver information center display PARK ASSIST OFF when it detects such a condition.

## Parking Assist System Operational Checks

The scan tool Parking Assist Disable History 1–8 data can be used to diagnose a malfunction within the parking assist system or an intermittent concern. The following is a brief description of potential causes which may aid in diagnosis. For each potential issue, perform an appropriate inspect of the component or system and refer to the specific service information subsection related to that system for further diagnosis:

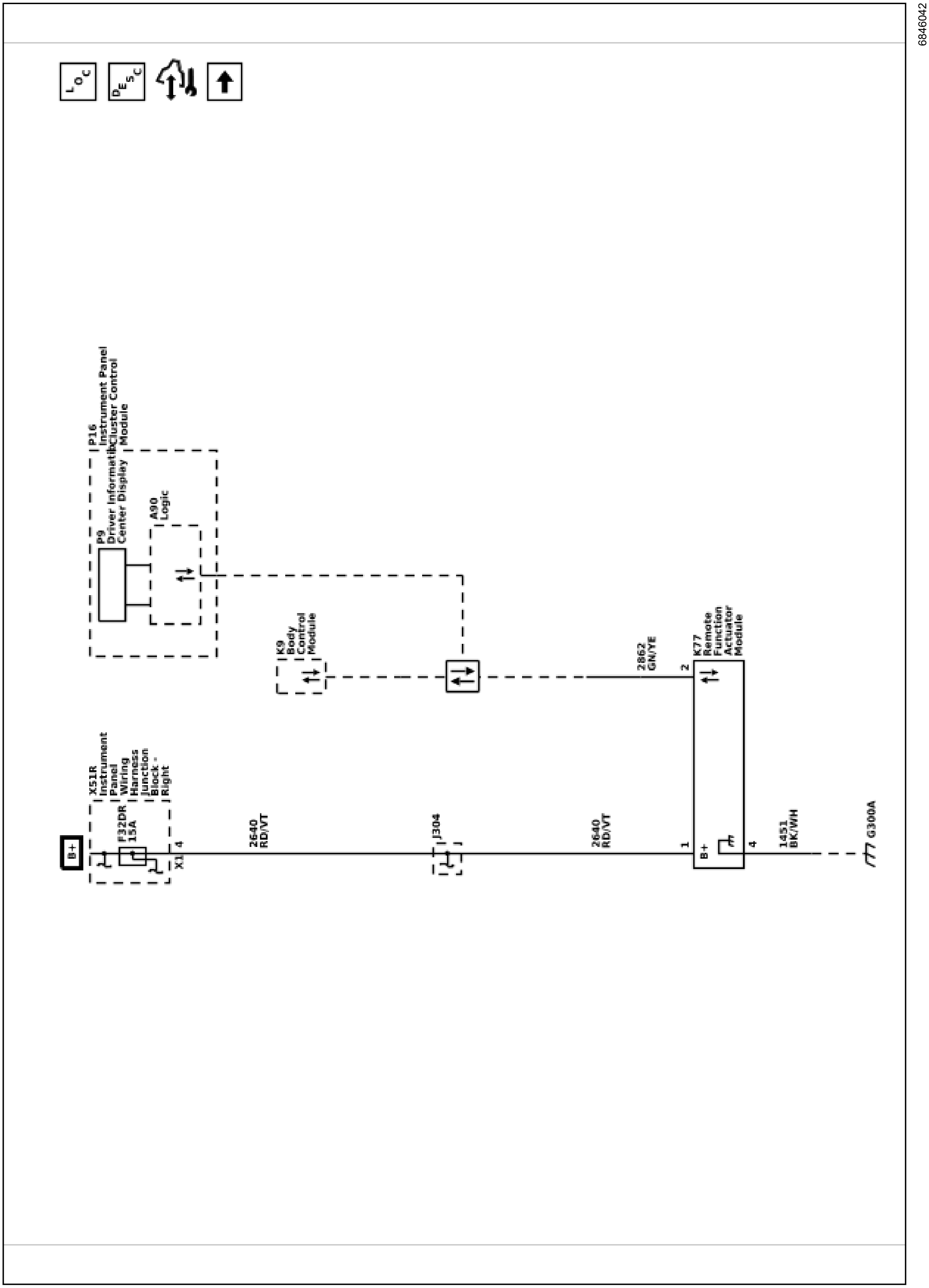
- Disable by Switch – The parking assist system has been disabled through the parking assist switch.
- Disabled by Customization Menu – The parking assist system has been disabled through the vehicle personalization menu. Note: the Parking Assist system customization menu may not be available on all vehicles based on vehicle option content.
- Vehicle Speed Too High – The vehicle is travelling too fast in reverse at speeds of greater than 8 km/h (5 mph).
- Vehicle Speed Invalid – The vehicle is unable to determine the vehicle speed.
- Steering Angle Signal Invalid – The vehicle is unable to determine the steering angle.
- Front Attached Object Detected – An object has been determined to be attached to the front of the vehicle. Common items such as brush guards, light bars, and license plates may cause this concern. Additionally, damage to the front of the vehicle or a misaligned sensor may cause this concern. If the vehicle is damaged in a manner that causes the sensor to detect the bumper itself, the parking assist control module will interpret this as an attached object and disable the system. Carefully inspect the bumper, bumper mounting surface, and sensor retainers before continuing with normal diagnosis. After the detected cause has been addressed the vehicle must be driven at speed greater than 40 km/h (25 MPH).
- Rear Attached Object Detected – An object has been determined to be attached to the rear of the vehicle. Common items such as a hitch receiver, trailer, or a bicycle rack may cause this concern. Additionally, damage to the rear of the vehicle or a misaligned sensor may cause this concern. If the vehicle is damaged in a manner that causes the sensor to detect the bumper itself, the parking assist control module will interpret this as an attached object and disable the system. Carefully inspect the bumper, bumper mounting surface, and sensor retainers before continuing with normal diagnosis. After the detected cause has been addressed the vehicle must be driven at speed greater than 40 km/h (25 MPH).

- Front And Rear Attached Object Detected – An object has been determined to be attached to the front and rear of vehicle.
- Parking Assist Alarm Sensor Blocked – One of the following conditions may be present:
  - One or more of the sensors may be blocked by snow, mud, ice, or other debris. This might happen after going through a car wash in cold weather.
  - Silicone insulator surrounding sensor maybe missing, cut, or twisted.
  - Improperly installed sensor, sensor maybe be crooked due to a tight wire harness.
  - One or more of the sensors may be scratched or the paint maybe chipped.
  - Excessive paint thickness on a sensor may cause an excessive sensor ring time. When replacing or refinishing a sensor, do not apply an excessive amount of paint or clear coat.
- Haptic Seat Malfunction – A fault exists with the safety alert seat. Check for DTCs.
- Chime Malfunction – A fault exists with the vehicle chime. Check for DTCs.
- Parking Assist Switch Malfunction – A fault exists with the parking assist switch. Check for DTCs.
- Invalid Gear – The vehicle has determine a plausibility fault exists with the transmission range.
- Incorrect Power Mode – The vehicle is in an incorrect power mode for parking assist operation.

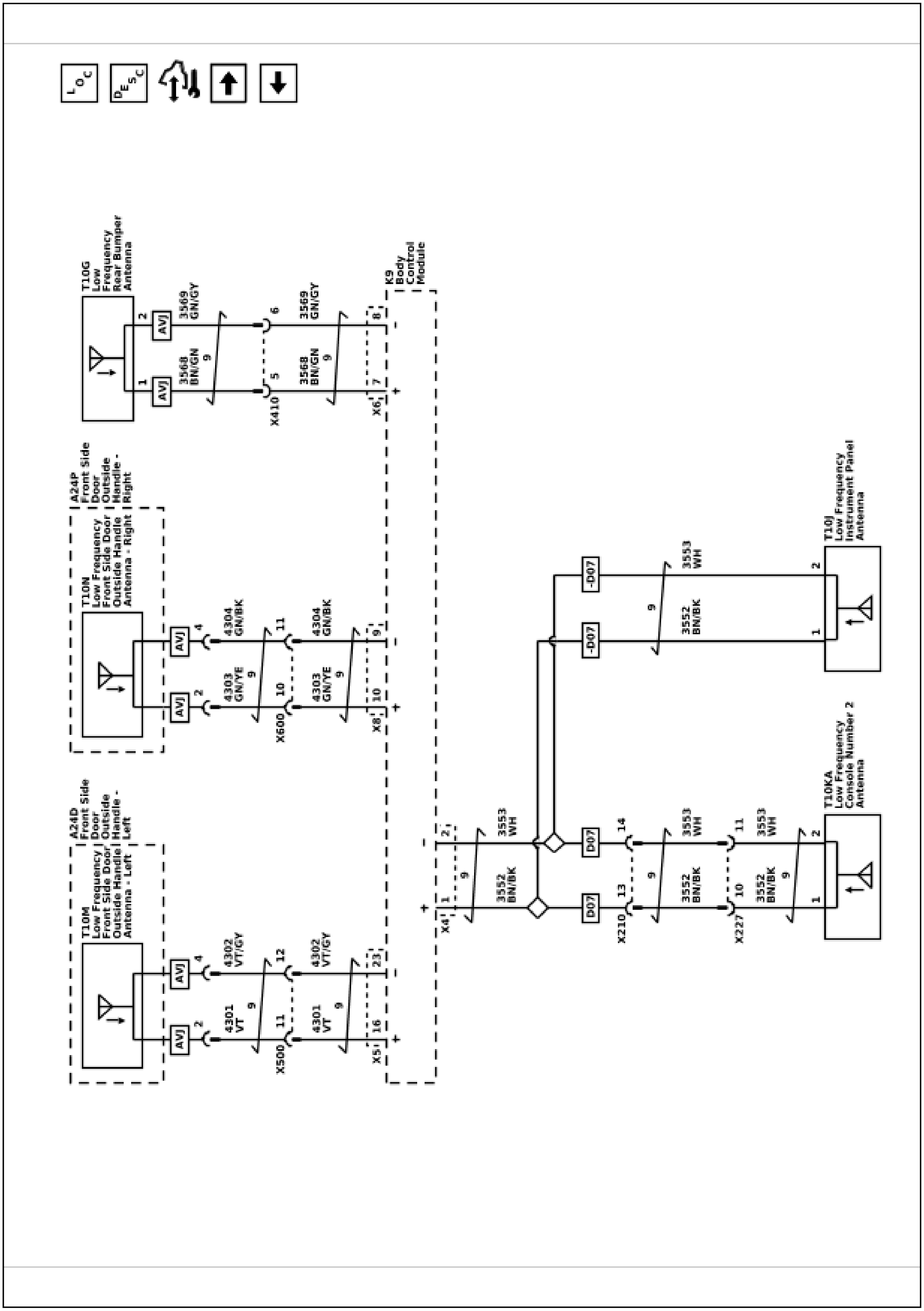
# Remote Functions

## Schematic and Routing Diagrams

## Remote Function Schematics (Keyless Entry (AQQ / AVJ))



## Remote Function Schematics (Keyless Entry - Passive and Keyless Start)

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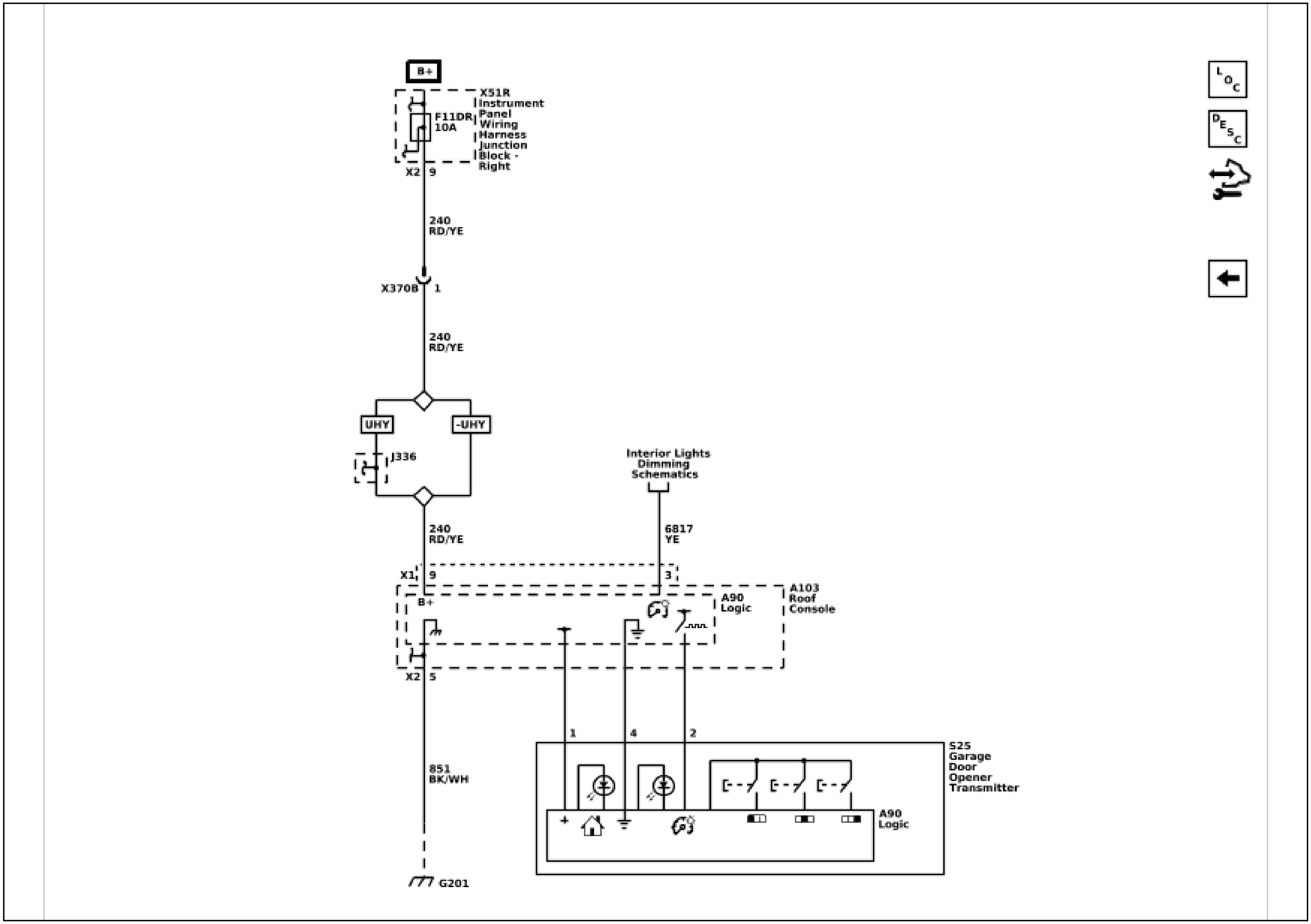
## Remote Function Schematics (Garage Door Opener (UG1))



# Description and Operation

## Front Side Door Access Control Transmitter Description and Operation

## Front Side Door Access Control Transmitter Description and Operation

The Front Side Door Access Control Transmitter is an accessory offered to be used as a vehicle entry device. Similar to the Keyless Entry Transmitter, the Front Side Door Access Control Transmitter will send a radio frequency signal to the Remote Function Actuator. Next, the Remote Function Actuator sends a signal to the Body Control Module via LIN communication. The BCM will interpret this signal and either lock or unlock the vehicle as a result. A low transmitter battery or radio frequency interference from aftermarket devices, such as 2-way radios, power inverters, computers, etc., may cause a system malfunction. High radio frequency traffic areas, such as gas stations that use pay-at-the-pump radio frequency transponders, may also cause interference that could lead to a malfunction.

Like the Keyless Entry Transmitter, the Front Side Door Access Control Transmitter is programmed to the vehicle's Body Control Module. This means the Front Side Door Access Control Transmitter will populate one of the 8 programmable spaces in the BCM for Keyless Entry Transmitters. The Front Side Door Access Control Transmitter will need to be reprogrammed in the event of BCM replacement. This can only be achieved with the Master Code. If the Master Code is not retrievable, a new Front Side Door Access Control Transmitter with accompanying wallet card will need to be programmed to the new BCM.

The Front Side Door Access Control Transmitter has 5 buttons depicting numbers from 0 to 9. Each button represents a character of a 5 digit code that the vehicle owner may program, which will be referred to as a personal code. The user has 3 attempts to input the correct access code before the Front Side Door Access Control Transmitter enters lockout mode for 1 minute. This will occur up to 2 more times if the incorrect access code is entered repeatedly. After that, any additional 3 attempts will cause the Front Side Door Access Control Transmitter to enter lockout mode for 23 minutes. There is an LED light at the top of the Front Side Door Access Control Transmitter that provides feedback to the user. Each Front Side Door Access Control Transmitter is sold with a wallet card that contains a master code that may be used for keyless entry as well as programming a personal code. The master code will always allow operation of the Front Side Door Access Control Transmitter and may be used to program a new personal code. Entering the 5 digit access code will unlock the driver door. Pressing the 3/4 key within 5 seconds of entering the 5 digit access code with unlock all doors. Pressing the 7/8 and 9/0 button will lock all doors. To change the personal code, refer to the wallet card included with the Front Side Door Access Control Transmitter.

The Front Side Door Access Control Transmitter contains a button cell battery that is not serviceable. Once the battery exceeds the expected lifetime, the Front Side Door Access Control Transmitter will need to be replaced. A new Front Side Door Access Control Transmitter will come with new wallet card.

## Garage Door Opener Description and Operation

The garage door opener is fixed and rolling code capable. Rolling code is a system that allows the code that the customers receiver receives from the garage door opener to change every time the garage door opener is used within operating range of the receiver. Rolling code programming requires the customer to push a learn/program button on the garage door opener receiver at their home. This button is usually located on the receiver unit under a cover (light cover) on one end of the unit. The customer must follow the garage door opener manufacturers instructions to program/learn the receiver to accept the Universal Home Remote System as an authorized opener for their unit . When the receiver and the garage door opener are initially programmed together, a code is established and a new code is created for every new transmission. The software in the receiver recognizes the garage door opener and accepts the new code.

The garage door opener is compatible with most, but not all types and brands of transmitters.

The garage door opener is a transmitter operating between 288–434 MHz. The power and range of the transmitter is limited to comply with laws governing the generation of radio frequency interference. The transmitter is programmed by the user to accept the signal generated by the user's transmitters.

The garage door opener has 3 buttons that may be programmed for individual transmitter/receiver combinations to control up to 3 garage door openers, security gates, lighting systems, etc. Each button represents a transmitter code section of the transmitter, which operates separately from any other button, and may be considered a separate transmitter. Operation consists of simply pressing a button to activate the corresponding transmitter.

The garage door opener does not need any programming after it is replaced. However, for the opener function it must be programmed to the customer’s garage door or other devices such as a gate. The programming can only be performed at the device being programmed, it cannot be programmed at a service facility. Instructions for programming are listed in the Garage Door Opener Malfunction document in a Diagnostic Aid.

**Note:** Do not use the garage door opener (GDO) with any garage door opener that does not have the stop and reverse safety feature. This includes any garage door opener model manufactured before April 1, 1982.

## Keyless Entry System Description and Operation

### Keyless Entry System Description and Operation – Active

The keyless entry system is a vehicle entry device. The keyless entry system is used in conjunction with the door locks to unlock the vehicle. Keyless entry will lock/unlock a door or open the rear compartment lid when a corresponding button on the keyless entry transmitter is pressed. This is accomplished by the transmitter sending a radio frequency to the remote control door lock receiver that has a direct link to the body control module (BCM). The BCM interprets the signal and activates the requested function or requests the appropriate ECU to activate the function via a serial data message. A low transmitter battery or radio frequency interference from aftermarket devices, such as 2-way radios, power inverters, computers, etc., may cause a system malfunction. High radio frequency traffic areas, such as gas stations that use pay-at-the-pump radio frequency transponders, may also cause interference that could lead to a malfunction. Keyless entry allows you to operate the following features:

- Door lock/unlock
- Rear compartment lid release
- Illuminated entry lamps
- Panic alarm/vehicle locator
- Remote vehicle start
- Passive keyless entry able/disable
- Automatic window express down, if equipped
- Automatic window express up, if equipped
- Automatic power mirror folding/unfolding, if equipped

### Keyless Entry System Description and Operation – Passive

Passive keyless entry allows entry to a locked vehicle without pressing any buttons on the keyless entry transmitter. The passive entry system uses low frequency antennas in several different areas on the vehicle to determine the location of the transmitter. When passively opening a locked door or the rear compartment, you must have a programmed transmitter with you in your pocket, purse, or briefcase within a one meter range.

When an exterior door handle button is pressed or the rear compartment touch pad is pressed, the body control module activates the low frequency antenna which sends out a challenge to the keyless entry transmitter. Because of the low frequency, communication range is limited. The antenna will emit the challenge in a one meter range. The transmitter must be within this range to receive the challenge. The transmitter receives this challenge and emits it's response as an RF message, which is received by the remote control door lock receiver. If the response is correct, entry into the vehicle will be allowed.

As a customer convenience feature, the keyless entry system will notify the driver if the transmitter has been left in the vehicle after exiting by chirping the vehicle horn three times and displaying a message on the DIC. This may be turned off using vehicle personalization. Also, if the transmitter is left in the vehicle after the central door lock switch has been used to lock the vehicle, the driver door will remain unlocked after exiting the vehicle. This is intended to prevent locking the transmitter in the vehicle and being unable to access it.

### Keyless Entry System Description and Operation – Keyless Start

The keyless start portion of the keyless entry system allows vehicle starting, having only the transmitter as your key. The keyless start system uses low frequency antennas in three different locations on the vehicle to determine the location of the transmitter. Multiple antenna are used to ensure complete coverage of the vehicle interior and rear compartment. When using the keyless start system, a programmed transmitter must be in the vehicle's interior, in the driver's pocket, purse, or briefcase.

When the ignition mode switch is pressed, the low frequency antennas emit a challenge to the keyless entry transmitter. The transmitter receives this challenge and emits it's response as an RF message, which is received by the remote control door lock receiver. If the response is correct, vehicle starting will be allowed. If RF communication is interrupted, a “No Remote Detected” message will be displayed on the DIC. In these cases, the transmitter can be placed in the transmitter pocket located in the center console. The immobilizer antenna coil is located directly beneath the transmitter pocket. Placing the transmitter in the pocket will create a low powered coupling between the transmitter and immobilizer antenna, allowing communications to occur and enabling vehicle starting. If the key has been idle the DIC may display “Key In Sleep Mode, Move Key, Then Start”. In this case move the vehicle key to start the vehicle.

The keyless entry system has the following components:

- Keyless entry integrated key/transmitter
- Driver and passenger side antennas
- Driver and passenger door handle switches (part of the door handle assembly)
- Rear fascia antenna
- Immobilizer antenna coil (front console antenna function)
- Rear console antenna
- Rear Compartment Antenna (If Equipped)
- Body control module (BCM)
- Remote control door lock receiver

### Keyless Entry Transmitters

By operating any of the exterior door handle buttons or the start/stop switch, a nearby transmitter is challenged by a keyless entry antenna. The transmitter will send an RF response to the remote control door lock receiver, which communicates with the BCM. The BCM will interpret this communication and either allow or deny vehicle entry or starting.

### Side Antennas

The keyless entry side antennas are used to transmit low frequency communications to the keyless entry transmitters.

The keyless entry side antennas are located in the driver and passenger body sides. The antennas are controlled by the body control module. When the exterior door handle button is pressed, the respective antenna will send out a challenge to the keyless entry transmitter, which begins the passive entry communications.

### Rear Fascia Antenna

The rear fascia antenna is used to transmit low frequency communication to the keyless entry transmitters for entry to rear compartment.

The rear fascia antenna is located behind the rear fascia. The antenna is controlled by the body control module. When the rear compartment touch pad is pressed, the antenna sends out a challenge to the keyless entry transmitter, which begins the passive entry communications.

### Immobilizer Coil Antenna

This antenna is located in the front of the center console.

The Immobilizer antenna coil is used for vehicle starting functions and for learning vehicle keys. When the ignition mode switch is pressed, the antenna is energized or "pinged". This emits a low frequency challenge signal that is received by the keyless entry transmitter. The transmitter will then reply to this challenge with a response and, if correct, vehicle starting will occur. If the transmitter battery is dead, weak, or the RF signal is being interrupted, the transmitter may be placed in the pocket to create a low powered coupling between the transmitter and immobilizer coil antenna, allowing communications to occur and enabling vehicle starting.

### Rear Console Antenna

This antenna is located in the rear of the center console.

The rear console antenna is used for vehicle starting functions. When the ignition mode switch is pressed, the antenna is energized or "pinged". This emits a low frequency challenge signal that is received by the keyless entry transmitter. The transmitter will then reply to this challenge with a response and, if correct, vehicle starting will occur.

### Rear Compartment Antenna (If Equipped)

This antenna is located near the center of the rear compartment area.

The rear compartment antenna is used for vehicle starting functions. When the ignition mode switch is pressed, the antenna is energized or "pinged". This emits a low frequency challenge signal that is received by the keyless entry transmitter. The transmitter will then reply to this challenge with a response and, if correct, vehicle starting will occur.

### OnStar® Remote Link

A vehicle operator may have the ability to perform some of the keyless entry functions using applications on personal devices such as smart phones. Refer to *OnStar Description and Operation 5-21*.

### Body Control Module (BCM)

The BCM is a multi-function module that performs the following functions:

- Receive and authenticate active transmitter and keyless start/entry signals from the remote control door lock receiver
- Determines the function requested by the transmitter signal
- Performs the function requested by the transmitter signal
- Activating vehicle antennas for passive keyless entry functions
- Activating vehicle antennas for keyless start functions
- Backup control for the ECM accessory wakeup and the run/crank relay
- If equipped, controls the electronic steering column lock
- Receiver of the exterior door handle switch inputs and door open switch (not the door ajar switch)
- Ignition mode switch monitoring

### Unlock Driver Door Only – Active

Momentarily press the transmitter UNLOCK button in order to perform the following functions:

- Unlock only the driver door or all doors, if enabled through personalization
- Illuminate the interior lamps for a determined length of time, or until the ignition is turned ON
- Flash the exterior lights, if enabled through personalization
- Disarm the Content Theft Deterrent (CTD) system
- Deactivate the CTD system when in the alarm mode

### Unlock All Doors – Second Operation – Active

Momentarily press the transmitter UNLOCK button a second time, within 5 seconds of the first press, to perform the following function:

Unlock the remaining doors

### Unlock Driver Door Only – Passive

If enabled through personalization, approach the driver door with a valid keyless entry transmitter and press the door handle button to perform the following functions:

- Unlock and open only the driver door
- Disarm the CTD system, if equipped
- Deactivate the CTD system when in the alarm mode

### Unlock All Doors – Passive

Approach any non driver door (front or rear) or, if enabled through personalization, the driver door with a valid keyless entry transmitter and press the door handle button to perform the following functions:

- Unlock all vehicle doors
- Disarm the CTD system, if equipped
- Deactivate the CTD system when in the alarm mode

### Lock All Doors – Active

Press the transmitter LOCK button to perform the following functions:

- Lock all vehicle doors
- Immediately turn off the interior lamps
- Flash the exterior lights, if enabled through personalization
- Chirp the horn, if enabled through personalization
- Arm the CTD system

### Lock All Doors – Passive

Exit the vehicle (with ignition off) with the keyless entry transmitter to automatically perform the following functions, if equipped.

- Lock all vehicle doors after a delay
- Flash the exterior lights, if enabled through personalization
- Chirp horn, if enabled through personalization
- Arm the CTD system

When all doors are closed, they can also be locked from the exterior by operating a front door handle button or touch pad while having a valid transmitter within range. Vehicles equipped with a rear door button can also lock all doors from the rear doors.

### Rear Compartment Lid Release – Active (If Equipped)

If the vehicle transaxle is in PARK or NEUTRAL, a double press of the transmitter rear compartment release button will open the rear compartment lid.

### Rear Compartment Lid Release – Passive (If Equipped)

Approach the rear of a locked vehicle with a valid keyless entry transmitter. Press the rear compartment lid release touch pad. The rear compartment lid will open.

### Tailgate Release – Passive (If Equipped)

Approach the rear of a locked vehicle with a valid keyless entry transmitter. Press the tailgate release touch pad. The rear tailgate will open.

### Vehicle Locator/Panic Alarm/Active

A single press of the panic button performs the following functions. Some functions may be dependent on personalization settings:

- Pulses the horn three times
- Flashes the exterior lamps three times

A press and hold of the panic button performs the following functions:

- Pulses the horn and flashes the parking lamps for 30 second or until the following conditions occur:
  - The panic button is pressed
  - The ignition switch is turned to the RUN position with a valid key

### Remote Vehicle Start/Active (If Equipped)

The remote vehicle start function allows engine starting while not in the vehicle. It also allows the vehicle HVAC system and other vehicle systems to enable, providing a comfortable vehicle upon entry. The remote vehicle start sequence begins by pressing and releasing the remote vehicle start button on the keyless entry transmitter twice. The turn signal lamps will illuminate to indicate the vehicle has received the remote start request. Each time a remote vehicle start is performed, the vehicle doors are locked, however they may then be unlocked/locked with the transmitter at any time. Once activated, the engine is allowed to run for 15 minutes. The remote start operation can be repeated as many times as desired up to a total run time of 30 minutes. The remote vehicle start event may be cancelled at any time by pressing only the remote vehicle start button on the transmitter or by entering the vehicle and turning ON the hazard lamps.

### Hood Ajar Switch/Active

The hood switch provides status of the hood to the BCM for remote vehicle start purposes. The switch is integrated into the hood latch assembly. The hood ajar switch provides 2 separate inputs to the BCM. These separate inputs allow the BCM to actively monitor for a hood ajar switch fault.

### Remote Vehicle Start Circuit Description/ Active

The BCM receives a signal from the keyless entry transmitter indicating a remote vehicle start request. The BCM and ECM use the following inputs to verify the system is ready to enable a remote vehicle start event:

- Vehicle is not in valet mode
- Vehicle is in park
- Keyless entry transmitter is not in the vehicle
- The hood is closed
- The hazard switch is OFF
- Vehicle power mode is OFF
- The malfunction indicator lamp (MIL) is not commanded ON by the ECM
- Remote start timer does not equal 0 (the 30 minute maximum time has not been used)

When the BCM determines all conditions meet those required for a remote vehicle start event, a message is sent via serial data to the ECM. While the ECM is in remote vehicle start mode it will cut fuel to the engine if any of the following monitored conditions occur:

- Vehicle speed is greater than 0
- Transmission is not in P
- Excessive engine coolant temperature
- Low oil pressure
- Engine crank time is greater than 30 seconds
- Excessive engine speed
- Accelerator pedal position too high
- Immobilizer system indicates a theft attempt

If any conditions prevent a remote start or cause a remote start operation to be cancelled there is a record of the cause in the scan tool.

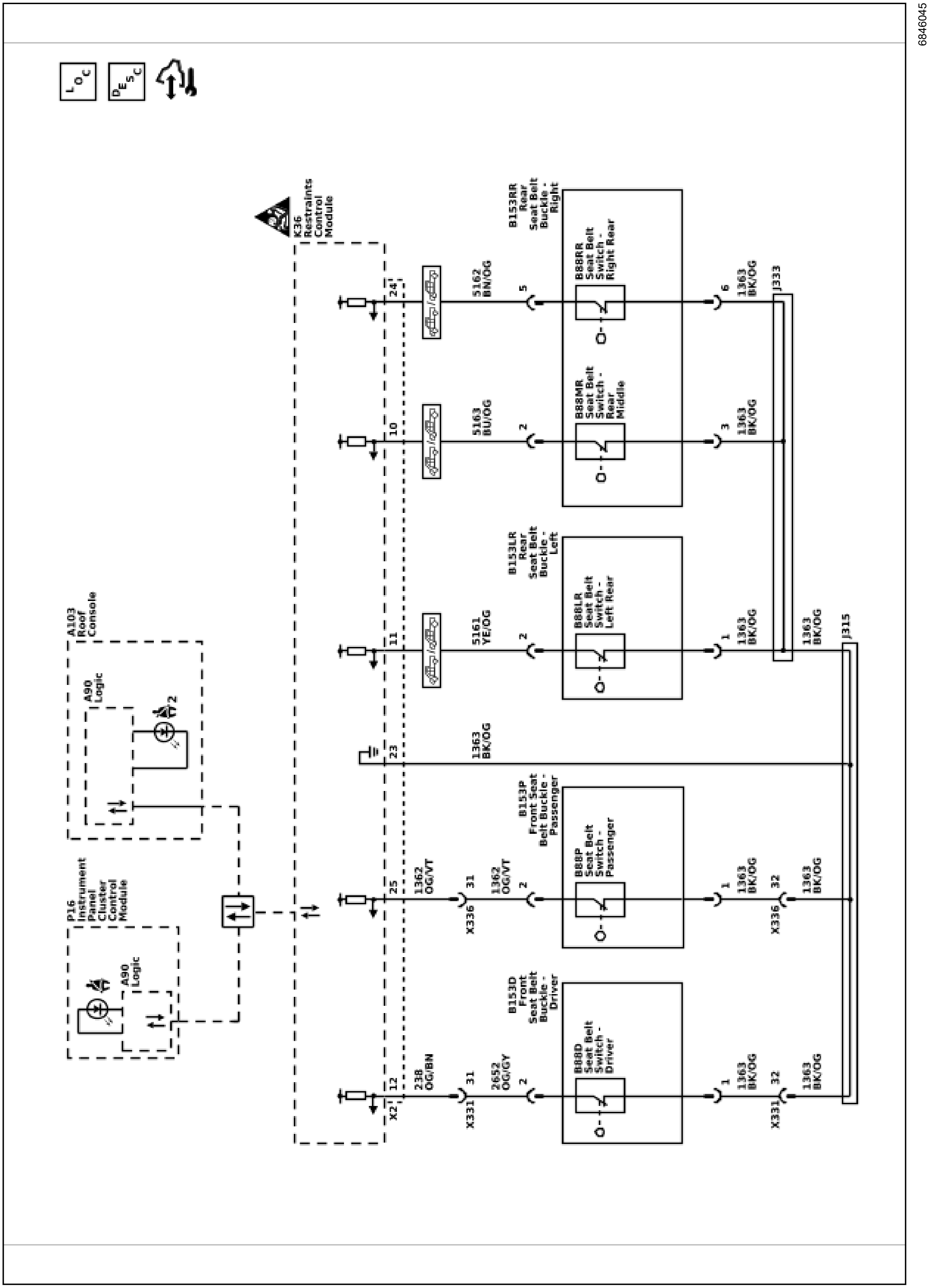
### Keyless Entry Personalization

Vehicle lock/unlock functions and remote vehicle start settings may be personalized for the vehicle. This includes the capability of turning the passive entry system completely off. For functional descriptions and programming instructions, refer to the vehicle owners manual.

# Seat Belts

## Schematic and Routing Diagrams

## Seat Belt Schematics (Seat Belts)



# Description and Operation

## Seat Belt System Description and Operation

### Restraint System

The primary means of occupant restraint are the front and rear seat belts. Seat belts help to keep the occupants inside the passenger compartment and gradually reduce the impact forces during the following events:

- Frontal impact
- Rear impact
- Side impact
- Rollover event

All seat belt retractors have emergency locks. The retractors remain unlocked during normal operation and under normal driving conditions to allow free movement of the upper body of each occupant. The seat belt webbing is locked into position by a pendulum, which causes a locking bar to engage a cog on the spool of the retractor mechanism, when the following conditions occur:

- Rapid extraction of the seat belt webbing from the retractor
- Abrupt change in vehicle velocity
- Operation of the vehicle on a steep slope

The seat belts have an automatic locking (cinch) feature. The cinch feature is activated when the seat belt webbing is completely extended from the retractor. It prevents the webbing from extending beyond the position at which it can retract. Use of the cinch feature is recommended for securing a child seat. The cinch feature may be cancelled by allowing the webbing to wind back completely into the retractor. After the cinch feature is cancelled, the webbing is unlocked. This vehicle is also equipped with a Supplemental Inflatable Restraint (SIR) system. Refer to *Supplemental Inflatable Restraint System Description and Operation 9-53*.

### Motorized Seat Belts

A motorized seat belt is a seat belt with a motor coupled to the shoulder belt retractor.  The motor performs a reversible, pretightening action (retraction) to reduce the slack in the seat belt. The motorized seat belt provides the driver and passenger a sense of safety and, in the case of severe braking or a crash, more quickly couples the occupant to the vehicle, enhancing the safety to the occupant.

**Motorized seat belts monitor vehicle information to determine when to perform each of the following retractions**

- Full retraction for such situations but not limited to: panic braking and or skidding
- Dynamic support for lateral and longitudinal dynamics
- Slack removal when the vehicle speed above enable speed

**Preconditions for motorized seat belt retractions**

- Seat belt buckle is latched
- Vehicle speed greater than or equal to 25 kph (16 mph)
- All messages on serial data are received as valid

**Triggers that may cause motorized seat belt retractions**

- Emergency Braking
- Sudden Emergency / Panic Braking
- High Vehicle Deceleration Detection
- Ice Braking Detection
- Oversteer and Understeer

**Motorized seat belt inputs**

- Vehicle Power Mode
- Transmission Gear
- Wheel Speeds
- Vehicle Acceleration
- Accelerator Pedal Position
- Steering Wheel Angle and Gradient
- Yaw Rate and Lat/Long Acceleration
- Brake Pedal Position, Gradient, Pressure, Initial Travel
- Vehicle Stability

**Motorized seat belt output signals**

- Driver information center message – motorized seat belt Failed “Service Automatic Seatbelt Tightening”
- Driver information center message – motorized seat belt Unavailable “Automatic Seatbelt Tightening Unavailable”

Motorized seat belt retractions are inhibited when seat belt unbuckled.

Driver and passenger motorized seat belts operate independently.

## Front Seat Belt System

The front seat belt system includes the driver and passenger seat belts, seat belt reminder indicators, retractors, and anchor pretensioners. They are all part of the SIR system, refer to *Supplemental Inflatable Restraint System Description and Operation 9-53* . The driver seat belt reminder indicator is controlled by a switch in the driver seat belt buckle. The passenger seat belt reminder indicator is controlled by a switch in the passenger seat belt buckle and the Restraint Occupant Classification System Module. For more on the Restraint Occupant Classification System Module, refer to *Supplemental Inflatable Restraint System Description and Operation 9-53*. When the vehicle is on, the seat belt reminder indicator and tone alarm will operate in the following cases:

- The driver seat belt is unbuckled.
- The passenger seat belt is unbuckled while the seat is occupied.

## Rear Seat Belt System

The rear seat belt system includes the following components:

- The rear seat belt retractor located at the wheelhouse panel and attached to the floor panel.
- The rear seat belt buckles and the center seat belt buckle attached to the seat.

## Child Seat Restraint System

***Warning: A child in a rear-facing child restraint can be seriously injured if the front passenger air bag inflates, because the back of a rear-facing child restraint would be very close to the inflating air bag. NEVER use a rear-facing child restraint in this vehicle. If a forward-facing child restraint is suitable for your child, ALWAYS move the front passenger seat as far back as it will go and then install the child restraint. Be sure the child restraint position does not conflict with any additional requirements provided by the manufacturer. For more information, refer to the vehicle owner's manual and the instructions that came with the child restraint.***

All vehicles are equipped with a dual-mode type retractor with emergency and automatic locking features. The automatic locking feature is for the restraint of a child seat. The child seat can be secured by pulling the seat belt all the way out to lock it, then tightening the seat belt around the child seat. If the child seat has a top strap, the child seat should be anchored. This applies to the seats designed with the top strap provision and for the vehicles sold in Canada. To ensure the correct top strap angle, the child seat is only to be used at the seating position for which the top strap anchor is installed. The child seat should be installed and secured according to the manufacturer's directions.

## Seat Belt Reminder Indicators

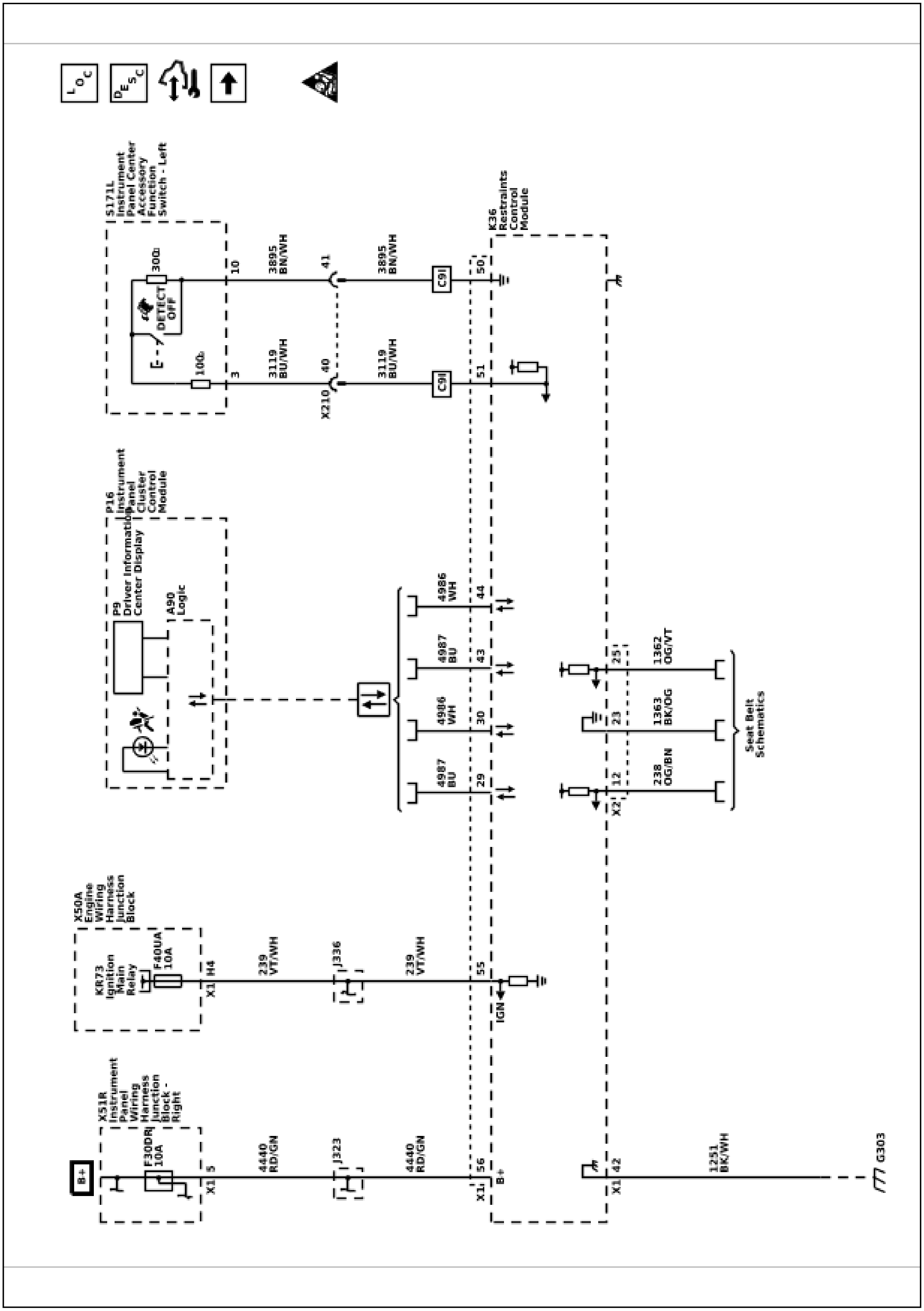
There is a driver seat belt reminder indicator located on the instrument cluster and a passenger seat belt reminder located on the overhead console. There also may have a rear seat belt reminder located in the instrument cluster. The state of the seat belt reminder indicators is determined by the Restraints Control Module. The seat belt reminder indicator illuminates under the following conditions:

- The Restraints Control Module sends the status of the driver seat belt to the instrument cluster via serial data. The passenger seat belt status is sent to the driver information center via serial data. The rear seat belt status is sent to the driver information center via serial data. If any of the seat belts are unfastened, the instrument cluster will send a message requesting a chime sound to be turned ON after a system check.

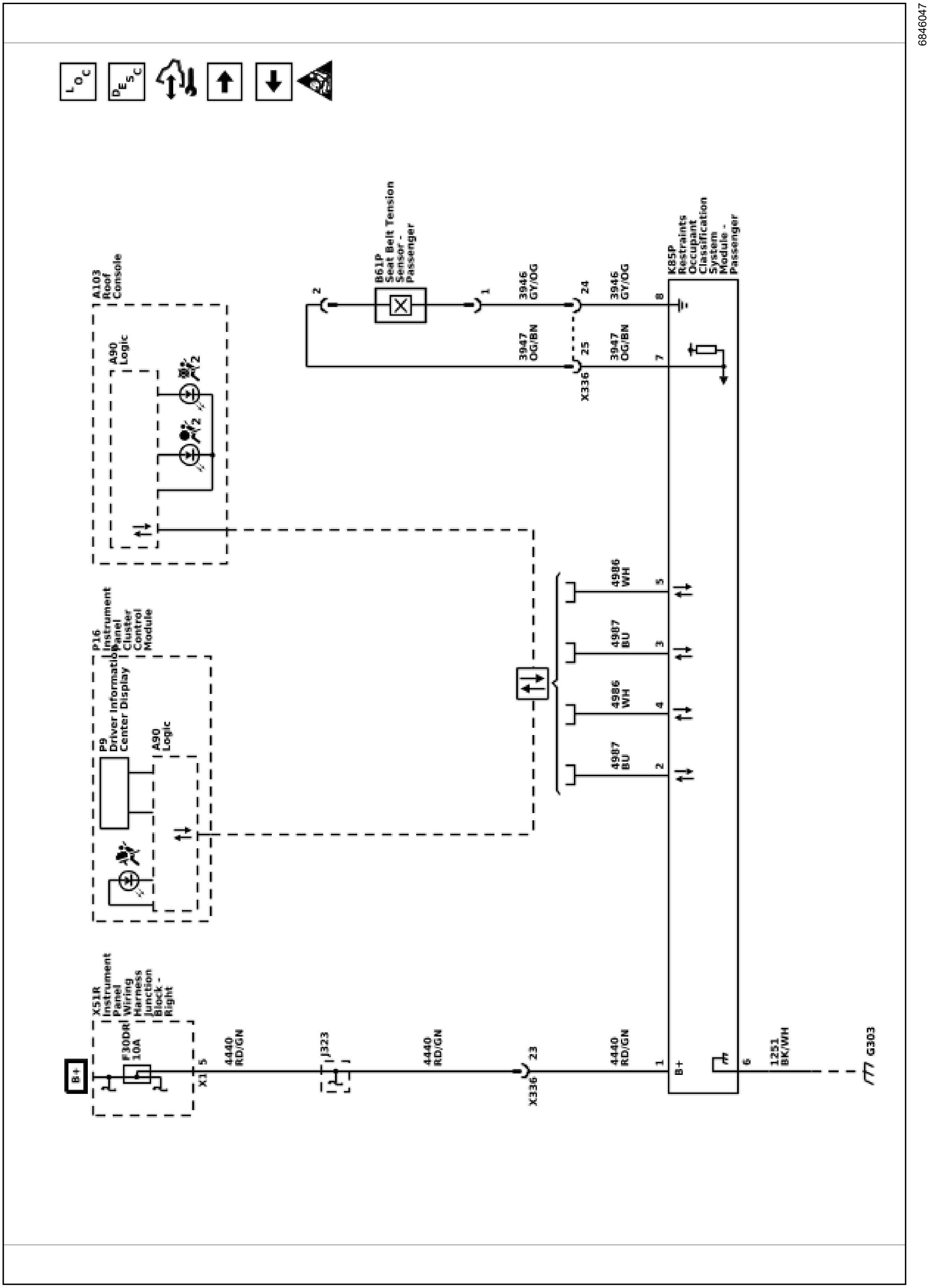
# Supplemental Restraints

## Schematic and Routing Diagrams

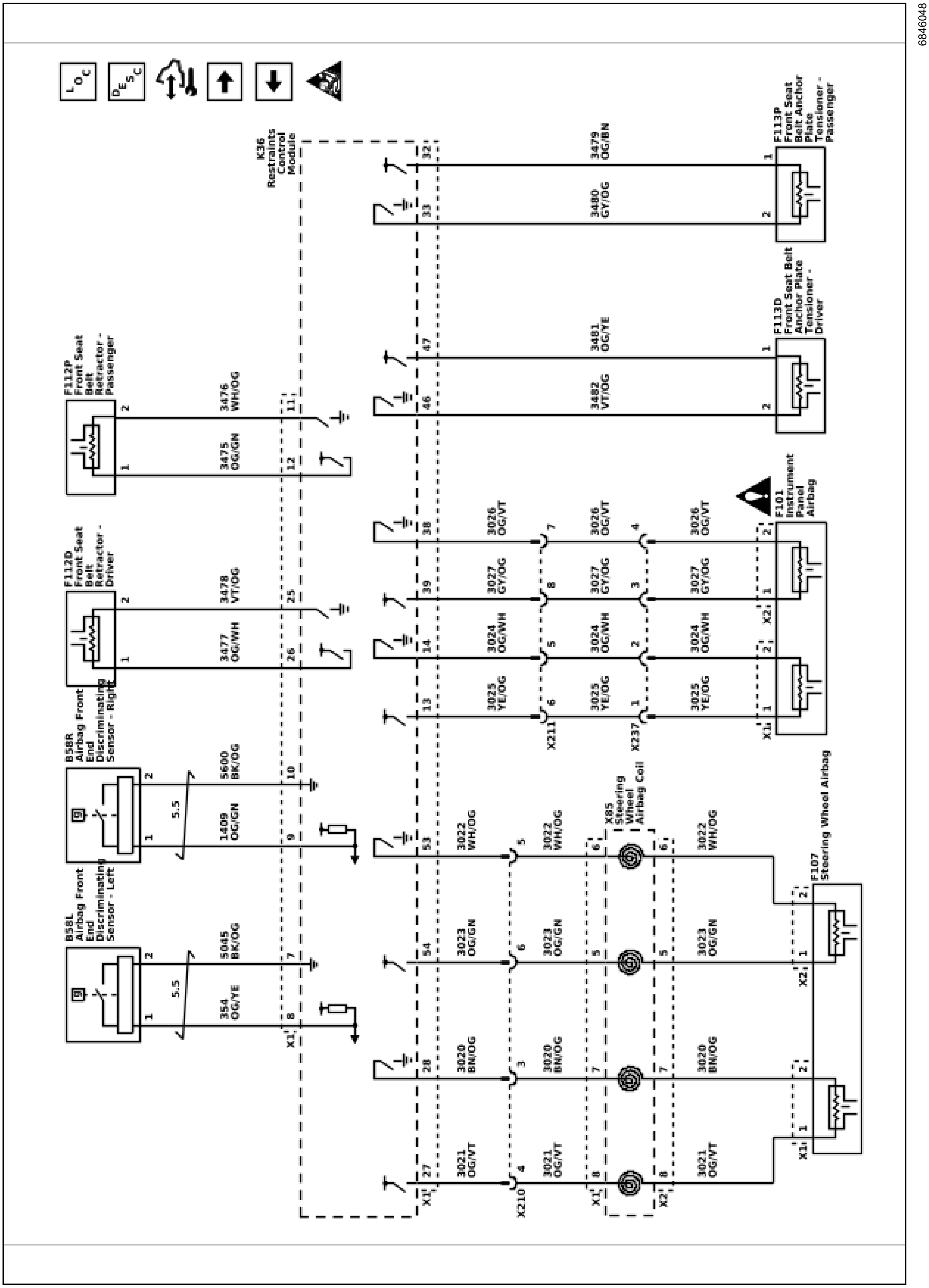
## SIR Schematics (Module Power, Ground, Serial Data, Controls, Indicators, and Subsystem References)



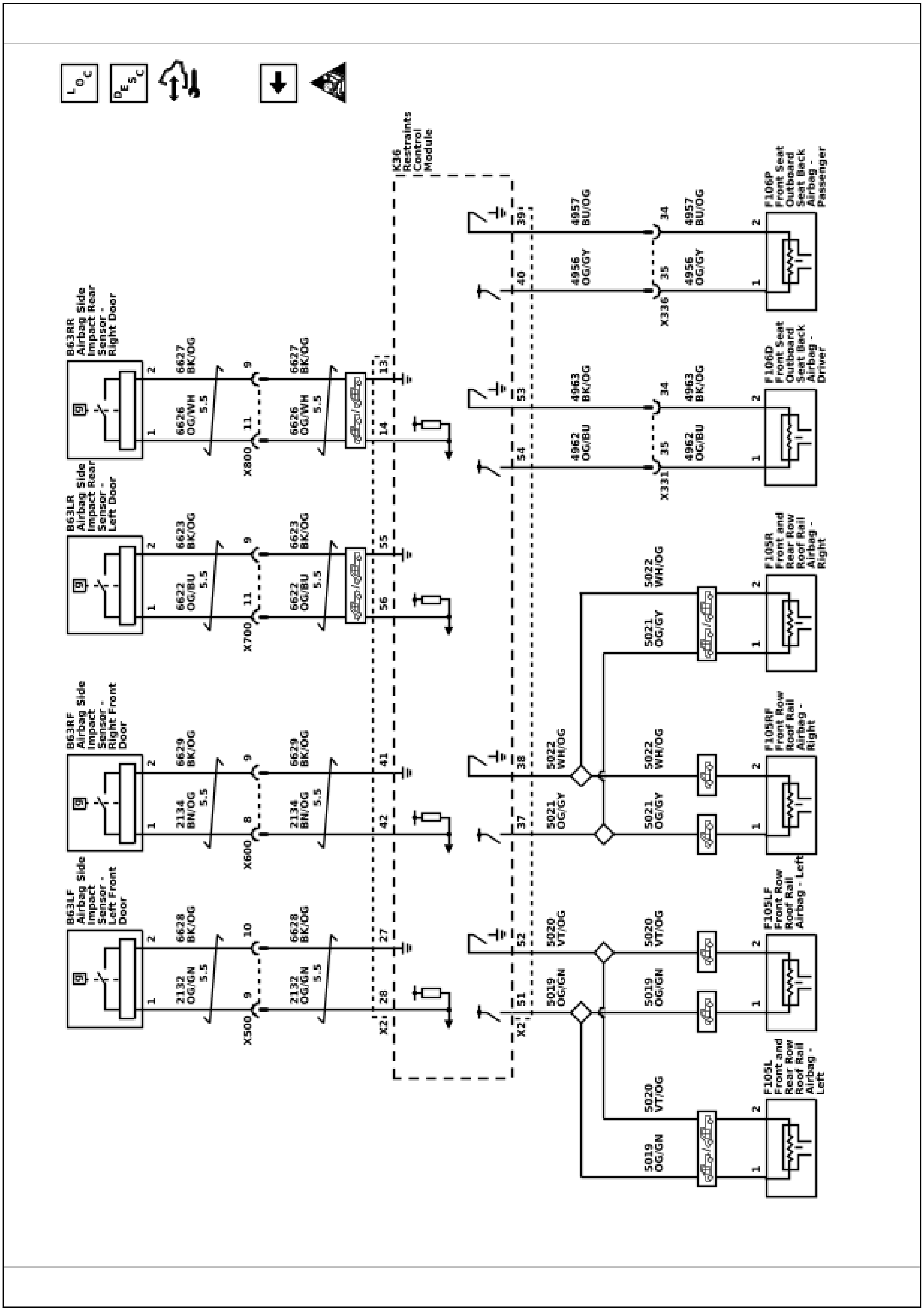
SIR Schematics (Passenger Presence Module)



## SIR Schematics (Frontal Impact Sensing and Deployment)



## SIR Schematics (Side Impact Sensing and Deployment)

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# Description and Operation

## Supplemental Inflatable Restraint System Description and Operation

The supplemental inflatable restraint (SIR) system, comprised of the Restraints Control module (RCM), impact sensors, Airbags, Restraint Occupant Classification System Module, and seat belt Pretensioners, supplements the protection offered by the seat belts. The RCM determines the severity of a collision using data collected from impact sensors located at strategic points on the vehicle. The RCM processes the information provided by the sensors to provide the safest combination of Airbag and pretensioner deployment. The RCM will deploy the Airbags and Pretensioners if it detects a collision of sufficient force. If the force of the impact is not sufficient to warrant Airbag deployment, the RCM may still deploy the seat belt Pretensioners. The RCM contains a sensing device that translates vehicle acceleration to an electrical signal. The RCM compares these signals to the threshold values stored in memory. If the signals exceed the stored threshold value, the RCM will determine the severity of the event and may deploy restraints. The RCM continuously monitors the deployment loops and electrical components for malfunctions. Upon detection of a circuit malfunction, the RCM will set a DTC and illuminate the SIR system Airbag indicator.

**Note:** The SIR System may be active up to 30 seconds after the ignition transitions to OFF.

The supplemental inflatable restraint system utilizes the following components:

- Restraints Control Module
- Airbag Indicator
- Airbags
- Seat Belt Pretensioners
- Impact Sensors
- Restraints Occupant Classification System Module (AL0)
- Passenger Airbag Indicator (C99 / AL0)
- Passenger Airbag Disable Switch (C99)
- Seat Belt Tension Sensor
- Seat Belt Indicators
- Event Data Recorder (EDR) Data
- Non-locked event storage overwrite mechanism and over writable event types

### Restraints Control Module

The RCM is the control unit for the SIR system. The RCM contains internal sensors in addition to the external impact sensors. The RCM contains sensors which translate vehicle acceleration into an electrical signal, which may be used by other modules. In the event of a collision, the RCM compares the signals from the internal and external impact sensors to a threshold value stored in memory. When the generated signals exceed the stored value, the RCM will cause current to flow through the appropriate deployment loops to deploy the restraints. The RCM records the SIR system status when a deployment occurs and illuminates the SIR system Airbag indicator. The RCM performs continuous diagnostic monitoring of the SIR system electrical components and circuitry when the ignition is ON. If the RCM detects a malfunction, a DTC will set and the RCM will command the instrument cluster to illuminate the SIR system Airbag indicator, notifying the driver that a malfunction exists. If power is lost during a collision, the RCM maintains a limited energy reserve for deployment of the Airbags. It is important when disabling the SIR system for servicing or rescue operations to allow the limited energy reserve to dissipate, which could take up to 2 minutes.

### Airbag Indicator

The SIR system Airbag indicator, located in the instrument cluster, is used to notify the driver of SIR system malfunctions and verify that the RCM is communicating with the instrument cluster. When the ignition is turned ON, the RCM is active. The instrument cluster will momentarily turn on the SIR system Airbag indicator. While the indicator is on, the RCM conducts tests on all SIR system components and circuits. If no malfunctions are detected the RCM will communicate with the instrument cluster through the serial data circuit and command the SIR system Airbag indicator to turn OFF. The RCM provides continuous monitoring of the SIR system components and circuits by conducting a sequence of checks. If a malfunction is detected the RCM will set a DTC and command the instrument cluster to illuminate the SIR system Airbag indicator via serial data. The presence of an SIR system malfunction could result in non-deployment of the inflatable restraints or deployment in conditions that normally would not warrant deployment. The SIR system Airbag indicator will remain on for the duration of the malfunction or until the system has been repaired.

### Airbags

The vehicle will contain a number of Airbags, depending on vehicle available and optional equipment:

- Steering wheel
- Instrument panel
- Driver seat
- Passenger seat
- Instrument Panel Lower Airbag
- Passenger knee
- Left roof rail
- Right roof rail

To view the locations of the Airbags refer to: *Master Electrical Component List 7-886*.

Airbags contain a housing, inflatable Airbag, an initiating device, a canister of gas generating material and, in some cases, stored compressed gas. Each Airbag has a discrete deployment loop to supply current and deploy the Airbag. The current passing through the Airbags ignite the material in the canister producing a rapid generation of gas and is some cases, the release of compressed gas. The gas produced from this reaction rapidly inflates the Airbag. Once the Airbag is inflated, it deflates through the Airbag vent holes and/or the bag fabric.

The steering wheel and instrument panel Airbag will either be a dual-stage or a single stage design. A dual-stage Airbag uses two stages of deployment, which varies the amount of restraint to the occupant according to the collision severity. For moderate frontal collisions, the Airbag deploys at less than full deployment which consists of stage 1 of the Airbag. During a more severe frontal collision, a full deployment is initiated which consists of stage 1 and stage 2 of the Airbag.

**Seat Belt Pretensioners**

The vehicle will contain a number of seat belt Pretensioners, depending on vehicle available and optional equipment:

- Driver – Seat belt anchor
- Driver – Seat belt retractor
- Passenger – Seat belt anchor
- Passenger – Seat belt retractor
- Rear Outboard Left/Right Passenger – Seat belt retractor

To view the locations of the Airbags refer to: *Master Electrical Component List 7-886*.

The seat belt Pretensioners consist of a housing, seat belt retractor, seat belt anchor, seat belt webbing, initiator, and a canister of gas generating materials. The initiator is part of the seat belt pretensioner deployment loop. When the vehicle is involved in a collision of sufficient force, the RCM causes current to flow through the seat belt deployment loops to the initiator. Current passing through the initiator ignites the material in the canister producing a rapid generation of gas. The gas produced from this reaction deploys the seat belt Pretensioners which removes the slack in the seat belts. Depending on the severity of the collision, the seat belt Pretensioners may deploy without the frontal inflator modules deploying, or they will deploy immediately before the frontal inflator modules deploy.

**Impact Sensors**

The vehicle will contain a number of impact sensors, depending on vehicle available and optional equipment:

- Front Impact Sensor — Left
- Front Impact Sensor — Right
- Side Impact Sensor — Left Front
- Side Impact Sensor — Right Front
- Side Impact Sensor — Left Middle
- Side Impact Sensor — Right Middle
- Side Impact Sensor — Left Rear
- Side Impact Sensor — Right Rear

To view the locations of the Airbags refer to: *Master Electrical Component List 7-886*.

The impact sensors contain a sensing device which monitors vehicle acceleration or pressure to detect collisions that are severe enough to warrant Airbag deployment. The impact sensors are not part of the deployment loop, but instead provide input to the RCM.

**Restraints Occupant Classification System Module**

The Restraints Occupant Classification System Module is used to monitor the type of occupant that is sitting in the front passenger seat and communicate the status to the RCM. The RCM then uses this information to determine whether to enable or suppress the deployment of the passenger instrument panel Airbag. The Restraints Occupant Classification System Module consists of an electronic control module, a sensor mat in the seat, Seat Belt Tension Sensor (if equipped), and a harness.

**Passenger Airbag Indicator**

The passenger Airbag indicator identifies the status of the instrument panel Airbag. The RCM will momentarily turn on the passenger Airbag indicators after ignition is turned ON. If an occupant is not detected in the passenger seat or the occupant type is not suitable for Airbag deployment, the Restraints Control module will illuminate the passenger Airbag OFF indicator. If an occupant is detected in the passenger seat, the Restraints Control module will illuminate the passenger Airbag ON indicator.

**Seat Belt Tension Sensor**

The seat belt tension sensor (if equipped) is mounted on the passenger seat belt retractor to measure the seat belt tension. If the shoulder portion of a passenger seat belt is fully extended, the infant car seat restraint locking feature may be engaged, disabling the passenger Airbag.

**Passenger Airbag Disable Switch**

The passenger Airbag disable switch provides the means to manually disable the ability for the passenger instrument panel Airbag to deploy. The vehicle has a passenger Airbag status indicator to inform the driver when the passenger Airbag is on or off based on the disable switch position.

**Seat Belt Indicators**

The seat belt indicators are controlled by the RCM. For further information on seat belt indicators refer to: *Seat Belt System Description and Operation 9-46*.

**Event Data Recorder (EDR) Data**

The vehicle is equipped with an event data recorder (EDR). When a specific collision or similar condition occurs (such as airbag deployment or hitting a road obstacle), the recorder records the data related to vehicle dynamics and safety systems within a short period of time, such as the status of occupant safety components, status of accelerator/brake pedals, vehicle speed, etc., helping understand the operating conditions of vehicle systems.

The data elements recorded by EDR mainly include the following data:

| No. | Data Element | Data Source | Collection Method |
|---|---|---|---|
| A1 | Longitudinal delta V | EDR acceleration sensor in EDR controller | None |
| A2 | Maximum recorded longitudinal delta V | EDR acceleration sensor in EDR controller | None |
| A3 | Time to maximum recorded longitudinal delta V | EDR acceleration sensor in EDR controller | None |
| A4 | Clipping flag | Since B1 lateral acceleration has been recorded, it is not necessary to record the clipping flag | None |
| A5 | Vehicle velocity | Wheel speed sensor, transmitted via CAN bus after calculation | CAN bus |
| A6 | Service brake, on or off | Brake pedal position sensor, transmitted via CAN bus after calculation | CAN bus |
| A7 | Driver safety belt status | Driver seat belt buckle | Hard wire |
| A8 | Accelerator pedal position, percentage of fully open position | Accelerator pedal position sensor, transmitted via CAN bus after calculation | CAN bus |
| A9 | Revolution Per Minute (RPM) | Engine crankshaft position sensor, transmitted via CAN bus after calculation<br>*Not required for electric vehicles | CAN bus<br>*Not required for electric vehicles |
| A10 | Power-on cycle at event | EDR controller | None |
| A11 | Power-on cycle at reading | EDR controller | None |
| A12 | Complete status of event data record | EDR controller | None |
| A13 | Time interval from this event to the last event | EDR controller | None |
| A14 | Vehicle Identification Number(VIN) | EDR controller | None |
| A15 | ECU hardware number | EDR controller | None |
| A16 | ECU serial number | EDR controller | None |
| A17 | ECU software number | EDR controller | None |
| B1 | Longitudinal acceleration | EDR acceleration sensor in EDR controller | None |

No contents related to intelligent control are available now for Level A elements above.

The recorded vehicle speed data is obtained from the on-board CAN bus. They are obtained by a vehicle speed sensor connected to other modules on the vehicle (such as engine control or transmission control module or new energy control, etc.), and transmitted and released via CAN bus after calculation.

The above data can be extracted by purchased general on-board diagnostic tools that meet the requirements in SAE J1962 and ISO 15765 and their referenced standards.

**Non-locked event storage overwrite mechanism and over writable event types**

Locking Conditions:

- Deployment event of irreversible restraints will be permanently locked.

- Non-deployment events will be locked, but become non-locked events after 255 ignition cycles.

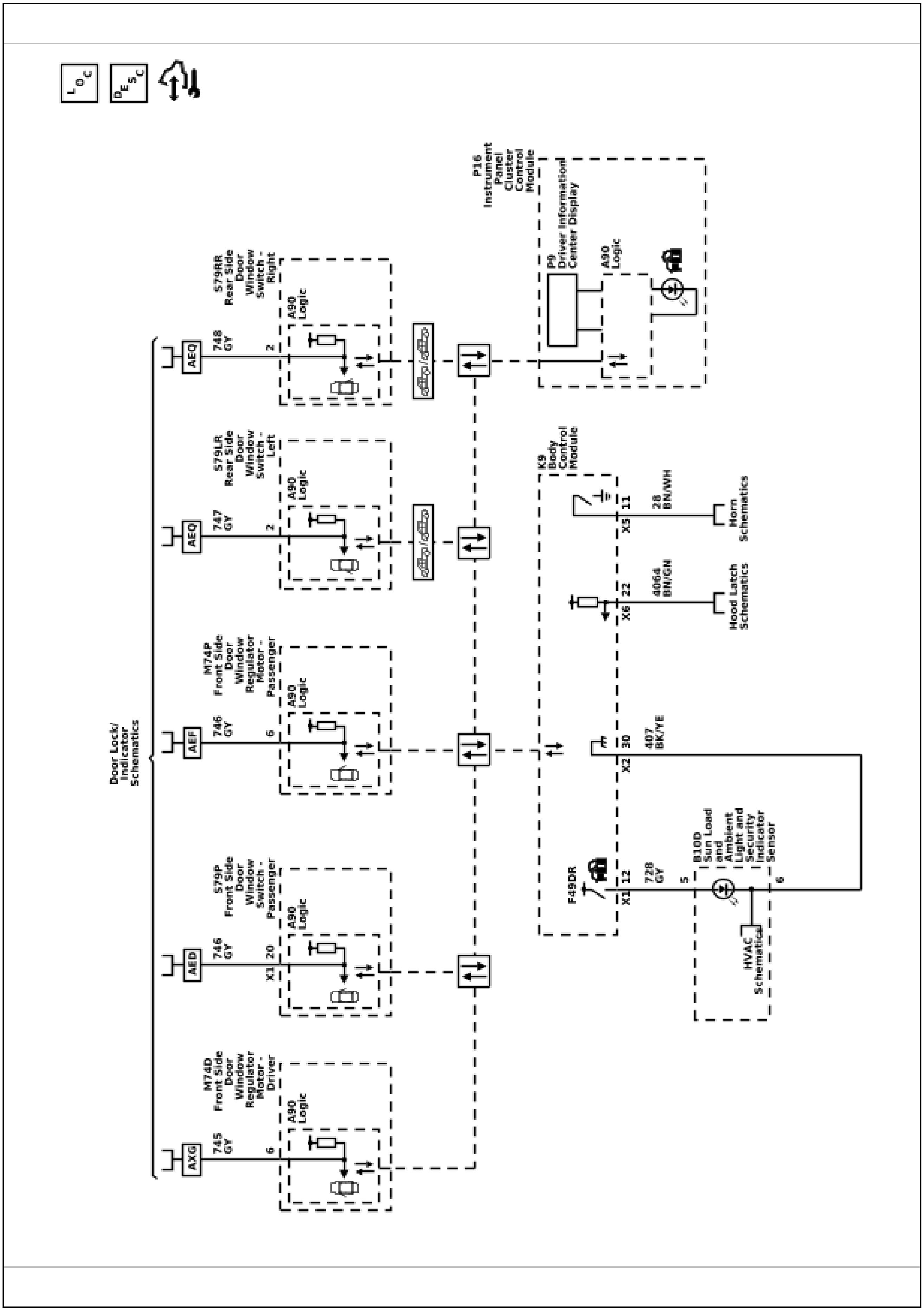
Overwrite Mechanism:

- Permanently locked events will not be overwritten. Only the non-locked EDR events can be overwritten, overwriting the earliest event first.
- If the EDR storage space is insufficient, the deployment events of irreversible restraints can overwrite any non-deployment events.
- If the EDR storage space is insuficcient, the non-deployment events can overwrite any non-deployment events that become non-locked after 255 ignition cycles.

# Theft Deterrent

## Schematic and Routing Diagrams

## Theft Deterrent System Schematics (Theft Deterrent System)

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# Description and Operation

## Theft Systems Description and Operation

When armed, the content theft deterrent system is designed to deter vehicle content theft by pulsing the horns and exterior lamps for approximately 30 seconds when an unauthorized vehicle entry is detected. However, the content theft deterrent system does not affect engine starting.

An unauthorized entry can be any of the following with the content theft deterrent system armed:

- Unauthorized entry into the engine area
- Unauthorized entry into the vehicle compartments
- When any door is opened without using the UNLOCK command from a keyless entry transmitter
- After a battery reconnect, if the battery was disconnected with the content theft deterrent system armed

The components of the content theft deterrent system are:

- Body Control Module (BCM)
- Remote control door lock receiver
- Security indicator
- Door ajar switches
- Hood ajar switch
- Liftgate ajar switch, if equipped
- Intrusion sensor, if equipped
- Intrusion sensor disable switch, if equipped
- Glass breakage sensor, if equipped
- Alarm siren, if equipped

## Arming the Content Theft Deterrent System

Use the following procedure in order to arm the system:

1. Place the vehicle in P (park).
2. Ignition OFF/Vehicle OFF.
3. Open any door.

**Note:** The system is not armed if the doors are locked manually; the power door lock switch or remote keyless entry transmitter must be used to arm the content theft deterrent system.

4. Lock the doors with the power door lock switch or by pressing the LOCK button on the transmitter. The system is in standby mode and will not start the arming timer until all doors are closed.
5. The system will begin the arm sequence immediately after the last door is closed. If the keyless entry transmitter is used to arm the system after the vehicle doors are closed, the arm sequence will begin as soon as the LOCK command is received from the transmitter.
6. Pressing the LOCK button on the keyless entry transmitter a second time will bypass the delayed arming function and force the system to arm.

## Locking the Vehicle Without Arming the Content Theft Deterrent System

Locking the vehicle may be accomplished without arming the content theft deterrent system. Use of the manual door locks will lock the vehicle, but will not arm the content theft deterrent system.

## Disarming an Armed System/Silencing an Alarm

If system arming has been requested by the power door lock switch or the keyless entry transmitter, it must be disarmed.

**Note:** Disconnecting the battery or removing fuses does not disable the arm or alarm modes, since the BCM stores the content theft deterrent mode status in memory.

- To disarm the content theft deterrent system in standby mode, perform one of the following:
  - Press the UNLOCK button on the keyless entry transmitter.
  - Approach the vehicle with a valid keyless entry transmitter and pull the vehicle door handle.
  - Turn the ignition ON/Vehicle ON.
- To disarm the content theft deterrent system in the armed mode (non-event) or when activated (during an alarm event):
  - Press the UNLOCK button on the keyless entry transmitter.
  - Turn the ignition ON/Vehicle ON.

## Content Theft Deterrent Circuit Description

The following is a description of each component used in the content theft deterrent system:

### Body Control Module

The content theft deterrent system is an internal function of the BCM which utilizes serial data and various switch inputs information to perform content theft deterrent functions. When the BCM detects an unauthorized entry, it activates the horns and exterior lamps. The BCM has 4 basic modes (disarmed, standby, armed, and alarm) for operating the content theft deterrent system. The different modes are described below.

1. The BCM has the content theft deterrent system in a disarmed mode until the following conditions are detected:

- Ignition OFF/Vehicle OFF.
- Doors locked by either the power door lock switch or the LOCK button on the transmitter.

2. The BCM enters the standby mode when the above conditions are detected. If a door was already opened when the arm mode was requested, the standby mode does not start the timer until the last door is closed.
3. When the last door is closed, a 15 second timer is activated. Once the timer has expired, the BCM enters the armed mode. After this delay, any unauthorized entry will activate the alarm mode.
4. When the BCM detects an unauthorized entry, the BCM enters the alarm mode. The BCM activates the horns and exterior lamps for 30 seconds. This is followed by a three minute time-out with the horn no longer active. If no new intrusions are detected after the time-out, the horn is not active. The system must be disarmed or the intrusion condition removed after the time-out for the system to exit alarm mode.

**Remote Control Door Lock Receiver**
The keyless entry system can arm and disarm the content theft deterrent system. When the remote control door lock receiver receives a door lock or unlock signal from the transmitter, the remote control door lock receiver sends a message to the BCM via serial data to perform the appropriate arm/disarm functions.

**Security Indicator**
The security LED is illuminated on the upper I/P by the BCM. The content theft deterrent system uses the security LED to inform the driver of system status prior to arming.

**Door Ajar Switches**
The content theft deterrent system uses the door ajar switches as a status indicator to activate the alarm. The door ajar switches are monitored by the body control module via a discrete input from each door ajar switch. If the BCM receives a signal indicating a door is opened when the content theft deterrent system is armed, the BCM activates the alarm.

**Hood Ajar Switch**
The content theft deterrent system uses the hood ajar switch as a status indicator to activate the alarm. The BCM monitors the hood ajar switch via a discrete input from the switch. If the BCM receives a signal indicating the hood has been opened when the content theft deterrent system is armed, the BCM activates the alarm.

**Liftgate Ajar Switch**
The content theft deterrent system uses the liftgate ajar switch as a status indicator to activate the alarm. The BCM monitors the liftgate ajar switch via a discrete input from the switch. If the BCM receives a signal indicating the liftgate has been opened when content theft deterrent system is armed, the BCM activates the alarm.

**Intrusion Sensor**
The intrusion sensor is located in the overhead console and uses two ultrasonic sensors to detect any motion inside the vehicle. If motion is detected inside the vehicle while the content theft deterrent system is armed, the system will transition to the alarm mode. The intrusion sensor also acts as an inclination sensor. The inclination sensor determines the vehicles level when the content theft deterrent system is armed. If the vehicle level is changed while the system is armed, such as being lifted by a tow truck or raised with a jack, the alarm will be activated. The intrusion sensor can be disabled using the intrusion sensor disable switch. The intrusion sensor disable switch also shows the intrusion sensor status using a status LED.

**Glass Breakage Sensor**
The glass breakage sensors (if equipped) are located on the rear side windows and are supplied battery voltage at all times. The BCM monitors the glass breakage sensor signal circuit. If the rear side glass is broken, the glass breakage sensor signal circuit will open and the BCM will enter the alarm mode.

**Alarm Siren**
The content theft deterrent system uses the alarm siren as an audible alert device to alert individuals near the vehicle that a vehicle intrusion is occurring. The siren is supplied battery voltage and ground for operation and communicates with the body control module (BCM) via a dedicated LAN circuit.

**Inputs**
The BCM monitors the following inputs for content theft deterrent:

- Door ajar switches
- Keyless entry transmitter LOCK/UNLOCK buttons; a message from the remote control door lock receiver
- Immobilizer status—The BCM uses the immobilizer status for disarming the system or silencing an alarm when the correct vehicle key is used to start the vehicle
- Liftgate ajar switch
- Hood ajar switch
- Intrusion sensor
- Glass breakage sensor

**Outputs**

The BCM controls the following for content theft deterrent:

- Horn relay
- Exterior lamps
- Alarm siren

# Section 10

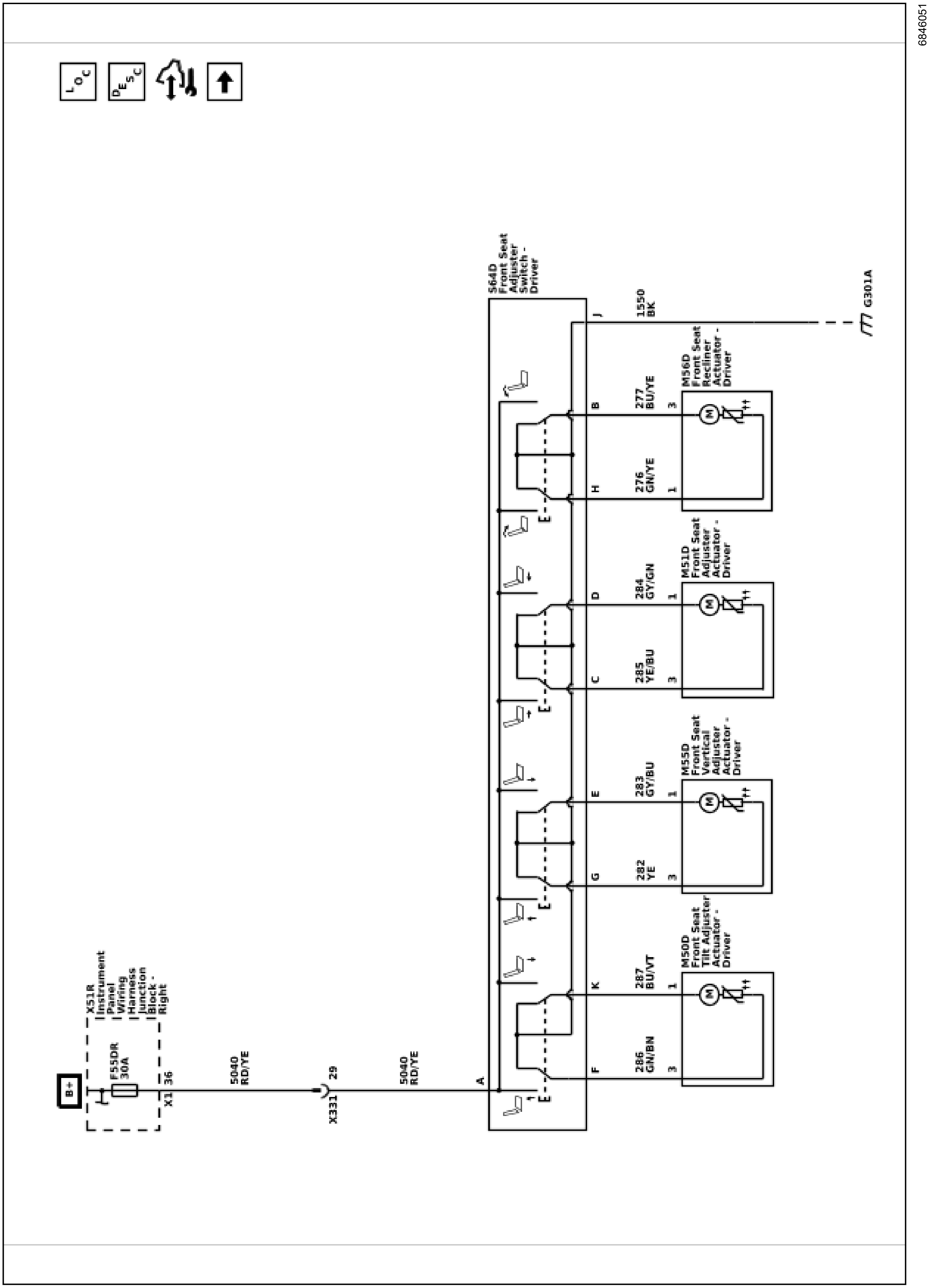
# Seats

# Seats

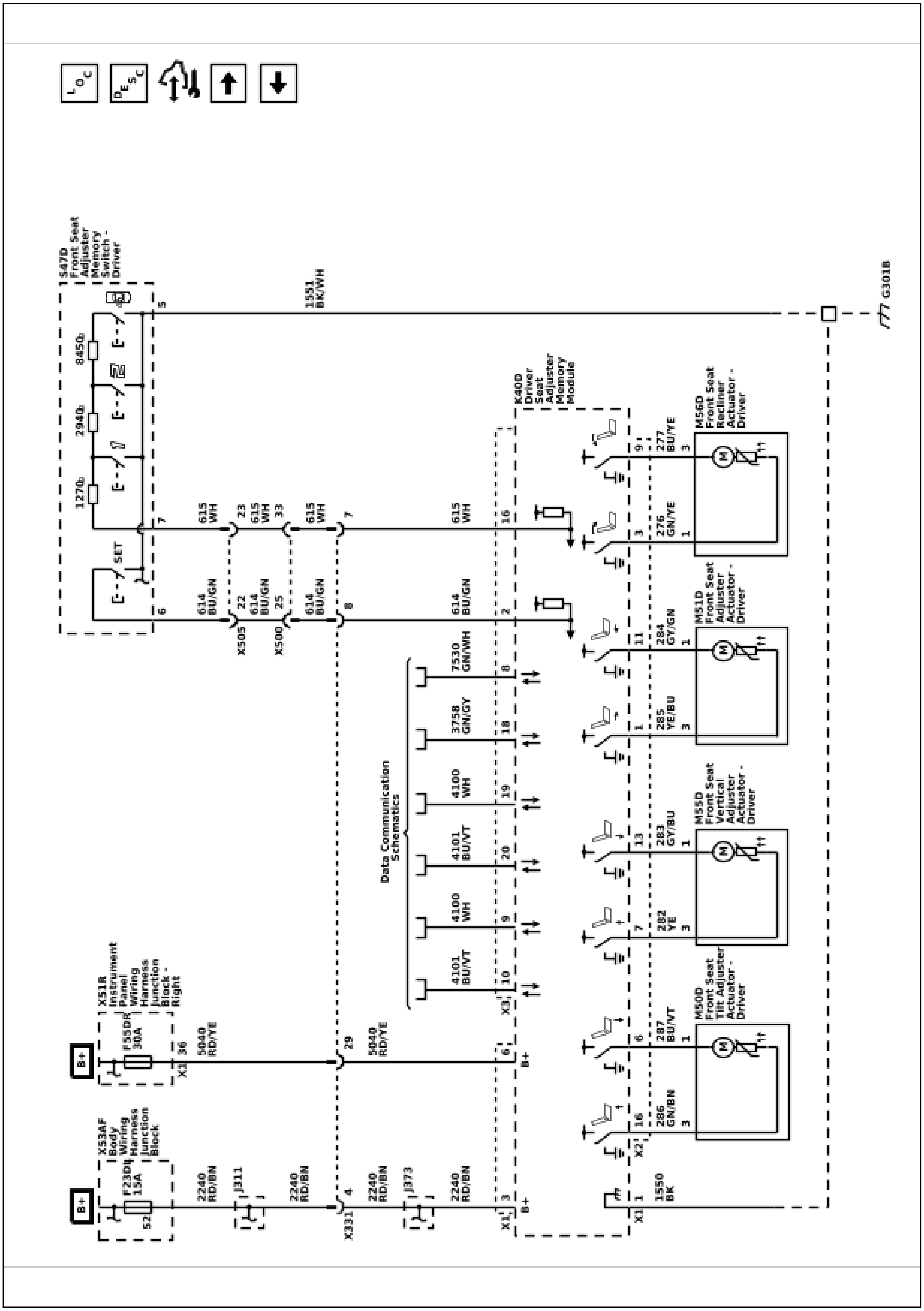
## Power Seats

### Schematic and Routing Diagrams

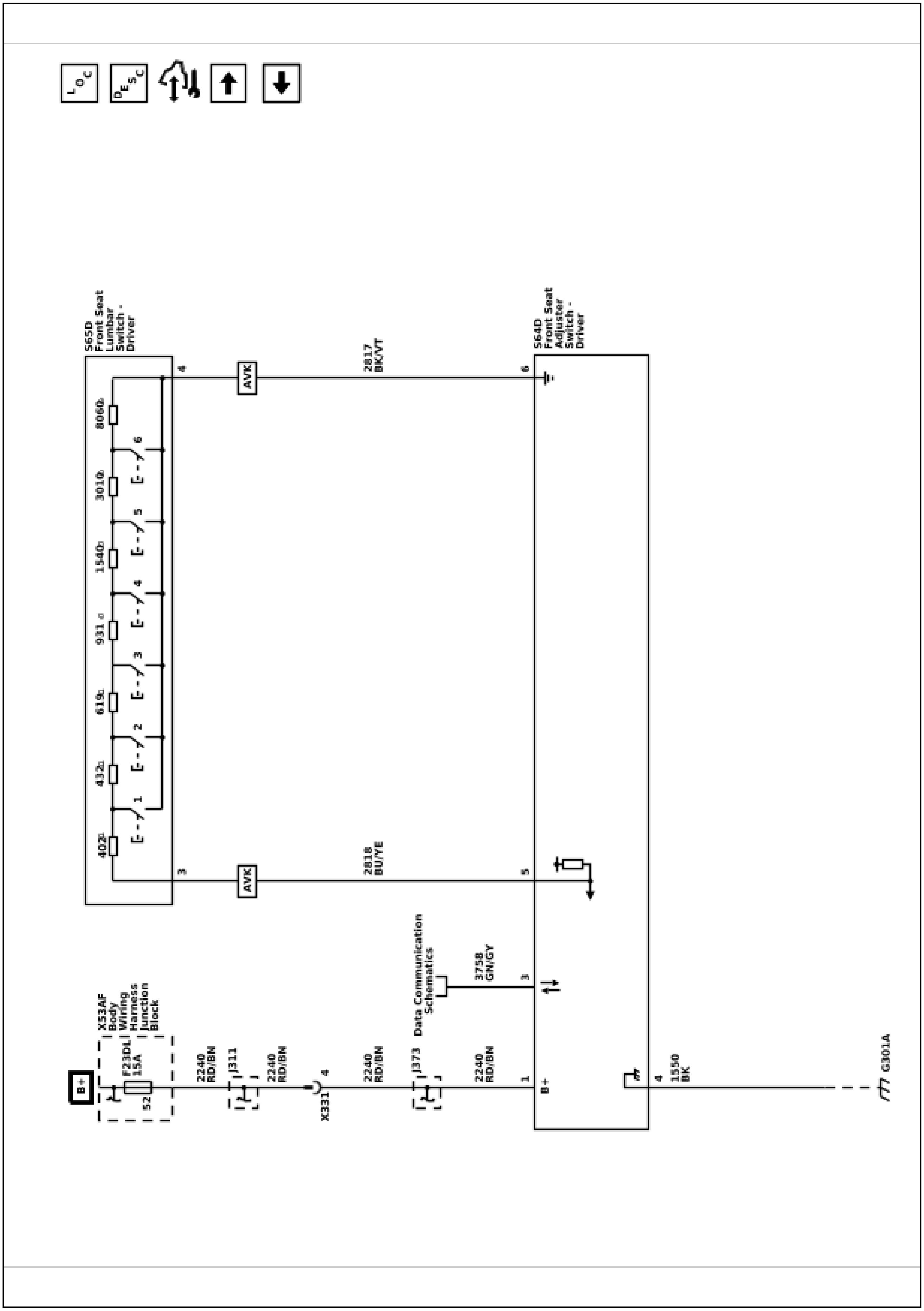
## Driver Seat Schematics (Power Seat (A2X - A45))



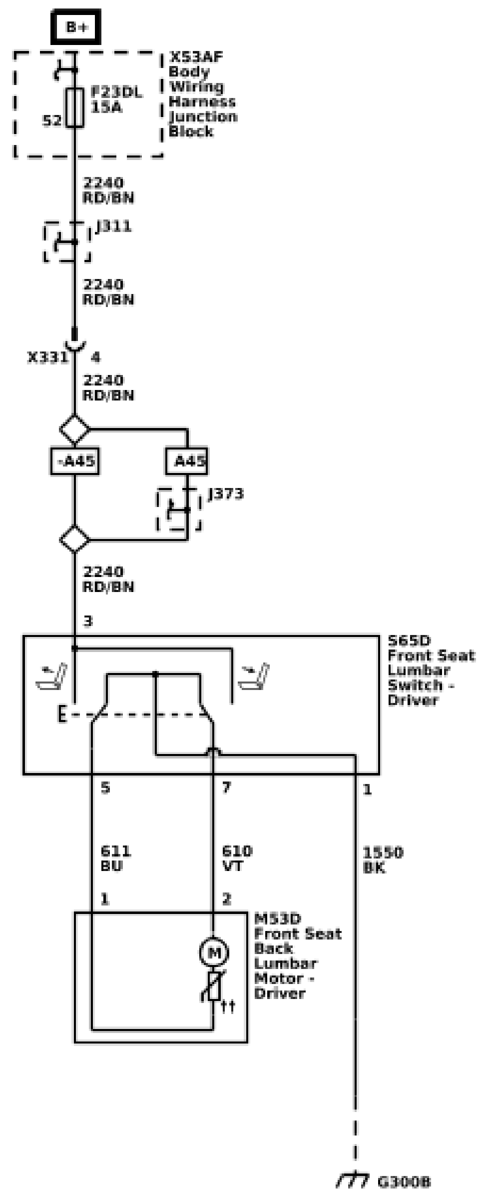
## Driver Seat Schematics (Module Power, Ground, Serial Data, Motors, and Memory Controls (A45))



## Driver Seat Schematics (Seat Adjuster Switches (A45))



## Driver Seat Schematics (2 Way Seat Lumbar (A2X - AVK))

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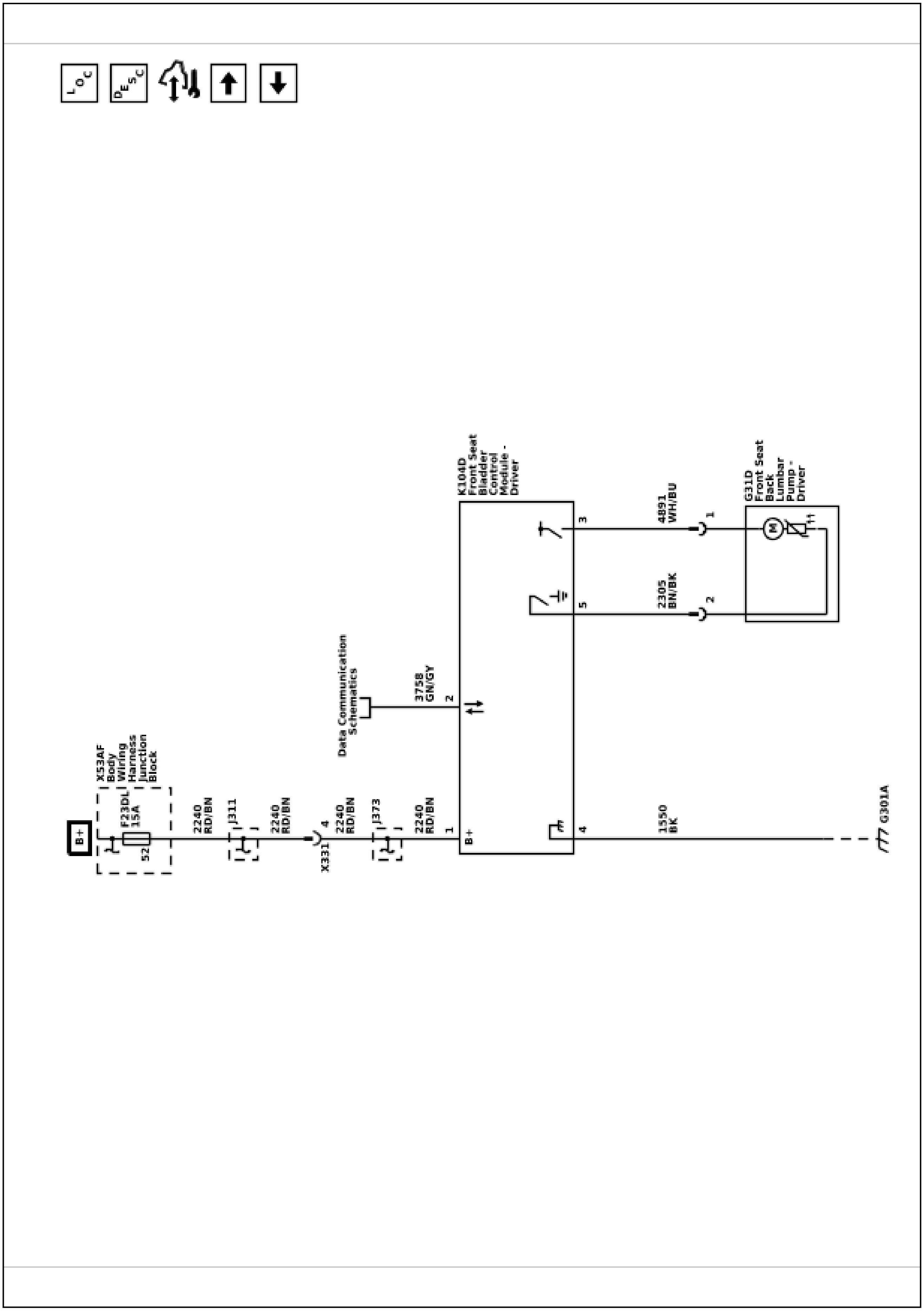
## Driver Seat Schematics (4 Way Seat Lumbar (AVK - AF6))

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## Driver Seat Schematics (Seat Lumbar and Massage (AF6))

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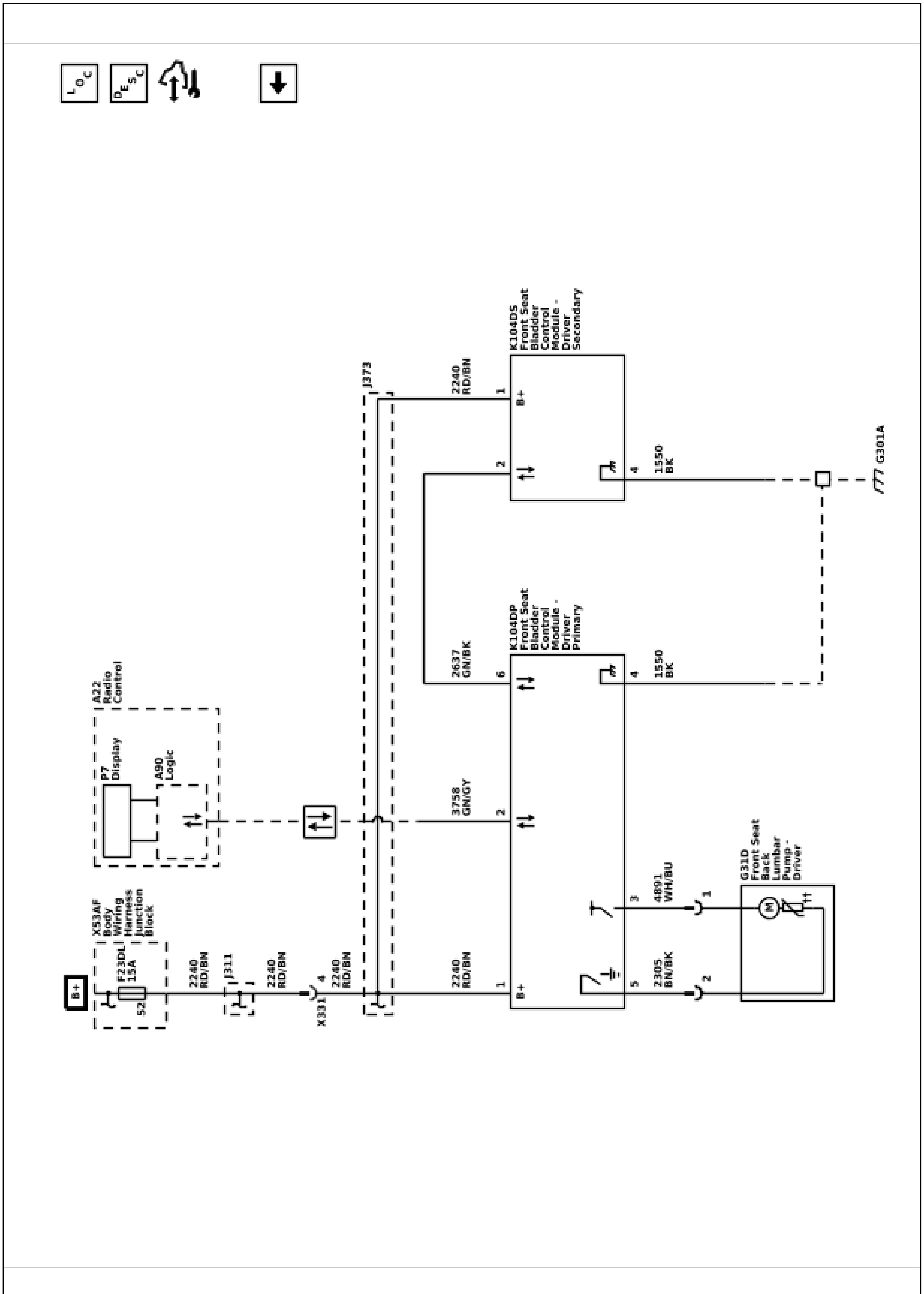
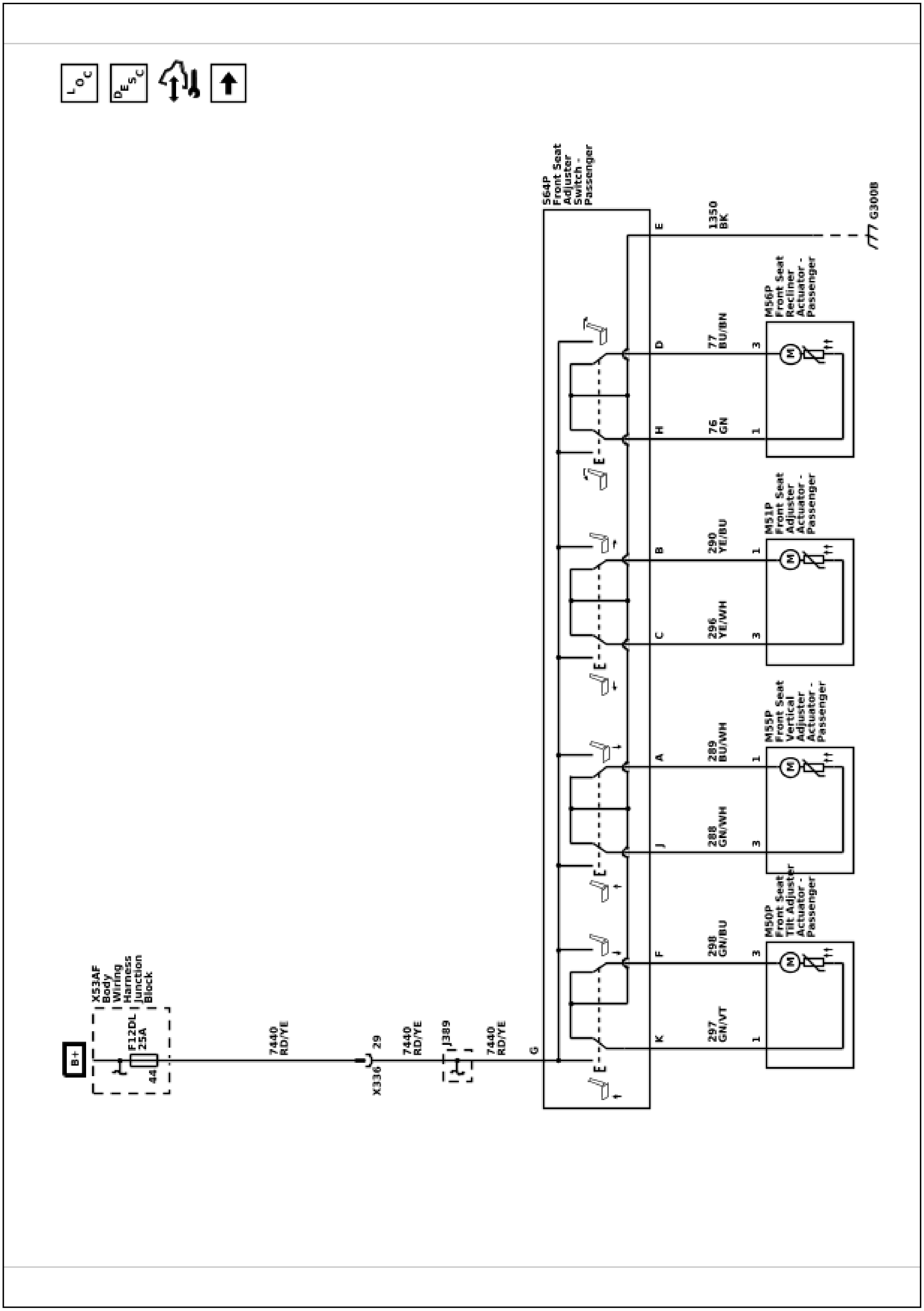
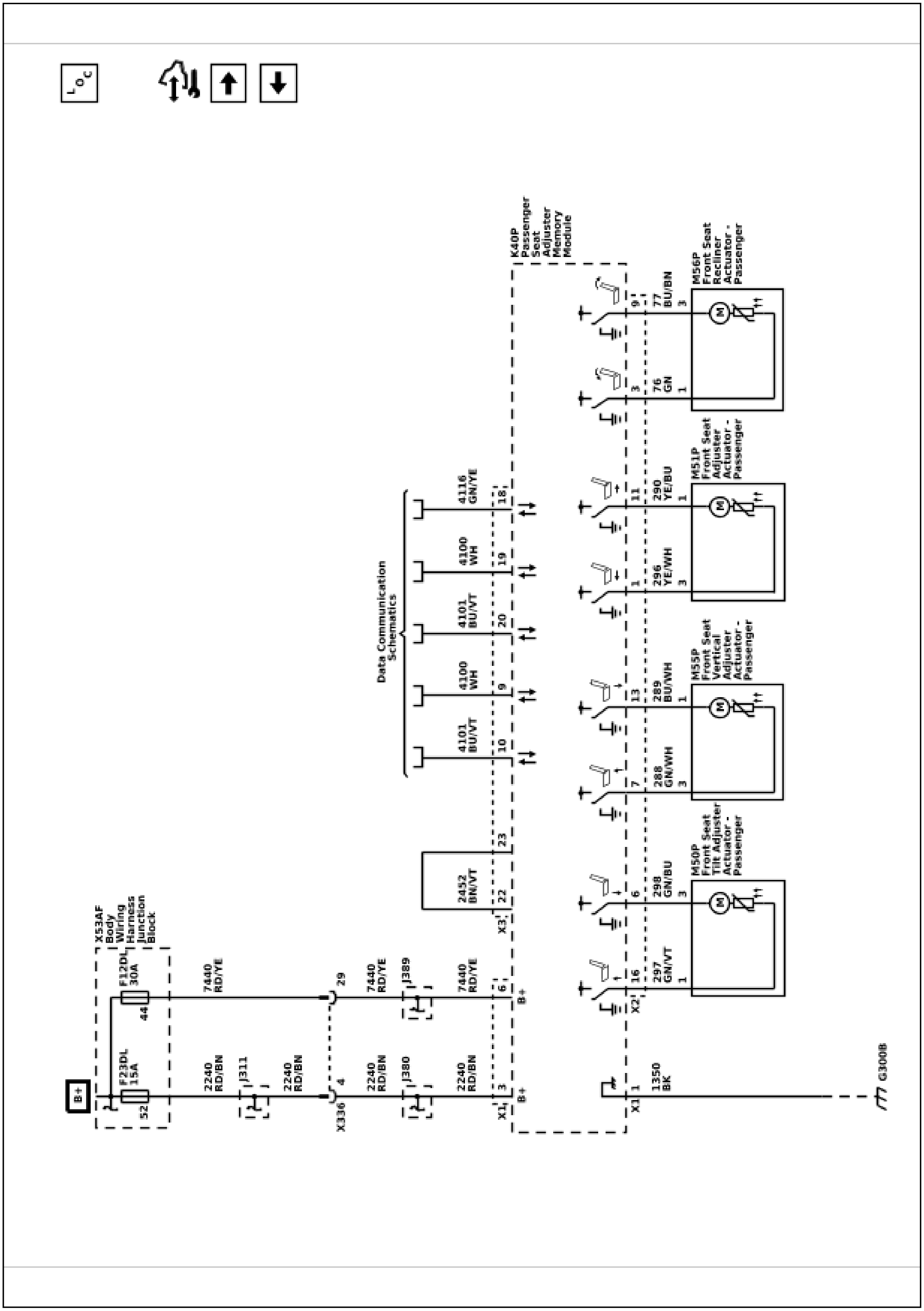




Passenger Seat Schematics (Power Seat (A7K - AKE))
6846057
B+
X53AF Body Wiring Harness Junction Block
F12DL 25A
44
7440 RD/YE
X336
29
7440 RD/YE
J389
7440 RD/YE
G
S64P Front Seat Adjuster Switch - Passenger
E
1350 BK
G300B
D
77 BU/BN
H
76 GN
M56P Front Seat Recliner Actuator - Passenger
B
290 YE/BU
C
296 YE/WH
M51P Front Seat Adjuster Actuator - Passenger
A
289 BU/WH
J
288 GN/WH
M55P Front Seat Vertical Adjuster Actuator - Passenger
F
298 GN/BU
K
297 GN/VT
M50P Front Seat Tilt Adjuster Actuator - Passenger

## Passenger Seat Schematics (Module Power, Ground, Serial Data, and Motors (AKE))

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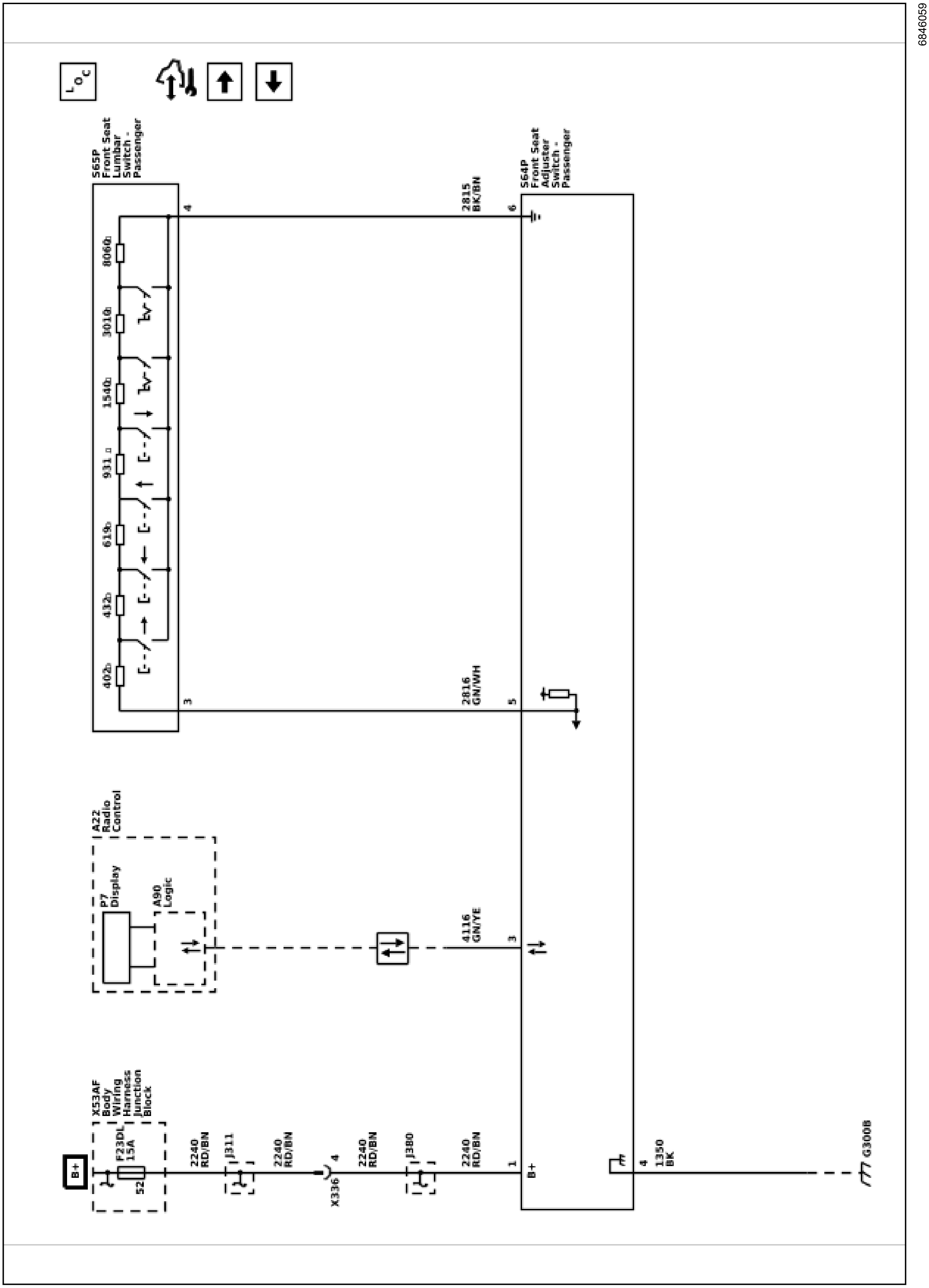
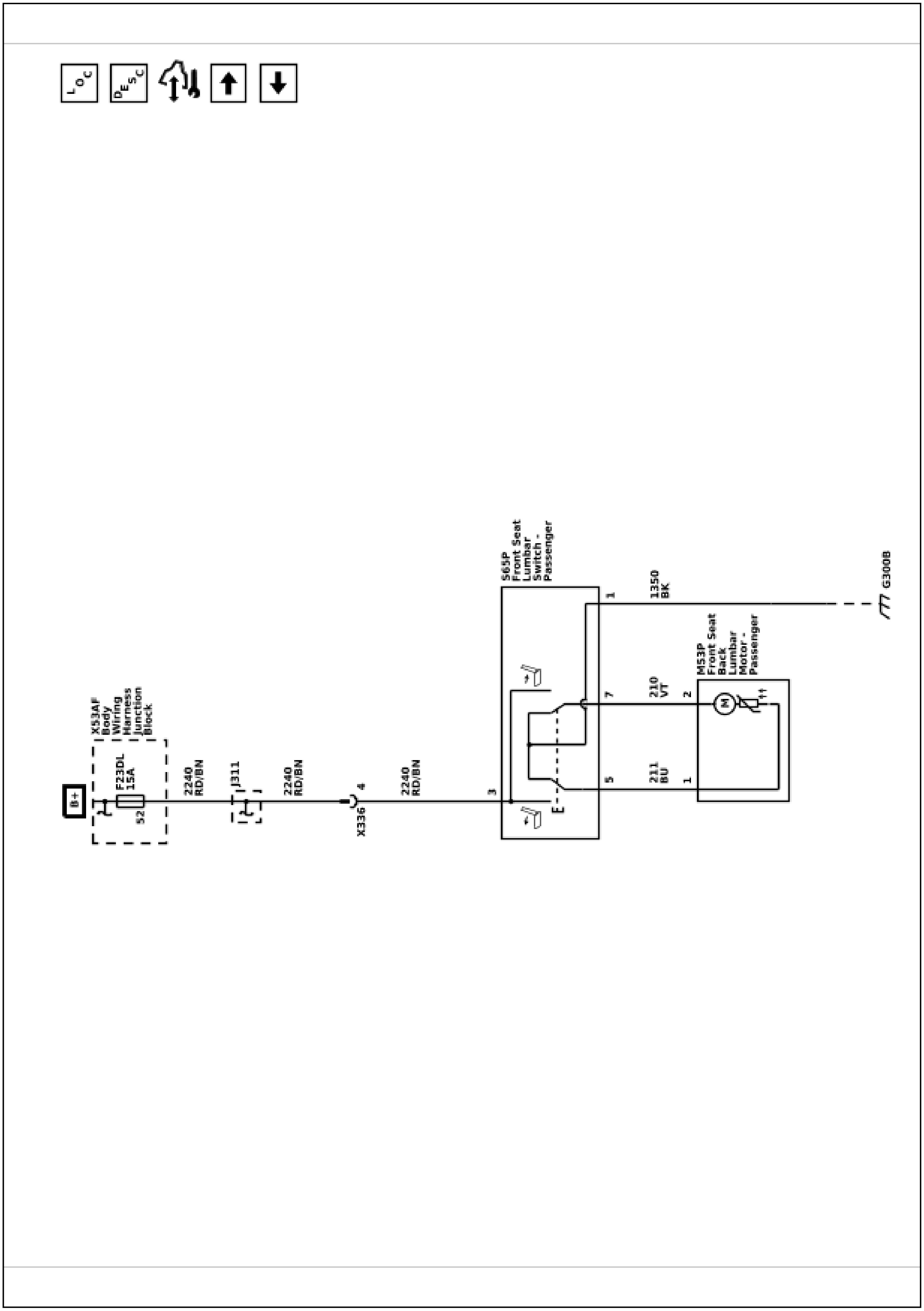
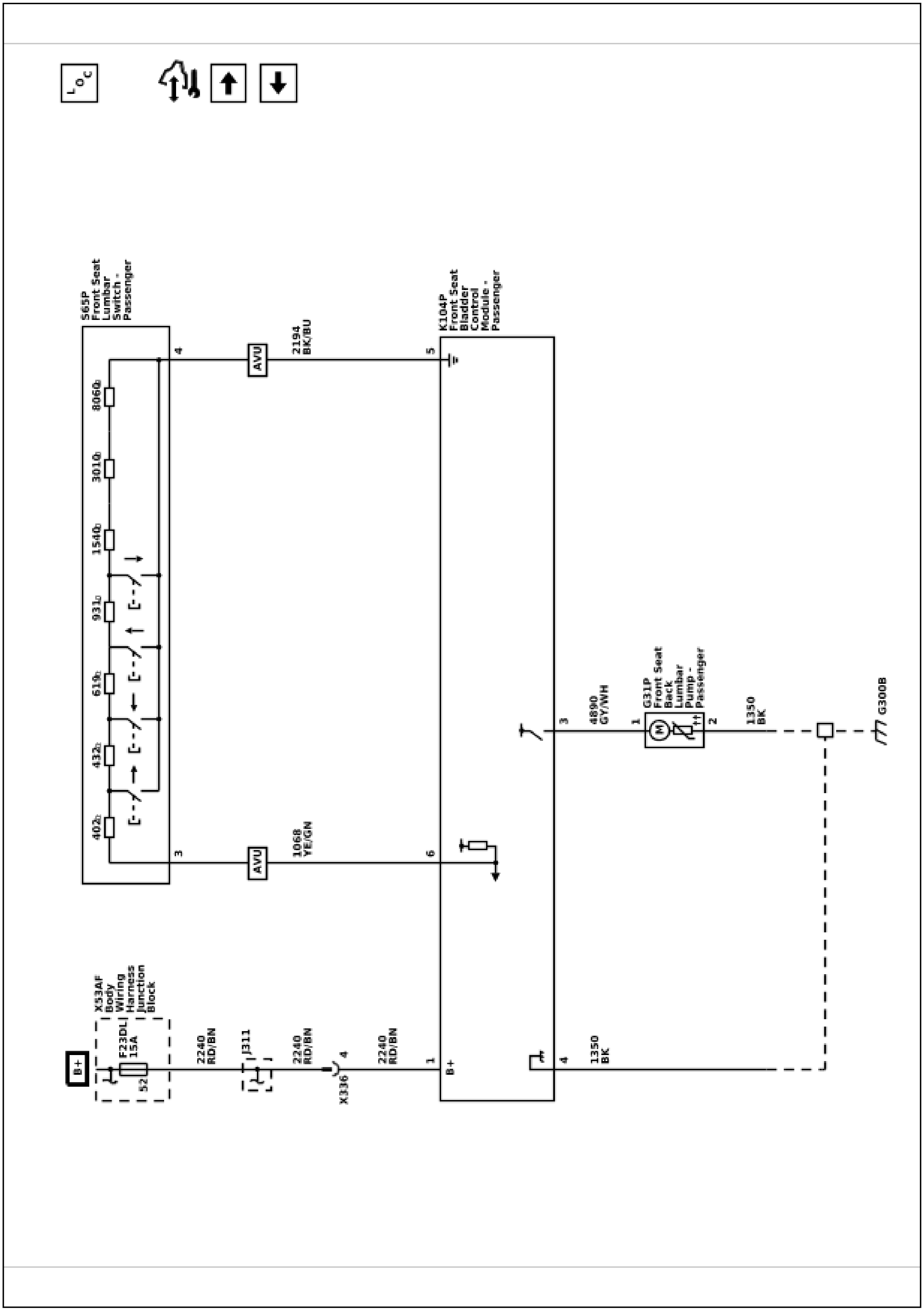
## Passenger Seat Schematics (Seat Controls (AKE))



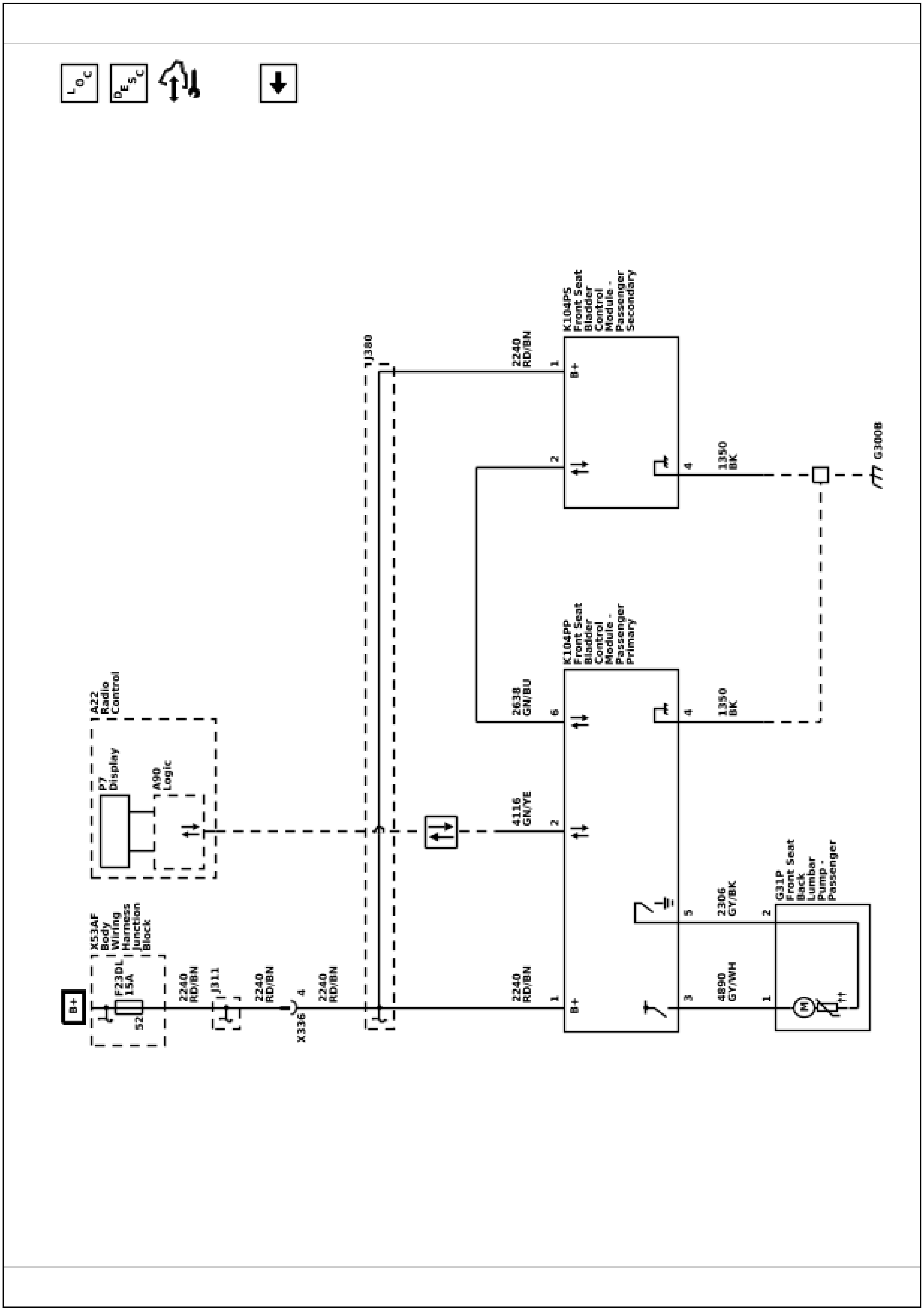
## Passenger Seat Schematics (2 Way Seat Lumbar (A7K - AVU))



## Passenger Seat Schematics (4 Way Seat Lumbar (AVU - AKE))



## Passenger Seat Schematics (Seat Lumbar and Massage (AKE))



# Description and Operation

## Lumbar Support/Massage Description and Operation (4-Way)

### Lumbar Support Components

The driver and front passenger pneumatic lumbar support system each consist of the following components:

- Seat lumbar support switch
- Seat lumbar support control module
- Seat lumbar/bolster pump

### Circuit Description

Battery voltage is supplied at all times to the seat lumbar support control module through a 10 A fuse located in the fuse block. Ground is also supplied at all times to the seat lumbar support control module and the seat lumbar/bolster pump.

The driver seat lumbar support switch is a resistive ladder switch. The seat lumbar support control module supplies the seat lumbar support switch with a signal and low reference circuits. When a lumbar switch is pressed, the signal circuit from the seat lumbar support control module is pulled low through the switch contacts and series of resistors indicating the lumbar support request. In response to this request, the seat lumbar support control module energizes its internal inflate solenoid and applies battery voltage through the lumbar support pump control circuit to the pump. The pump runs to inflate the appropriate support bladder until the switch is released.

### Description of Operation

The following describes the lumbar support operation and how the seat lumbar support control module responds to each of the lumbar support switch inputs:

- When the lumbar support switch pressed in the FORWARD direction, the seat lumbar support control module will command the lumbar support pump ON and the upper and lower lumbar support bladders should inflate until the bladders are 100% inflated or the switch is released.
- When pressing the lumbar support switch in the REARWARD direction, the seat lumbar support control module will slowly deflate the upper and lower lumbar support bladders until the switch is released or both bladders are 100% deflated.
- When the lumbar support switch is pressed in the UP direction, the seat lumbar support control module will slowly inflate the upper lumbar support bladder until the switch is released or the bladder is 100% inflated.
- When the lumbar support switch is pressed in the DOWN direction, the seat lumbar support control module will slowly deflate the upper lumbar bladder while it inflates the lower lumbar bladder. The seat lumbar support control module will continue this operation until the switch is released or the upper lumbar bladder is 100% deflated and the lower lumbar bladder is 100% inflated.

## Lumbar Support/Massage Description and Operation (2-Way)

### Lumbar Support Components

The power seat lumbar support systems consist of the following components:

- S65 Front Seat Lumbar Switch
- M53 Front Seat Back Lumbar Motor

The seat lumbar switch provides both power and ground to the lumbar support motor. The motor contains an electronic circuit breaker (PTC) that will reset only after voltage has been removed from the motor. The motor moves the lumbar support forward and rearward.

When the lumbar switch is operated to move the lumbar support rearward, battery positive voltage is applied through the lumbar rearward switch contacts and the lumbar motor rearward control circuit to the lumbar support motor. The motor is grounded through the lumbar forward switch contacts and the lumbar motor forward control circuit to the motor. The motor runs to drive the lumbar support rearward away from the occupant's back until the switch is released. Moving the lumbar support forward works similarly to moving the lumbar support rearward, except that battery positive voltage and ground are applied on opposite circuits causing the motor to run in the opposite direction.

## Lumbar Support/Massage Description and Operation (Lumbar and Massage)

The memory lumbar/bolster/massage system uses air bladders to adjust various aspects of the seat configuration to meet an occupant’s preference. It also allows these adjustments/types/intensities to be stored to a memory position along with the stored seat position.

Some vehicles may also be equipped with dynamic mode control which gives the chassis subsystem the ability to request an automatic adjustment to the seat's bolster support depending on vehicle driving conditions.

The various seat adjustments and functionality which may be possible include:

- Lumbar support – forward and rearward
- Lumbar support – up and down

- Seat back side bolster – in and out
- Back massage – type(s) and intensity (intensities)
- Cushion side bolster – in and out

The components of the system include:

- LIN based seat switch
- Seat adjuster memory module
- Bolster memory control module
- Seat air pump motor
- Air bladders
- Information display (If applicable)

### LIN Seat Switch

The seat switch communicates all customer requests for seat movement or adjustment via the LIN serial data bus to the seat adjuster memory module. The seat switch may consist of the following controls:

- Seat adjuster switch similar to the typical discrete seat switch
- Massage On/Off switch, if massage is equipped
- 4-way lumbar switch which can be activated Up/Down/Forward/Rearward
- 2-way bolster switch which can be activated Up/Down

### Lumbar/Bolster Operation

**Note:** When the Ignition Off, it is normal operation for bladders to deflate.

Once the lumbar/bolster feature has been activated, the seat adjuster memory module will command the seat bolster memory control module to perform the required pneumatic movements via LIN serial data messages.

The seat bolster memory control module contains the electronic circuitry for executing the commanded pneumatic seat adjustments, air direction solenoids, pressure sensors for storing air bladder pressures, and an output which supplies battery power to the external seat air pump motor when any of the air bladders require inflating.

Based on the LIN command from the seat adjuster memory module, the seat bolster memory control module controls the appropriate air solenoids and activates or deactivates the external air pump in order to inflate or deflate the air bladders in the correct combination. When an air bladder needs inflating its solenoid opens and the pump motor is activated pumping air into the bladder. When an air bladder needs deflating its solenoid opens the release valve and air is allowed to bleed out of the bladder into the vehicle cabin.

To support memory recall and massage, the seat bolster memory control module uses internal air pressure sensors to track, store and recall the positions of all the air bladders under its control.

The massage On/Off switch on the LIN seat switch allows the customer to turn the massage feature on and off.

### Memory Seats Description and Operation

The memory seat system consists of the following components:

- Driver seat adjuster switch
- Driver seat memory switch
- Seat memory control module
- Driver seat horizontal motor
- Driver seat front vertical motor
- Driver seat rear vertical motor
- Driver seat recline motor

### Driver Seat Adjuster Switch

Ground is supplied at all times to the seat adjuster switch. Battery positive voltage is supplied at all times to the seat adjuster switch through a 10 A fuse located in the fuse block. When the seat adjuster switches are pressed, the appropriate signal message is sent to the seat memory control module, via a LIN message. The seat memory control module then commands the appropriate seat motor to move in response to the switch signal message.

### Seat Memory Control Module Power and Grounds

Battery positive voltage is supplied at all times to the seat memory control module through a 30 A fuse located in the fuse block. This voltage is used by the module to apply power to the seat motor when commanded ON. Battery positive voltage is also applied at all times to the seat memory control module through a 10 A fuse located in the fuse block.
This voltage is used to power up the module. Ground is provided to the seat memory control module through the module ground circuit and ground connection.

### Seat Motors

There are 4 motors that move the position of the seat. These are the seat horizontal motor, seat front vertical motor, seat rear vertical motor, and the seat back recline motor. The horizontal motor moves the entire seat forward and rearward. The seat front vertical motor moves the front of the seat cushion up or down. The seat rear vertical motor moves the rear of the seat cushion up and down. The recline motor moves the angle of the seat back forward or rearward.

The seat memory control module controls all seat motors via half bridges that are connected to a single power rail internal to the module. The module connects each of the seat motor outputs together when a seat motor is not in operation. The seat memory control module continually checks the motor control circuits for shorts to ground or voltage. If a fault is detected with a motor control circuit movement of the related motor is inhibited. All of the motors operate independently of each other. Each motor contains an electronic circuit breaker (PTC), which will reset only after voltage has been removed from the motor.

All seat motors are reversible. For example, when a seat switch is pressed to move the entire seat forward, a signal is sent from the seat adjuster switch to the seat memory control module, via the LIN message. In response to this signal, the module applies battery voltage through the seat horizontal motor forward control circuit and ground through the seat horizontal motor rearward control circuit to the motor. The motor runs to drive the entire seat forward until the switch is released, the motor reaches the end of travel, or an obstruction prevents further seat movement. Moving the entire seat rearward works similarly to moving the entire seat forward, except that battery voltage and ground are applied on the opposite circuits causing the motor to run in the opposite direction. All of the motors are powered this way.

## Position Detection

**Note:** There are no physical position sensors used to detect the seat position and movement.

To monitor the seat position, the seat memory control module counts the electrical pulses of each seat motor. During seat motor operation, the electrical pulses are counted and the direction of the seat movement is monitored to determine the seat position.

The seat memory control module determines seat position by keeping a running counter where movement in the forward/upward direction adds counts and movement in the rearward/down direction subtracts counts.

The value of these counters, which represent seat positions, are stored in memory for future seat memory recall operation. During a memory seat position recall, the seat memory control module moves the seat in such a way to return it the stored counter value.

## Memory Functions

**Note:** The seat memory control module does not store the mirror, column, MBM, or HUD positions. The seat memory control sends a serial data messages to the respective modules to recall their locally stored memory position.

In all power modes except crank, memory recalls can be initiated by pressing and holding one of the memory position buttons until the seat reaches the stored memory position associated with the activated button. This is called a supervised recall.

The driver seat memory switch is supplied ground at all times. The seat memory control module supplies set and memory recall signal circuits to the seat memory switch. When a memory recall switch is pressed, the signal circuit from the seat memory control module is pulled low through the switch contacts and a series of resistors indicating the memory recall request. In response to this signal, the seat memory control module commands the appropriate seat motors to move to the pre-recorded seat positions stored in memory.

Refer to the Owner’s Manual for storing memory positions.

## Seat Entry Memory Recall and Seat Exit Memory Recall

The seat memory control module will not perform Seat Entry Memory Recall and Seat Exit Memory Recall functions unless these options are enabled in vehicle personalization using the radio/HVAC controls.

Refer to Instruments and Controls/Vehicle Personalization in the Owner’s Manual for the following memory personalization options:

- Seat Entry Memory Recall
- Seat Exit Memory Recall

The radio/HVAC controls reports the seat memory recall option settings to the seat memory control module via serial data message. The module will then store the memory recall option setting and examine it before making a memory seat adjustment. The seat memory recall option setting stored within the module will not change until the seat memory recall option setting in vehicle personalization is changed.

## Memory Store and Recall Conditions

**Note:** Memory function requires a position be saved to the activated memory switch that is being recalled.

**Memory Store Preconditions:**

- RUN power mode
- No Stuck or Active Switches (seat, mirror, column, HUD)
- No SIR Disable
- No Load Shed 3
- No output motor drive faults detected
- No position plausibility faults detected
- No child lockout – rear

- Not limit switch fault
- No memory switch fault
- Memory ID is 1 or 2

**Memory Recall Preconditions:**
- No Stuck or Active Switches (seat, mirror, column, HUD)
- No SIR Disable
- No Load Shed 3
- No output motor drive faults detected
- No position plausibility faults detected
- No child lockout – rear
- Not limit switch fault
- No memory switch fault
- Memory ID is 1 or 2
- LIN communications Active
- Not currently performing a memory store
- A position has been saved to the recalled memory position

**Memory Recall Termination Conditions:**
- Precondition no longer met
- Active memory button changed
- Recall completed
- Exceed the max allowed recall time (30 seconds)
- OTA Programming Requested

**Auto Memory Recall Preconditions:**
**Note:** Auto Memory Recall is suspended during Start power mode.
- Valid Memory ID and Driver ID
- Valid Power Mode
- No Active or Stuck Switches
- No SIR disable
- Vehicle is Stopped
- No Load Shed 3
- No ASIL – A output fault detected
- No position plausibility faults detected
- No child lockout – rear
- Not limit switch fault
- No memory switch fault
- A position has been saved to the recalled memory position
- Enabled for Current Driver

**Auto Memory Recall Termination Conditions:**
- Precondition no longer met, except being Parked
- Exceed any recall completion times
- Vehicle On terminates Seat Exit Memory
- Vehicle Off terminates Seat Entry Memory
- OTA Programming Requested

**Memory Recall Termination Data Displays:**

The termination causes can be viewed through the Seat Memory Recall History data displays. The following are possible memory recall termination causes:

- No Recall Requested
- Seat Entry/Exit Recall Completed
- Memory Button 1 Recall Initiated
- Memory Button 1 Recall Completed
- Memory Button 2 Recall Initiated
- Memory Button 2 Recall Completed
- Memory Button Exit Recall Initiated
- Memory Button Exit Recall Completed
- Terminated by Other then following
- Memory switch stuck or Invalid
- Memory Switch (Not including SET) out of Range
- Memory SET switch Active or 1, 2, Exit switch changed
- Seat Switch Active or Stuck
- Mirror Switch Active or Stuck
- HUD Switch Active or Stuck
- No Position 1 stored
- No Position 2 Stored
- No Position Exit Stored
- Load Shed 3
- Sir Disabled
- Limit Switch Active or Fault
- Seat Entry – Not Parked terminated
- Invalid Power Mode
- Seat Forward Rearward Motor Control Fault
- Seat Front Up/Down Motor Control Fault
- Seat Rear Up/Down Motor Control Fault
- Recline Forward Rearward Motor Control Fault
- Seat Front Up/Down Motor Position Fault
- Seat Rear Up/Down Motor Position Fault
- Recline Forward Rearward Motor Position Fault

## Power Seats System Description and Operation

The driver and passenger power seat systems each consist of the following components:

- Seat adjuster switch
- Seat horizontal motor
- Seat front vertical motor (If Equipped)
- Seat rear vertical motor
- Seat recline motor

### Seat Motors

The seat switches provide both power and ground to the selected seat motors.

All of the seat motors operate independently of each other. Each motor contains an electronic circuit breaker (PTC) that opens in the event of a circuit overload and will reset only after voltage has been removed from the circuit. There are four seat position motors and two lumbar motors. These are the horizontal motor, front vertical motor, rear vertical motor, and the seat back recline motor. The seat horizontal motor moves the entire seat forward and rearward. The seat vertical motors may operate independently to tilt the front or rear of the seat cushion up or down. Both motors can also run simultaneously to move the entire seat up or down. The recline motor moves the angle of the seat back forward or rearward.

### Seat Operation

All seat motors are reversible. For example, when the seat horizontal forward switch is pressed to move the entire seat forward, battery voltage is applied through the switch contacts and the seat horizontal motor forward control circuit to the motor. With the horizontal motor rearward switch contacts closed to the switch ground circuit, the motor runs in order to drive the entire seat forward until the switch is released. Moving the entire seat rearward works similarly to moving the entire seat forward, except that battery voltage and ground are applied on opposite circuits causing the motor to run in the opposite direction. All seat motors are powered this way.

# Seat Heating and Cooling

## Schematic and Routing Diagrams

## Heated/Cooled Seat Schematics (Front Seat Heating Control Module Power, Ground, Serial Data, and Controls (KA1))

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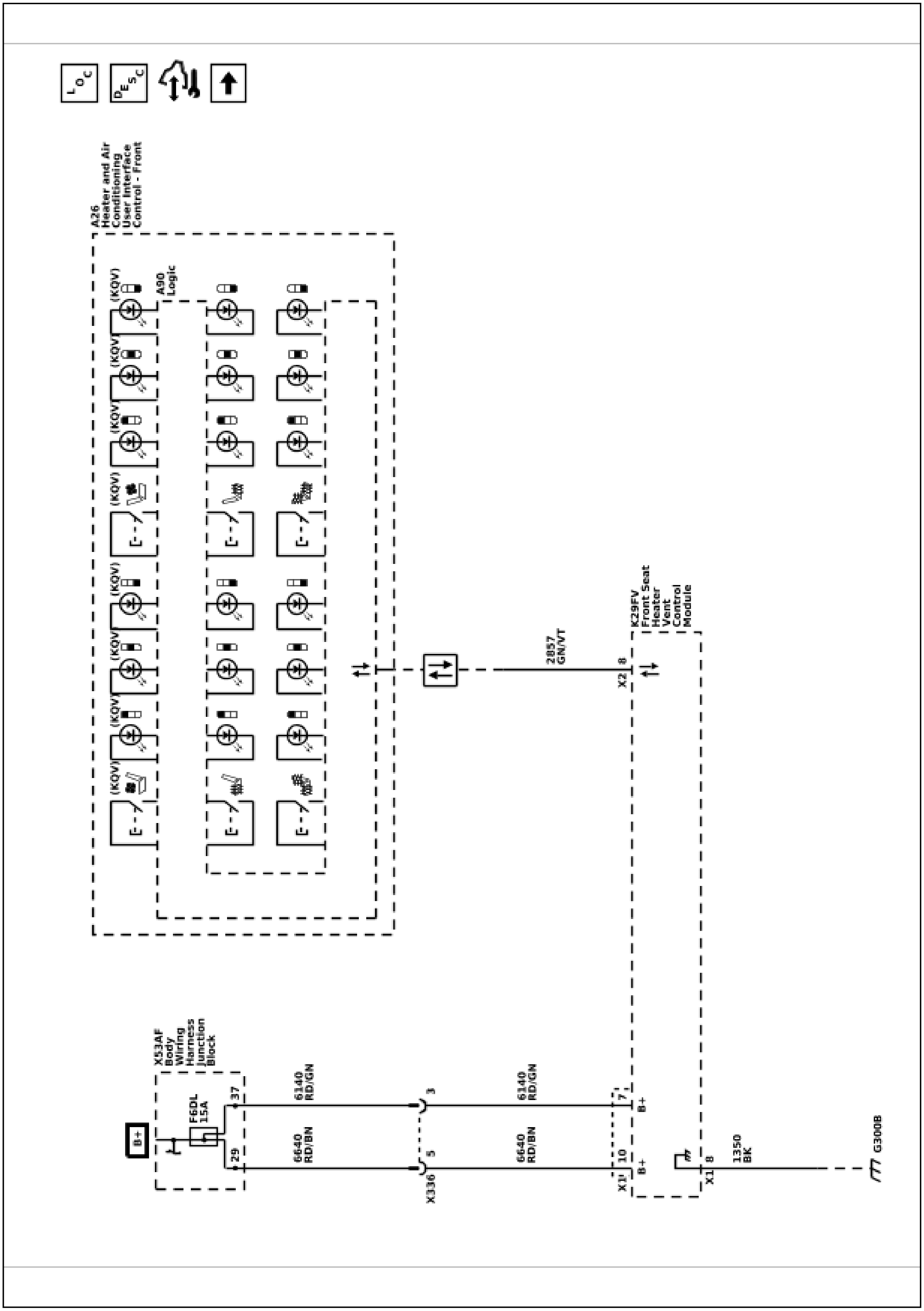
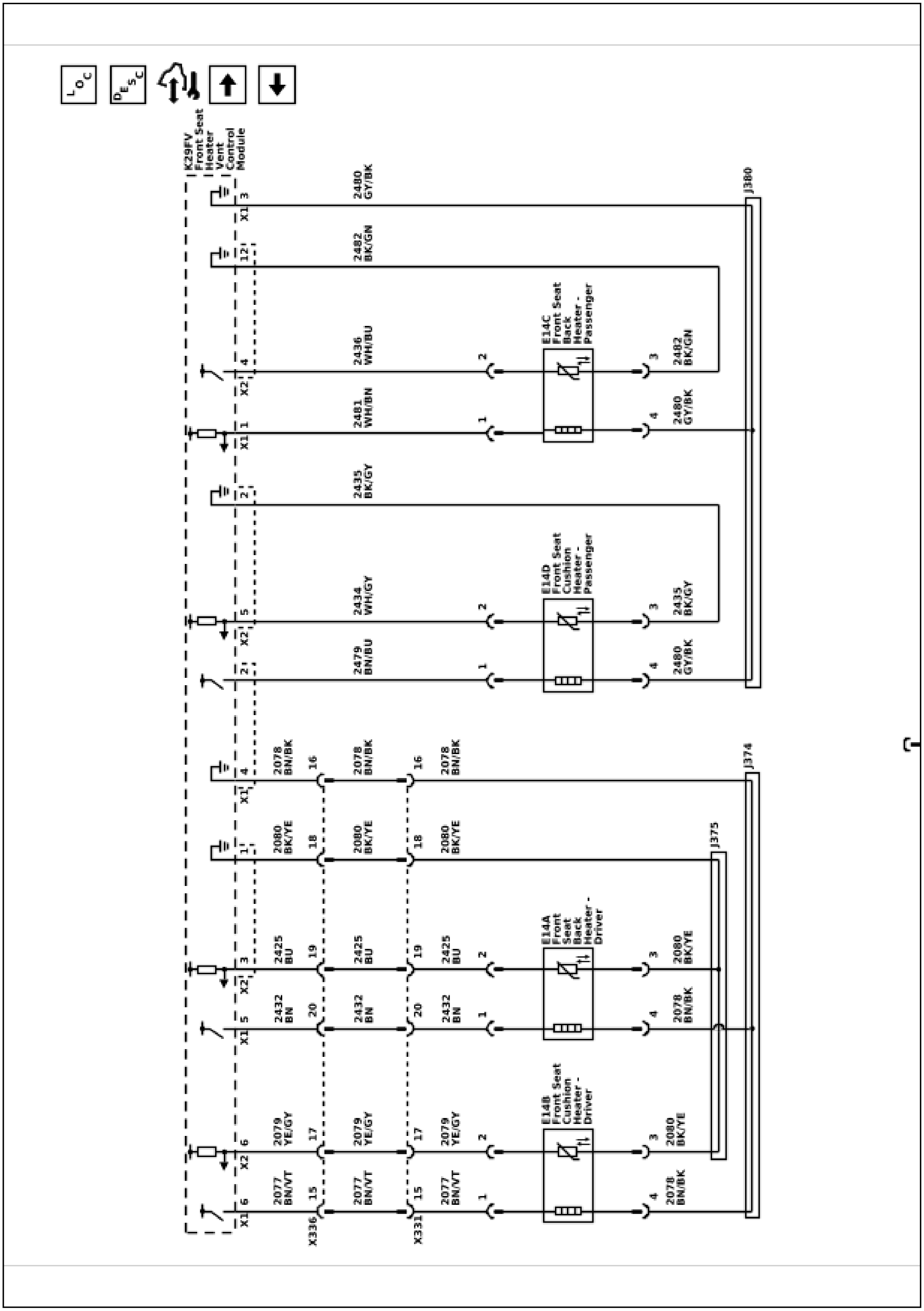


## Heated/Cooled Seat Schematics (Heated Seat Elements - Front (KA1))

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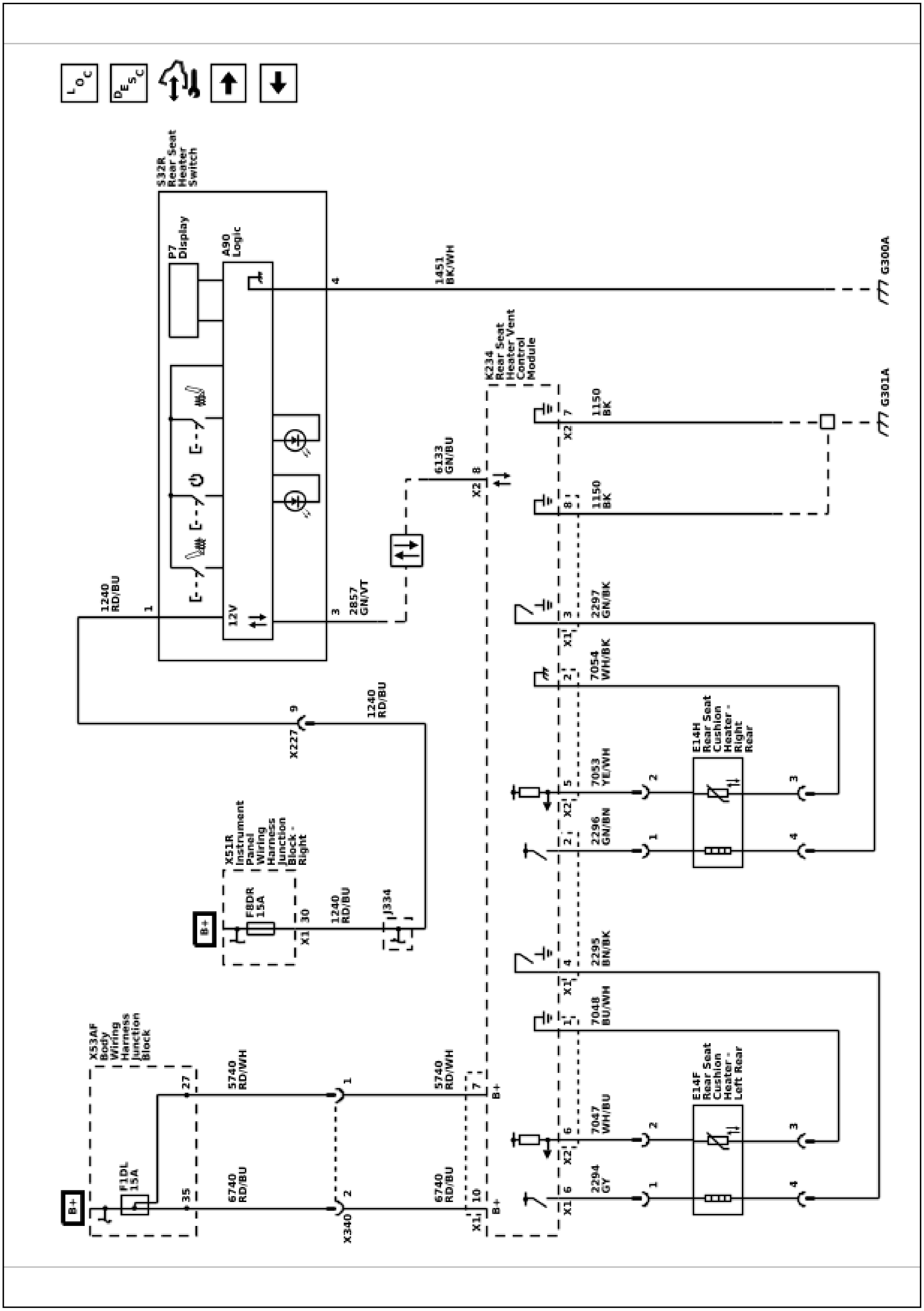
Heated/Cooled Seat Schematics (Heated Seats - Rear (KA6))

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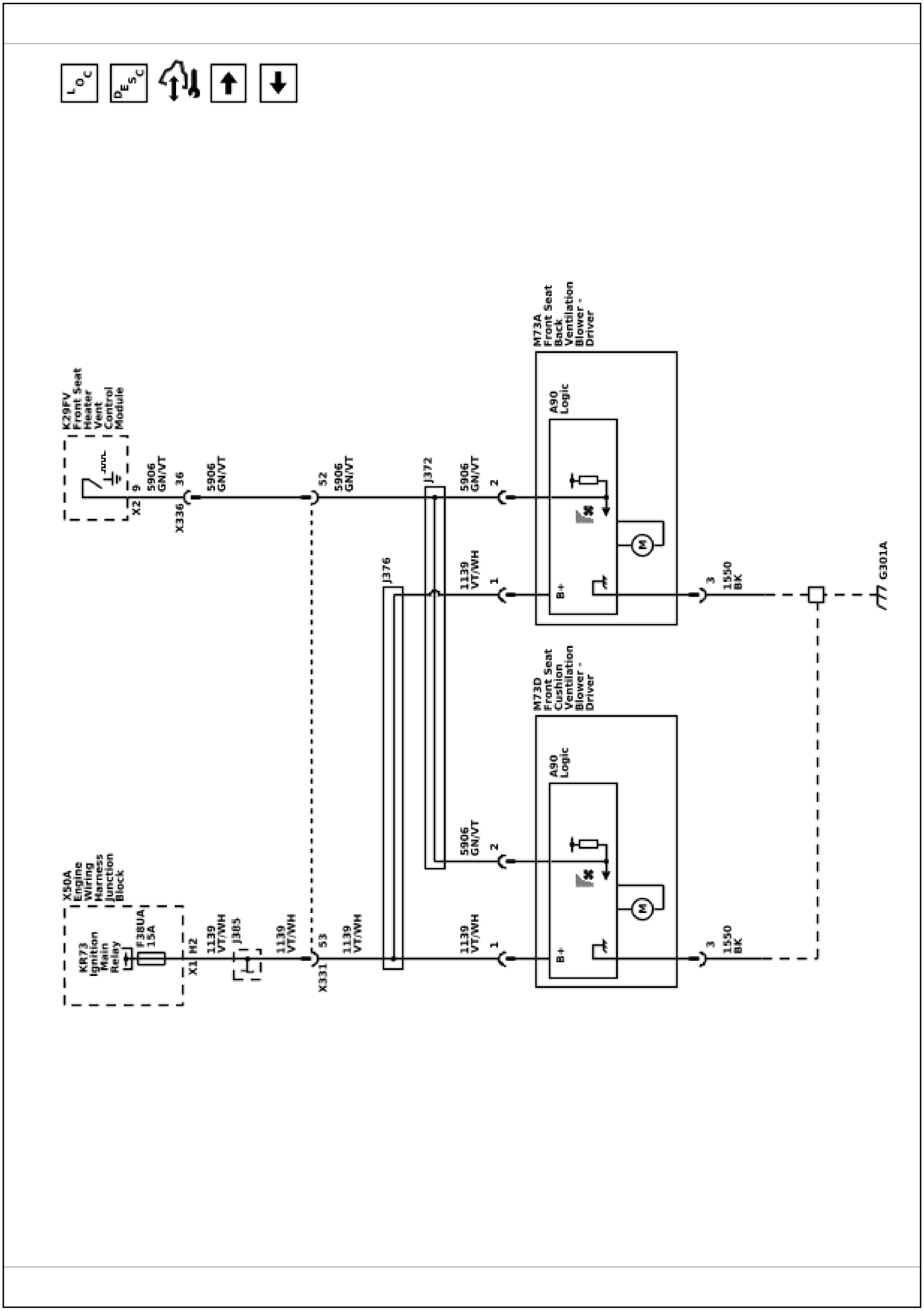
## Heated/Cooled Seat Schematics (Ventilated Seats - Driver (KQV))

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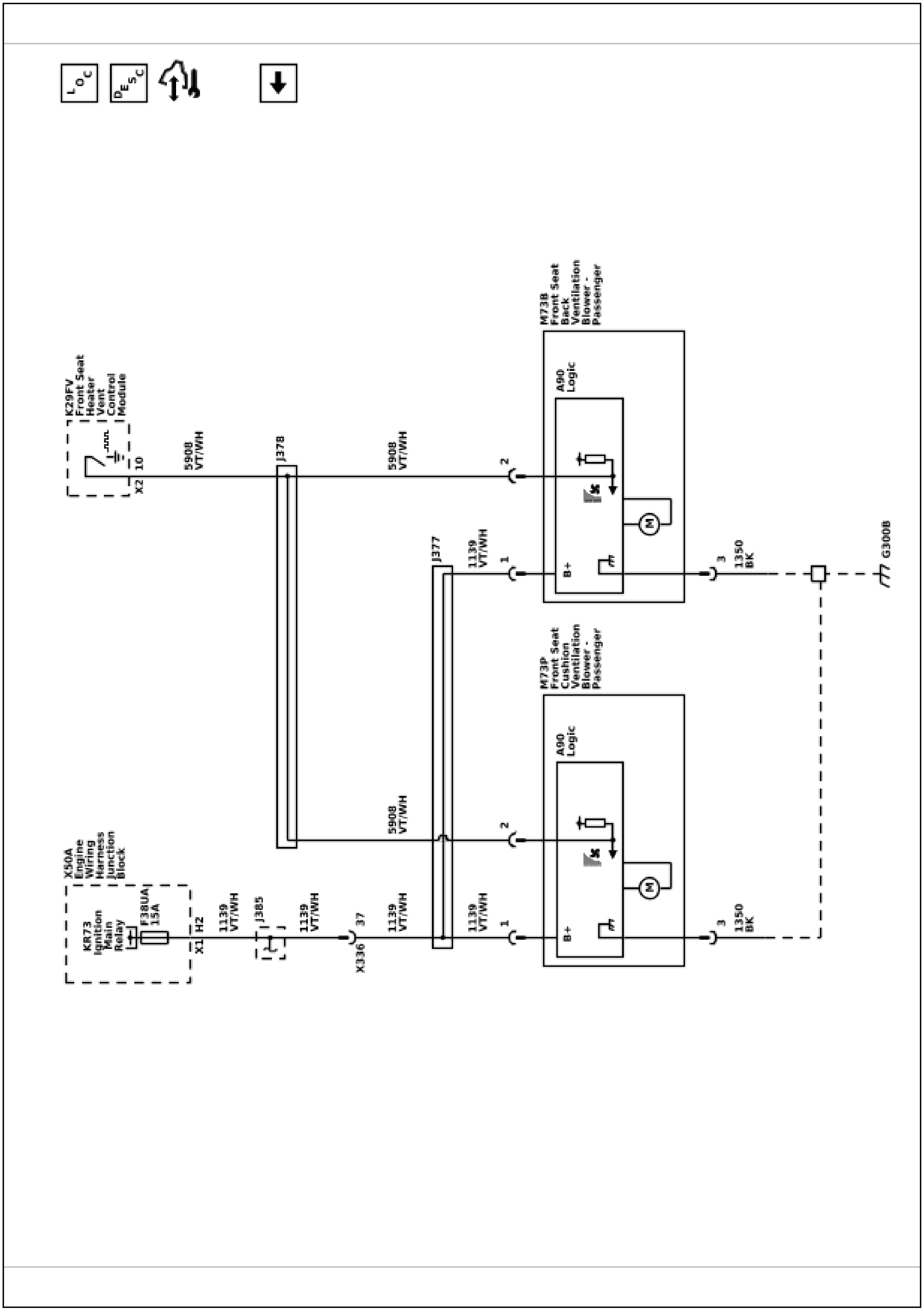
## Heated/Cooled Seat Schematics (Ventilated Seats - Passenger (KQV))

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# Description and Operation

## Heated/Vented Seat Description and Operation

### Heated and Vented Seat Components

The heated/vented seat system consists of the following components:

- Heated and vented seat switches
- Body control module
- Front seat heater control module
- Driver seat cushion heating element
- Driver seat cushion temperature sensor
- Driver seat back heating element
- Driver seat back temperature sensor
- Driver seat cushion blower motor
- Driver seat back blower motor
- Passenger seat cushion heating element
- Passenger seat cushion temperature sensor
- Passenger seat back heating element
- Passenger seat back temperature sensor
- Passenger seat cushion blower motor
- Passenger seat back blower motor

### Heated/Vented Seat Switches

The driver and passenger heated and vented seat switches are located near the HVAC controls on the center stack. The BCM is the heated and vented seat system master. It monitors heated/vented seat switch activations to determine user requested operating mode. Based on the requested operating mode, the BCM sends a LIN Bus serial data message to the front seat heater control module how to drive the self-regulated heating pads or ventilation motors. The BCM also controls the indicators used to provide the operator with feedback as to the operating status of the system. With each press of the switch, the system will cycle through High, Medium, Low, and then back to Off again. The BCM also controls the seat temperature and mode indicators, via the serial data line, used to provide the operator with feedback as to the operating status of the system.

### Heated Seat Operation

The front seat heater control module controls heated seat operation for the driver and passenger seats. When active, power is applied to the seat cushion and back heater elements through a common pulse width modulated (PWM) voltage supply control circuit. Each individual heater element is switched to ground by the module through a common low side drive control circuit.

When inactive the front seat heater control module connects the heating element low side outputs to a common reference point internal to the module which is biased to approximately 3.5 V. The module uses this biased voltage in order to check the high side and low side control circuits for a short to battery or ground before enabling the driver and passenger seat heating elements. During heated seat operation, the front seat heater control module interrupts control of the heating elements every 10 s for approximately 10 ms to make this biased voltage check.

With both the seat cushion and seat back heater elements disconnected, if the high side output of the module is measured it will display a low current 12 V bleed off voltage. This bleed off voltage does not have a meaningful diagnostic purpose. With one or both of the heater elements connected you would just see the 3.5 V biased voltage from this circuit.

### Temperature Regulation

The seat back and cushion temperature sensors (thermistors) are packaged with the seat heating elements located just under the seat covers. The front seat heater control module supplies each temperature sensor with a 5 V reference signal circuit and a low reference circuit. The module monitors the voltage from the signal circuit to determine the temperature of the seat.

The temperature sensor varies in resistance based on the temperature of the heating element causing the signal voltage to change. Once the module senses the seat reached the set temperature, it will then begin regulate the current flow through the heater elements in order to maintain the desired seat temperature based on the feedback voltage from the sensor.

If the heated seats are on high, the temperature level may automatically be lowered after approximately 30 min of operation.

### Vented Seat Operation

Each vented seat consists of 2 blower motors, one in the seat back and one in the seat cushion. During vented seat operation, the vented seat blower motors draw cabin air in through channels in the foam pad and small holes in the seat covers to pull heat away from the occupant.

When the front seat heater control module receives a ventilation seat command, it sends a low side drive pulse width modulation (PWM) signal through the blower motor control circuit to the seat back and cushion blower motors indicating the seat ventilation command. The logic in the blower motors sets the blower speed to the switch set point. The blower motors run causing a cooling effect to the occupant.

### Auto Heated Seat Operation with Vehicle ON

Refer to Heated and Ventilated Front Seats and Vehicle Personalization in the Owner’s Manual for information regarding Auto Heated and Ventilation Seat operation.

### Heated and Cooled Seat Operation During Remote Start

Refer to Vehicle Personalization in the Owner’s Manual for Remote Start Auto Heated and Ventilation Seats.

During remote start, the heated seats will turn ON when the ambient temperature is below 10° C (50° F).

During remote start, the seat ventilation system will turn ON when the ambient temperature is above 27° C (80° F).

### Load Shed Management

The electrical power management function is designed to monitor the vehicle electrical load and determine when the battery is potentially in a high discharge condition. The heated seat system is one of the vehicle loads that is subject to reduction during a battery discharge condition. For more information on load management refer to [Link target (target-id 147282-) not found] .

## Rear Heated Seats Description and Operation

### Heated Seat Components

The rear heated seat system consists of the following components:

- Rear heated seat switches
- Body control module
- Rear seat heating control module
- Left rear seat cushion heating element
- Left rear seat cushion temperature sensor
- Right rear seat cushion heating element
- Right rear seat cushion temperature sensor

### Heated Seat Switches

When a heated seat switch is pressed, the heated seat switch signal circuit from the body control module (BCM) is pulled low indicating the heated seat command. The BCM serves as the heated seat system master to determine the requested operating mode. The BCM then sends a LIN bus serial data message to the rear seat heating control module indicating the heated seat command. In response to this message, the seat heating control module attempts to drive the appropriate seat heating element per the BCM command.

### Rear Heated Seat Operation

The rear seat heating control module controls heated seat operation for the left and right rear seats. When active, power is applied to the seat cushion and back heater elements through a common pulse width modulated (PWM) voltage supply control circuit. Each individual heater element is switched to ground by the module through a common low side drive control circuit.

When inactive the rear seat heating control module connects the heating element low side outputs to a common reference point internal to the control module which is biased to approximately 3.5 V. The control module uses this biased voltage in order to check the high side and low side control circuits for a short to battery or ground before enabling either the left or right rear seat heating element. During heated seat operation, the control module interrupts control of the heating elements every 10 s for approximately 10 ms to make this biased voltage check.

### Temperature Regulation

The seat cushion temperature sensor (thermistors) is packaged with the seat heating element located just under the seat cover. The rear seat heating control module supplies the temperature sensor with a 5 V reference signal circuit and a low reference circuit. The control module monitors the voltage from the signal circuit to determine the temperature of the seat.

The temperature sensor varies in resistance based on the temperature of the heating element causing the signal voltage to change. Once the rear seat heating control module senses the seat reached the set temperature, it will then begin regulate the current flow through the heater elements in order to maintain the desired seat temperature based on the feedback voltage from the sensor.

The temperature level may automatically be lowered after approximately 30 min of operation.

# Section 11

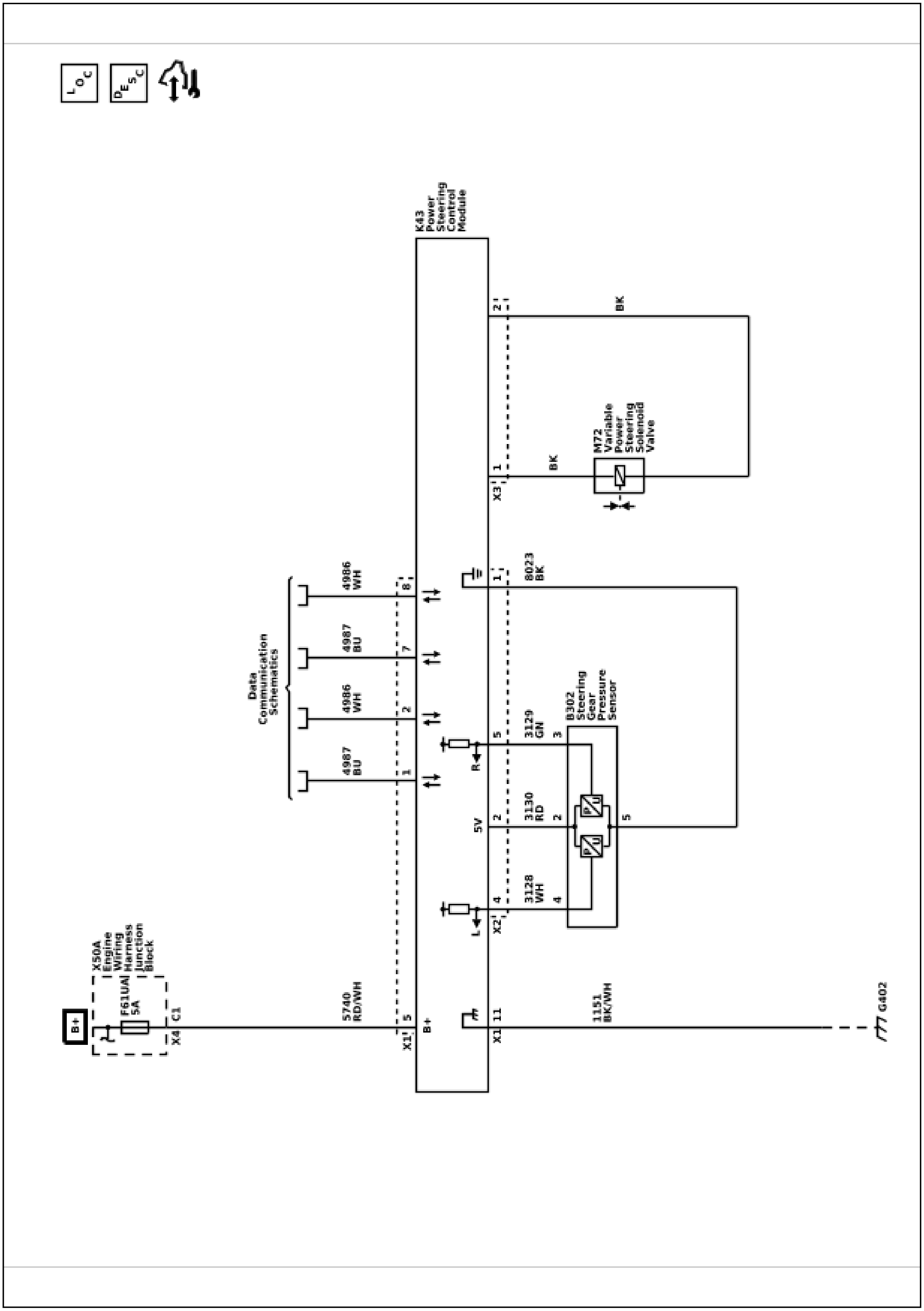
# Steering

# Steering

## Power Steering

### Schematic and Routing Diagrams

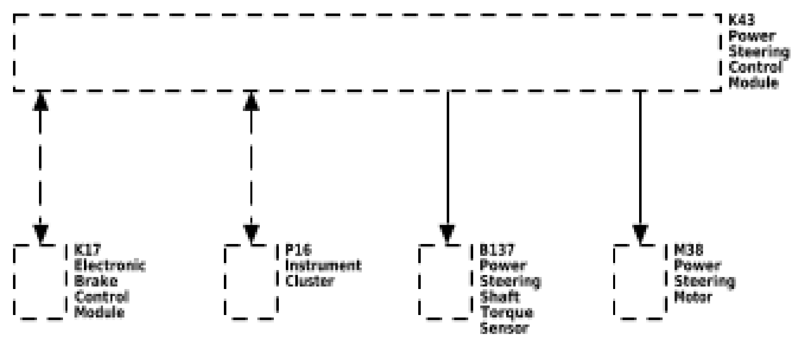
## Power Steering Schematics (Variable Effort Steering (NV8))



# Description and Operation

## Power Steering System Description and Operation (Electric Power Steering)

### Electric Power Steering Block Diagram

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Serial Data

Serial Data

Hard-Wired

Hard-Wired

K43 Power Steering Control Module

K17 Electronic Brake Control Module

P16 Instrument Cluster

B137 Power Steering Shaft Torque Sensor

M38 Power Steering Motor

The belt driven electronic power steering system consists of the following components:

- The integrated electromechanical power steering unit, containing the power steering control module, its sensors, the power steering motor, a belt drive and a ball nut mechanism.
- The steering gear (rack and pinion)

The power steering control module is part of the power steering assist motor assembly and is replaceable as a complete unit independent of the steering gear assembly. The torque sensor is integrated with the steering gear pinion and is serviced as part of the steering gear.

The belt driven electric power steering system reduces the amount of effort needed to steer the vehicle utilizing the power steering control module to control the power steering motor to maneuver the steering gear. The power steering control module also uses a combination of the torque sensor, motor rotational sensor, battery voltage circuit and serial data circuit to perform the system functions. At low speeds more assist is provided for easy turning during parking maneuvers. At higher speeds less assist is provided for improved road feel and directional stability.

The power steering control module continuously monitors the digital torque sensor's torque and index current signals. As the steering wheel is turned and torque is applied to the steering shaft, the steering input and output shafts are monitored via the torque signal circuit and then processed by the power steering control module to calculate the steering torque. The voltage signals of the motor position sensor and the digital torque sensor's index current signal are both processed by the power steering control module to detect and calculate the steering wheel angle.

The power steering control module responds to the change in the digital torque sensor signals as well as the motor rotational sensor's voltage signals by commanding current to the power steering motor. The power steering control module controls the motor drive circuit to drive the alternating current motor. The power steering control module and motor assembly is attached to the base of the steering gear housing and applies power assist directly to the rack with a belt drive and a ball nut mechanism to maneuver the rack laterally depending on the direction the steering wheel is turned.

The power steering control module has advanced software features referred to as Active Pull Compensation and Smooth Road Shake Compensation.

Active Pull Compensation constantly measures steering wheel torque being applied by the driver to maintain the vehicle's path. When the software detects extra effort being used, the steering assist motor adds torque in the proper direction to prevent the driver from having to make corrections to keep the vehicle on course. The torque assistance reduces driver fatigue and effort and makes steering easier. The software automatically resets itself to compensate for changing road conditions or the vehicle turning on curves. This software feature will compensate for a specific range of lead/pull up to its maximum limit within a set of parameters. The feature can be disabled during diagnostics for appropriate root cause of a complaint vehicle.

Smooth Road Shake Compensation reduces steering wheel rotational vibration caused by an imbalance from the front tire/wheel assemblies. The rotational vibration transmitted to the steering wheel is referred to as Smooth Road Shake and is a phenomenon that occurs only at highway speeds and on smooth roads. The power steering control module employs active controls to sense and reduce the periodic torque component applied to the steering wheel caused by the wheel imbalance force. This software feature will compensate for a specific range of imbalance. If the imbalance is above a certain level, the power steering control module will disable the smooth road shake compensation software feature and set a DTC C044B to indicate that it has been disabled.

The power steering control module has the ability to calculate an internal system temperature to protect the power steering system from potential damage. To reduce a high system temperature, the power steering control module will reduce the amount of current commanded to the power steering motor, which reduces the amount of steering assist and will set DTC C0176.

The power steering control module has the ability to detect malfunctions within the electric power steering system. Any malfunction detected that disables steering assist will cause the SERVICE POWER STEERING or STEERING ASSIST IS REDUCED DRIVE WITH CARE message to be displayed on the driver information center.

### Power Steering System Description and Operation (Hydraulic Power Steering)

The hydraulic power steering pump is a constant displacement vane-type pump that provides hydraulic pressure and flow for the power steering gear. The hydraulic power steering pump is belt-driven.

The power steering fluid reservoir holds the power steering fluid and may be integral with the power steering pump or remotely located. The following locations are typical locations for the remote reservoir:

- Mounted to the front of the dash panel
- Mounted to the inner fender
- Mounted to a bracket on the engine

The 2 basic types of power steering gears are listed below:

- A recirculating ball system
- A rack and pinion system

In the recirculating ball system, a worm gear converts steering wheel movement to movement of a sector shaft. A pitman arm attached to the bottom of the sector shaft actually moves one tie rod and an intermediate rod move the other tie rod.

In the rack and pinion system, the rack and the pinion are the 2 components that convert steering wheel rotation to lateral movement. The steering shaft is attached to the pinion in the steering gear. The pinion rotates with the steering wheel. Gear teeth on the pinion mesh with the gear teeth on the rack. The rotating pinion moves the rack from side to side. The lateral action of the rack pushes and pulls the tie rods in order to change the direction of the vehicle's front wheels.

The power steering pressure hose connects the power steering pump union fitting to the power steering gear and allows pressurized power steering fluid to flow from the pump to the gear.

The power steering return hose returns fluid from the power steering gear back to the power steering fluid reservoir. The power steering return line may contain an integral fin-type or line-type power steering fluid cooler.

In a typical power steering system, a pump generates hydraulic pressure, causing fluid to flow, via the pressure hose, to the steering gear valve assembly. The steering gear valve assembly regulates the incoming fluid to the right and left chambers in order to assist in right and left turns.

Turning the steering wheel activates the valve assembly, which applies greater fluid pressure and flow to 1 side of the steering gear piston, and lower pressure and flow to the other side of the piston. The pressure assists the movement of the gear piston. Tie rods transfer this force to the front wheels, which turn the vehicle right or left.

## Power Steering System Description and Operation (Active Hydraulic Assist (NV8))

The Active Hydraulic Assist (AHA) system is an updated recirculating ball hydraulic power steering system that allows for some of the performance benefits of electric power steering such as variable effort steering, active return to center, active damping, and lead/pull compensation.

The original hydraulic system was retrofitted with the AHA Module, a pressure sensor, and an electric coil (electromechanical valve).

The pressure sensor is one unit with two separate detection bodies located in the left and right chambers of the steering gear. As the driver turns the steering wheel, the pressure increases on one side and decreases on the other. These pressure changes are sent to the AHA module which then decides which way to direct the hydraulic pressure.

The electromechanical control of the pressure valve allows for the additional functions in the power steering system.

The TOW/HAUL feature will change the amount of assist provided. The power steering system will still provide more assist at lower speeds and less assist at higher speeds with TOW/HAUL enabled. However, with TOW/HAUL enabled, the amount of assist provided at higher speeds will be less than what it provided with TOW/HAUL disabled. This is to account for the front axle mass being lower during towing.

# Steering Wheel and Column

## Schematic and Routing Diagrams

## Steering Wheel Schematics (Heated Steering Wheel (KI3))

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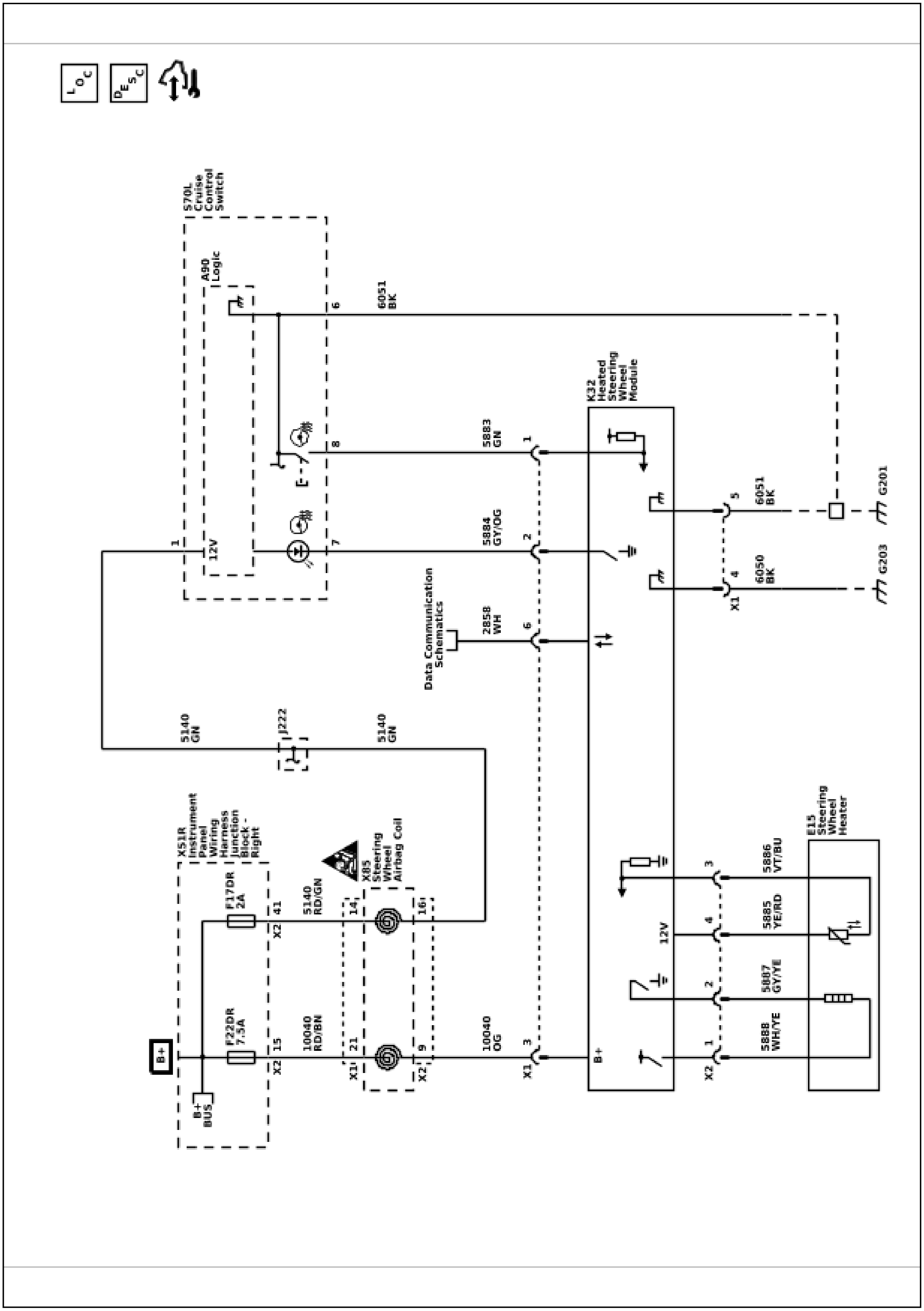
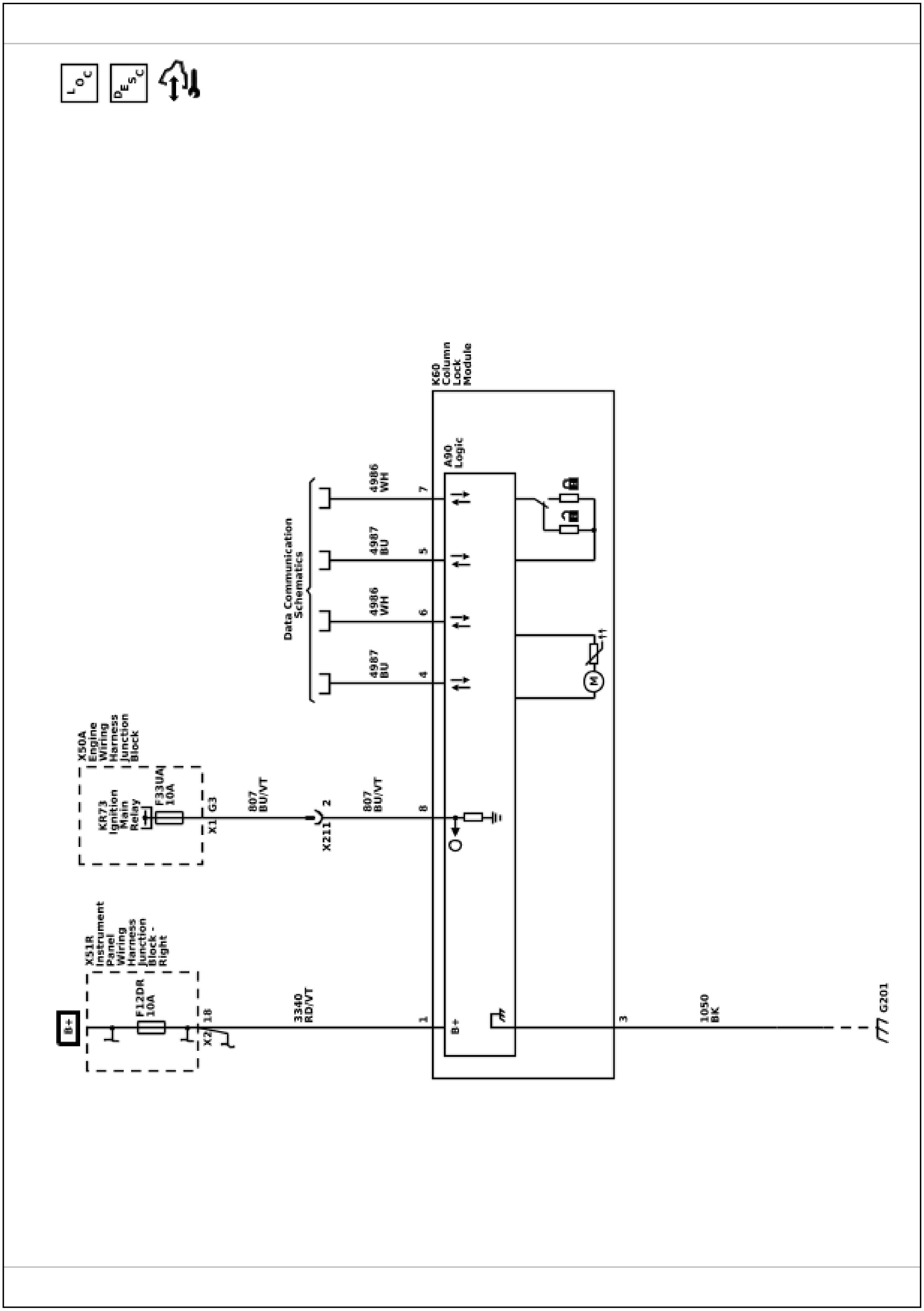


## Column Lock Schematics (Steering Column Lock (BTM))

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# Description and Operation

## Steering Wheel and Column Description and Operation

### Column Lock (if equipped)

The Column Lock Module (CLM) controls the steering wheel theft deterrent lock function, which allows the column to be electronically locked. When a valid key is used to start the vehicle, the BCM recognizes this and will send the encrypted password to the CLM. The CLM will compare its own stored password to the encrypted password sent by the BCM. If the data matches, the steering column will be unlocked.

In order for the steering column to be locked the CLM has to see 3 inputs.

1. The BCM power mode is OFF.
2. The vehicle is stationary based on zero speed reported from all ABS wheel speed sensors.
3. The driver door is reported open by the BCM.

When the CLM receives these inputs, the steering column will be locked.

The CLM monitors the column lock system and will set DTC codes when the module detects malfunctions within the system. When a malfunction occurs the driver information center (DIC) will display the Service Column Lock Now message indicating DTC codes are set within the CLM. The immobilizer system will prevent vehicle starting if there is a fault or no communication with the CLM.

### Tilt/Telescoping Description (if equipped)

The steering column has a tilt/telescoping control system that consists of an electronic control module capable of LIN message communication, a steering column power assembly with positioning actuators and sensors, and a steering column control switch.

**Column Position Module has two versions of operation:**

1. N38 – Power Steering Column-Tilt/Telescope, and A45 – Memory Seats

   The column position module will wake up either by the LIN bus or by the tilt/telescope steering column switch. The memory seat module is the master and column position module is the slave. All DTCs and the data from column position module are reported through the LIN bus and stored in the memory seat module.

2. N38 – Power Steering Column-Tilt/Telescope Only

   The column position module will wake up with the tilt/telescope steering column switch. No DTCs or data is available. Vehicle symptoms will cause the customer to bring the vehicle in for service.

**Tilt/Telescoping Switch Operation**
The tilt/telescope steering column has a four-position switch. The switch may be used to adjust the position of the steering wheel in or out which is telescope and up or down which is tilt. The position of the column may be changed as follows:

- Press the switch up to tilt the column up.
- Press the switch down to tilt the column down.
- Press the switch forward and the column moves toward the front of the vehicle.
- Press the switch rearward and the column moves toward the rear of the vehicle.

**Actuators**
Both the tilt and telescoping actuators are reversible. For example, the tilt actuator moves the column both up and down. When the column position module receives an input to move the column up, the column position module supplies battery positive voltage and ground to the tilt actuator in order to move the column up. When the column position module receives a column down input, the column position module supplies battery positive voltage and ground to the same actuator, but with reverse polarity. When the voltage polarity is reversed, the actuator runs in the opposite direction and moves the column down.

**Position Sensors with A45 Memory Seats**
Two position sensors are Hall Effect sensors and are used by the column position module. The column position module provides a 5 V reference voltage and a ground to both the tilt and telescoping position sensors. The sensor feedback circuit voltage varies from 0–5 V. Each sensor is part of the actuator assembly. When the actuator rotates, the voltage of the sensor varies on the scan tool. The column position module monitors the feedback voltage to determine the column position.

Without the A45 Memory Seat option, scan tool data is not available.

**Tilt/Telescoping Memory with A45 Memory Seats**
Memory settings and the personalization of steering wheel positions are available with the tilt/telescoping steering column only with the A45 Memory Seat option. The data stored consists of entry positions and exit positions. The entry position is the position that the steering column moves in when the ignition is turned ON. The exit position is the direction that the steering column moves in when the ignition is turned OFF and the driver's door is opened. The memory seat module stores memory positions and commands column position module to move actuators to specific positions through a LIN message.

An initial memory setting is set in the memory seat module at the assembly plant. This setting may be changed by the customer at any time.

Without the A45 Memory Seat option, memory settings, personalization, and the entry and exit function is not available.

## Driver Safety

The steering wheel and column has safety features to protect the driver. The following components may be mounted on or near the steering column:

**Energy-Absorbing Steering Column:** The energy-absorbing steering column compresses in the event of a front-end collision, which reduces the chance of injury to the driver. The energy-absorbing feature, collapsible steering shaft, and break away mounting features help reduce the injury in the event of an accident.

## Heated Steering Wheel (if equipped)

The heated steering wheel system consists of a heated steering wheel, a heated steering wheel switch, and a K32 Heated Steering Wheel Module. The heated steering wheel includes non-serviceable heating elements and a temperature sensor. The heating elements and sensor are located in the left and right sides of the rim of the steering wheel. The heated steering wheel switch is located in the left steering wheel control switch assembly. The steering wheel heat control module is located at the bottom of the steering wheel center hub. When the switch is pressed, the switch signal circuit is grounded and the heat module turns the heated steering wheel on. The system then remains on until the customer turns it off. The wheels normal operating temperature is 32°C (89.6°F). The wheel takes approximately 3 to 4 minutes to reach the normal operating temperature. The wheel will take longer to heat up if the vehicle temperature is below -21°C (-5.8°F). The built-in temperature sensor provides input to the controller to limit the temperature to the normal operating temperature. The wheel will not operate if the vehicle temperature is at or above 32°C (89.6°F).

The heated steering wheel control module is on the LIN bus. This allows the heated steering wheel to be activated during remote vehicle start.

For vehicles equipped with UKL, the K180S Driver Monitoring System Module controls the steering wheel heater, the steering wheel LED display and the steering wheel touch sensors. The K180S Driver Monitoring System Module - Steering Wheel is integral to the steering wheel and cannot be replaced by itself. The K180S Driver Monitoring System Module - Steering Wheel is also a LIN device to the K124 Image Processing Module.

# Section 12

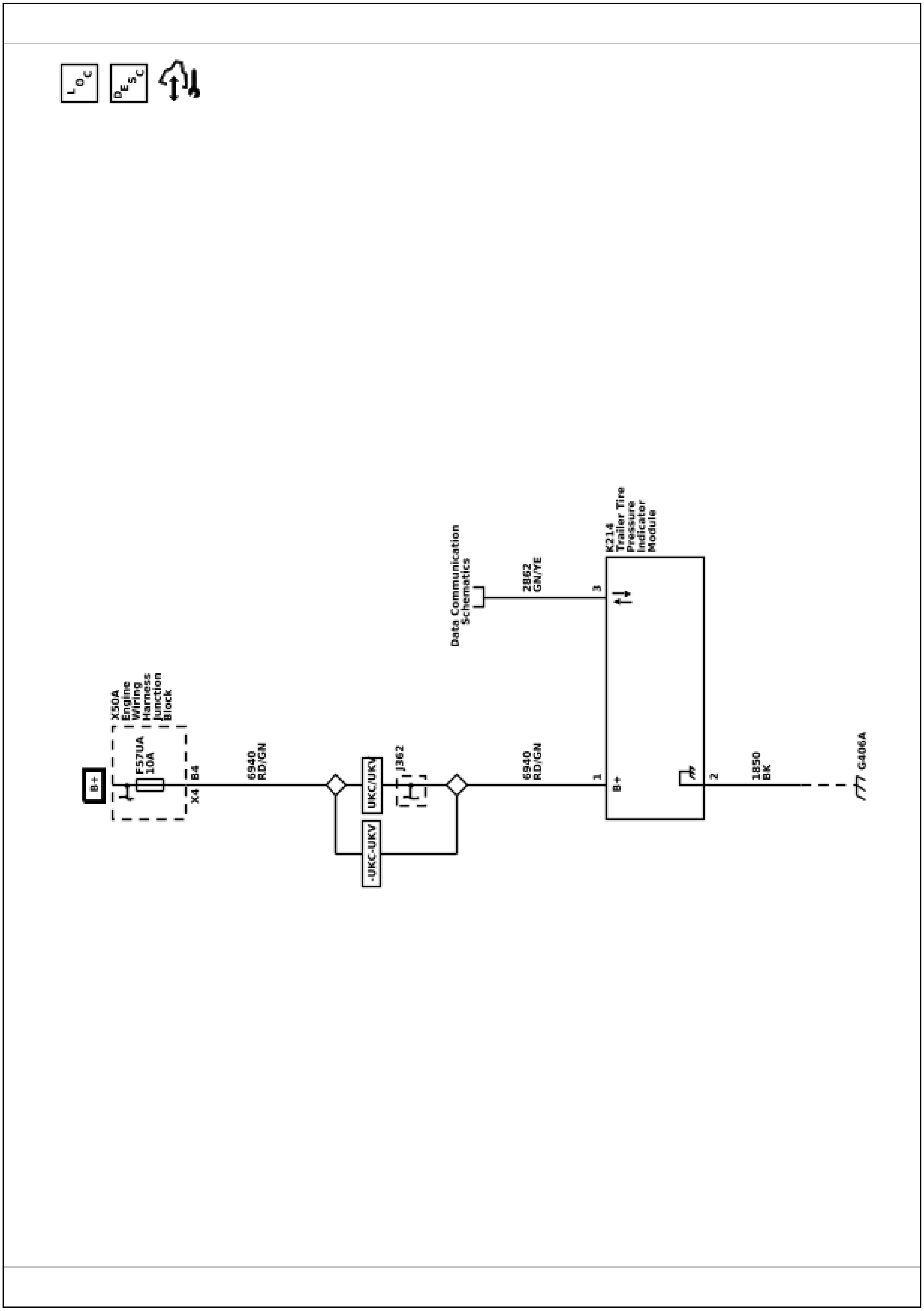
# Suspension

# Suspension

## Tire Pressure Monitoring

### Schematic and Routing Diagrams

## Tire Pressure Monitoring System Schematics (Trailer Tire Pressure (UET))

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# Description and Operation

## Tire Pressure Monitor Description and Operation (-DZW)

### Special Tools

*EL-52545*
Tire Pressure Monitor Sensor and RF Diagnostic Tool

For equivalent regional tools, refer to [Link target (target-id 59410-) not found] .

### Tire Pressure Monitoring System Operation

The tire pressure monitor system warns the driver when a significant loss of tire pressure occurs in any of the equipped tires. It allows the driver to display the individual tire pressures and their locations on the driver information center.

The system uses the body control module (BCM), driver information center, instrument cluster, remote function actuator module, and a radio frequency transmitting pressure sensor in each tire assembly. Each sensor has an internal power supply.

Tire Fill Alert (TFA) (If Equipped) feature provides visual and audible alerts (light flashes and horn chirps) to drivers to assist in inflating an underinflated tire to the recommended tire pressure without the need to check a gauge or the instrument panel. TFA only functions once the tire pressure is low enough to trigger the telltale on the dashboard.  When the driver starts filling the underinflated tire, the corner lamp nearest to that tire will begin to flash. When the recommended pressure is reached, the horn sounds once and the turn signal lamps will stop flashing and briefly turn solid. If the tire is overinflated by more than 35 kPa (5 psi), the horn will sound multiple times and the turn signal lamp will continue to flash for several seconds after filling stops. To release and correct the pressure, while the turn signal lamp is still flashing, briefly press the center of the valve stem. When the recommended pressure is reached, the horn sounds once.

Software Auto Learn (SAL) (If Equipped) is achieved by correlating information from the sensor with information from the ABS system to make a location decision. Factors such as rolling radius, steering angle etc. cause each vehicle wheel to rotate at a unique speed and difference in tire speeds helps software auto learn feature to assign sensor IDs to the correct locations. If a new sensor has been installed or tire rotated, the vehicle must be stationary for about 20 minutes before the system can start the process of calculating correct sensor locations. For this to happen, the vehicle will need to be driven at speed greater than 20 km/h (12 mph) for about 10 min.

When the vehicle is stationary, the sensors internal shock sensor is inactive which puts the sensors into a Stationary state. In this state the sensors sample tire pressure once every 30 sec and do not transmit at all if the tire pressure does not change. As vehicle speed increases, the shock sensor pulses every wheel rotation, which puts the sensor into Rolling mode. The remote function actuator module receives and then sends the tire pressure and temperature data to the body control module (BCM). The BCM translates the data contained in the tire pressure sensor radio frequency transmissions into sensor presence, sensor mode, and tire pressure. Once vehicle speed is greater than 40 km/h (25 MPH), the sensors begin to transmit once a minute keeping the pressure data up to date.

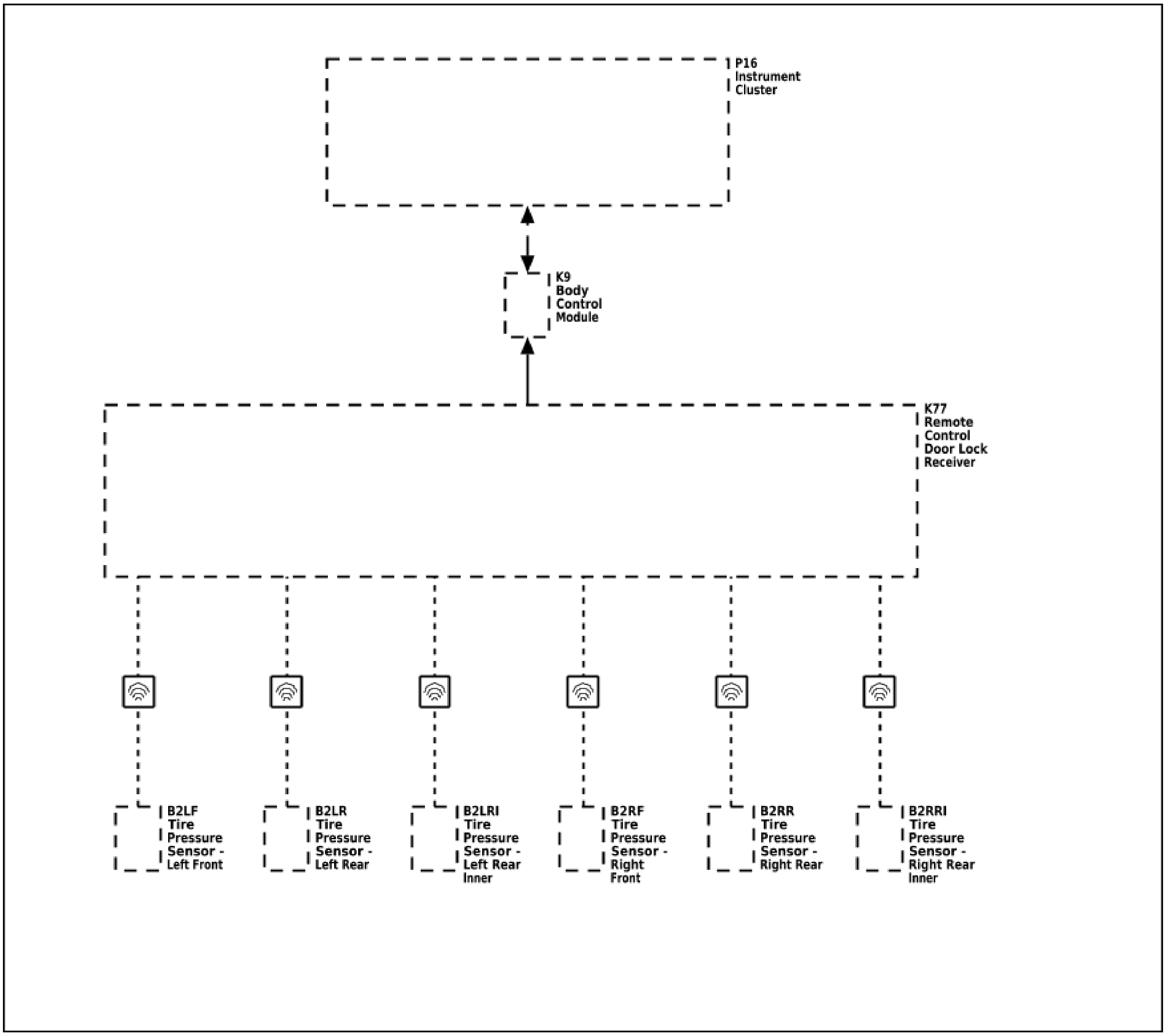
Each sensor has its own unique identification (ID) code which it transmits as part of each RF message and must be learned into the BCM memory. Once all 4 ID's have been learned and vehicle speed is greater than 40 km/h (25 mph), the BCM continuously compares ID's and pressure data in the received transmissions to the learned ID's and pressures to determine if all 4 sensors are present and if one or more tires are low. If the BCM detects a low tire pressure condition, or a malfunction in the system, it will send a serial data message to the instrument cluster requesting the appropriate tire pressure monitor indicator illumination and also to display the appropriate data message on the driver information center, if equipped.

The sensors continuously compare their last pressure sample to their current pressure sample and will transmit in Alert mode if a 8.3 kPa (1.2 PSI) change in tire pressure has been detected in either a Stationary or Rolling state. When the tire pressure system detects a significant loss, or gain of tire pressure, the tire pressure monitor indicator icon is continuously illuminated on the instrument cluster and if equipped, a check tire pressure type message is displayed on the driver information center.

Both the indicator icon and driver information center message can be cleared by adjusting the tire pressures to the recommended kPa/PSI.

If power is disconnected from the BCM or if the vehicle battery is disconnected each tire pressure sensor ID is retained but all of the tire pressure information is lost. Under these circumstances the BCM cannot assume that the tire pressures were maintained over an unknown period of time. Cars equipped with the driver information center will display dashes and the scan tool will indicate a default tire pressure value of 220 kPa (32 PSI) for each tire. To reactivate the sensors, the vehicle must be driven above 40 km/h (25 MPH) for at least 2 min. When the sensors are activated, the driver information center displays the current tire pressures. The EL-52545 tire pressure monitor sensor and RF diagnostic tool may also be used to activate the sensors as well.

**Tire Pressure Monitoring Block Diagram**

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Serial Data

Hard-Wired

The BCM has the ability to detect malfunctions within the tire pressure monitor system. In the event a DTC is set, the tire pressure monitor indicator icon on the instrument cluster will flash for approximately 1 min. and then remain illuminated for the remainder of the key cycle. After a key cycle and the instrument cluster bulb check has been completed the indicator will again flash for 1 min. and then remain illuminated if the DTC persists. Any malfunction detected will cause the driver information center to display a service tire monitor system type message.

## Tire Pressure Monitor Description and Operation (DZW)

Wireless
Wireless
Wireless
Wireless
Wireless
Wireless
P16 Instrument Cluster
K9 Body Control Module
K77 Remote Control Door Lock Receiver
B2LF Tire Pressure Sensor - Left Front
B2RF Tire Pressure Sensor - Right Front
Tire Pressure Sensor - Left Rear Inner
Tire Pressure Sensor - Right Rear Inner
B2LR Tire Pressure Sensor - Left Rear
B2RR Tire Pressure Sensor - Right Rear

## Special Tools

*EL-52545*
Tire Pressure Monitor Sensor and RF Diagnostic Tool

For equivalent regional tools, refer to [Link target (target-id 59410-) not found] .

### Tire Pressure Monitoring System Operation

The tire pressure monitor system warns the driver when a significant loss of tire pressure occurs in any of the equipped tires. It allows the driver to display the individual tire pressures and their locations on the driver information center.

The system uses the body control module (BCM), driver information center, instrument cluster, remote function actuator module, and a radio frequency transmitting pressure sensor in each tire assembly. Each sensor has an internal power supply.

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Software Auto-location (SAL) (If Equipped) is achieved by correlating information from the sensor with information from the ABS system to make a location decision. Factors such as rolling radius, steering angle etc. cause each vehicle wheel to rotate at a unique speed and difference in tire speeds helps software auto learn feature to assign sensor IDs to the correct locations. If a new sensor has been installed or tire rotated, the vehicle must be stationary for about 20 minutes before the system can start the process of calculating correct sensor locations. For this to happen, the vehicle will need to be driven at speed greater than 20 km/h (12 mph) for about 10 min.

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The sensors continuously compare their last pressure sample to their current pressure sample and will transmit in Alert mode if a 8.3 kPa (1.2 PSI) change in tire pressure has been detected in either a Stationary or Rolling state. When the tire pressure system detects a significant loss, or gain of tire pressure, the tire pressure monitor indicator icon is continuously illuminated on the instrument cluster and if equipped, a check tire pressure type message is displayed on the driver information center.

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The BCM has the ability to detect malfunctions within the tire pressure monitor system. In the event a DTC is set, the tire pressure monitor indicator icon on the instrument cluster will flash for approximately 1 min. and then remain illuminated for the remainder of the key cycle. After a key cycle and the instrument cluster bulb check has been completed the indicator will again flash for 1 min. and then remain illuminated if the DTC persists. Any malfunction detected will cause the driver information center to display a service tire monitor system type message.

# Section 13

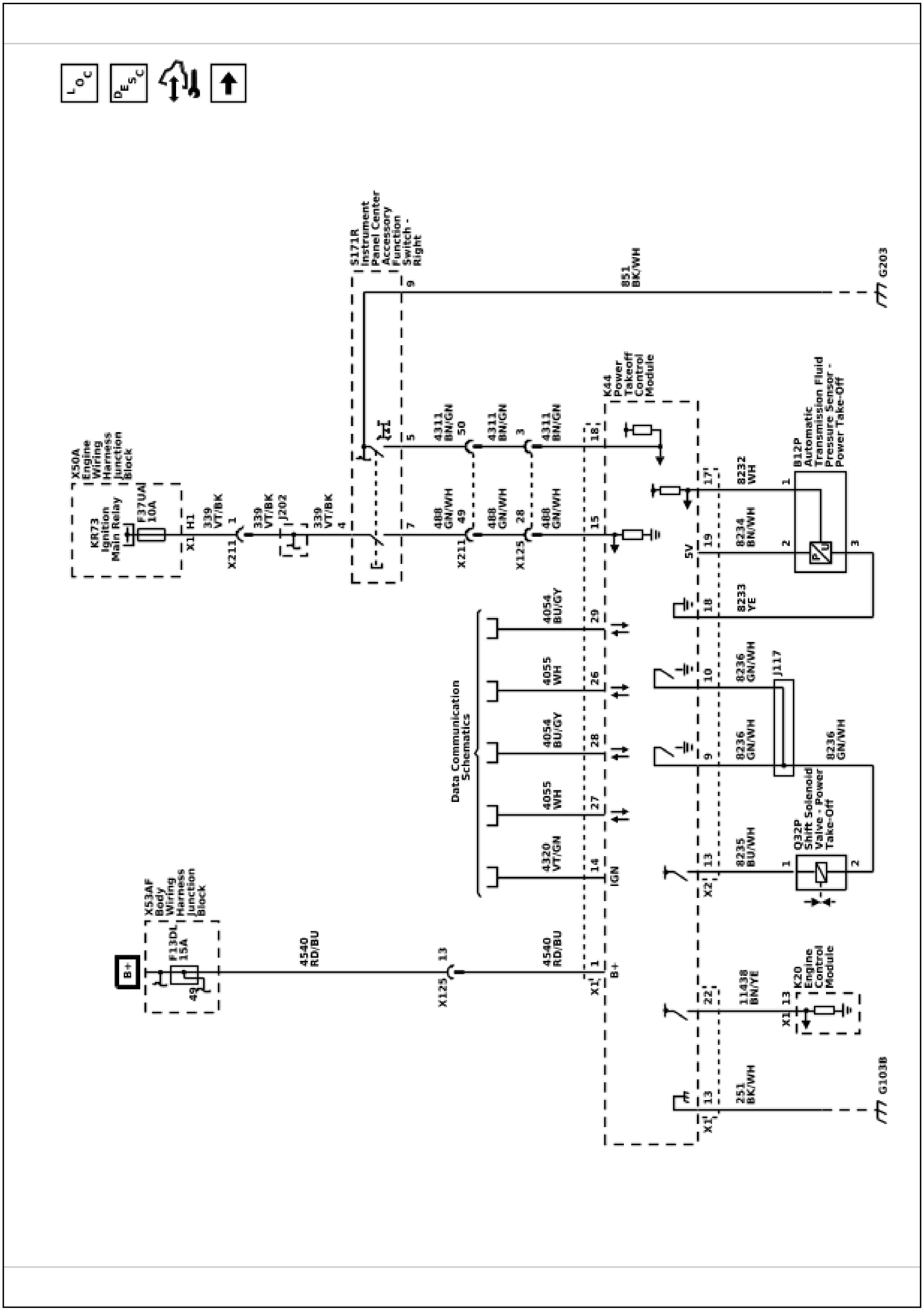
# Transmission

# Transmission

## Power Take-Off

### Schematic and Routing Diagrams

## Power Take-Off (PTO) Schematics (Power, Ground, Serial Data and Enable (PTO))

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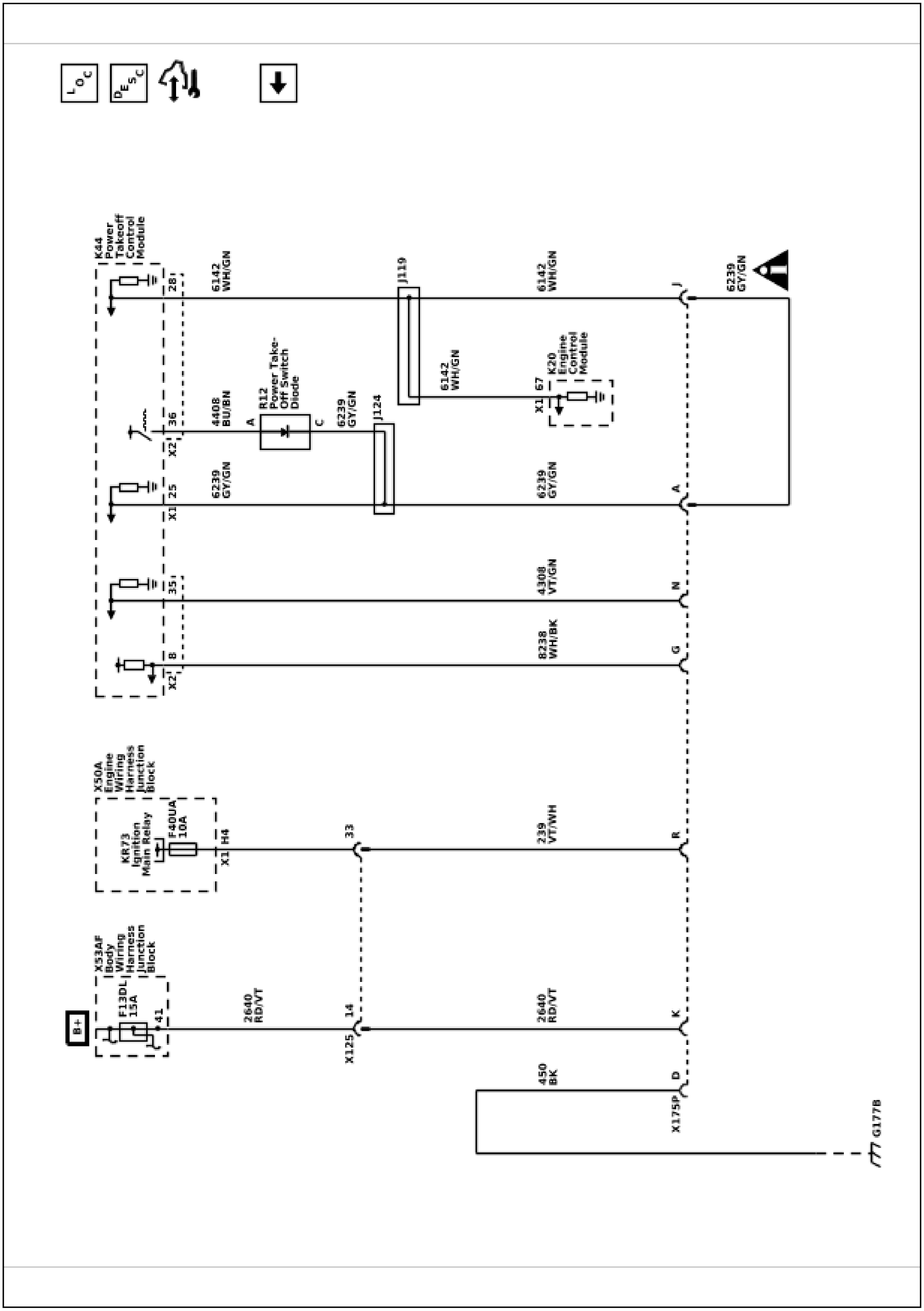
## Power Take-Off (PTO) Schematics (Provisional Connector (PTO))



# Description and Operation

## Power Take-Off (PTO) Description and Operation

### Power Take-Off System

The Power Take-Of (PTO) is a General Motors (GM) Upfitter integrated system that creates an auxiliary power source for running add-on equipment, such as salt spreaders, snow plows, winches, and lift buckets. It controls engine speed to values higher than normal base idle, PTO integral clutch engagement, and remote starting and shutdown of the engine.

For specific information on how to set up and operate the Power Take Off system refer to the vehicle's owners manual and the GM Upfitter website.

### PTO Components

The Original Equipment Manufacturer (OEM) PTO components consist of:

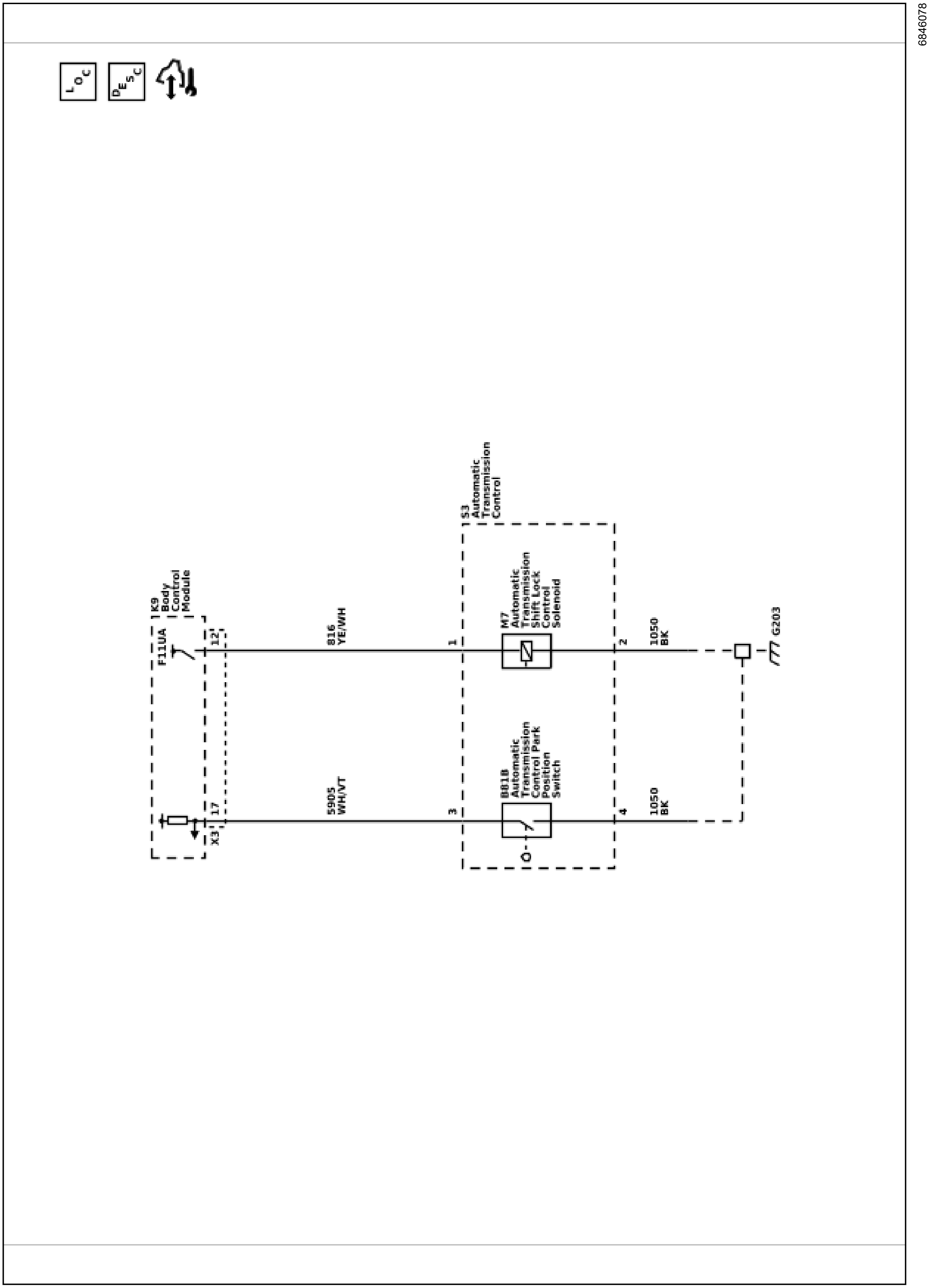
- The transmission (internal) PTO gear which rotates with the torque converter
- The In-cab PTO switch and cruise control SET and RES switches
- The PTO telltale indicator
- The Driver Information Center (DIC)
- The Radio and Navigation Screen (HMI)
- The Power Take-Off Module
- The PTO Unit
- The On/Off Solenoid
- The Pressure Sensor
- The Remote PTO Upfitter connector X176

**Note:** The interface connector X176 is located underneath the cab, near the left frame rail and comes with a cap which is the mating half to the truck harness connector. This is the connector the Upfitter will use to wire in necessary external electrical components such as external switches to control the PTO from outside the cab.

# Shift Lock Control

## Schematic and Routing Diagrams

## Shift Lock Control Schematics (Shift Lock Control)



# Description and Operation

## Automatic Transmission Shift Lock Control Description and Operation

The Automatic Transmission Shift Lock Control System is a safety device that prevents an inadvertent shift out of PARK when the engine is running. The driver must press the brake pedal before moving the shift lever out of the PARK position. The system consists of the following components:

- The Automatic Transmission Shift Lock Solenoid (serviced as the S3 Automatic Transmission Shift Lock Actuator)
- The Body Control Module (BCM)
- The Engine Control Module (ECM)

The BCM controls the voltage to the shift lock control solenoid though the shift lock control solenoid controlled voltage circuit. The following conditions must be met before the BCM will supply voltage to the shift lock control solenoid:

- The ignition is in the ON position.
- The ECM sends an input via GMLAN serial data to the BCM when the Transmission Control Module (TCM) indicates the transmission is in the PARK position.
- The BCM receives a brake applied input from the stop lamp switch.

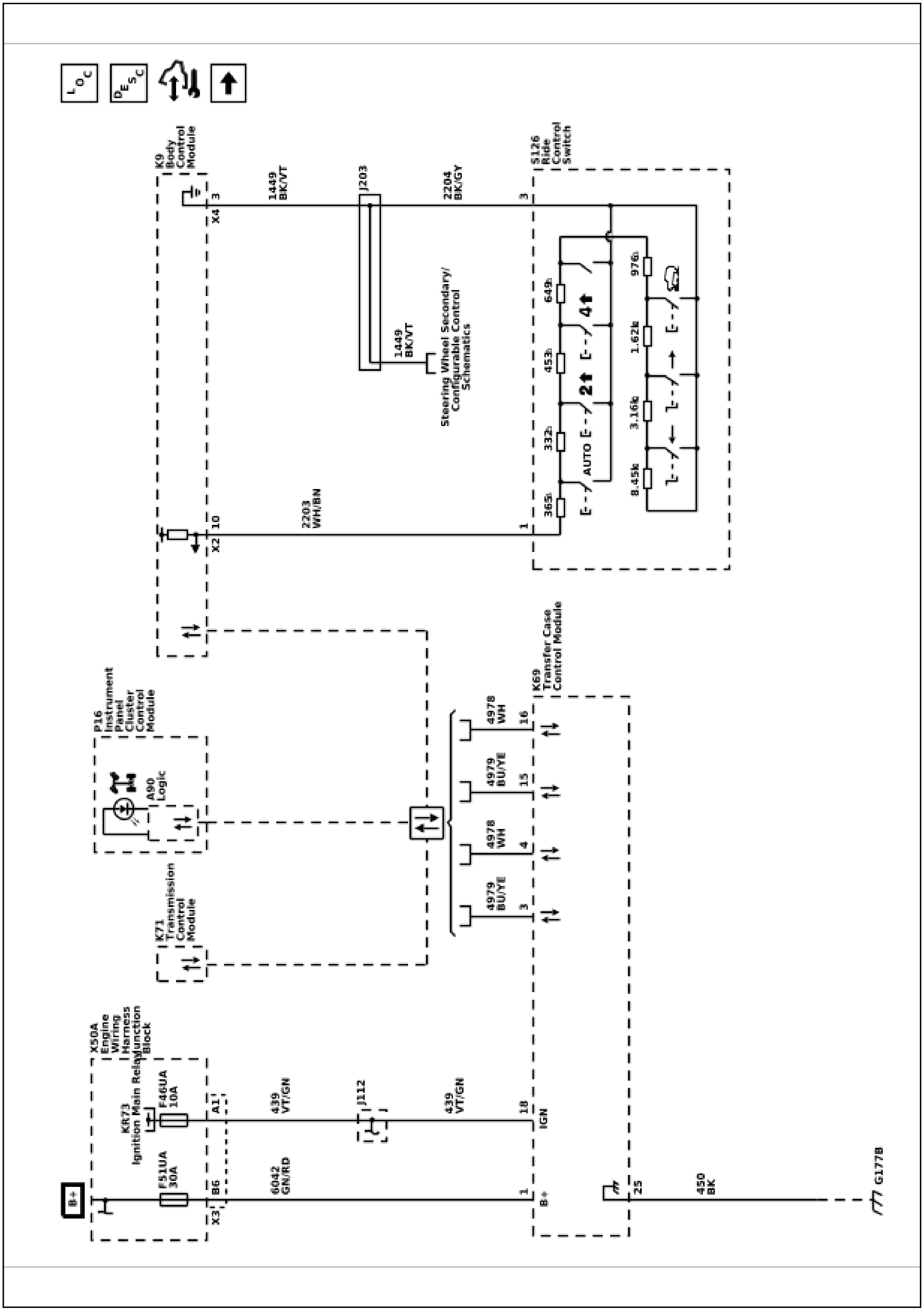
Since the shift lock control solenoid is permanently grounded, the BCM supplies voltage to the automatic transmission shift lock control solenoid, releasing the mechanical lock on the shift lever as the solenoid energizes. The energized solenoid allows the driver to move the shift lever out of the PARK position. When the brake pedal is not applied, the BCM turns the control voltage output of the shift lock control solenoid OFF, de-energizing the shift lock control solenoid. When the transmission is in the PARK position, the de-energized shift lock control solenoid will prevent shifting as the lever is mechanically locked in the PARK position.

During remote start operation the BCM will de-energize the automatic transmission shift lock control circuit, locking the shift lever in the PARK position

# Transfer Case - MP 1625/1626

## Schematic and Routing Diagrams

## Transfer Case Control Schematics (Power, Ground, Serial Data and Shift Controls (NQF))

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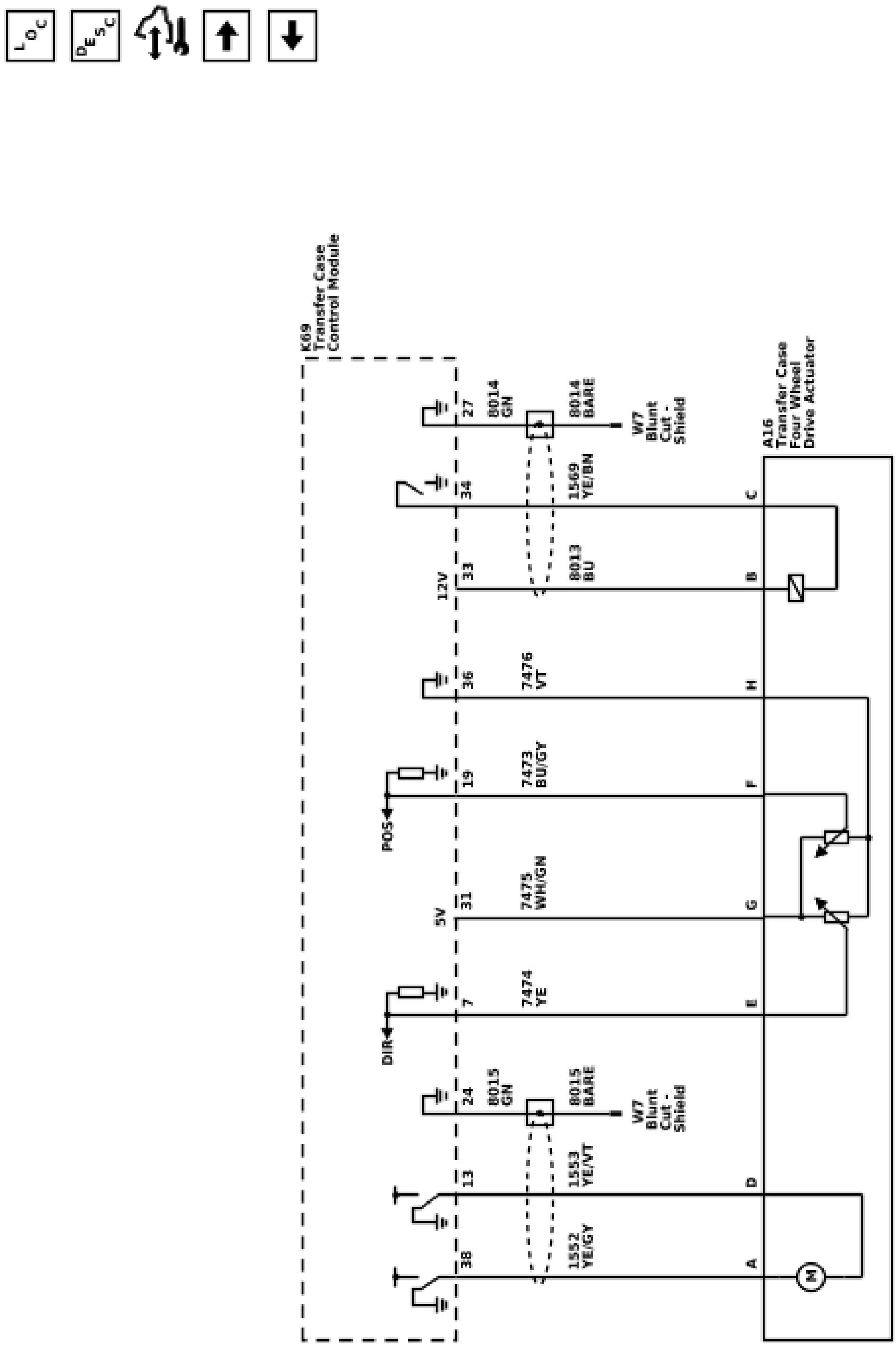
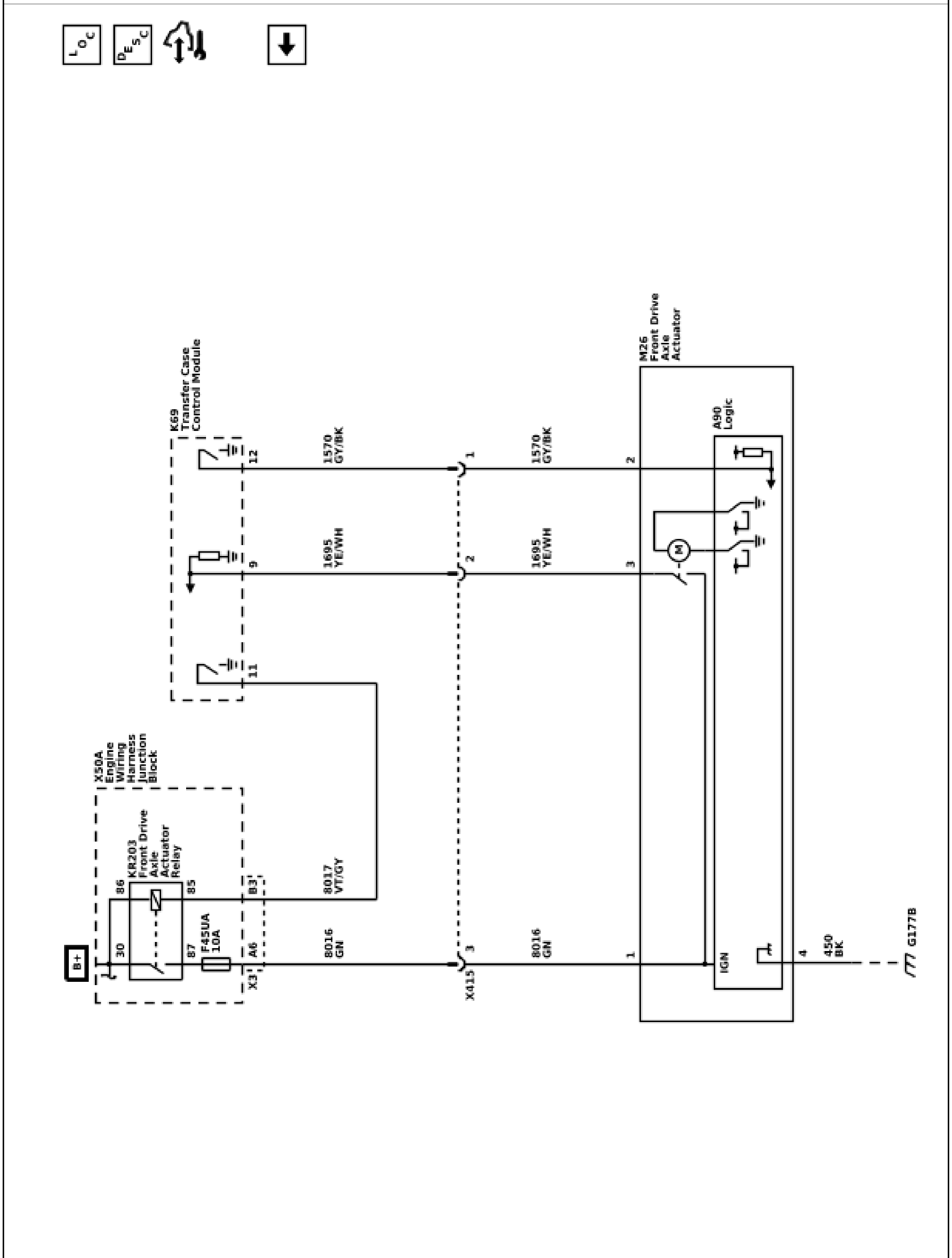
## Transfer Case Control Schematics (Transfer Case Controls (NQF))



## Transfer Case Control Schematics (Front Axle Controls (NQF))

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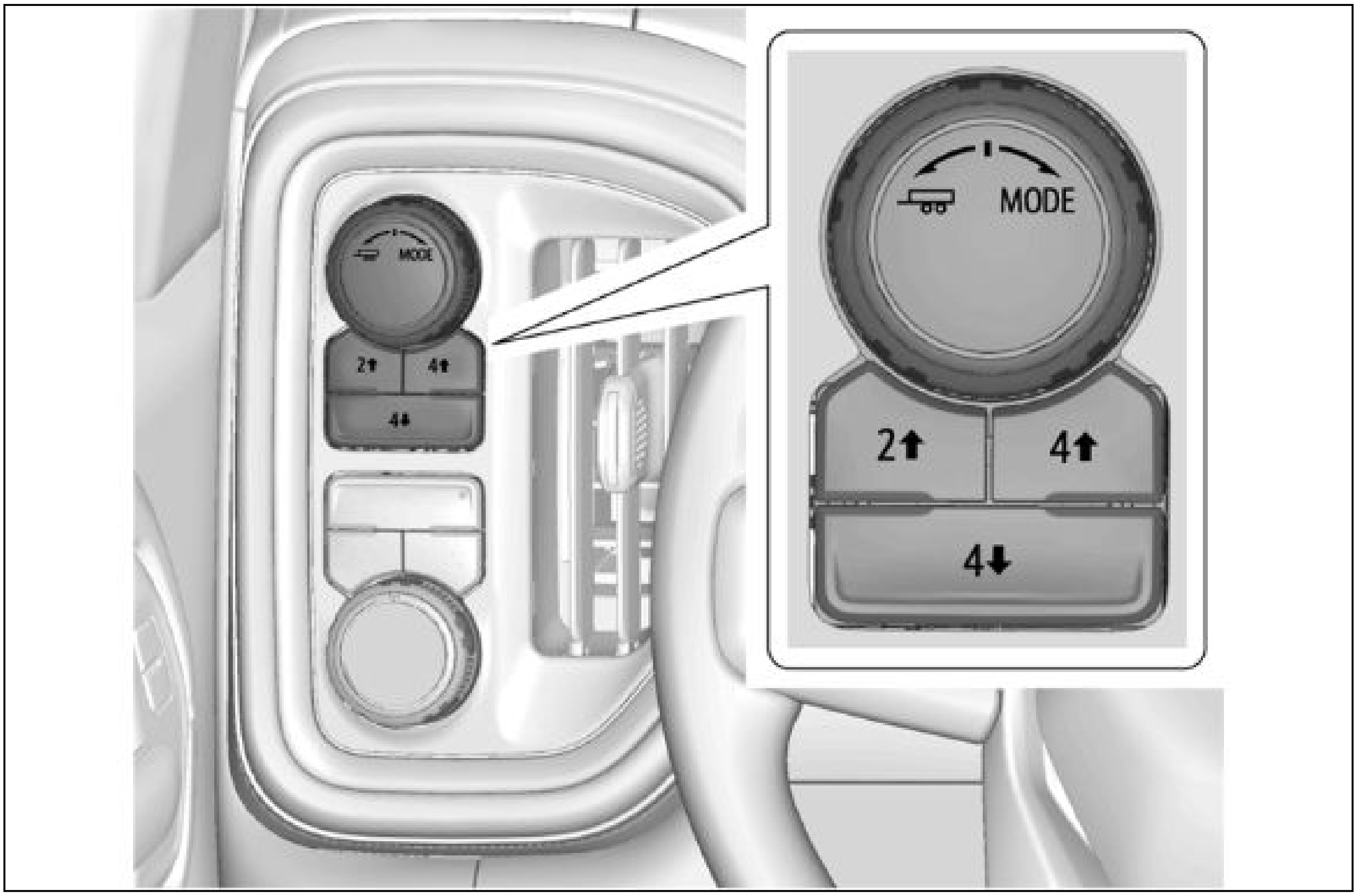
# Description and Operation

## Transfer Case Description and Operation

### Transfer Case Shift Control Switch

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The NQF transfer case features a 4 mode shift control switch located on the instrument panel. When the ignition is in the RUN position, the transfer case shift control module monitors the transfer case shift control switch to determine if the driver desires a new mode/range position. At a turn of the transfer case shift control switch, the lamp of the new desired position will begin flashing to inform the driver that the transfer case shift control module has received the request for a new mode/range position. The lamp continues to flash until all shifting criteria has been met and the new mode/range position has been engaged. Once the new mode/range position is fully active, the switch indicator for the new position will remain ON constantly. In the event that the transfer case shift control module cannot or will not complete the shift, the indicator switch flashes and returns to the previously selected position.

The transfer case provides the driver with 4 manual mode/range positions:

- 2HI – 2 Wheel Drive high range
- 4HI – 4 Wheel Drive high range
- 4LO – 4 wheel drive low range, 2.72:1 gear ratio reduction.
- NEUTRAL

The driver may choose to select any of these mode/range positions while driving the vehicle. However, the transfer case will not allow a shift into or out of 4LO unless the following criteria has been met:

- The ignition switch is in RUN.
- The automatic transmission is in NEUTRAL.
- The vehicle speed is below 5 km/h (3 mph).

This transfer case also has a NEUTRAL position. A shift to the NEUTRAL position allows the vehicle to be towed without rotating the transmission output shaft. NEUTRAL position may be obtained only if the following criteria has been met:

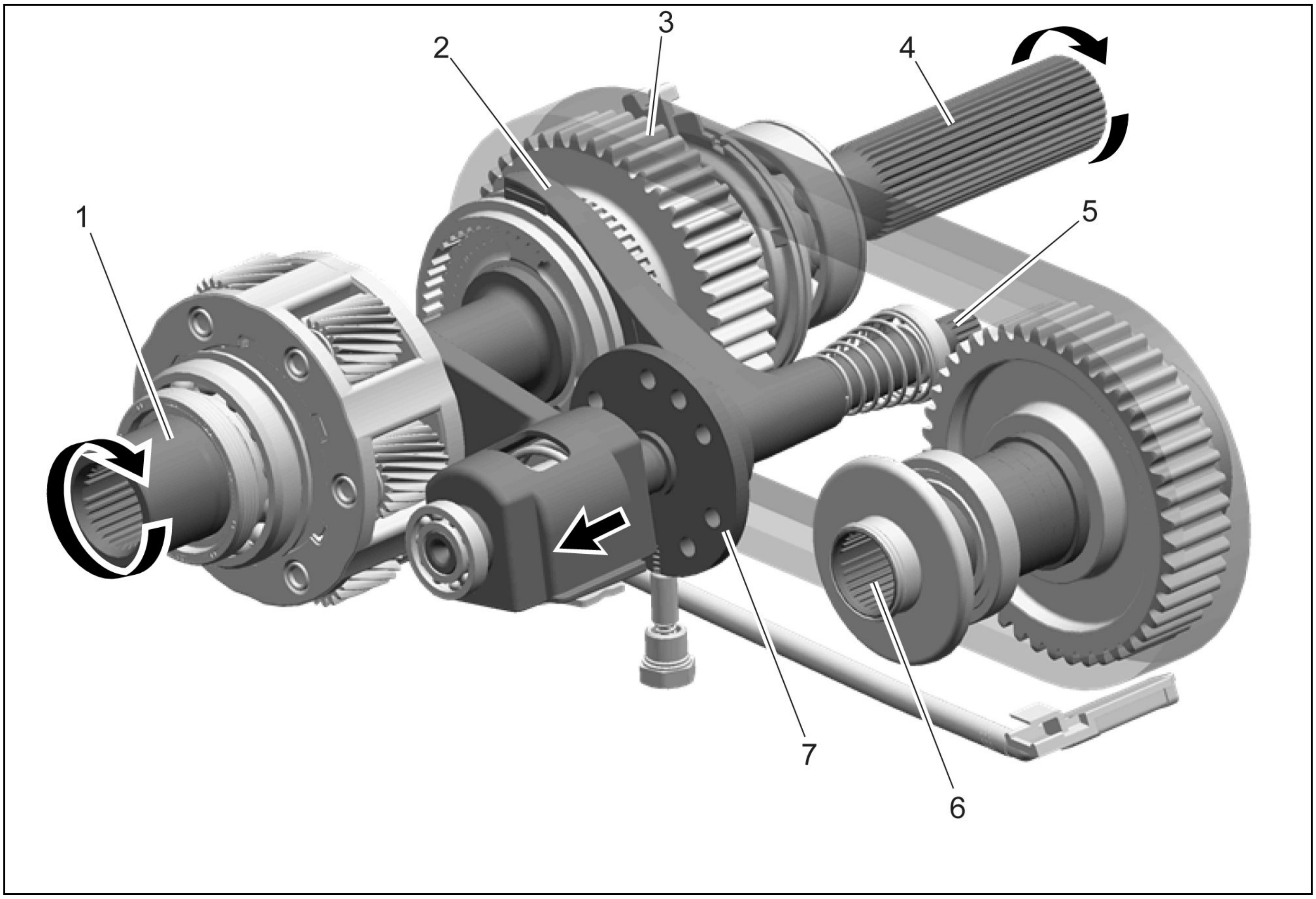
- The ignition switch is in RUN.
- The automatic transmission is in NEUTRAL.
- The vehicle speed is below 5 km/h (3 mph).
- The transfer case is in 2HI mode.

Once these conditions have been met, turn the rotary switch clockwise past 4 low and hold for 10 seconds. When the system completes the shift to NEUTRAL, the red NEUTRAL lamp will illuminate.

A shift to the NEUTRAL position allows the vehicle to be towed without rotating the transmission output shaft. In the NEUTRAL position, the rear propeller shaft rotates the transfer case rear output shaft, in turn rotating the oil pump, thus providing constant lubrication during towing. This NEUTRAL position is a 4WD NEUTRAL, meaning the front and rear outputs of the transfer case are engaged as though in 4HI. With a disengaged front axle, there is no power flow to the front wheels, thus allowing towing with the front wheels off the ground or flat towing without driveline binding.

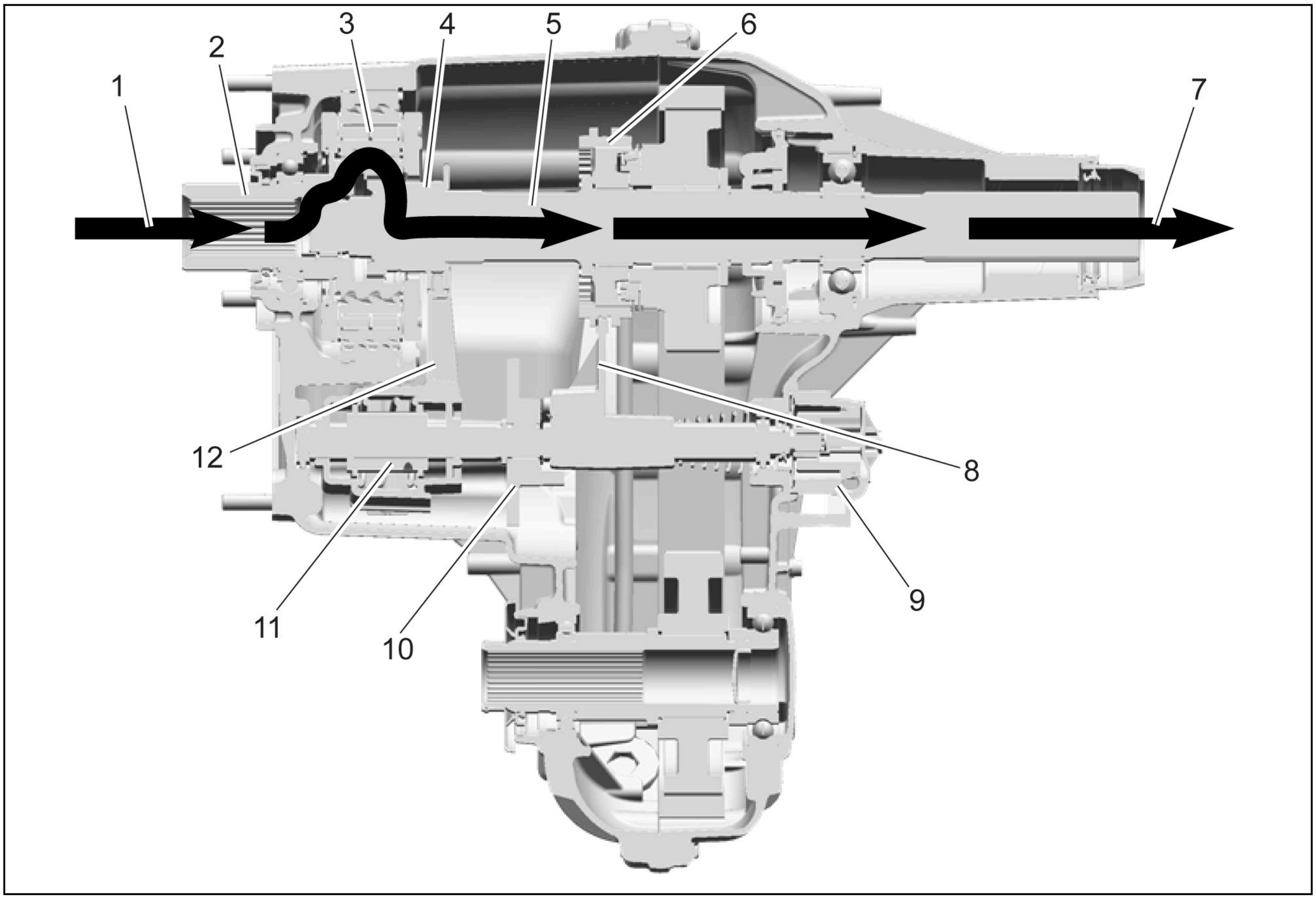
**2WD Mode Power Flow**

## 2WD Mode Power Flow




5394860

(1) Input Shaft
(2) Two/Four Shift Fork
(3) Drive Chain
(4) Rear Output Shaft
(5) Control Actuator Shaft
(6) Front Output Shaft
(7) Drive Actuator Cam

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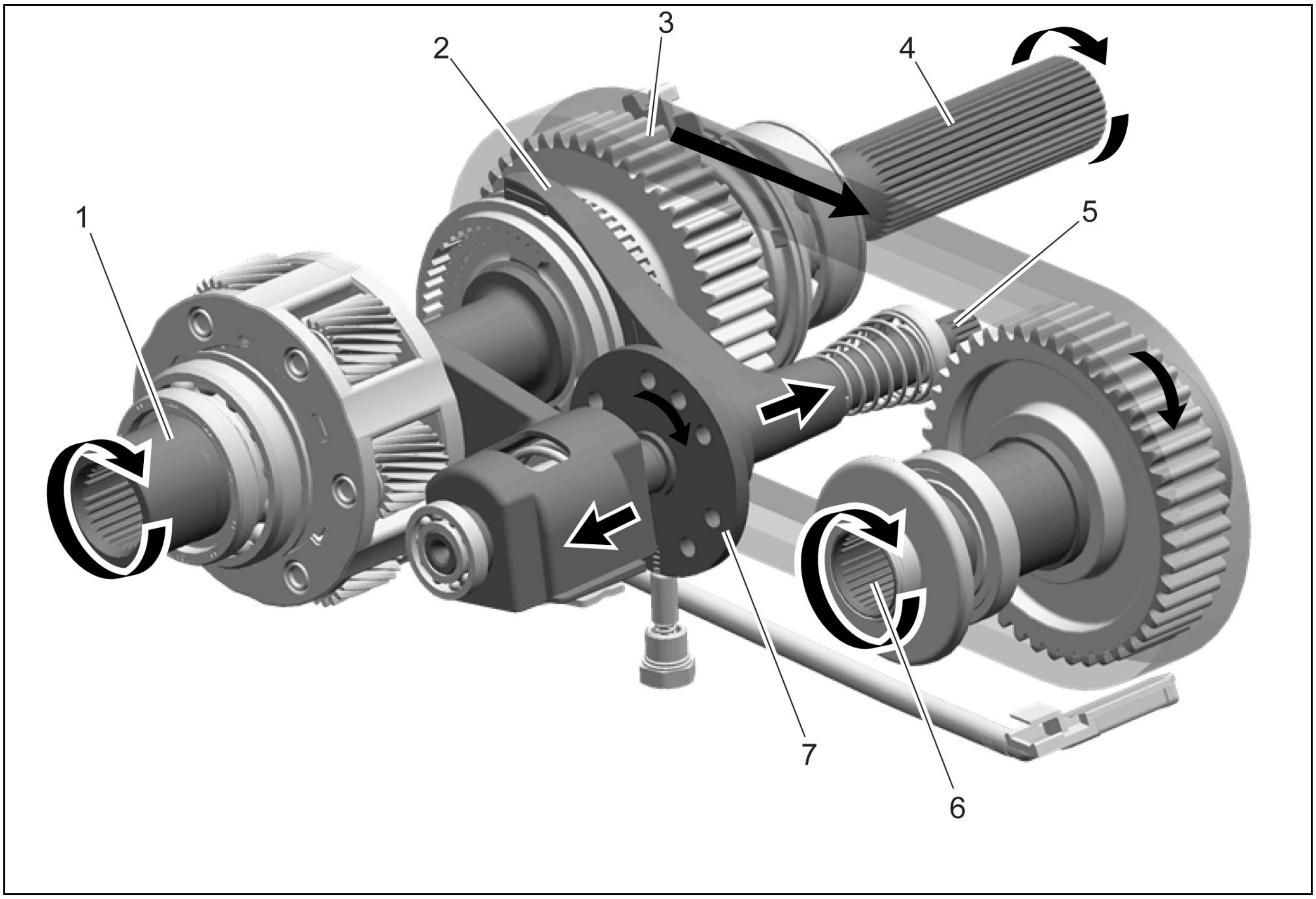
The transfer case is shifted by an encoder motor (9) on the control actuator shaft. The control actuator shaft rotates the 2/4 wheel drive actuator cam (10) and moves the high/low range shift fork (12) or the 2/4 wheel drive mode shift fork (8). Depending on the selected mode or range, the shift forks move either the high/low clutch (4) for the high/low range planetary assembly (3) or the synchronizer sleeve (6) for the 2/4 wheel drive mode. In 2WD mode, the engine power

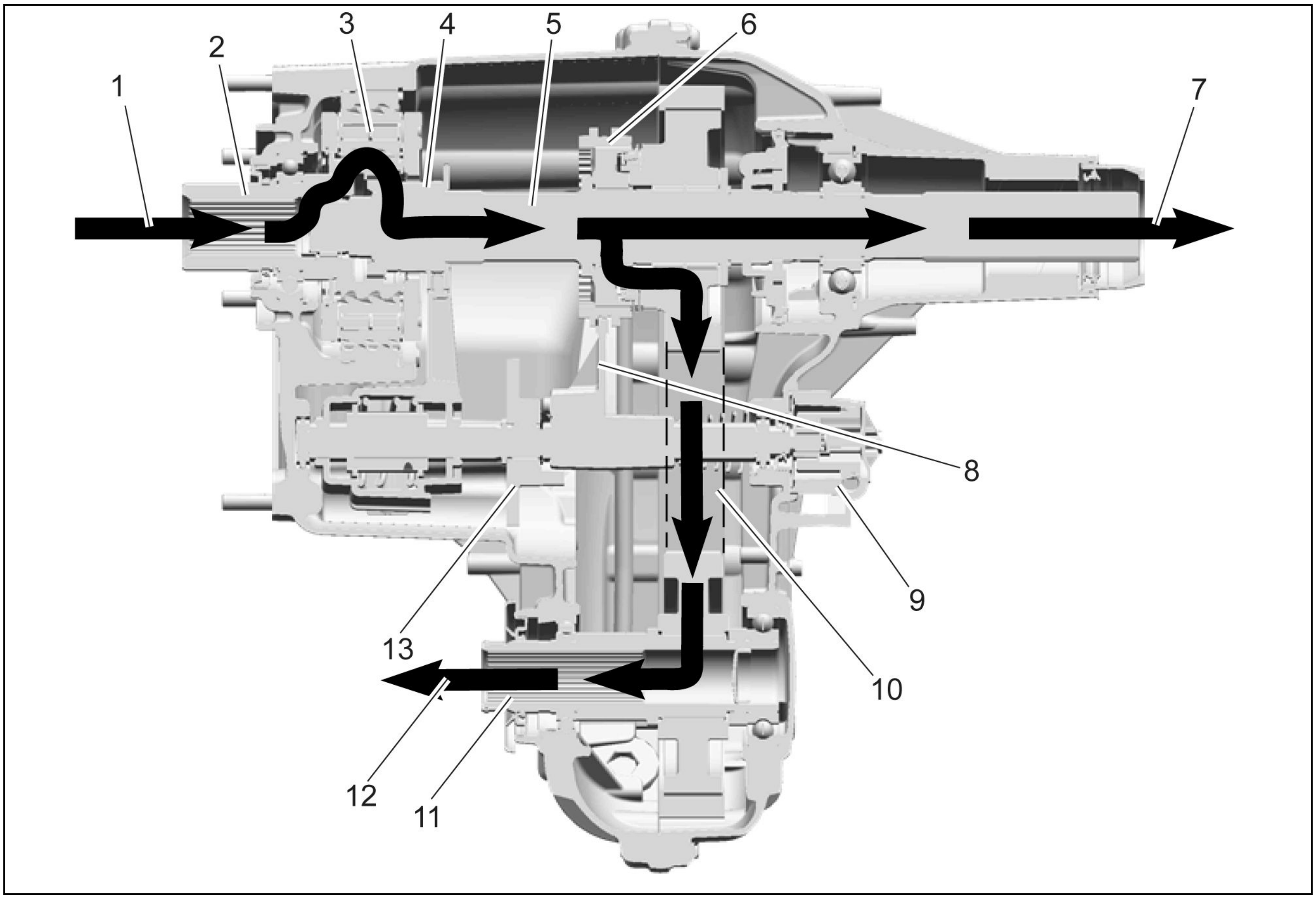
**4HI Mode Power Flow**

from the transmission (1) is delivered to the input shaft (2). The engagement teeth on the inside of the input shaft (2) are engaged to the outer teeth on the high/low clutch (4). The high/low clutch (4) is slip splined to rear output shaft (5). The engine power flows from the high/low clutch (4) to the rear output shaft (5) and delivered to rear propeller shaft (7).

**4HI Mode Power Flow**




(1) Input Shaft
(2) Two/Four Shift Fork
(3) Drive Chain
(4) Rear Output Shaft
(5) Control Actuator Shaft
(6) Front Output Shaft
(7) Drive Actuator Cam

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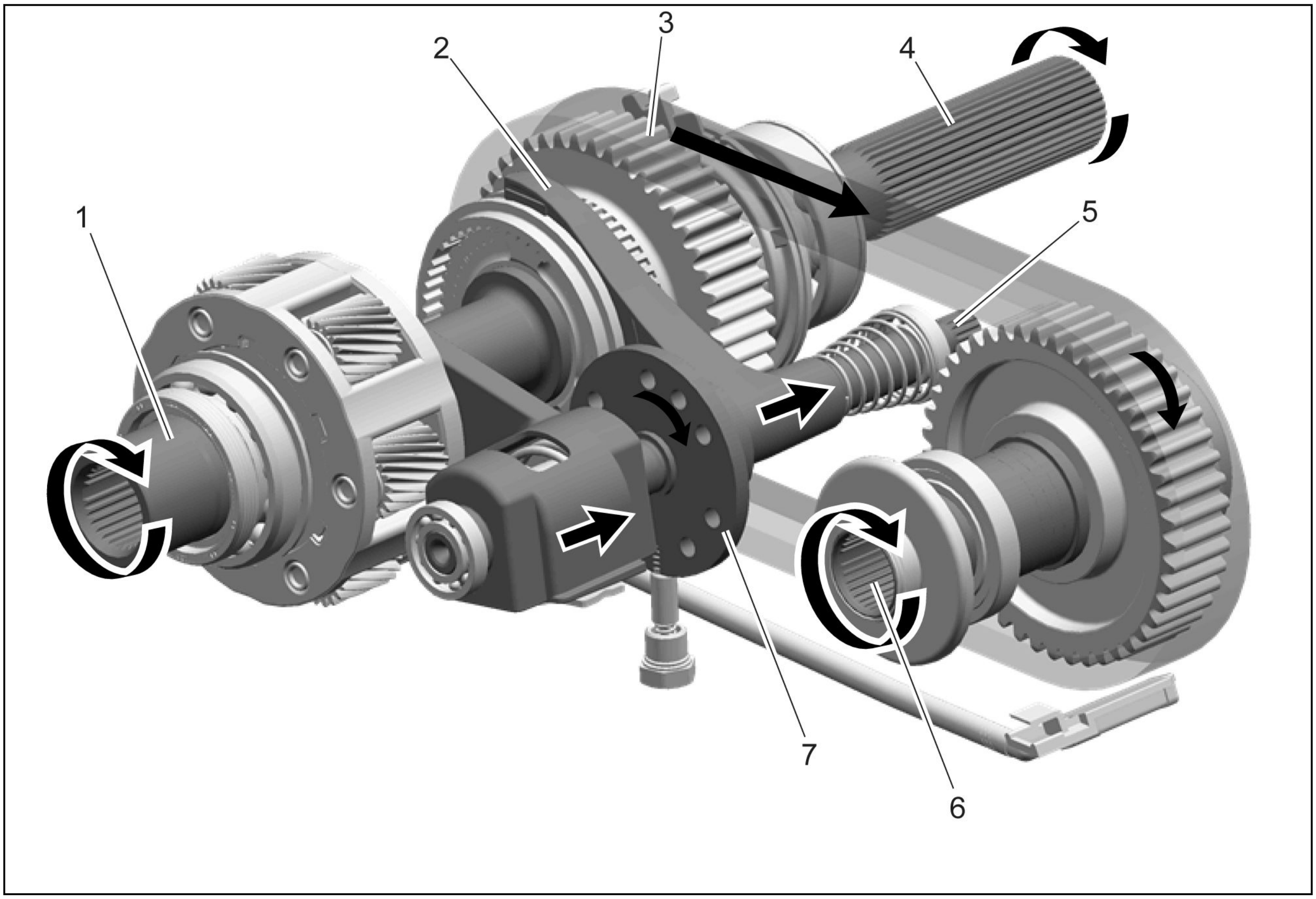
In 4HI mode, the engine power from the transmission (1) is delivered to the input shaft (2). The engagement teeth on the inside of the input shaft (2) are engaged to the outer teeth on the high/low clutch (3). The high/low clutch (3) is slip splined to the rear output shaft (4). During a shift mode from 2HI to 4HI, the cam profile on the 2/4 wheel drive actuator cam (13) pushes the 2/4 wheel drive mode shift fork (9) and the synchronizer sleeve. The sleeve, engaging the synchronizer (8), equalizes the front propeller shaft (12) and rear propeller shaft (7) speeds. The sleeve then engages to the drive sprocket (6). The engine power flow for driving the front propeller shaft (12), now travels from the rear

**4LO Mode Power Flow**

output shaft (4) to the synchronizer hub (5), which is splined to the rear output shaft (4). The power flows from the synchronizer hub (5) to the sleeve and then to the drive sprocket (6). The power flow is transmitted by a chain (10) to the driven sprocket on the front output shaft (11) and to the front propeller shaft (12). The front and rear propeller shafts are being driven at equal RPM, therefore giving a four wheel drive mode. This mode should only be used for extra traction. Using this mode on dry pavement causes tire scuffing when turning.

**4LO Mode Power Flow**




5394864

(1) Input Shaft

(2) Two/Four Shift Fork

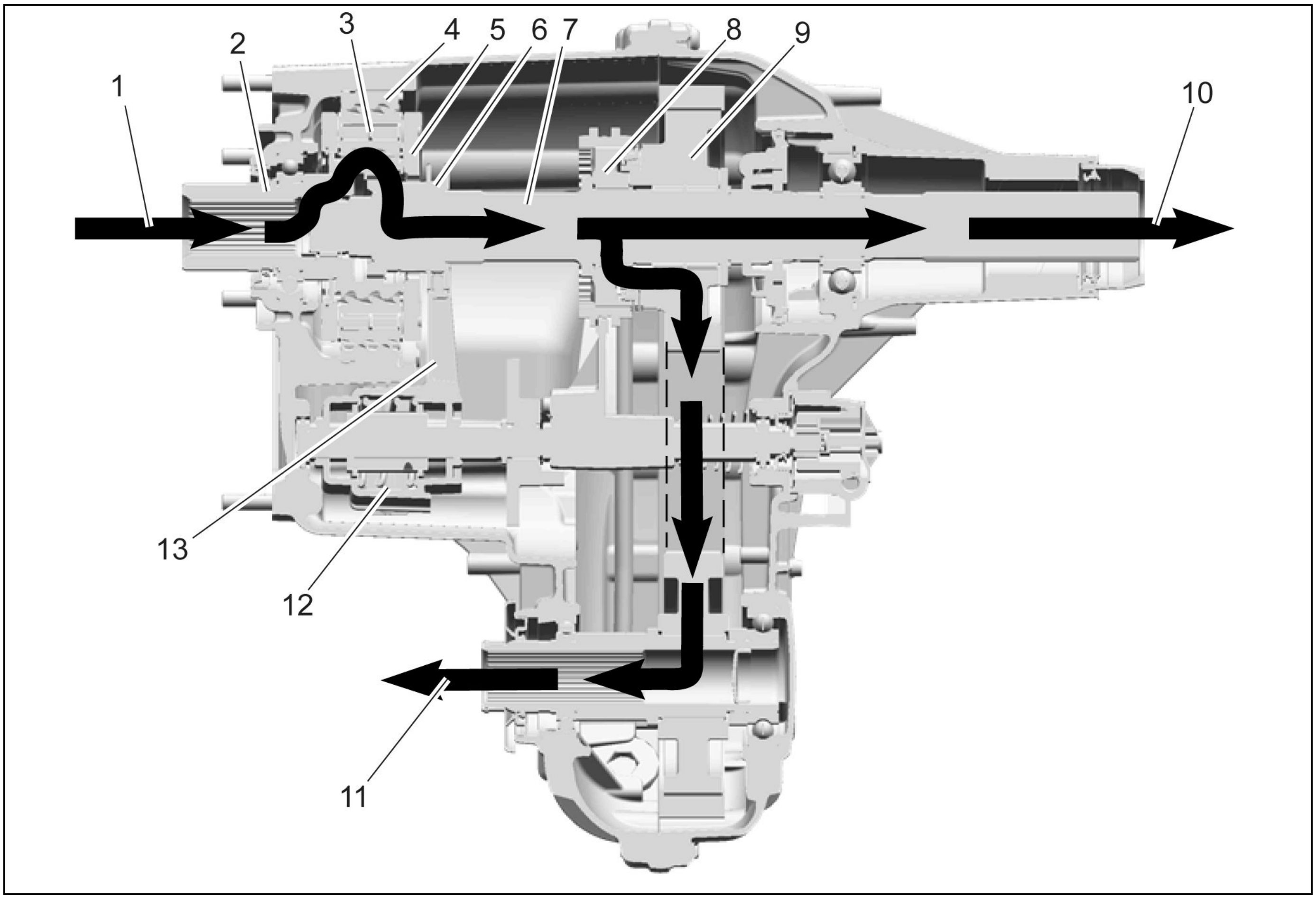
(3) Drive Chain

(4) Rear Output Shaft

(5) Control Actuator Shaft

(6) Front Output Shaft

(7) Drive Actuator Cam

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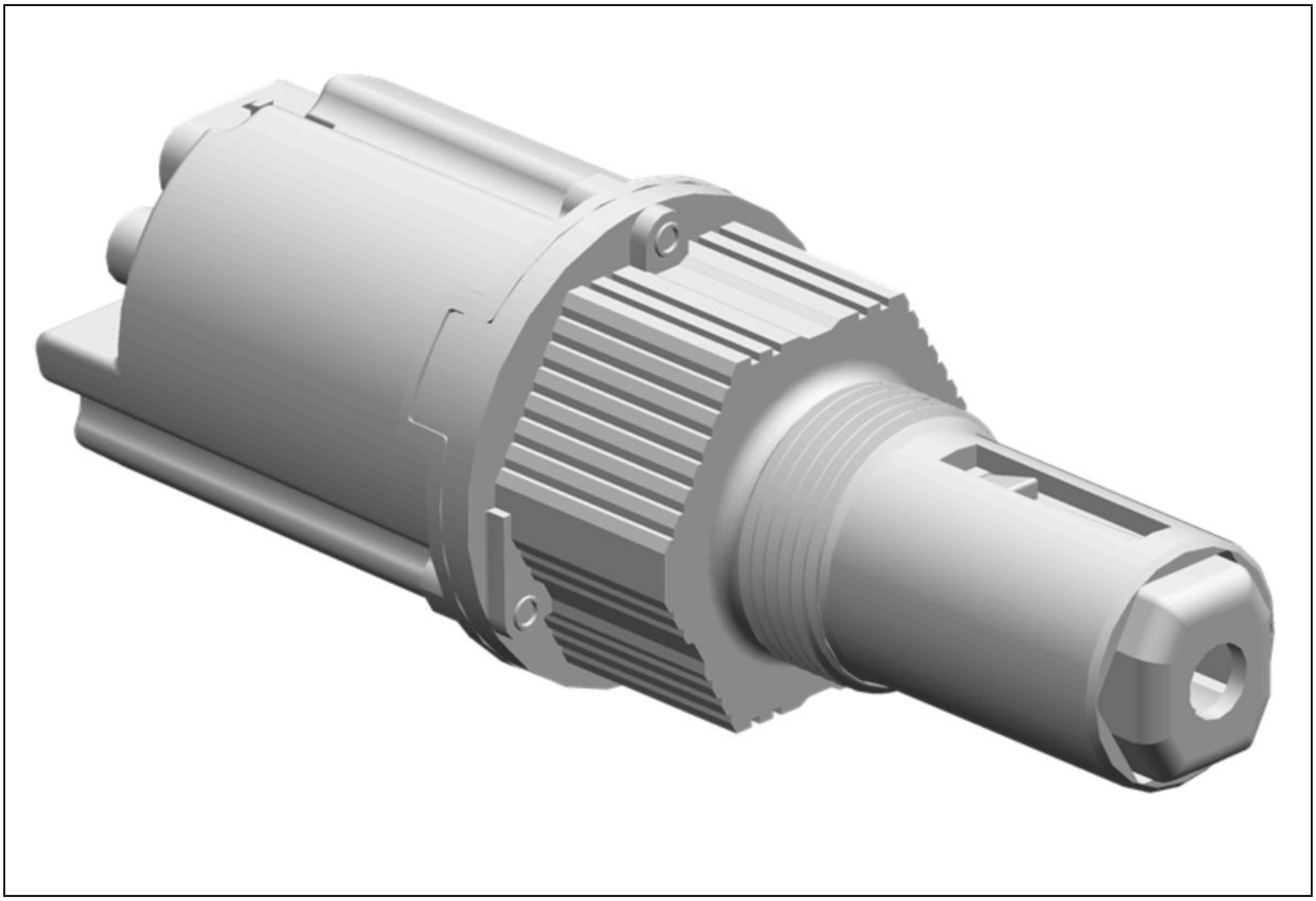
During a range shift request to 4LO, a separate cam profile, in the high/low shift fork spring assembly (12), moves the high/low shift fork (13). The high/low shift fork (13) moves the high/low clutch (6) rearward. The high/low clutch (6) outer teeth disengage from the input shaft (2) high-speed teeth. The high/low clutch (6) outer teeth then engage in the high/low planetary carrier teeth (5). The power flow is now from the transmission (1) to the planetary teeth on the input shaft (2) to the planetary gears (3) in the high/low planetary carrier assembly (5). Rotating the planetary gears (3), which are engaged in the high/low internal gear (4), rotates the high/low planetary carrier assembly (5). The high/low planetary carrier assembly (5) delivers the power to the high/low clutch (6). The high/low clutch (6) then drives the rear output shaft (7), providing a 2.68:1 gear ratio reduction to the rear output shaft (7). The sleeve is still engaged to drive the drive sprocket (9), as in the 4HI position, providing the engine power to the rear propeller shaft (10) and to the front propeller shaft (11).

### NEUTRAL Mode Power Flow

Shifting to the NEUTRAL position, the high/low clutch is centered between the input shaft and the high/low planetary carrier. The high/low clutch is not engaged with either the input shaft or the high/low planetary carrier teeth. The 2/4 wheel drive synchronizer is in the 4HI mode position.

## Front Axle Actuator



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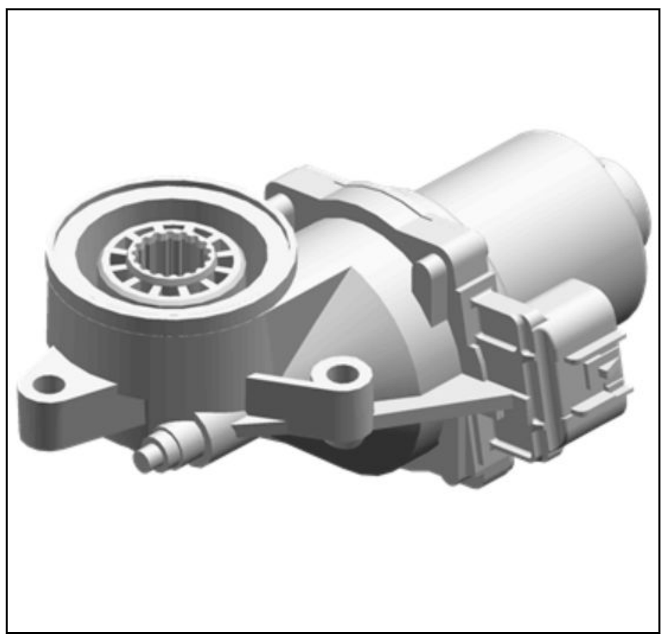
The front axle actuator engages and disengages the front axle. The front axle actuator consists of a permanent magnetic (PM) motor, a worm gear controlled plunger, a front axle switch and an electronic control circuit. When a range shift to 4HI, or 4LO is requested, the transfer case shift control module requests engagement of the front axle by grounding the axle actuator control circuit through a current limiting driver. The front axle actuator also sends a return signal to the transfer case shift control module indicating when the 4WD is engaged.

## Service 4 Wheel Drive Message

The Service 4 Wheel Drive Message is a display within the drivers information center (DIC) and cannot be serviced separately. This message is used to inform the driver that a transfer case system condition has occurred. The Service 4 Wheel Drive Message is controlled by the transfer case shift control module via GMLAN.

## Transfer Case Two/Four Wheel Drive Actuator Assembly



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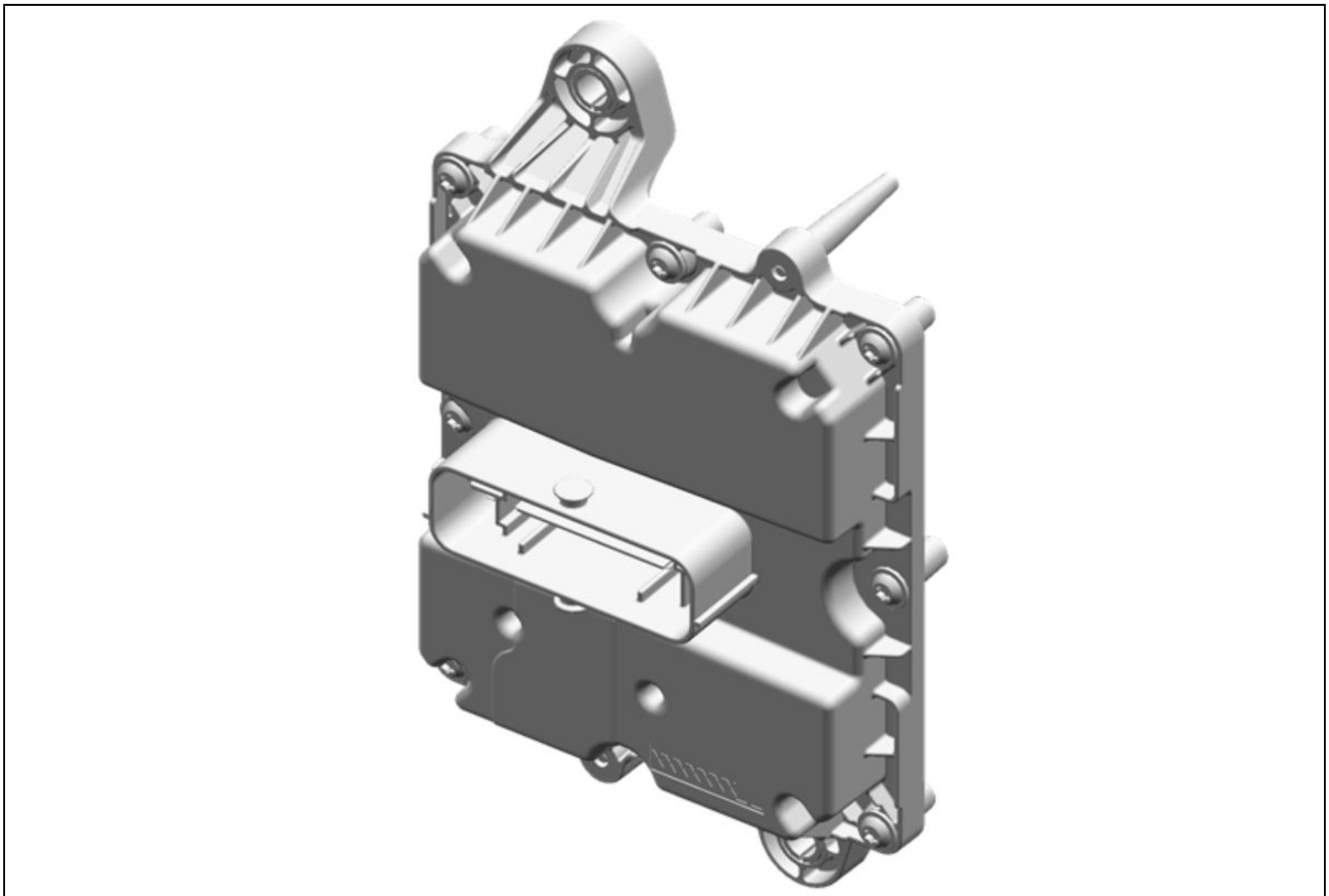
The transfer case two/four wheel drive actuator assembly consists of a PM DC motor and gear reduction assembly. It is located on the left side, driver's side, of the transfer case. When activated, it turns the sector shaft of the transfer case clockwise or counter clockwise to shift the transfer case. The encoder motor is controlled by the transfer case shift control module. This circuit consists of a driver on both the motor control A and motor control B circuits. The encoder motor is bi-directional, to allow the motor to shift the transfer case from 2HI or 4HI to NEUTRAL and 4LO positions. The transfer case encoder motor can be fully driven clockwise or counterclockwise using a scan tool. You may also monitor motor control A and B circuits using a scan tool.

The two/four wheel drive actuator assembly also has a built in incremental sensor. This device is a linear encoder. The transfer case shift control module sends a 5 volt reference signal to the encoder. The transfer case shift control module reads the voltage back based on the exact position of the sector shaft of the transfer case. The transfer case shift control module knows if a shift has been completed and if the shift is somewhere in between.

The encoder motor on the does not have an internal brake like the NVG 246. The encoder motor is not serviceable and must be replaced as an assembly.

### Transfer Case Shift Control Module



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The transfer case shift control module has been standardized for all K trucks. The transfer case shift control module contains the same hardware, boot software, and operational software found in other GM K trucks. The only difference is the calibration file downloaded into the transfer case shift control module memory. The transfer case shift control module comes with the appropriate calibrations out of the factory, but new calibrations must be flashed into the transfer case shift control module during service. This is especially important if a new transfer case shift control module is installed during service. Calibration files may be introduced irregularly. See your technical service bulletins.

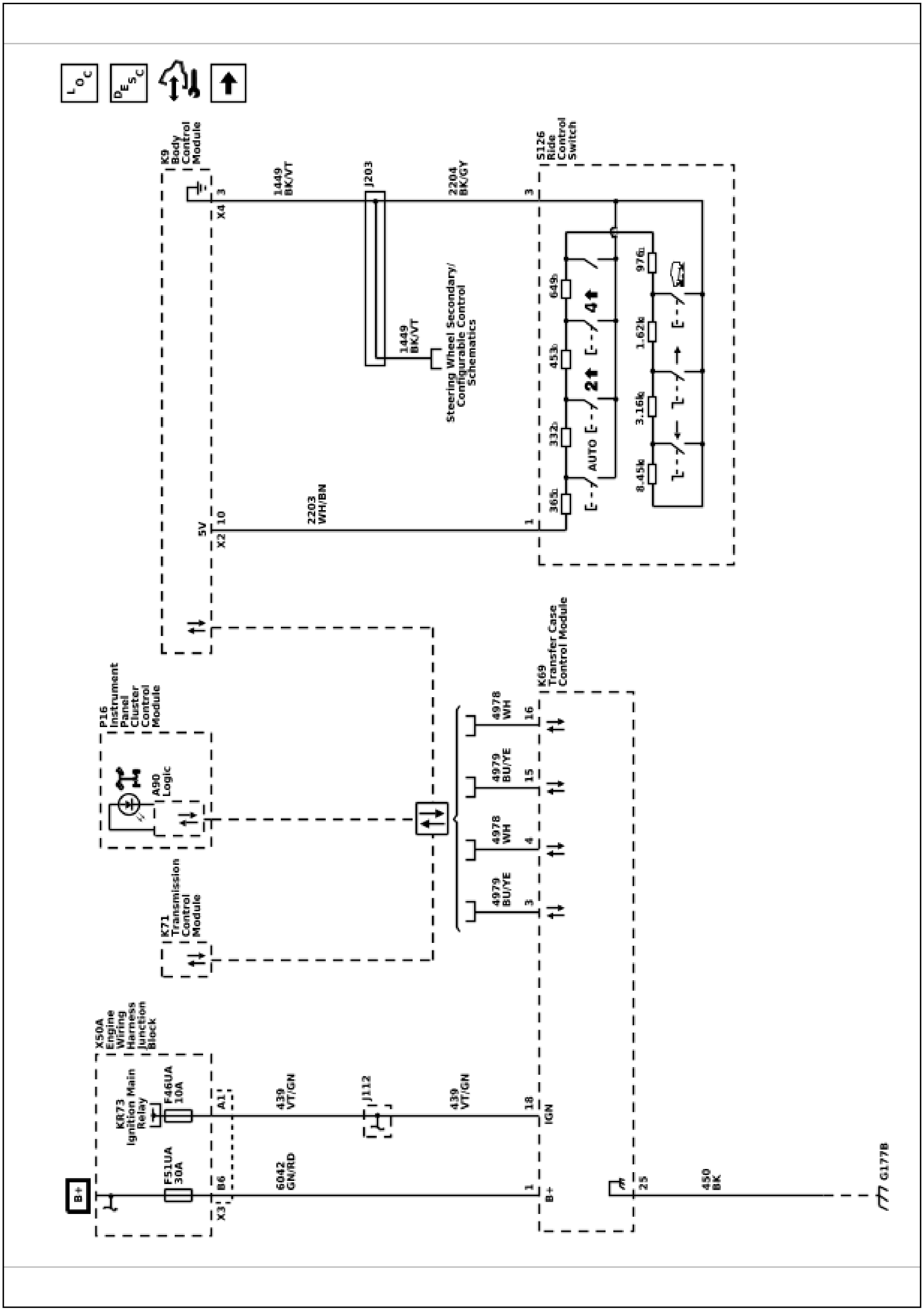
### Vehicle Speed Sensor (VSS)

There is a VSS mounted to the transfer case on the rear output shaft. The VSS is a PM generator. The PM generator produces an AC voltage. The AC voltage and frequency increases as speed increases. The VSS is an input to the powertrain control module (PCM). The PCM sends this information to the transfer case shift control module via the GM LAN serial data bus.

# Transfer Case - MP 3023/3024

## Schematic and Routing Diagrams

## Transfer Case Control Schematics (Power, Ground, Serial Data and Shift Controls (NQH))

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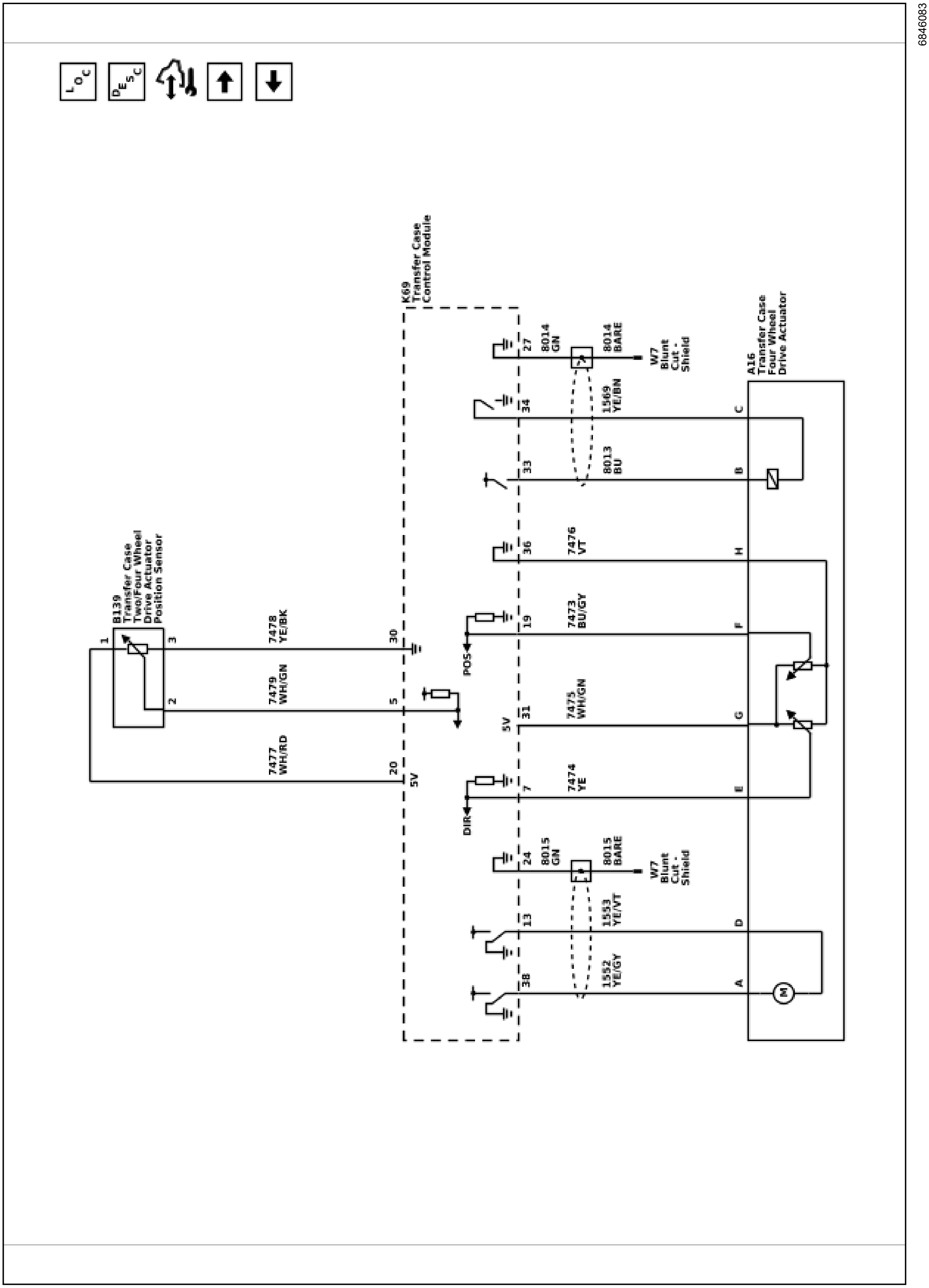
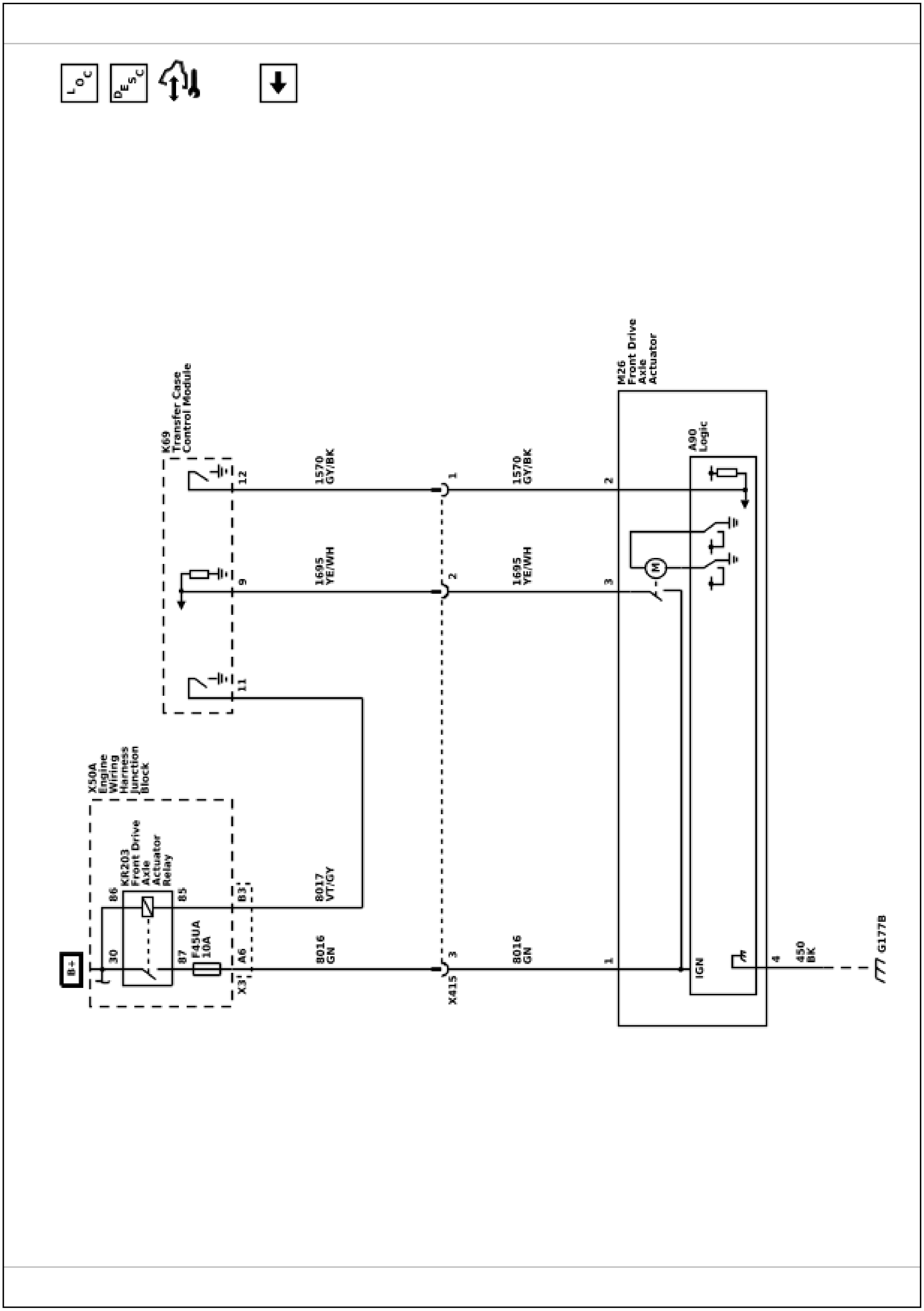
## Transfer Case Control Schematics (Transfer Case Controls (NQH))



## Transfer Case Control Schematics (Front Axle Controls (NQH))



## Description and Operation

### Transfer Case Description and Operation

The NQH transfer case is a 2 speed automatic, active transfer case (ATC). The ATC provides 5 modes, Auto, 4WD, 4HI, 4LO, 2HI and NEUTRAL. The Auto 4WD position allows the capability of an active transfer case, which provides the benefits of on-demand torque biasing wet clutch and easy vehicle tuning through software calibrations. The software calibrations allow more features such as flexible adapt ready position and clutch preload torque levels. The technology allows for vehicle speed dependent clutch torque levels to enhance the performance of the system. For example, the system is calibrated to provide 0–6.78 newtonm (0–5 lb ft) of clutch torque during low speed, low engine torque operation, and predetermined higher torque for 40 km/h (25 mph) and greater. This prevents crow-hop and binding at low speeds and provides higher torque biases at higher vehicle speeds, in order to enhance stability.

### Transfer Case Shift Control Switch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The transfer case features a 5 mode shift control switch located on the instrument panel. When the ignition key is in the RUN position, the transfer case shift control module monitors the transfer case shift control switch to determine if the driver desires a new mode/range position.

To command a shift, press button of the new desired state. The actual 4x4 shift request is only made after the button is released. Transfer Case state will be displayed in the Cluster at all times. Graphic location could vary depending on trim level. However, graphics will be consistent. The graphic in the cluster will blink while a shift is in progress. The graphic will change to indicate the mode requested. When the shift is complete, the graphic will stop blinking and become steady. If the transfer case cannot complete a shift, the graphic will return to the previously selected mode. While shift is in progress, cluster will display following DIC message: “4WD Shift in Progress”. The DIC message will turn off once the shift is complete.

During normal driving situations, the transfer case can operate in the Auto 4WD mode. In the Auto 4WD mode, the transfer case shift control module monitors rear wheel slip speed, based on the inputs from the wheel speed sensors and/or vehicle speed sensor. When the vehicle experiences a rear wheel slip condition, the transfer case shift control module sends a pulse width modulated (PWM) signal to an electronic motor, which is the transfer case 2/4 wheel drive actuator assembly. This actuator rotates the transfer case control actuator shaft, applying a clutch. The clutch is designed to deliver a variable amount of torque, normally delivered to the rear wheels, and transfers it to the front wheels. Torque is ramped up to the front wheels until the front wheel speed sensor matches that of the rear wheel speed sensors and/or vehicle speed sensor. Torque is ramped down to the front wheels. The process would repeat if rear wheel slip is detected again.

The MP 3025 ATC transfer case has the added feature of also providing the driver with 4 manual mode/range positions:

- 4HI – 4 Wheel Drive high range
- 2HI – 2 Wheel Drive high range
- 4LO – 4 wheel drive low range, 2.72:1 gear ratio reduction.
- Neutral

The driver may choose to select any of these mode/range positions while driving the vehicle. However, the transfer case will not allow a shift into or out of 4LO unless the following criteria has been met:

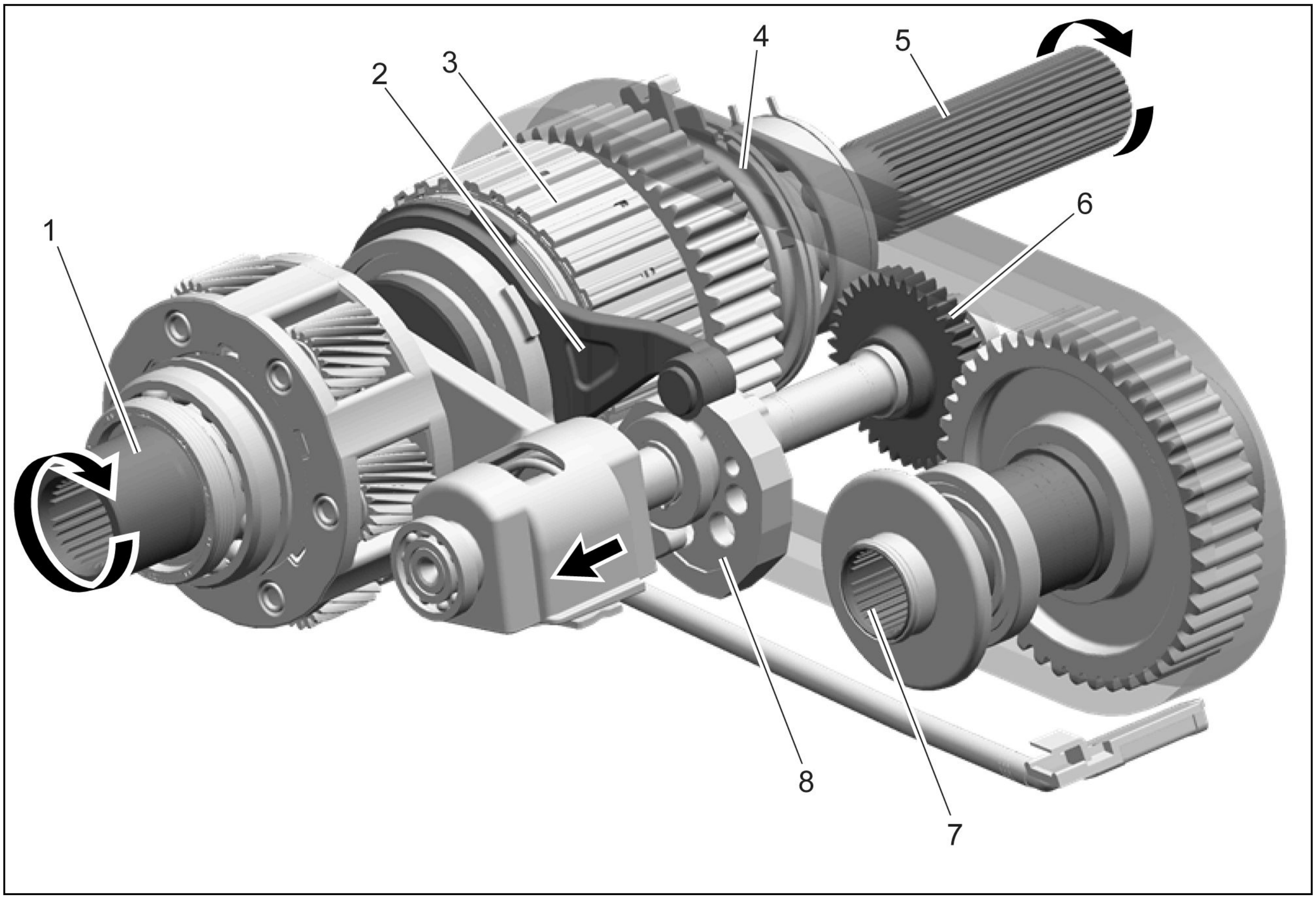
- The ignition switch is in RUN.
- The automatic transmission is in NEUTRAL.
- The vehicle speed is below 5 km/h (3 mph).

This transfer case also has a NEUTRAL position. A shift to the NEUTRAL position allows the vehicle to be towed without rotating the transmission output shaft. In the NEUTRAL position, the rear propeller shaft rotates the transfer case rear output shaft, in turn rotating the oil pump, thus providing constant lubrication during towing. NEUTRAL position may be obtained only if the following criteria have been met:

- Start the vehicle or turn the ignition on.
- Shift the transmission to NEUTRAL.
- Shift the transfer case to 2 HI. (Shifts to transfer case neutral are only allowed when transfer case initial state is 2 HI.)
- Apply park brake and/or Service brake. If Park Brake and/or service brake is not applied within 20 seconds, transfer case will remain in original state.

Once these conditions have been met, Press 2 HI 5 sequential times in 10 seconds until the Transfer Case N (Neutral) graphic starts blinking in cluster. When shift to Transfer Case N (Neutral) is complete, graphic in cluster will be steady. When the system completes the shift to NEUTRAL, the red NEUTRAL lamp will illuminate.

**2WD Mode Power Flow**

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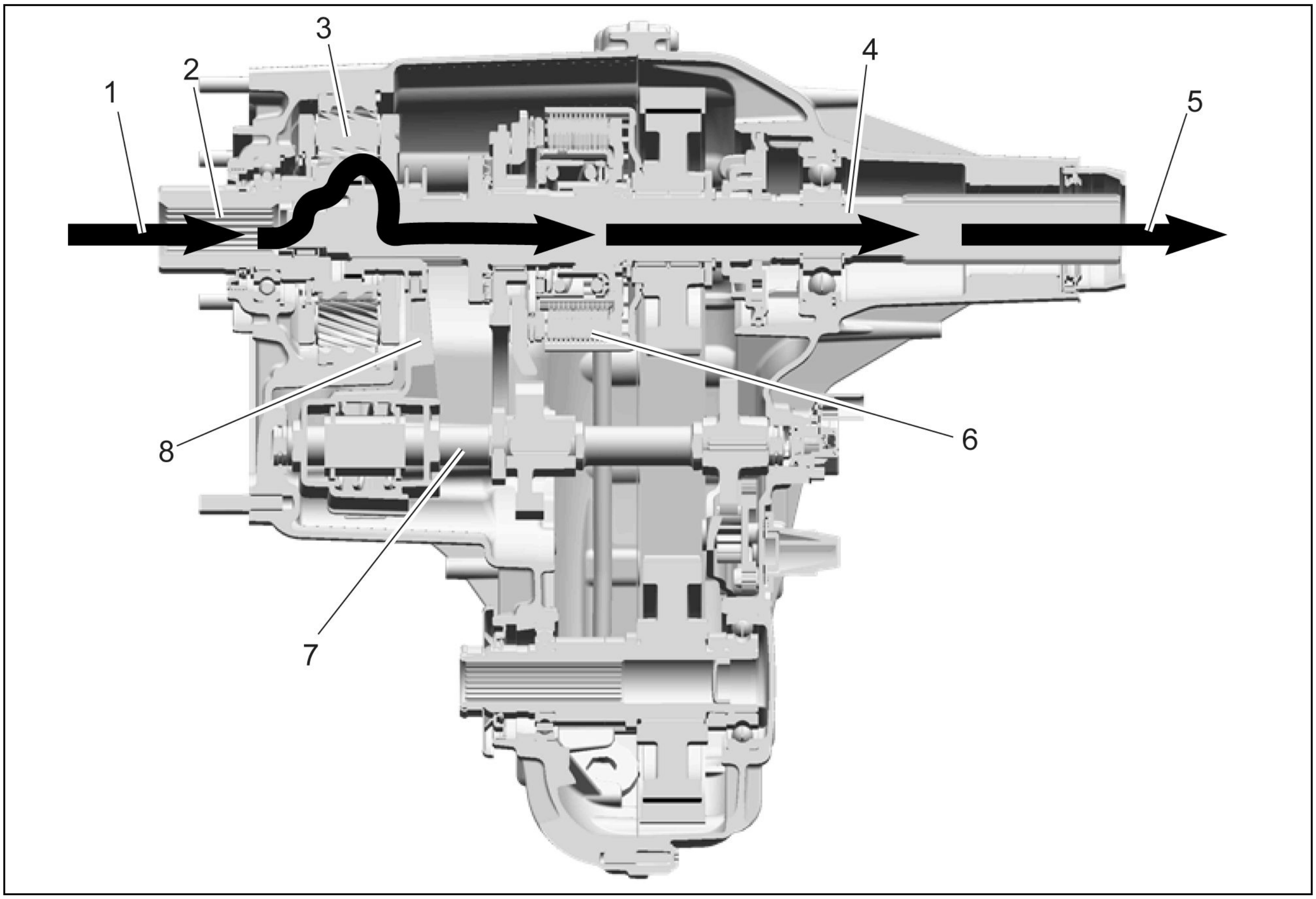
(1) Transfer Case Input Shaft
(2) Transfer Case Scissor Mechanism Lever
(3) Transfer Case Four Wheel Drive Clutch
(4) Transfer Case Front Output Shaft Drive Chain Assembly
(5) Transfer Case Rear Output Shaft
(6) Transfer Case Two/Four Wheel Drive Actuator Shaft Gear
(7) Transfer Case Two/Four Wheel Drive Actuator Cam
(8) Transfer Case Front Output Shaft

## 2WD Mode Power Flow

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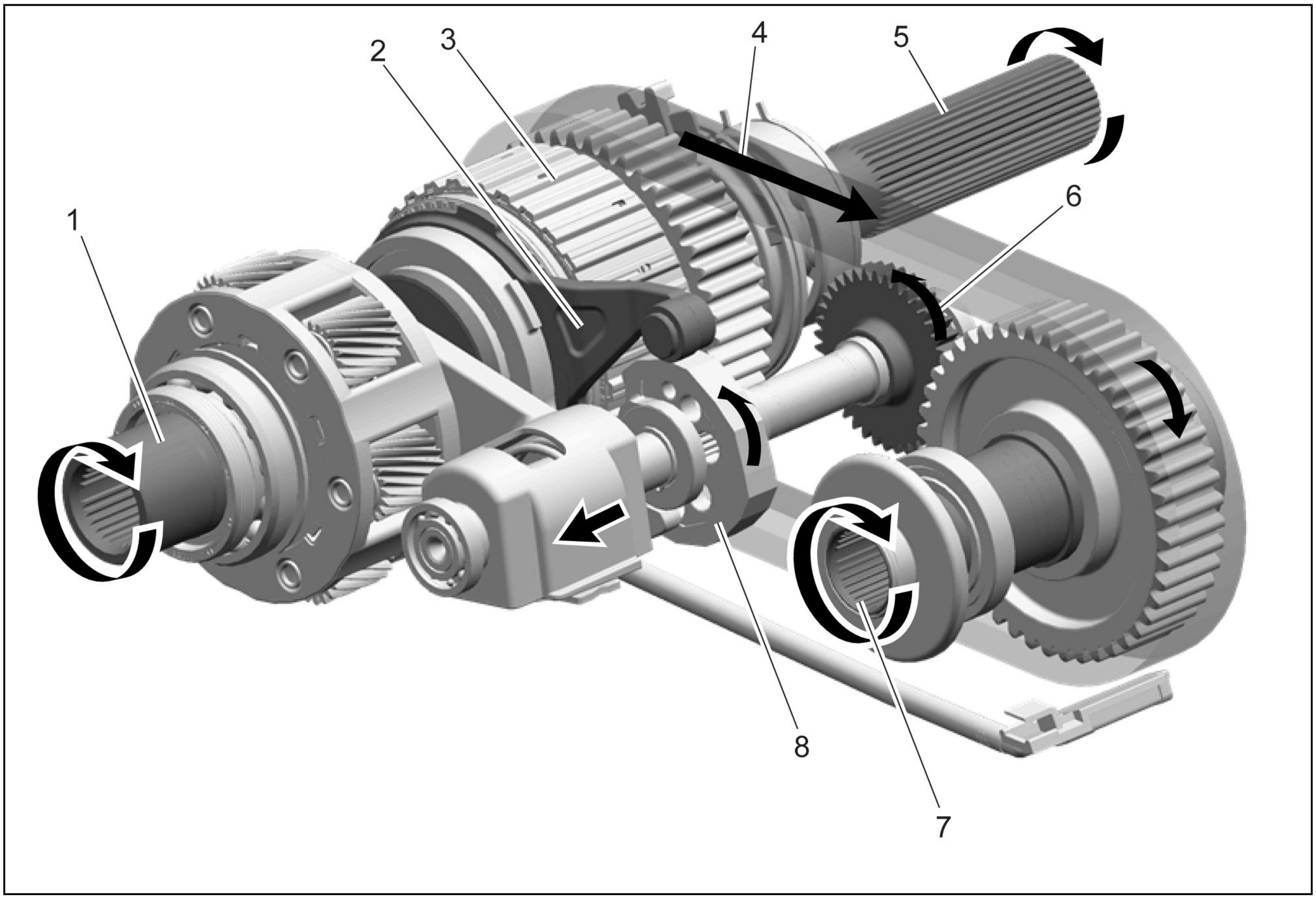
When the ATC is in the 2WD mode, the power flows from the transmission (1) to the input shaft (2). The input shaft (2) is connected to the rear output shaft (4) by the high/low clutch (3). The high/low clutch (3) outer teeth are engaged with the input shaft (2) inner, high-speed position teeth. At the same time the high/low clutch is slip splined to the rear output shaft (4). The rear output shaft (4) delivers the power flow to the rear propshaft (5). The position of the control actuator shaft (7) allows no clutch (6) engagement. The high/low range shift fork (8), is in the high-speed position on the control actuator shaft (7).

**4HI Mode Power Flow**

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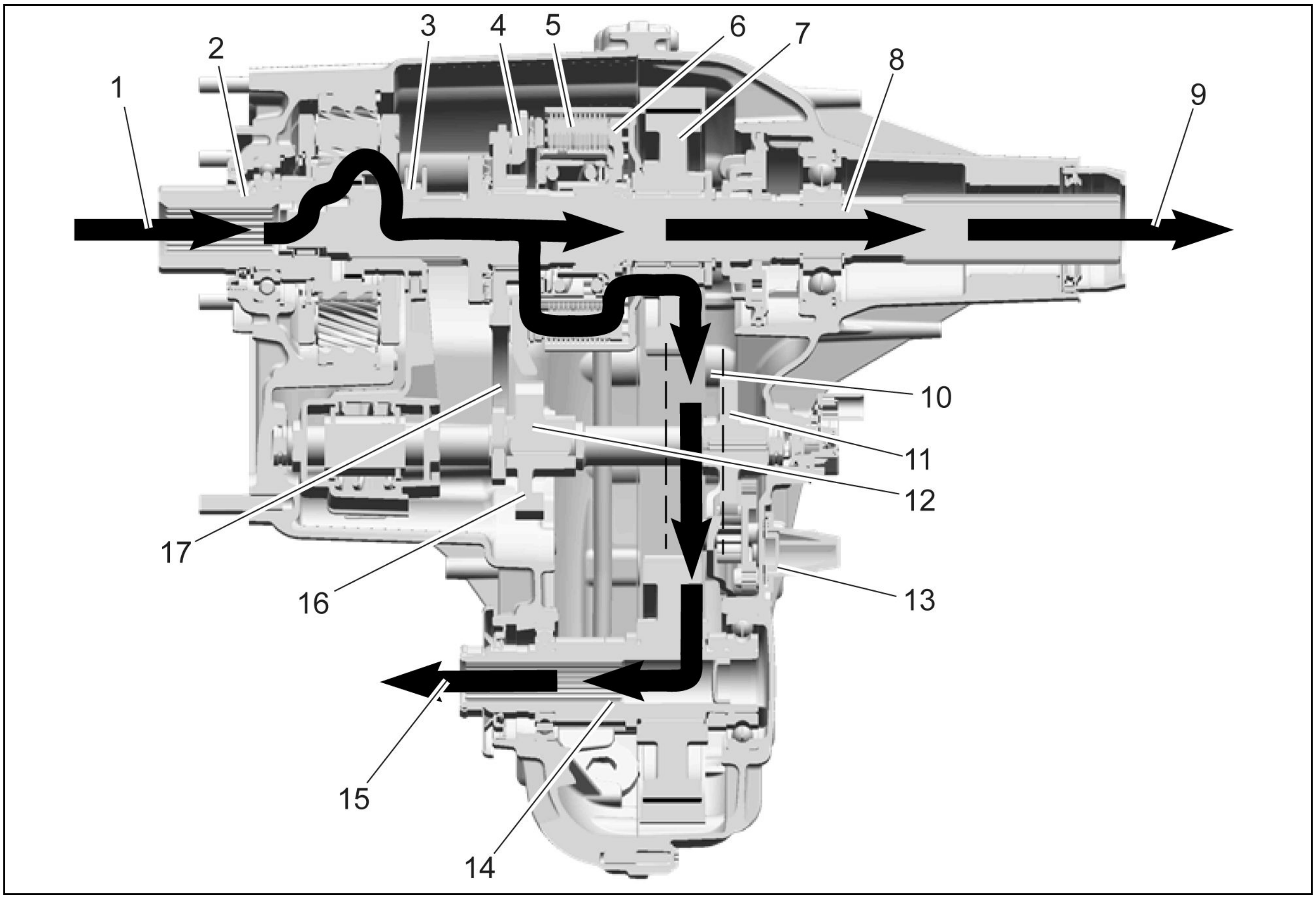
(1) Transfer Case Input Shaft
(2) Transfer Case Scissor Mechanism Lever
(3) Transfer Case Four Wheel Drive Clutch
(4) Transfer Case Front Output Shaft Drive Chain Assembly
(5) Transfer Case Rear Output Shaft
(6) Transfer Case Two/Four Wheel Drive Actuator Shaft Gear
(7) Transfer Case Two/Four Wheel Drive Actuator Cam
(8) Transfer Case Front Output Shaft

### 4HI Mode Power Flow

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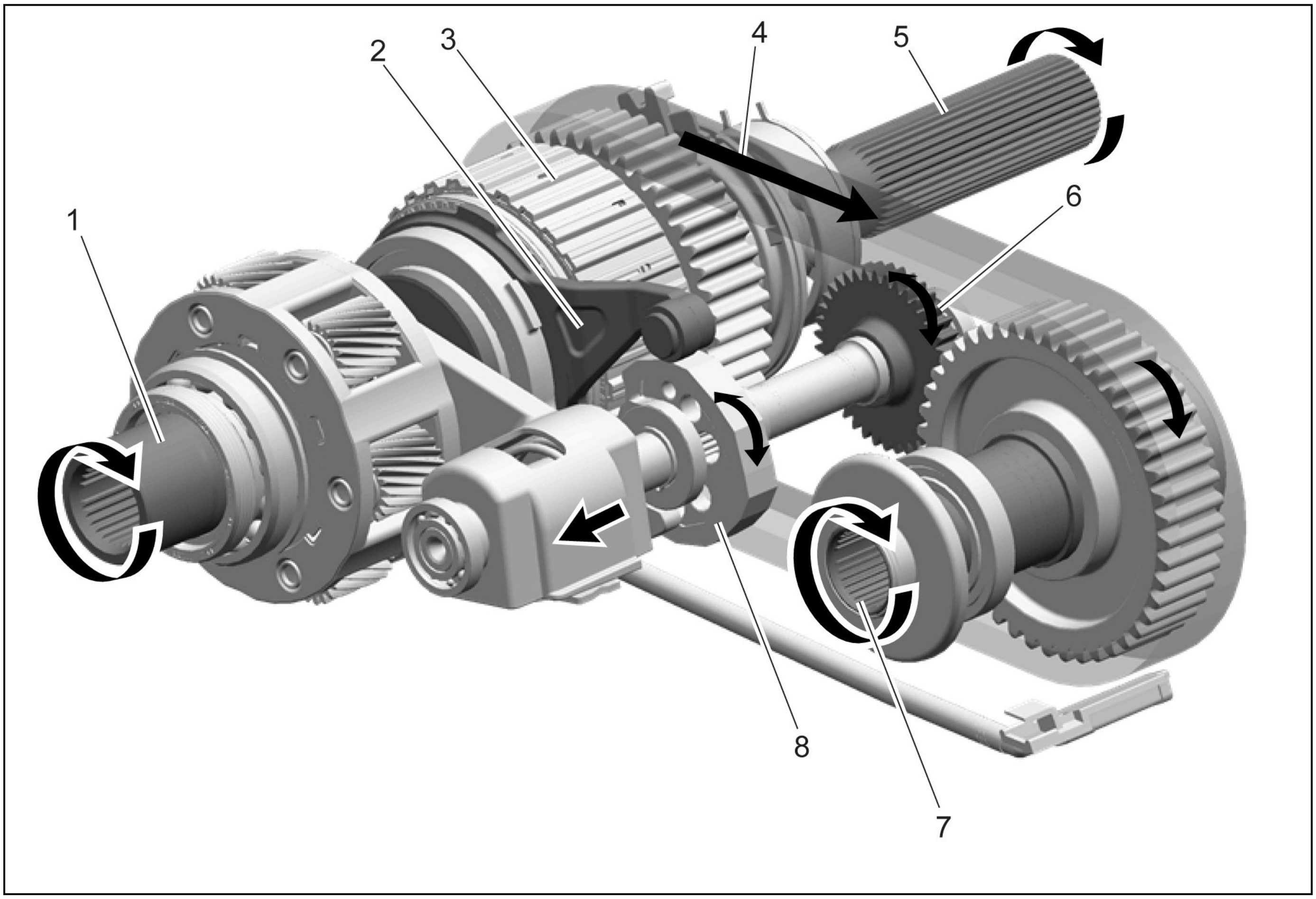
In the 4HI mode, the power flow to the rear propshaft (9) is the same as it is in the 2WD mode. To deliver power flow to the front propshaft (15) during the 4HI position, the transfer case control module commands the 2/4 wheel drive actuator assembly (13) to apply the clutch to a calibrated torque. The 2/4 wheel drive actuator assembly (13) turns the control actuator shaft. A brake in the 2/4 wheel drive actuator assembly (13) holds the control actuator shaft in the full clutch position. The control actuator shaft is cam designed and the cam action moves the control actuator lever (12). The control actuator lever (12) pivots against the control lever (17) and moves toward the clutch pressure plate (4), to engage the clutch (5). As more pressure is applied to the clutch pressure plate (4), the clutch discs (5) are compressed. Using inner clutch discs, which are engaged with the clutch hub, and the outer clutch discs, which are engaged with the clutch housing (6), the power flow is delivered to the clutch housing (6). The clutch hub is splined to the rear output shaft (8), and the clutch housing (6) rotates on a needle bearing on the rear output shaft (8). The chain drive sprocket (7) is splined to the clutch housing (6). The power flows from the drive sprocket (7), through the chain (10), to the chain driven sprocket. The driven sprocket is splined to the front output shaft (14). The power flow is delivered to the front propshaft (15) through the front output shaft (14).

During the Auto 4WD mode, the power flow is the same as it is in the 4HI mode. Except, during the Auto 4WD mode, the 2/4 wheel drive actuator assembly (13) rotates the control actuator shaft to the correct torque level positions. Rotating the control actuator shaft to the various positions changes the clutch torque level. When a difference of front wheel speed to rear wheel speed is recognized, the transfer case control module commands for more, or less clutch torque.

**Auto 4WD Mode Power Flow**

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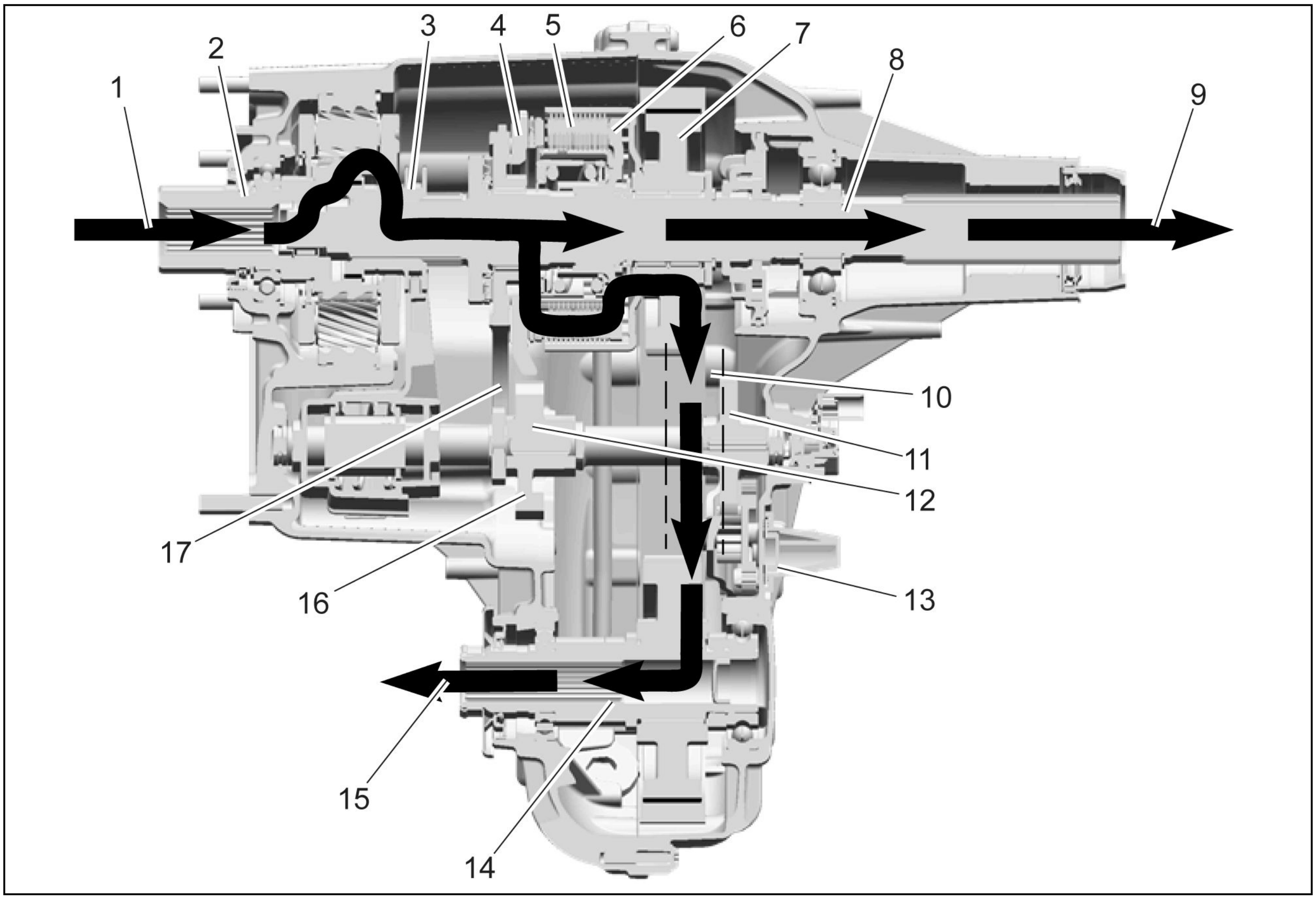
(1) Transfer Case Input Shaft
(2) Transfer Case Scissor Mechanism Lever
(3) Transfer Case Four Wheel Drive Clutch
(4) Transfer Case Front Output Shaft Drive Chain Assembly
(5) Transfer Case Rear Output Shaft
(6) Transfer Case Two/Four Wheel Drive Actuator Shaft Gear
(7) Transfer Case Front Output Shaft
(8) Transfer Case Two/Four Wheel Drive Actuator Cam

## AUTO 4WD Mode Power Flow

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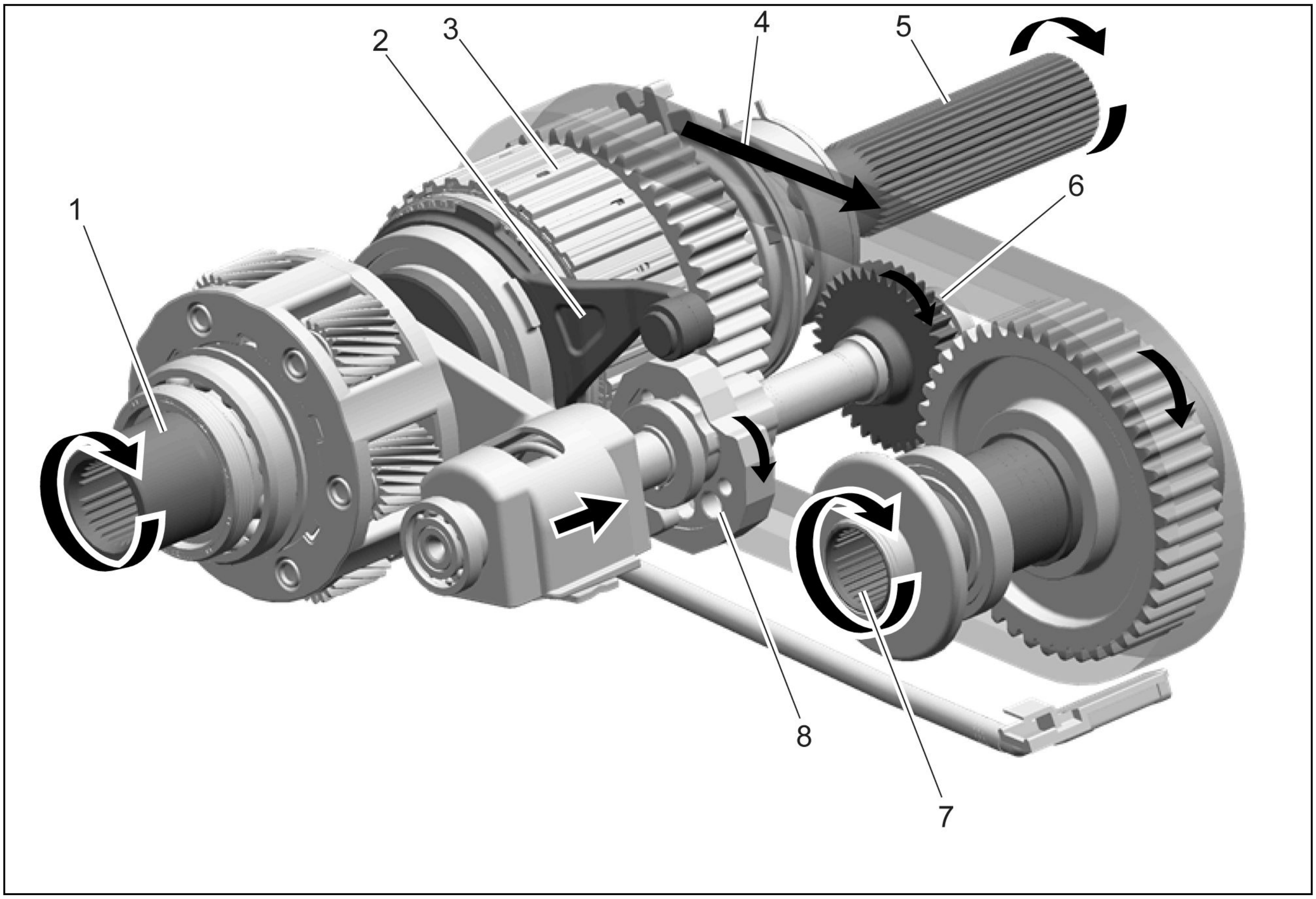
During the Auto 4WD mode, the power flow is the same as it is in the 4HI mode. Except, during the Auto 4WD mode, the 2/4 wheel drive actuator assembly (13) rotates the control actuator shaft to the correct torque level positions. Rotating the control actuator shaft to the various positions changes the clutch torque level. When a difference of front wheel speed to rear wheel speed is recognized, the transfer case control module commands for more or less clutch torque.

**4LO Mode Power Flow**

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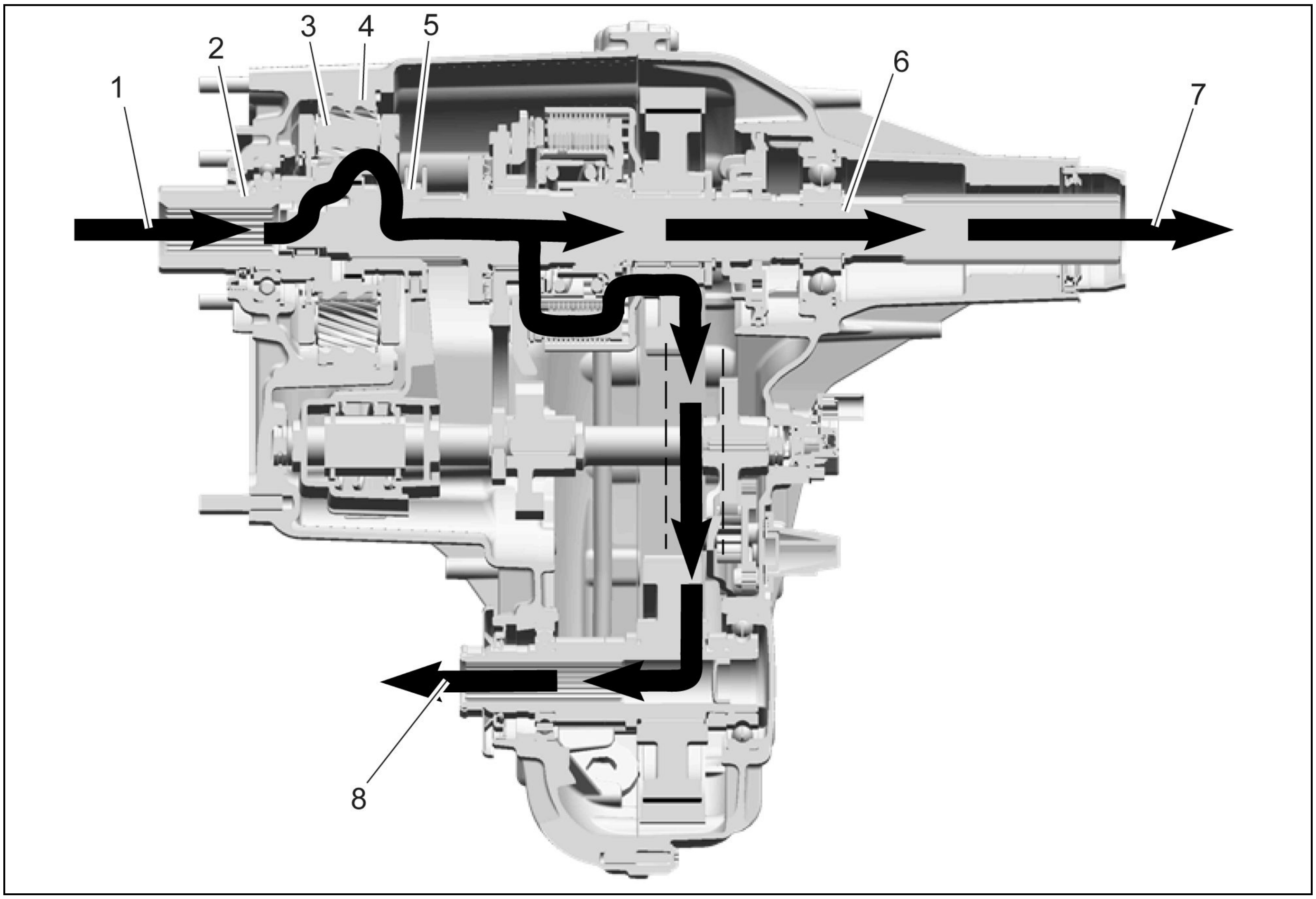
(1) Transfer Case Input Shaft
(2) Transfer Case Scissor Mechanism Lever
(3) Transfer Case Four Wheel Drive Clutch
(4) Transfer Case Front Output Shaft Drive Chain Assembly
(5) Transfer Case Rear Output Shaft
(6) Transfer Case Two/Four Wheel Drive Actuator Shaft Gear
(7) Transfer Case Front Output Shaft
(8) Transfer Case Two/Four Wheel Drive Actuator Cam

### 4LO Mode Power Flow

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When shifting the transfer case to the 4LO mode, it commands the 2/4 wheel drive actuator assembly to turn the control actuator shaft, to move the high/low shift fork (9). The shift fork (9) moves the high/low clutch (5), which is slip splined on the rear output shaft (6) toward the rear of the transfer case. The high/low clutch (5) outer teeth disengage from the input shaft (2) inner teeth. The high/low clutch (5) outer teeth then engage in the planetary carrier teeth. The power flow is now from the input shaft (2) planetary teeth to the planetary gears (3) in the carrier. Rotating the planetary gears (3), which are engaged in the high/low internal gear (4), the planetary carrier rotates. The planetary carrier engaged to the high/low clutch (5), drives the rear output shaft (6), providing a 2.72 reduction to the speed of the rear output shaft (6). The power flow to the front propshaft (8) is the same as it is in the 4HI.

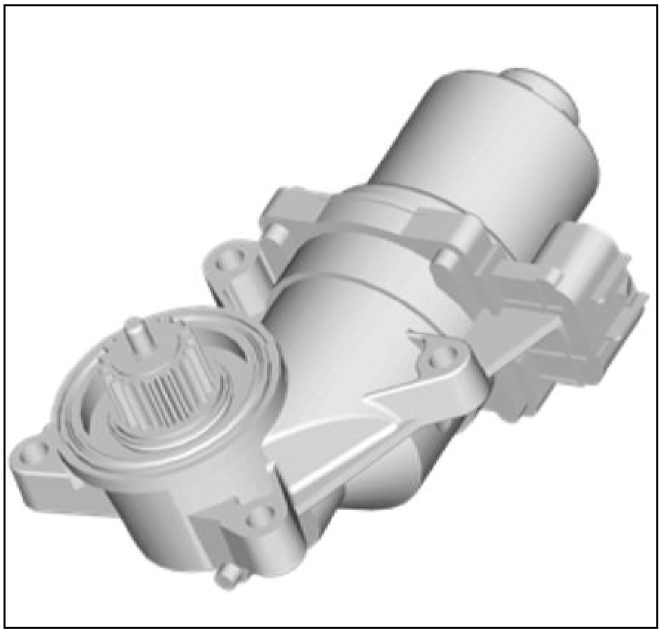
### NEUTRAL Mode Power Flow

Shifting to the NEUTRAL position, the high/low clutch is centered between the input shaft and the high/low planetary carrier. The high/low clutch is not engaged with either the input shaft or the high/low planetary carrier teeth.

### Service 4 Wheel Drive Message

The Service 4 Wheel Drive Message is a display within the Drivers Information Center (DIC) and cannot be serviced separately. This message is used to inform the driver that a transfer case system malfunction has occurred. The Service 4 Wheel Drive Message is controlled by the transfer case shift control module via GMLAN.

## Transfer Case Two/Four Wheel Drive Actuator Assembly



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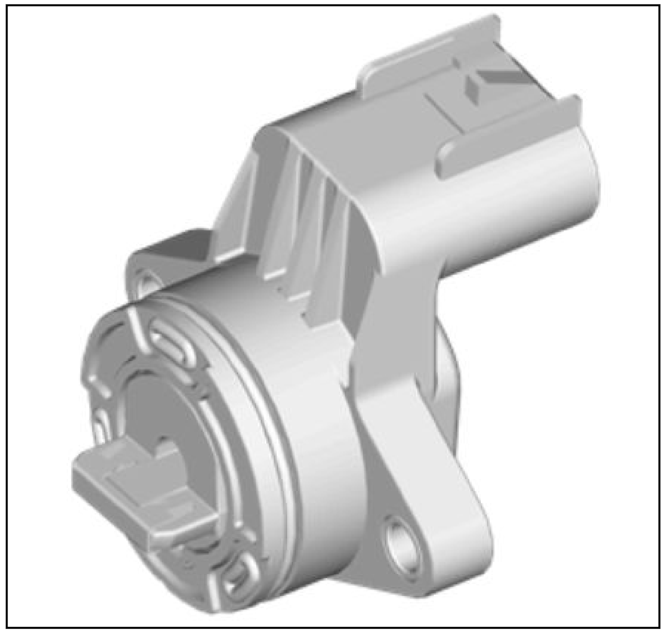
The transfer case two/four wheel drive actuator assembly consists of a permanent magnet DC motor and gear reduction assembly. It is located on the left hand side, driver's side, of the transfer case. When activated, it rotates the shift detent lever shaft of the transfer case, clockwise or counterclockwise, to shift the transfer case. The motor/encoder is controlled with a PWM signal by the transfer case shift control module. This circuit consists of a driver on both the Motor A and Motor B circuits. The encoder motor is bi-directional in order to allow the motor to shift the transfer case from 2HI or 4HI to NEUTRAL and 4LO positions. The two/four wheel drive incremental sensor and motor lock are internal to the actuator motor assembly.

## Transfer Case Actuator Shaft Position Sensor Assembly



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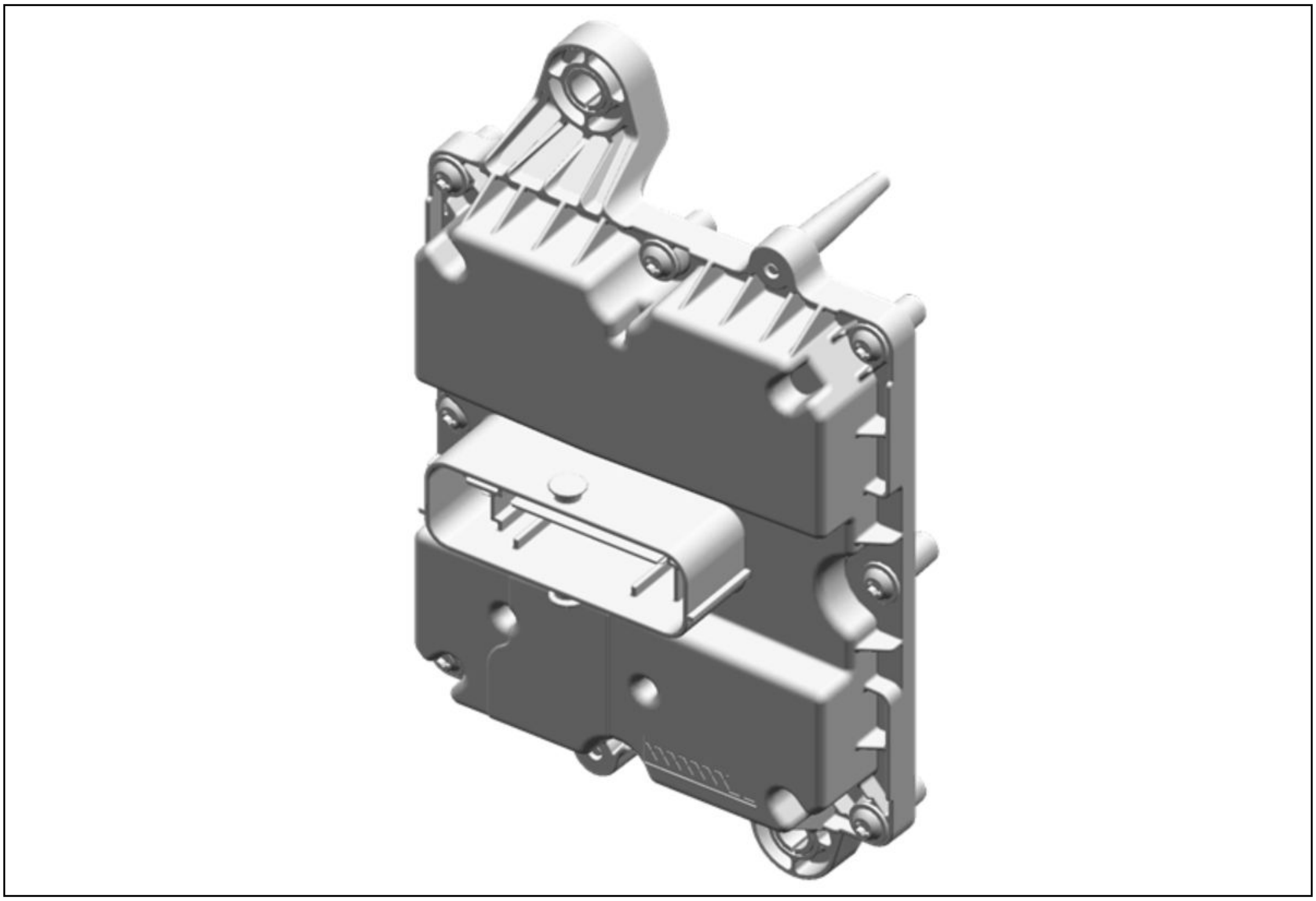
This sensor works in conjunction with the incremental sensor and shows transfer case position in degrees.

## Transfer Case Shift Control Module



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The transfer case shift control module uses the vehicle identification number (VIN) information for calculations based on axle ratio, transmission, tire size, and engine size. For StabiliTtrak applications, when the vehicle is in the AUTO 4WD mode, the transfer case shift control module monitors the wheel speed via the four wheel speed sensors in order to detect wheel slippage. For non-StabiliTrak applications, when the vehicle is in the AUTO 4WD mode, the transfer case shift control module monitors the wheel speed via the two front wheel speed sensors and the vehicle speed sensor in order to detect wheel slippage. When wheel slippage is detected, the module applies a clutch pack contained inside the transfer case. This clutch pack is used to lock-in and apply the front propshaft, transferring torque to the front wheels. The clutch pack is applied by a motor/encoder assembly. When slip is no longer detected by the transfer case shift control module, the clutch is no longer applied.