14.1

Gas Electrical Symbols

	Fuse	Electronic Parts		Coil (Inductor), Solenoid Magnetic Valve
	Fusible Link	 Resistor		Relay
	Fusible Link Wire	Speaker		
	Switch	Buzzer		Connector
	Switch	Circuit Breaker		Light-Emitting Diode
	Switch (Normal Close Type)	Bulb		Reed Switch
-	Contact Wiring	Double-Filament Bulb	———	Condenser
Q 0	Battery	Motor		Horn
	Diode	Variable Resistor Rheostat		Vacuum Switching Valve

14.2

Abbreviations

Abbreviation	Definition	Abbreviation	Definition
3A/T	6-Speed Automatic Transmission	IG	Ignition
4A/T	4-Speed Automatic Transmission	kW	kilowatt
A/T	Automatic Transmission	LH	Left hand
ABS	Anti-lock brake system	LO	Low
APP	Accelerator pedal position	LWB	Long wheelbase
ATF	Automatic Transmission Fluid	M/T	Manual Transmission
AUTO	Automatic	M/V	Magnetic valve
BRKT	Bracket	MAF	Mass airflow
C/B	Circuit breaker	MIL	Check engine light
CKP	Crankshaft position	OD	Over drive
CMP	Camshaft position	OPT	Option
COMB	Combination	PTO	Power Take Off
CONT	Control	RH	Right hand
D.R.L.	Day time running light	RR	Rear
DC	Direct current	SCV	Suction control valve
ECM	Electronic control module	ST	Start
ECT	Engine coolant temperature	STD	Standard
ECU	Electronic control unit	SW	Switch
EGR	Exhaust gas reticulation	SWB	Short wheelbase
EHCU	Electronic and hydraulic control unit	TCM	Transmission control module
FL	Fusible link	V	Volt
FRT	Front	VSV	Vacuum switching valve
FT	Fuel Temperature	W	Watt (S)
H/L	Headlight	W/	With
HI	High	W/O	Without
IAT	Intake air temperature	W/S	Weld splice
IC	Integrated circuit	WOT	Wide-open throttle

14.3

Wiring

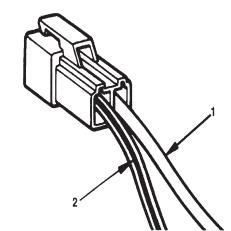
Wire Color

All wires have color-coded insulation. Wires belonging to a system's main harness will have a single color. Wires belonging to a system's subcircuits will have a colored stripe. Striped wires use the following code to show wire size and colors.

Example: 0.5 G / R Red (Stripe Color)

Green (Base Color)

Wire Size (0.5 mm²)



- 1. Single Color Wire
- 2. Colored Stripe Wire

14.4

Wiring

Abbreviations are used to indicate wire color within a circuit diagram. Refer to the following table.

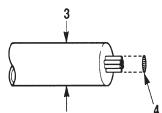
Color-Coding	Meaning	Color-Coding	Meaning
В	Black	BR	Brown
W	White	LG	Light Green
R	Red	GR	Grey
G	Green	Р	Pink
Υ	Yellow	LB	Light Blue
L	Blue	V	Violet
0	Orange		

Wire Size

The size of wire used in a circuit is determined by the amount of current (amperage), the length of the circuit, and the voltage drop allowed. The following wire size and load capacity are specified by AWG (American Wire Gauge). (Nominal size means approximate cross sectional area.)



4. Cross Sectional Area



14.5

Wiring

Nominal Size	Cross Sectional Area (mm²)	Outside Diameter (mm)	Allowable Current (A)	AWG Size (Cross reference)
			Current (A)	•
0.3	0.372	1.8	9	22
0.5	0.563	2.0	12	20
0.85	0.885	2.2	16	18
1.25	1.287	2.5	21	16
2	2.091	2.9	28	14
3	3.296	3.6	37.5	12
5	5.227	4.4	53	10
8	7.952	5.5	67	8
15	13.36	7.0	75	6
20	20.61	8.2	97	4

Alternator pulley ratio 3500 HG 4500 HG Gas Engine.

L8T 6.6L 3.16: 1 alternator pullet to crankshaft pulley

14.6

Fuses

Replacing Fuses

- 1. Before replacing fuses, apply the parking brake, then move the selector lever to the "P" (Park) position, and turn the engine control switch to the "LOCK" position.
- 2. Place the fuse puller on the fuse and pull it out. (The fuse puller is stored in the fuse box inside the cab.)
- 3. If the fuse appears as shown in the right hand side of the diagram at left, the fuse is blown. Replace with a spare fuse. (Spare fuses are stored in the fuse box inside the cab.)

Replacing Relays

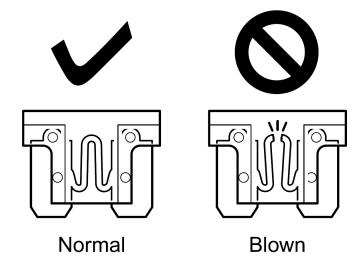
1. Before replacing the relays, contact the nearest Chevrolet Dealer.

Fusible Links

- 1. The fusible link is primarily used to protect circuits where high amounts of current flow and where it would not be practical to use a fuse. For example, the starter circuit. When a current overload occurs, the fusible link melts open and interrupts the flow of current so as to prevent the rest of the wiring harness from burning.
- 2. Determine the cause of the overload before replacing the fusible link. The replacement fusible link must have the same amperage specification as the original fusible link.
- 3. Never replace a blown fusible link with fusible link of a different amperage specification. Doing so can result in an electrical fire or other serious circuit damage.



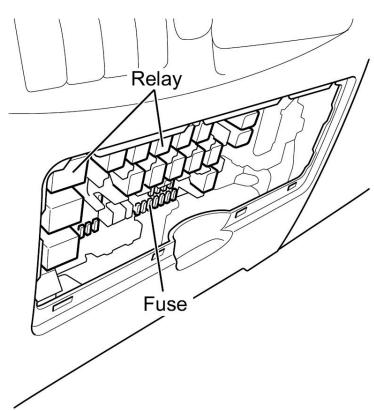
- Always use fuses specified by Isuzu. Using fuses with a rating other than that specified, or using wire or tin foil, etc., could result in fire or damage.
- · If the new fuses blow right away and the cause is unknown, contact the nearest Isuzu Dealer.
- · Do not inspect or replace fuses when the engine control switch is in the "ON" position. Doing so may lead to an accident.
- When inspecting fuses, be sure to park the vehicle on flat, level ground and apply chocks to the wheels.



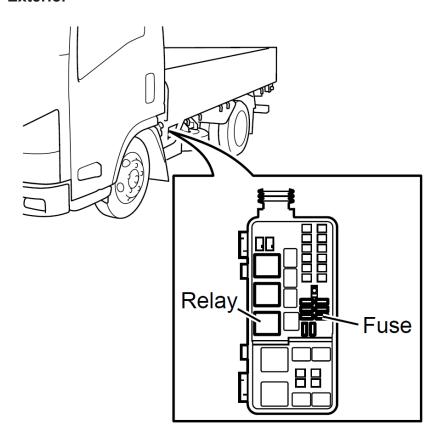
14.7

Fuse and Relay Box Locations

Interior

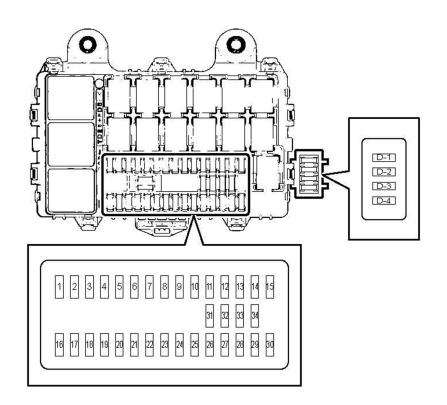


Exterior



14.8

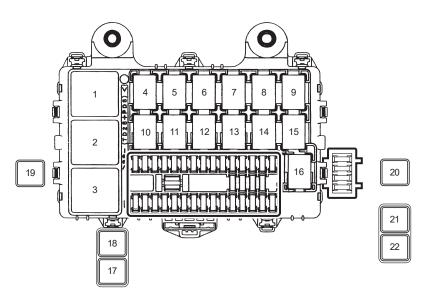
Fuse Locations Interior



No.	Description	Rating
1	RR P / WINDOW	25A
2	_	_
3	ROOM LAMP, AUDIO	10A
4	DOOR LOCK	15A
5	TRAILER BRAKE	15A
6	P/ WINDOW	25A
7	ABS	10A
8	WIPER	25A
9	H / LAMP LO (LH)	10A
10	LAMPS (BATT)	10A
11	H / LAMP LO (RH)	10A
12	BRAKE LAMPS	10A
13	STARTER	10A
14	H / LAMP HI (LH)	10A
15	H / LAMP HI (RH)	10A
16	MIRROR HEATER	15A

Description	Rating
IGNITION2	10A
IGNITION1	10A
_	_
ECM	10A
METER	10A
ECU (BATT)	10A
MIRROR	10A
AUDIO, ACC	15A
HORN	15A
TURN, HAZARD	15A
TAIL LAMPS	10A
ILLUMINATIONS	10A
CORNERING LAMPS	10A
AIR CONDITIONER	10A
SPARE	10A
SPARE	15A
SPARE	25A
SPARE	20A
CIGAR	20A
ACCESSORIES SOCKET	15A
POWER SOURCE	20A
AUDIO REVERSE MUTE	10A
	IGNITION2 IGNITION1 — ECM METER ECU (BATT) MIRROR AUDIO, ACC HORN TURN, HAZARD TAIL LAMPS ILLUMINATIONS CORNERING LAMPS AIR CONDITIONER SPARE SPARE SPARE SPARE SPARE CIGAR ACCESSORIES SOCKET POWER SOURCE

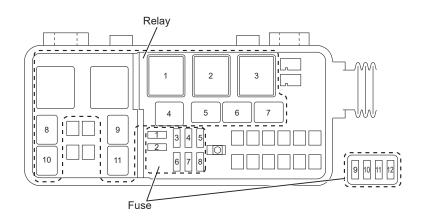
Relay Locations Interior



No.	Description
1	BRAKE LAMP
2	DAYTIME RUNNING LAMP
3	KEY ON
4	TCM
5	PARKING/NEUTRAL
6	WIPER MAIN
7	HORN
8	WIPER HI LO
9	TRAILER BRAKE
10	REAR POWER WINDOW
11	CHARGE (ENG RUN)

No.	Description
12	POWER WINDOW
12	I OWER WINDOW
13	HEAD LAMP LO
14	CORNERING LAMP
15	HEAD LAMP HI
16	TAIL LAMP
17	DAYTIME RUNNING LAMP
18	CIGAR LIGHTER
19	POWER ACC
20	BLOWER MOTOR
21	HEAD LAMP WASHER
22	HEAD LAMP WASHER

Fuse and Relay Locations Exterior - 3500 HG / 4500 HG

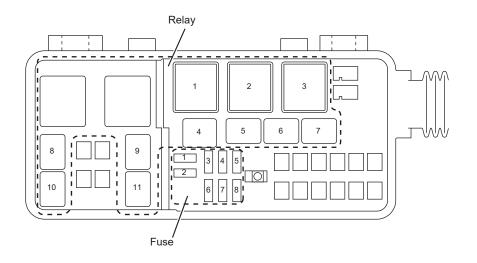


No.	Relay name
1	STARTER
2	TAIL LAMP
3	_
4	A/C COMPRESSOR
5	CONDENSER FAN
6	_
7	RR DOME LAMP
8	_
9	_
10	MARKER LAMP
11	PCM MAIN
12	_
13	A/C

No.	Fuse name	Rating
1	MARKER LAMP	20A
2	TAIL MAIN	20A
3	PCM1	25A
4	PCM2	15A
5	PCM3	15A
6	POWER SOURCE	15A
7	CONDENSER FAN	20A
8	A/C COMPRESSOR	10A
9	IGN-COILS EVEN*	20A
10	IGN-COILS ODD*	20A
11	TAIL LAMP*	10A
12	TCM*	10A

^{*:} Fuse No. 9 to No. 12 are installed inside the vehicle frame. If replacement or inspection is necessary, please contact your Chevrolet Dealer.

Fuse and Relay Locations Exterior - 5500 HG / 5500 XG



No.	Relay name
1	STARTER
2	TAIL LAMP
3	_
4	A/C COMPRESSOR
5	CONDENSER FAN
6	FUEL PUMP
7	RR DOME LAMP
8	MARKER LAMP
9	PCM MAIN
10	_
11	A/C

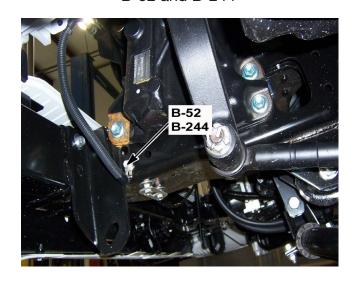
No.	Fuse name	Rating
INO.	i use name	Italing
1	MARKER LAMP	20A
2	TAIL MAIN	20A
3	PCM1	25A
4	PCM2	15A
5	PCM3	15A
6	POWER SOURCE	15A
7	CONDENSER FAN	20A
8	A/C COMPRESSOR	10A
9	TAIL LAMP*	10A
10	IGN-COILS EVEN*	20A
11	IGN-COILS ODD*	20A

^{*:} Fuse No. 9 to No. 11 are installed inside the vehicle frame. If replacement or inspection is necessary, please contact your Chevrolet Dealer.

14.12

Grounding Point Location

B-52 and B-244

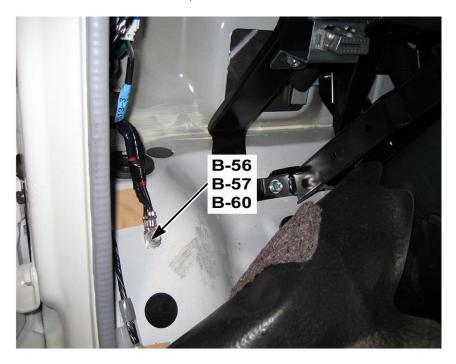


B-53 and B-54



Grounding Point Location

B-56, B-57 and B-60



B-51, B-58 and B-59



Grounding Point Location

J-9, J-10 and J-12



J-7, J-8 and J-11



14.15

Grounding Point Location

E-105 P-5

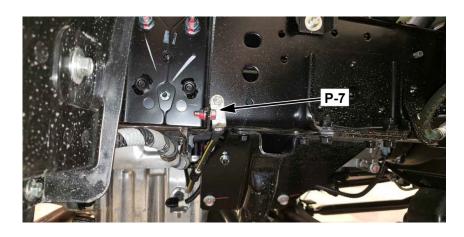


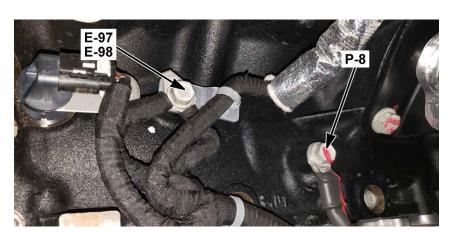


14.16

Grounding Point Location

P-7 E-97 & E-98





Grounding Point Location

P-8

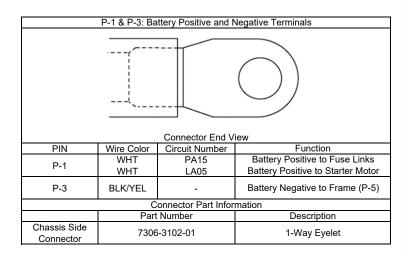


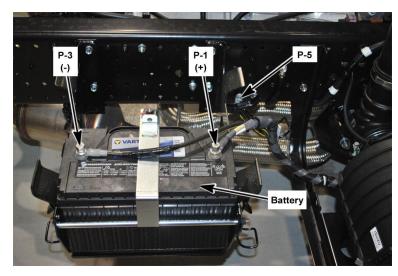
14.18

Reference Table of Grounding Points

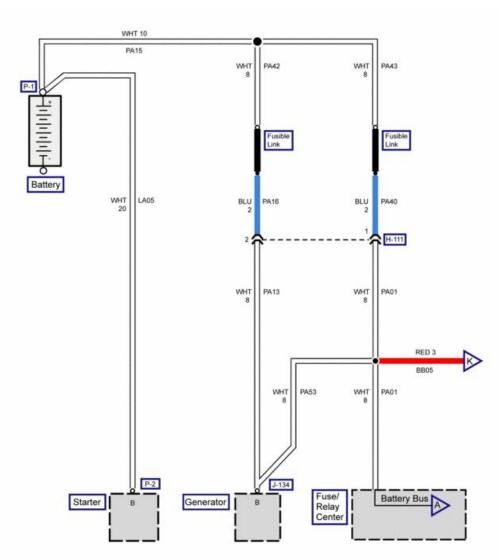
Connector Number	Load	Location
B-52	Ground to Splice Pack B-561 and Splice Pack B-49	On the Front Left Frame Rail, Behind the Front Bumper
B-244	Ground to B-56	On the Front Left Frame Rail, Behind the Front Bumper
B-53 and B-54	Ground to Splice Pack B-53	On the Front Right Frame Rail, Behind the Front Bumper
B-51, B-58, and B-59	Ground to Splice 9	Behind the Right Side of the I/P, On the Interior Wall of the Right A-Pillar
B-56, B-57, and B-60	Ground to B-244	On the Front Cab Floor Under the Floor Mat, Next to the Left A-Pillar
E-105	Engine Ground	Left Rear of Engine On Cylinder Head
E-97 and E-98	Ground to Oil Level Sensor, AC Compressor and ECM	Right Lower Rear of Engine, Next to the Starter
J-7, J-8, and J-11	Ground to J-12 and Rear Manufactures Connector	Bottom of Right Front Frame Rail, Behind Front Bumper
J-9, J-10, and J-12	Ground to J-7 and Rear Manufactures Connector	Right Outer Frame Rail, in Front of the Battery
P-5	Ground from Battery	Right Outer Frame Rail, in Front of the Battery
P-7	Frame Ground to Engine Ground P-8	Right Outer Frame Rail, Just Behind the Engine Crossmember
P-8	Engine Ground to Frame Ground P-7	Right Lower Side of the Engine Block, Just Behind the Motor Mount

Battery Cable Connection

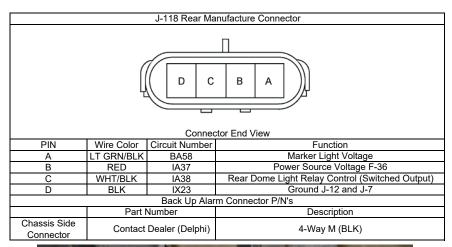


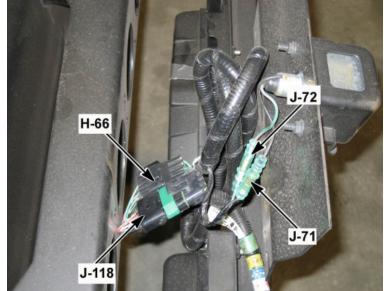


Tightening Torques: 15 N-m (11 lb-ft)

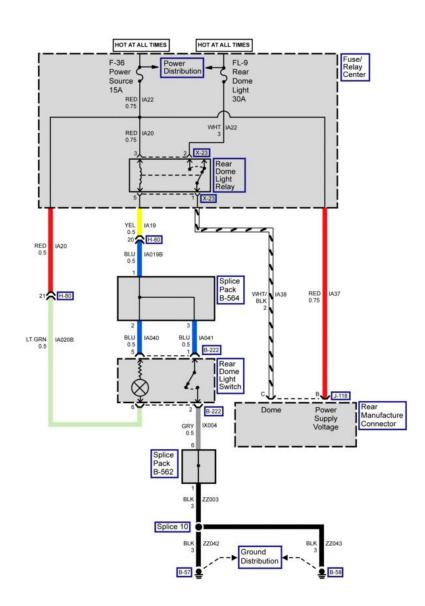


Rear Manufacture Connector

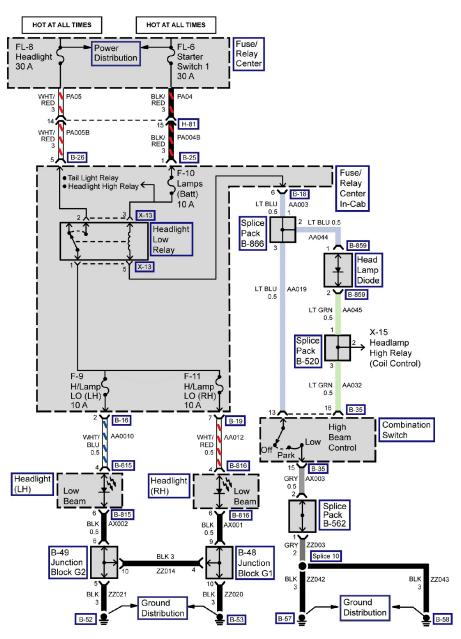




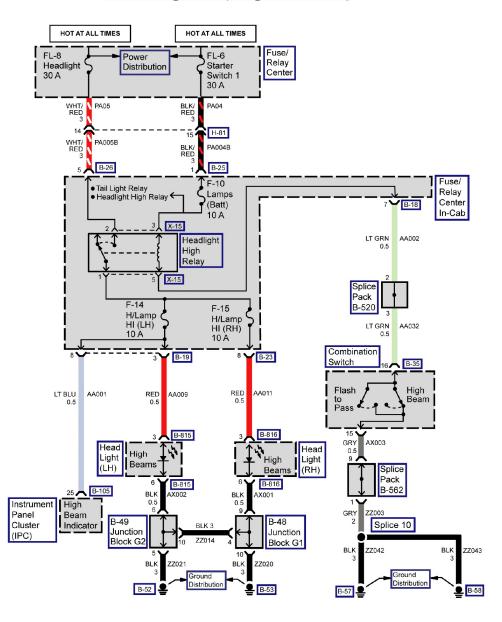
Center rear of last crossmember



Headlights (Low Beam)

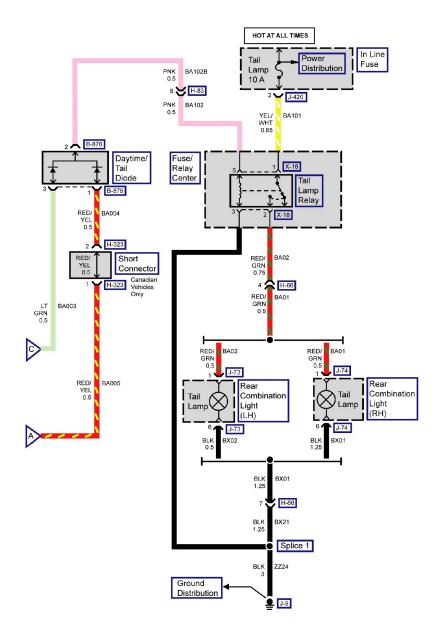


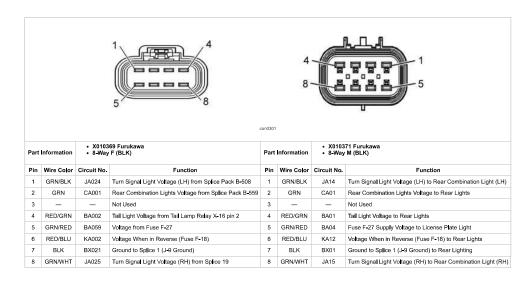
Headlights (High Beam)



[₩] 14.23

Taillights





The connectors that match the end of frame tail and stop lamp harness can now be ordered through GM dealership.

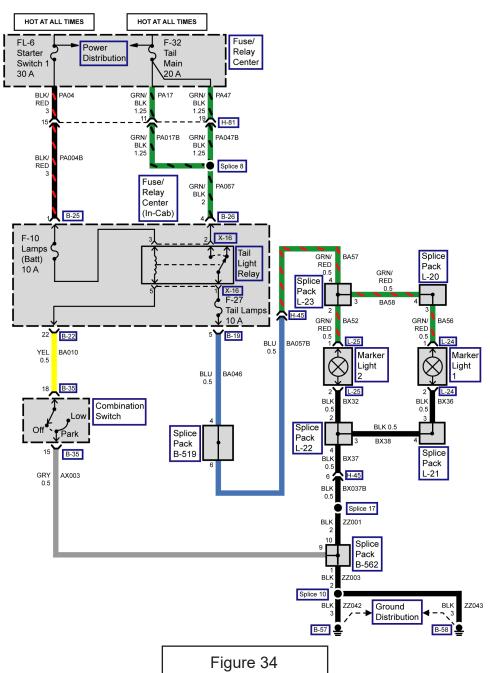


Chassis harness side part number Contact Dealer



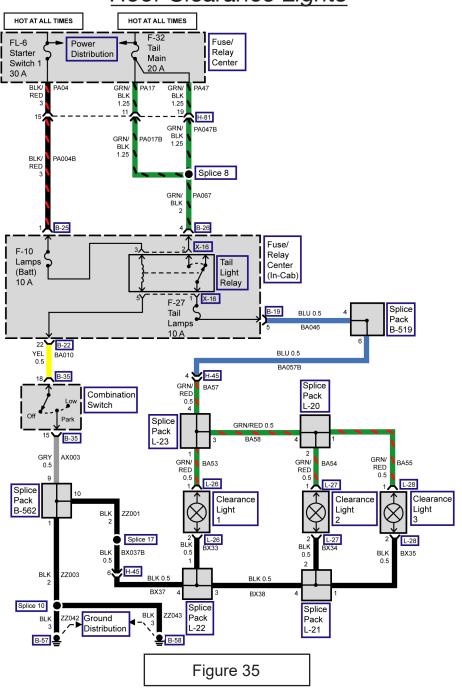
Stop and tail lamp side part number **Contact Dealer**

Roof Marker Lights



14.25

Roof Clearance Lights



4.26

Rear Turn Signal Lights

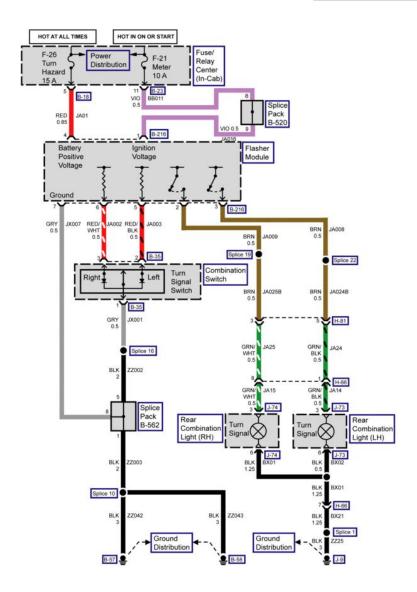
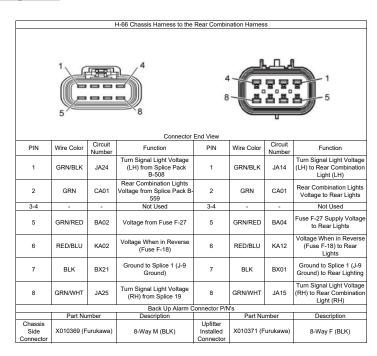


Figure 36



The connectors that match the end of frame tail and stop lamp harness can now be ordered through GM dealer.



Chassis harness side part number Contact Dealer

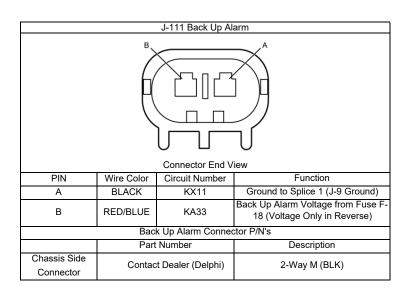
Figure 37

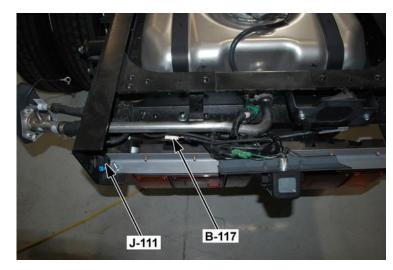


Stop and tail lamp side part number **Contact Dealer**

Figure 38

Back Up Light and Back Up Alarm Circuits





Left Inner Frame Rail, In Front of the Last Crossmember

Figure 39

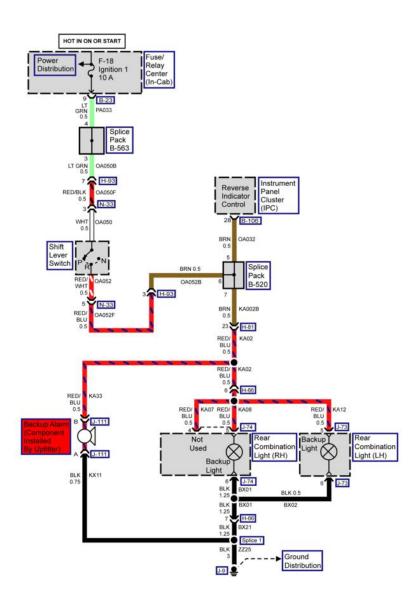
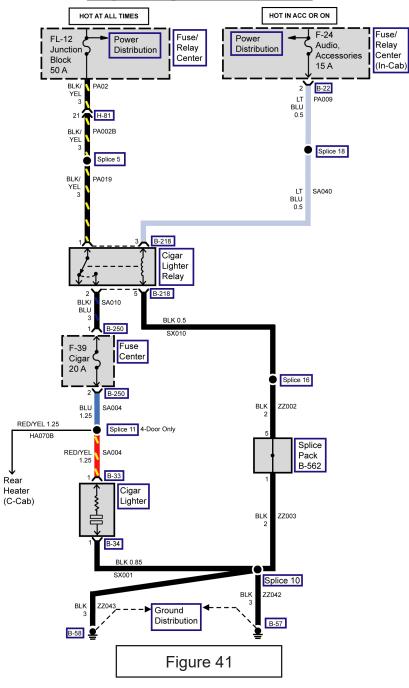
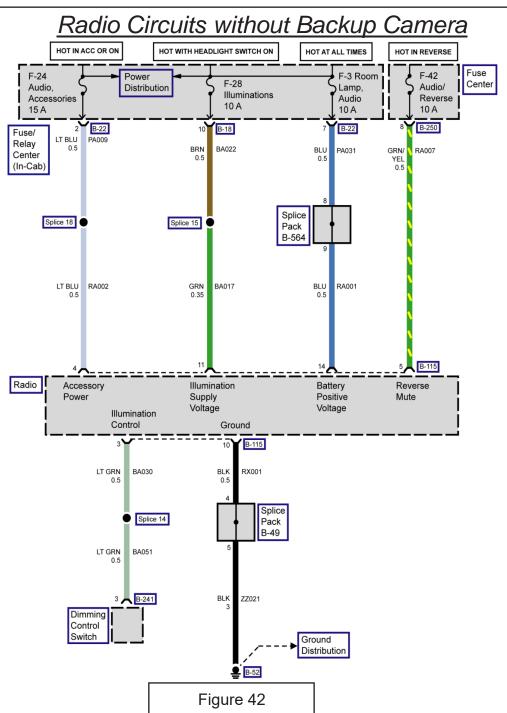


Figure 40

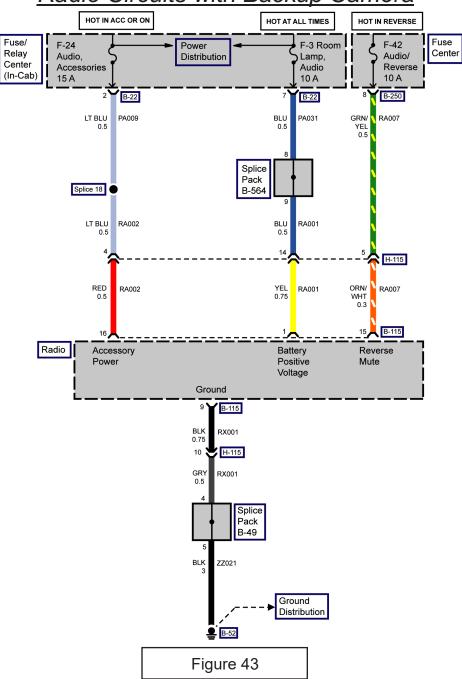
Cigar Lighter Circuits



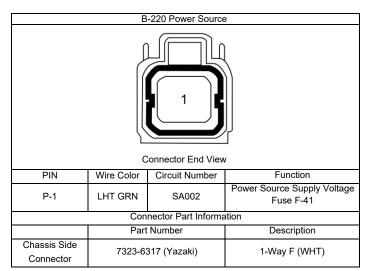
g 14.29

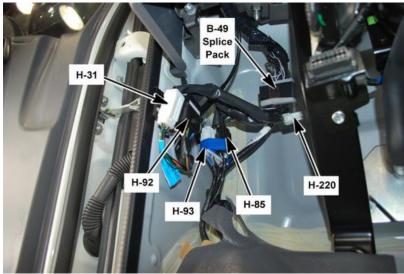


Radio Circuits with Backup Camera



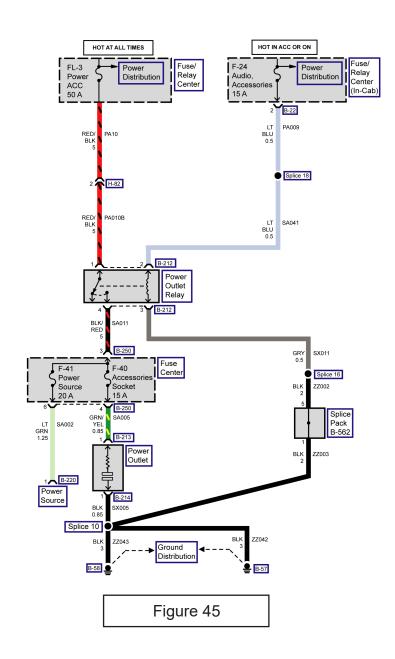
Auxiliary Power Source Circuit Diagram





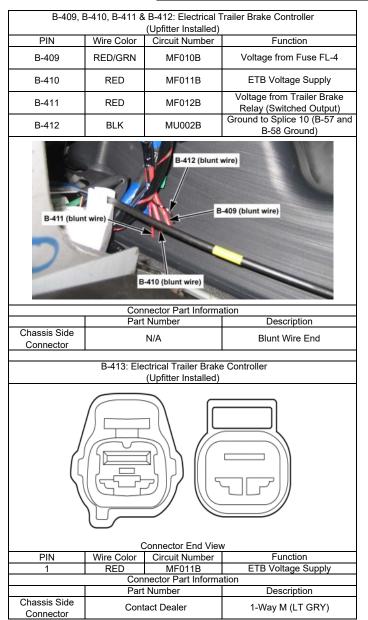
On the Left Side of the I/P, to the Left of the Steering Column

Figure 44



⁸ 14.32

Trailer Brake Controller Wiring and Activation



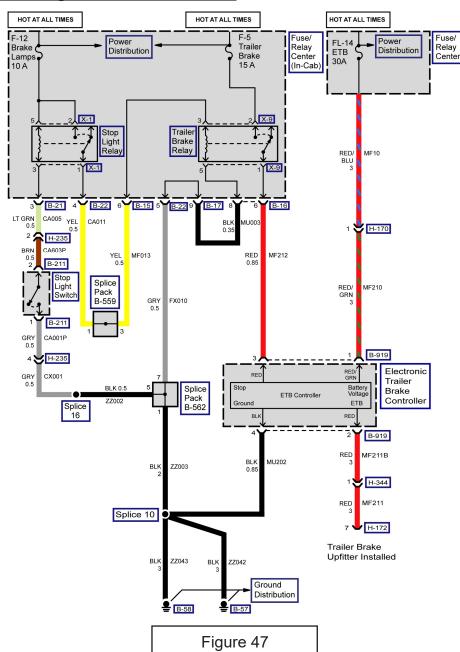


Figure 46

14.33

Gas Trailer Brake Controller Wiring and Activation

Introduction:

From model year 2009 Model Year 3500 HG / 4500 HG Gas chassis feature integrated electronic trailer brake controller wiring and a dedicated chassis wiring hamess for control of trailer stop, turn, and tail lamps. *Note: the electronic brake controller is not supplied with the vehicle.*

Integrated Electronic Brake Controller Wiring and Activation:

Wires for the electronic trailer brake controller are located behind the radio. To access these wire, remove the radio and DIN pocket from the dash, and pull out the wiring pigtail for the trailer brake controller.

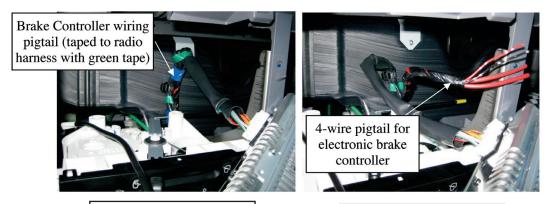


Figure 48

Figure 49

Wire Chart for the brake controller pigtail:

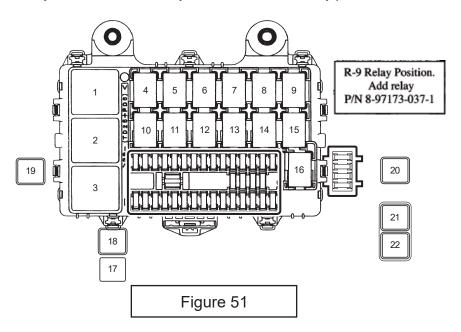
Wire#	Wire Color	Wire Size (mm²)	Wire Size (AWG Approx)	Description/Notes
1	Red/Green	3	12	Supply power for brake controller (Fused to battery 20A; continuous max)
2	Red	3	12	Output signal from brake controller (rated max 20A continuous)
3	Red	0.85	18	Brake lamp signal (12V on when brake applied. Activated by relay R-9)
4	Black	0.85	18	Ground (max continuous current 10A)

The brake signal wire (Wire # 3) is activated by installation of a relay in the "R-9" position in the center relay console located in the center of the dash just above floor level.

Figure 50

Gas Trailer Brake Controller Wiring and Activation

The R9 rela is not supplied with the vehicle. The relay can be ordered from your GM dealer. R-9 relay position:



Gas Trailer Brake Controller Wiring and Activation

The power supply for the trailer brake controller (Wire #1) is not energized from the factory.

To power the brake controller, the brake controller harness power supply must be plugged in to the chassis power supply plug.

- Locate the trailer brake controller power supply harness under the cab, behind the passenger-side head light:
- 2) Remove tape to expose the 2 connectors. The Grey connector is used to supply power to the trailer brake controller (Wire #1). This connector plugs in to the chassis trailer brake controller power supply. The Black connector is the output signal wire from the trailer brake controller (Wire #2).
- 3) Unplug the harness. Connect the Black connector (Wire #2) to an extension wire of suitable length and route the wire to the rear of the vehicle. This wire is the trailer brake controller output signal wire.

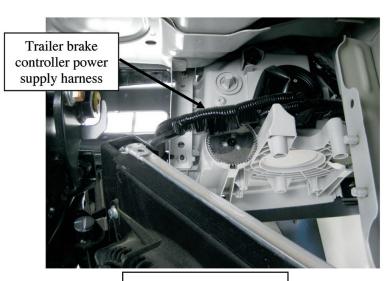


Figure 52

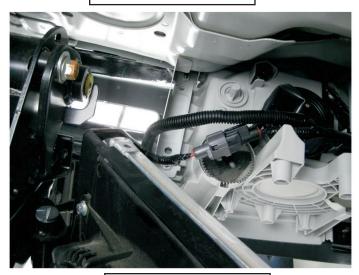
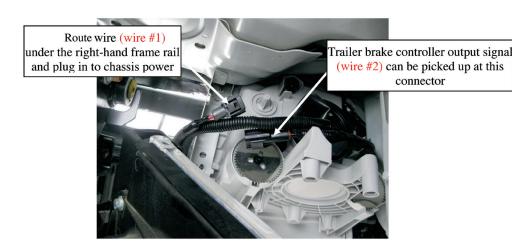


Figure 53

Gas Trailer Brake Controller Wiring and Activation

4) Remove the tape from the wire with the Grey connector (Wire #1) and route this wire underneath of the right hand frame rail.

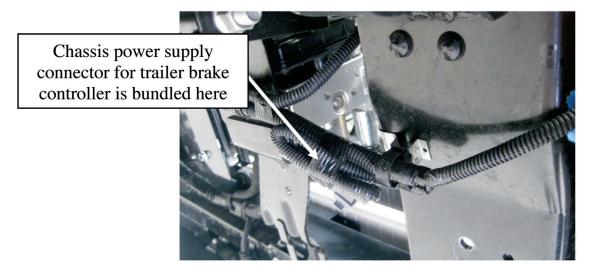


Route trailer brake power supply wire under frame rail in this region

Figure 55

Figure 54

5) Locate the chassis side power supply harness. This connector is located just inboard of the right hand frame rail, beneath the ABS control module.



4.37

Gas Trailer Brake Controller Wiring and Activation

6) Remove tape and route chassis side power supply wire to brake controller power supply wire:



Figure 57

7) Remove protective cover, and plug chassis side power supply harness into electronic trailer brake controller power supply connector (Wire #1). Secure harness to chassis with suitable tie strap.



Figure 58

Power, Ground, and Trailer Connector

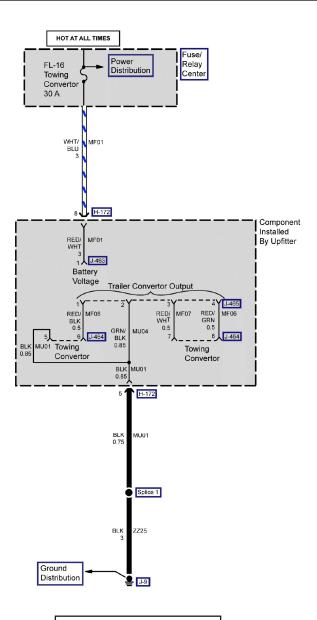
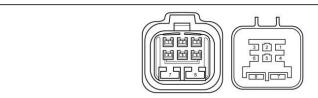


Figure 59

H-172 Chassis Harness to Towing Converter Connector

The H-172 wiring harness allows upfitters to control trailer lighting functions without having to splice into the vehicle tail lamp harness. The connector is located on the left hand frame rail (driver's side), to the rear of the transmission cross member. The connector wires are the standard 4-wire electrical light system that is used on the chassis (separate stop and turn light). If the trailer has a 3-wire electrical system (combined stop and turn light) a heavy duty tail light converter box will be necessary for proper trailer light integration.



Part I	Part Information		R020050 Furukawa 8-Way F (BLK) Upfitter Installed		Part Information		0054 Furukawa ny M (BLK)
Pin	Wire Color	Circuit No.	Function	Pin	Wire Color	Circuit No.	Function
1	GRN	MF02	Stop Light Voltage to Towing Converter	1	GRN	MF02	Stop Light Voltage from Switch
2	GRN/RED	MF03	Tail Light Voltage to Towing Converter	2	GRN/RED	MF03	Tail Light Voltage from Fuse F-27
3	GRN/BLK	MF04	Left Turn Signal Voltage to Towing Converter	3	GRN/BLK	MF04	Left Turn Signal Voltage from Flasher Module
4	GRN/WHT	MF05	Right Turn Signal Voltage to Towing Converter	4	GRN/WHT	MF05	Right Turn Signal Voltage from Flasher Module
5	BLK	MU01	Ground to Splice 1 to Towing Converter	5	BLK	M U01	Ground to Splice 1 to J-9 Ground
6	-	-	Not Used	6	-	-	Not Used
7 (MY 2024)	-	ı	Not Used	7 (MY 2024)	RED	MF211B	Trailer Brake Control
8	RED/WHT	MF01	Voltage from Fuse FL-16 to Towing Converter	8	WHT/BLU	MF01	Voltage from Fuse FL-16

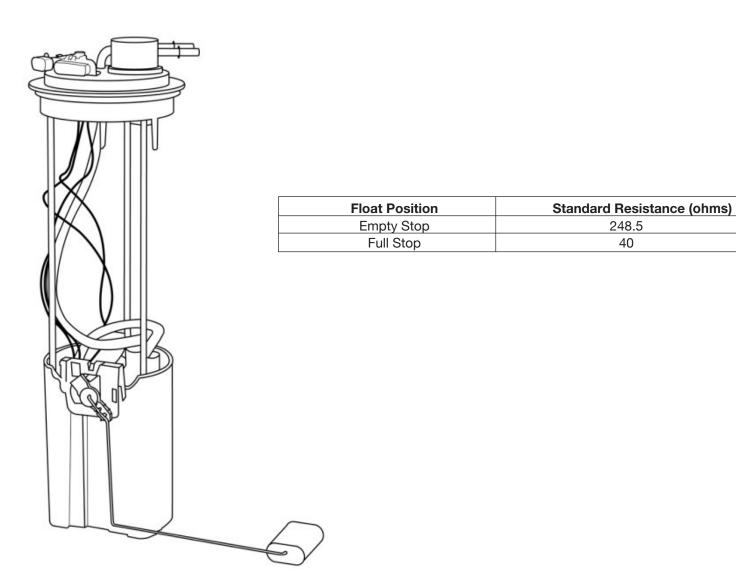


Left Inner Side of the Frame Rail, Behind the Transmission Crossmember

Figure 61

Figure 60

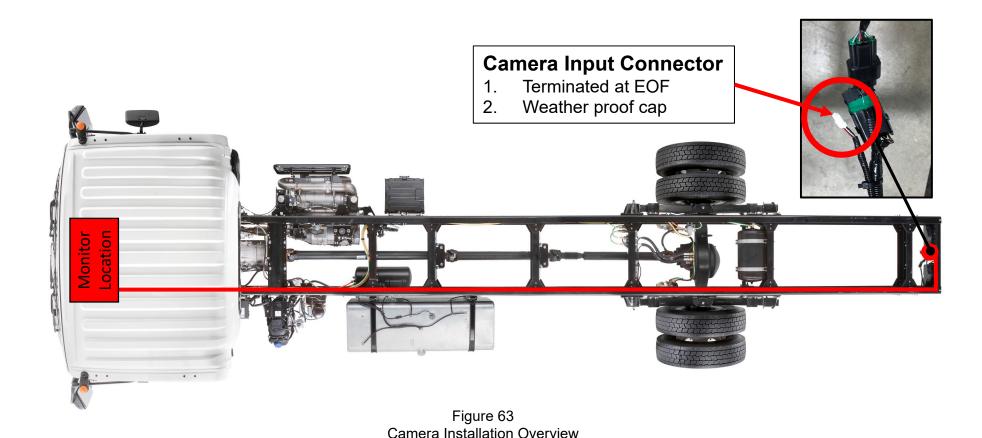
Fuel Tank Sending Unit Resistance Values



Back Up Camera Installation Information

Back Up Camera Installation Overview

- The Alpine HCE-C1100 Back Up Camera is available with RPO code I2V (Audio system with 7" diagonal color touch screen with backup camera).
- RPO codes I1V (Audio system with 7" diagonal color touch screen) and I2V (Audio system with 7" diagonal color touch screen with backup camera) will both include a pre-wired camera input connection at the end of the chassis frame. (Figure 63)



Back Up Camera Installation Kit Part Numbers

KIT PART N	KIT PART NUMBER: Contact Dealer			
NO.	PART NUMBER	DESCRIPTION	QTY	
1	8975438760	HCE-C1100 Back Up Camera	1	
2	8975438730	Camera Bracket/Shroud	1	
3	8975438750	23' Camera Extension Harness	1	

Figure 64 - Camera Install Kit Part Numbers

- When RPO code I2V (Audio system with 7" diagonal color touch screen with backup camera) is selected, the Back Up Camera Kit will be shipped in the cab, in a poly bag, band tied to the center seat. (Figure 67).
- The Back Up Camera Kit will include the parts listed in Figure 64, provided in a sealed package. The package also includes a piece of shrink tube that should be used to protect the connection between the camera pigtail and the 23' extension harness (see the circled location in Figure 66 below).



Figure 65 Camera Install Kit



Figure 66
Camera Install Kit Shrink Tube Installation



Figure 67
Camera Install Kit Shipping Location

Back Up Camera Mounting Information

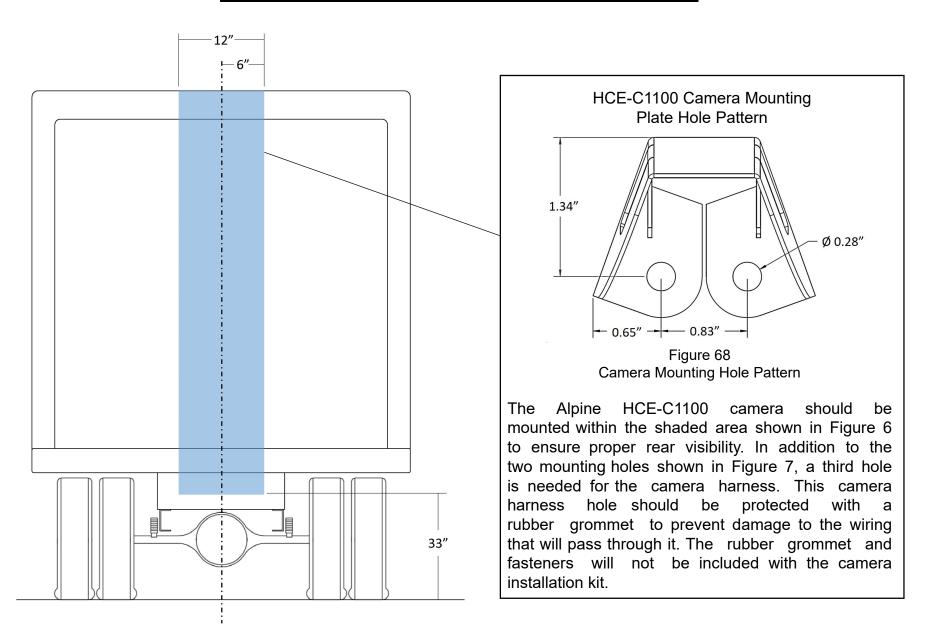


Figure 68 Camera Mounting Area

2026 Chevrolet Low Cab Forward

15.1

Diesel Electrical Symbols

	Fuse		Electronic Parts		Coil (Inductor), Solenoid Magnetic Valve
	Fusible Link		Resistor		Relay
	Fusible Link Wire		Speaker	-	
	Switch		Buzzer		Connector
	Switch	8	Circuit Breaker		Light-Emitting Diode
	Switch (Normal Close Type)		Bulb		Reed Switch
	Contact Wiring		Double-Filament Bulb	———	Condenser
Q <u>O</u>	Battery		Motor		Horn
	Diode		Variable Resistor Rheostat		Vacuum Switching Valve

2026 Chevrolet Low Cab Forward

Abbreviations

Abbreviation	Definition	Abbreviation	Definition
3A/T	6-Speed Automatic Transmission	IG	Ignition
4A/T	4-Speed Automatic Transmission	kW	kilowatt
A/T	Automatic Transmission	LH	Left hand
ABS	Anti-lock brake system	LO	Low
APP	Accelerator pedal position	LWB	Long wheelbase
ATF	Automatic Transmission Fluid	M/T	Manual Transmission
AUTO	Automatic	M/V	Magnetic valve
BRKT	Bracket	MAF	Mass airflow
C/B	Circuit breaker	MIL	Check engine light
CKP	Crankshaft position	OD	Over drive
CMP	Camshaft position	OPT	Option
COMB	Combination	PTO	Power Take Off
CONT	Control	RH	Right hand
D.R.L.	Day time running light	RR	Rear
DC	Direct current	SCV	Suction control valve
ECM	Electronic control module	ST	Start
ECT	Engine coolant temperature	STD	Standard
ECU	Electronic control unit	SW	Switch
EGR	Exhaust gas reticulation	SWB	Short wheelbase
EHCU	Electronic and hydraulic control unit	TCM	Transmission control module
FL	Fusible link	V	Volt
FRT	Front	VSV	Vacuum switching valve
FT	Fuel Temperature	W	Watt (S)
H/L	Headlight	W/	With
HI	High	W/O	Without
IAT	Intake air temperature	W/S	Weld splice
IC	Integrated circuit	WOT	Wide-open throttle

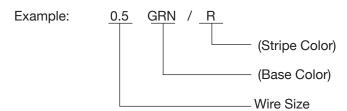
Diesel Electrical Section

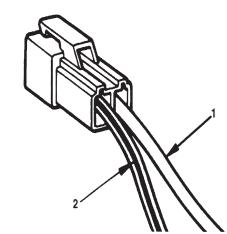
Additional information including complete chassis wiring schematics, connector locations, wire sizes, and pin connector diagrams can be obtained from our BBM

Wiring

Wire Color

All wires have color-coded insulation. Wires belonging to a system's main harness will have a single color. Wires belonging to a system's sub-circuits will have a colored stripe. Striped wires use the following code to show wire size and colors.





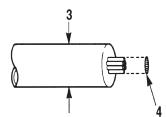
- 1. Single Color Wire
- 2. Colored Stripe Wire

Wiring (continued)

Nominal Size	Cross Sectional Area (mm²)	Outside Diameter (mm)	Allowable Current (A)	AWG Size (Cross reference)
0.3	0.372	1.8	9	22
0.5	0.563	2.0	12	20
0.85	0.885	2.2	16	18
1.25	1.287	2.5	21	16
2	2.091	2.9	28	14
3	3.296	3.6	37.5	12
5	5.227	4.4	53	10
8	7.952	5.5	67	8
15	13.36	7.0	75	6
20	20.61	8.2	97	4

Wire Size

The size of wire used in a circuit is determined by the amount of current (amperage), the length of the circuit, and the voltage drop allowed. The following wire size and load capacity are specified by AWG (American Wire Gauge). (Nominal size means approximate cross sectional area.)



- 3. Outside Diameter
- 4. Cross Sectional Area

Alternator and Battery Information

4500 HD, 4500 XD, and 5500 Diesel Engine

2.662:1 alternator pulley to crankshaft pulley

Electrical Caution: Please see note in Section 1 Introduction on page 1.9 of on the subject of "NO-START CONDITION – CLICKING OR BANGING FROM STARTER 2012-2015MY Equipped with 5.2L (4HK1) Diesel Engines".

15.5

Fuses

Replacing Fuses

- 1. Before replacing fuses, apply the parking brake, then move the selector lever to the "P" (Park) position, and turn the engine control switch to the "LOCK" position.
- 2. Place the fuse puller on the fuse and pull it out. (The fuse puller is stored in the fuse box inside the cab.)
- 3. If the fuse appears as shown in the right hand side of the diagram at left, the fuse is blown. Replace with a spare fuse. (Spare fuses are stored in the fuse box inside the cab.)

Replacing Relays

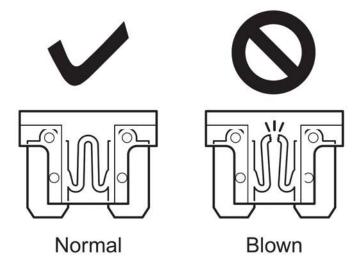
1. Before replacing the relays, contact the nearest Isuzu Dealer.

Fusible Links

- 1. The fusible link is primarily used to protect circuits where high amounts of current flow and where it would not be practical to use a fuse. For example, the starter circuit. When a current overload occurs, the fusible link melts open and interrupts the flow of current so as to prevent the rest of the wiring harness from burning.
- 2. Determine the cause of the overload before replacing the fusible link. The replacement fusible link must have the same amperage specification as the original fusible link.
- 3. Never replace a blown fusible link with fusible link of a different amperage specification. Doing so can result in an electrical fire or other serious circuit damage.

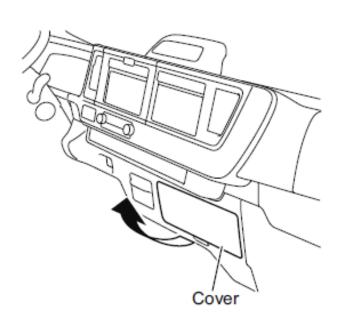


- · Always use fuses specified by Isuzu. Using fuses with a rating other than that specified, or using wire or tin foil, etc., could result in fire or damage.
- · If the new fuses blow right away and the cause is unknown, contact the nearest Isuzu Dealer.
- Do not inspect or replace fuses when the engine control switch is in the "ON" position. Doing so may lead to an accident.
- · When inspecting fuses, be sure to park the vehicle on flat, level ground and apply chocks to the wheels.

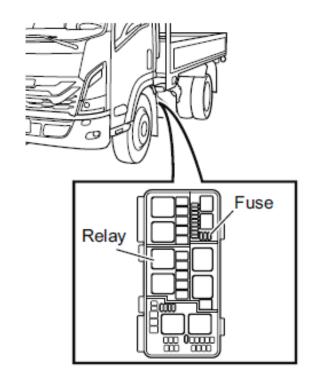


Fuse and Relay Box Locations

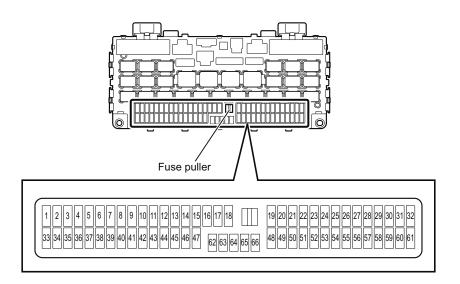
Interior



Exterior



Fuse Location (interior)



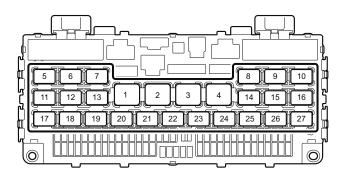
No.	Description	Rating
1	HEAD LIGHT HI(RH)	10A
2	AUDIO REVERSE MUTE	10A
3	HEAD LIGHT HI(LH)	10A
4	HEAD LIGHT LO(RH)	10A
5	HEAD LIGHT LO(LH)	10A
6	SRS	5A
7	CONTROLLER(ACC)	15A
8	_	5A
9	TRAILER BRAKE	25A
10	_	10A
11	ACC.SOCKET, AUDIO, USB	15A
12	_	10A
13	_	10A
14	METER(IGN)	5A
15	TRANSMISSION(IGN)	10A
16	POWER SOURCE(ACC)	20A
17	CENTRAL GATEWAY(IGN)	5A
18	_	15A
19	BLOWER	25A

No.	Description	Rating
20	TURN, HAZARD	15A
21	_	10A
22	MIRROR HEATER	15A
23	WIPER	25A
24	TRANSMISSION(BATT)	10A
25	BACK UP LIGHTS	10A
26	AIR CONDITIONER(BATT)	15A
27	_	10A
28	BODY CONTROL(BATT)	10A
29	ELECTRIC PARKING BRAKE(IGN)	10A
30	ABS,STEREO CAMERA(IGN)	5A
31	I/O CONTROLLER(BATT)	15A
32	FOG LIGHTS	10A
33	DRL	10A
34	BRAKE LIGHTS	10A
35	TRAILER BRAKE	15A
36	BRAKE LIGHTS SWITCH	10A
37	ILLUMINATIONS	10A

No.	Description	Rating
38	TAIL LIGHTS	10A
39	KEYLESS ENTRY(IGN)	5A
40	AUDIO(BATT)	10A
41	I/O CONTROLLER(IGN)	10A
42	MARKER LIGHTS	10A
43	_	10A
44	ENGINE CONTROL SWITCH	10A
45	POWER TAKE OFF, HSA	10A
46	CONTROLLER(IGN)	10A
47	MOBILEYE	10A
48	AIR CONDITIONER(IGN)	10A
49	HEAD LIGHTS WASHER	25A
50	BODY CONTROL(IGN)	10A
51	HORN	15A
52	_	5A

No.	Description	Rating
53	CONTROLLER(BATT)	15A
54	METER(BATT)	10A
55	KEYLESS ENTRY(BATT)	10A
56	_	10A
57	_	10A
58	STARTER	10A
59	CORNERING LIGHTS	5A
60	CENTRAL GATEWAY(BATT)	5A
61	STEREO CAMERA(BATT)	10A
62	SPARE	_
63	SPARE	
64	SPARE	_
65	SPARE	_
66	SPARE	_

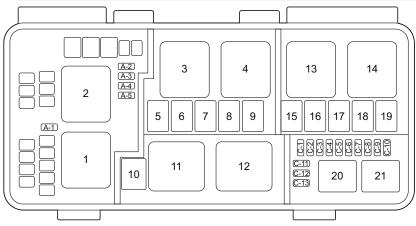
Relay Location (interior)



No.	Description
1	Accessory
2	Ignition main
3	Blower motor
4	Wiper key on
5	_
6	Clearance lights cut
7	Power window (rear) (crew cab model)
8	_
9	_
10	_
11	DRL
12	_
13	_
14	Tail lights

No.	Description
15	_
16	Headlights high
17	DRL
18	Headlights low
19	Trailer brake (model with trailer)
20	Power window
21	Headlights washer
22	Back up lights
23	Washer motor
24	Horn
25	_
26	_
27	Fog lights (model with fog lights)

Relay and Fuse Locations (exterior)



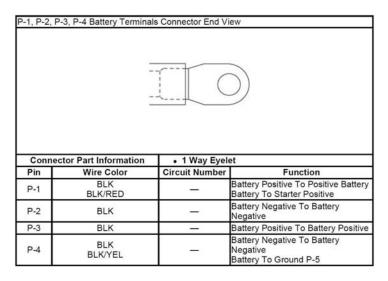
No.	Relay name
1	Starter
2	_
3	_
4	_
5	_
6	_
7	Fuel heater
8	_
9	_
10	Rear dome light
11	_
12	NOx & Urea
13	ECM main
14	Ignition chassis
15	Marker lights
16	_
17	Heater valve
18	_
19	Condenser fan
20	A/C compressor
21	Starter cut

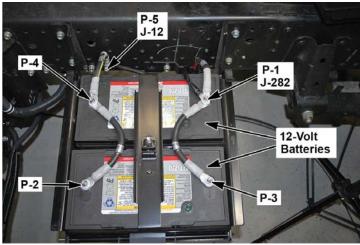
No.	Fuse name	Rating
A-1	Air conditioner	20A
A-2	ECM (battery)	10A
A-3	_	_
A-4	_	_
A-5	_	_
C-1	SCR	20A
C-2	Power source	15A
C-3	Marker lights	20A
C-4	Chassis ignition	15A
C-5	SCR ignition	10A
C-6	ECM ignition	15A
C-7	ECM main	20A
C-8	PM sensor	15A
C-9	PTO	10A
C-10	_	_
C-11	Chassis (battery)	10A
C-12	_	_
C-13	_	_

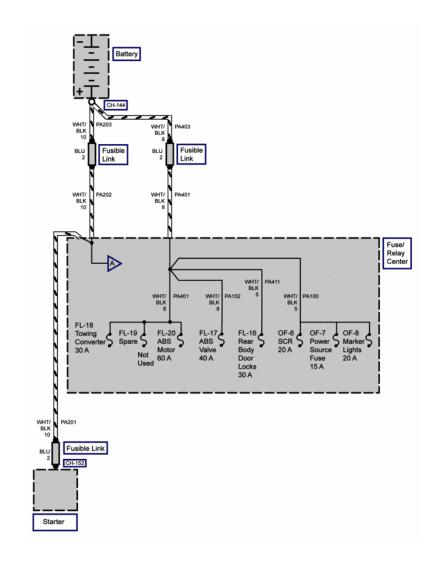
2026 Chevrolet Low Cab Forward

15.10

Battery Cable Tightening Torques

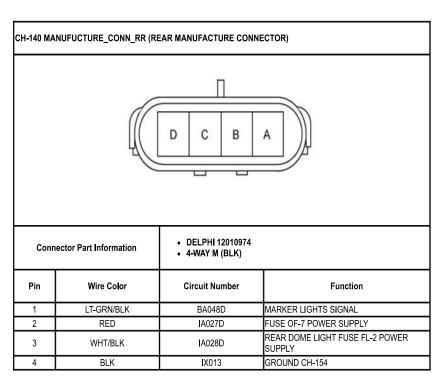




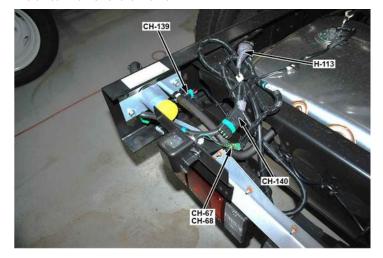


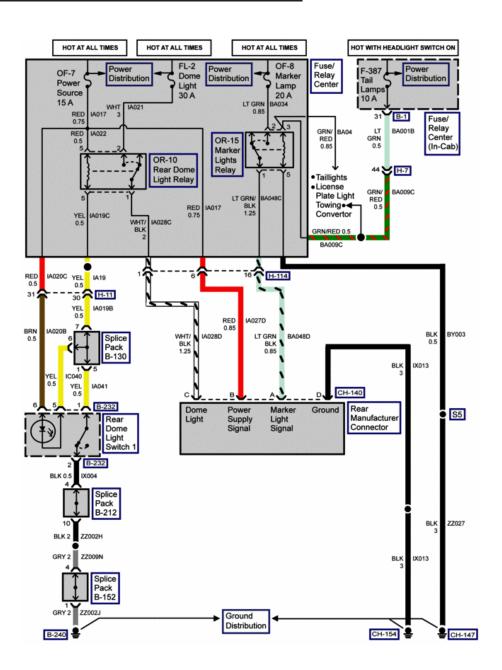
Tightening Torques: 15 N-m (11 lb-ft)

Rear Manufacturer Connector Location and Diagram

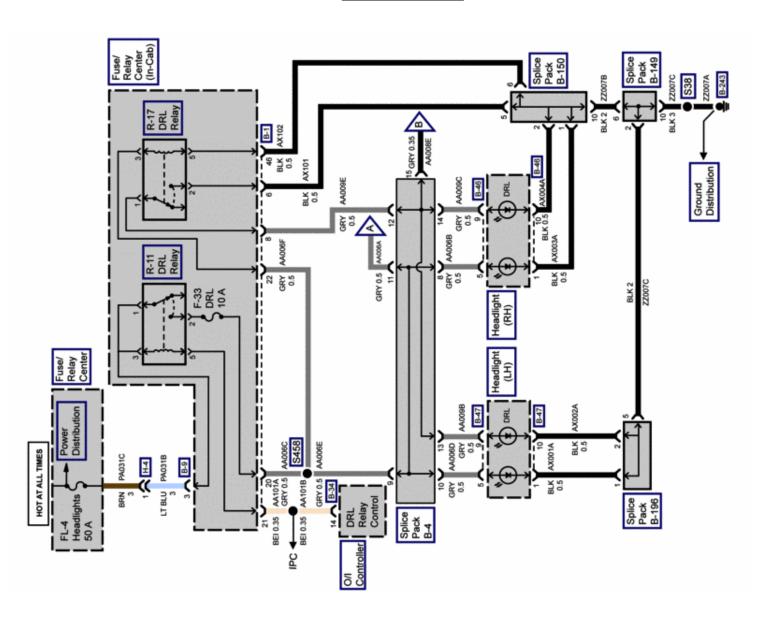


Left Rear Corner of the Frame

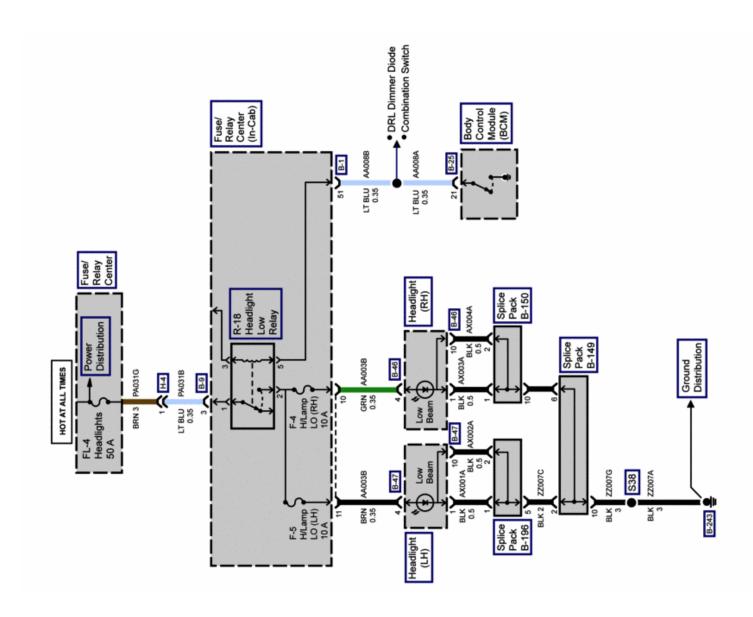




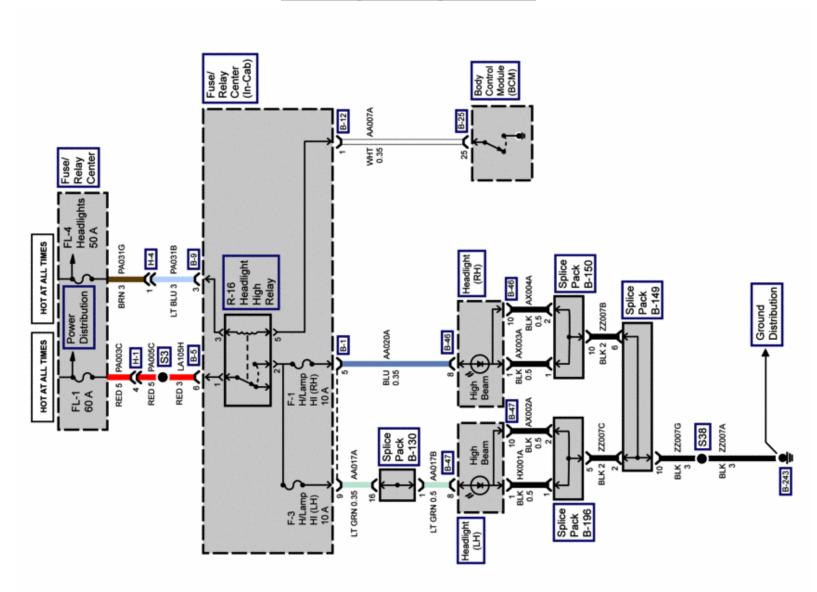
Headlights



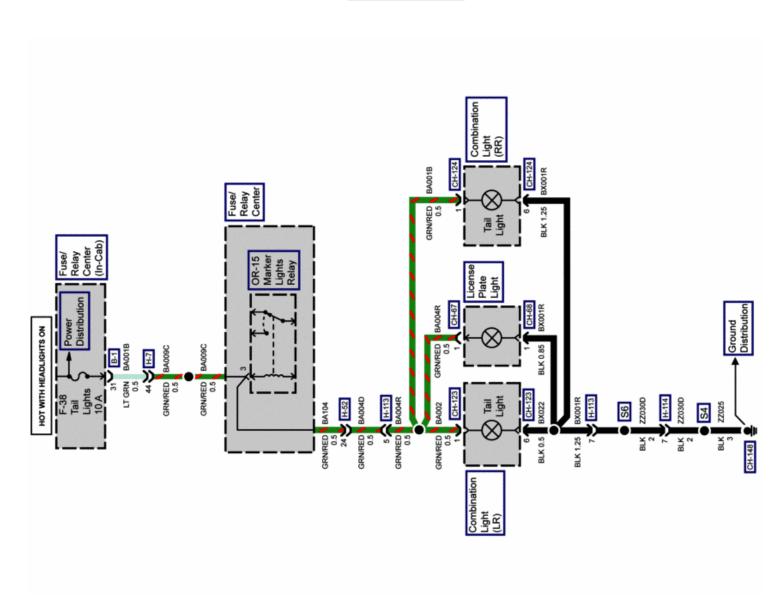
Headlights Low Beam



Headlights High Beam



Tail Lights

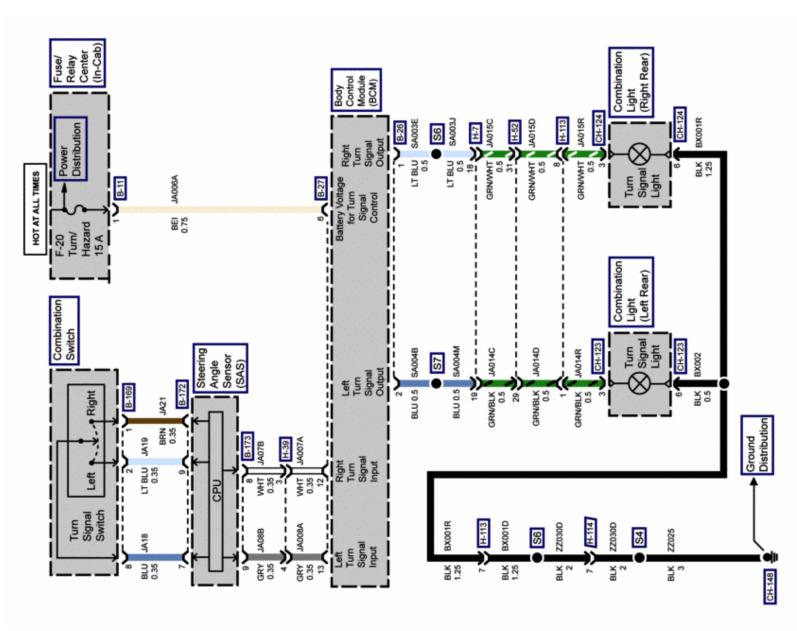


Rear Combination Lights Connector

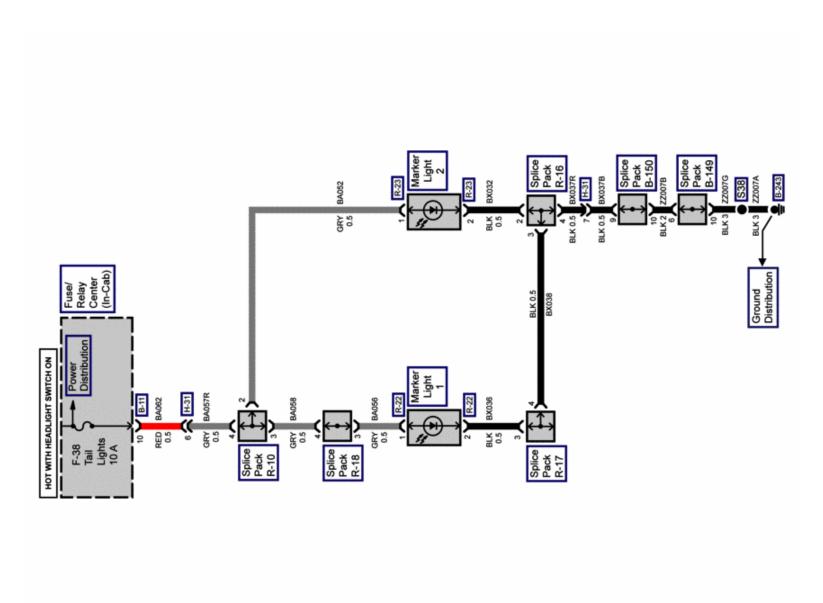


Left Rear Corner of the Frame

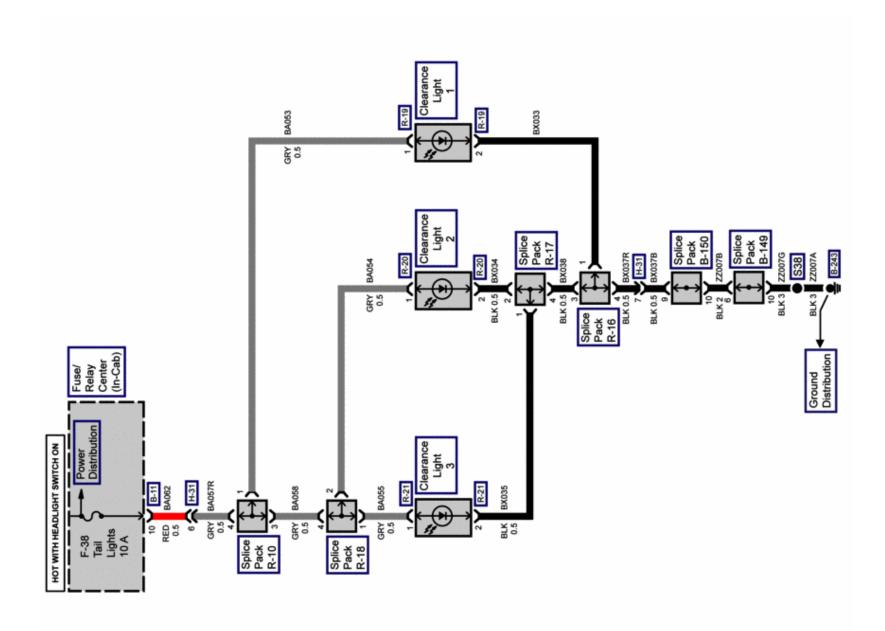
Rear Turn Signal Lights



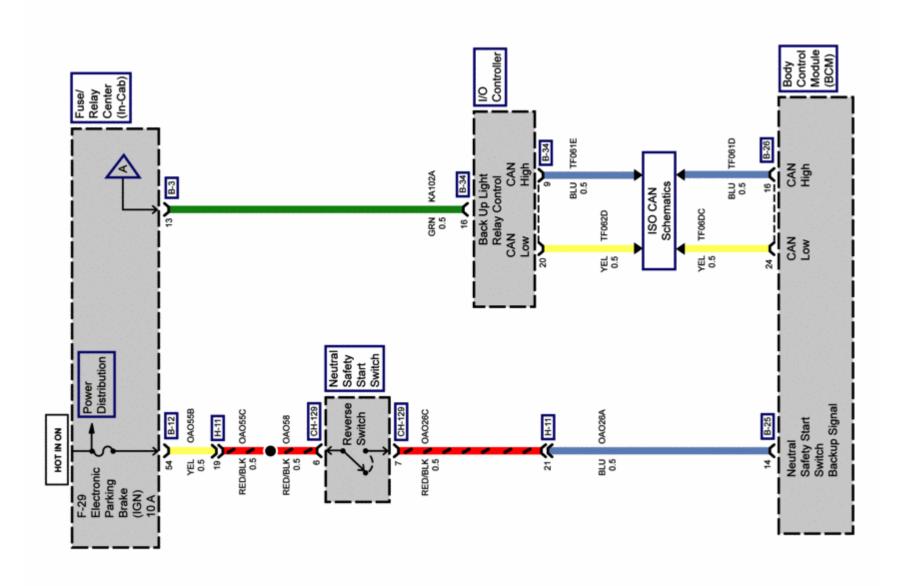
Roof Marker Lights



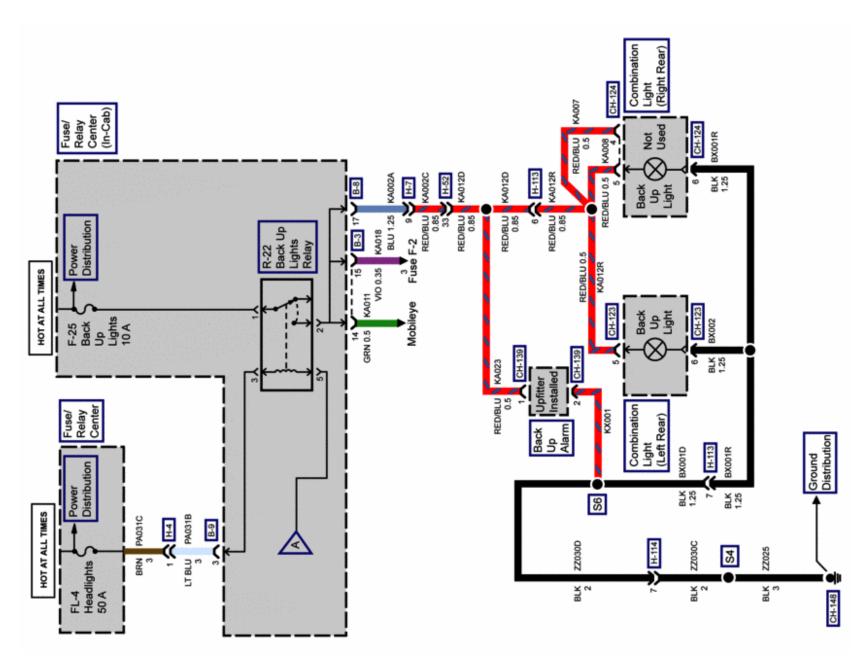
Roof Clearance Lights



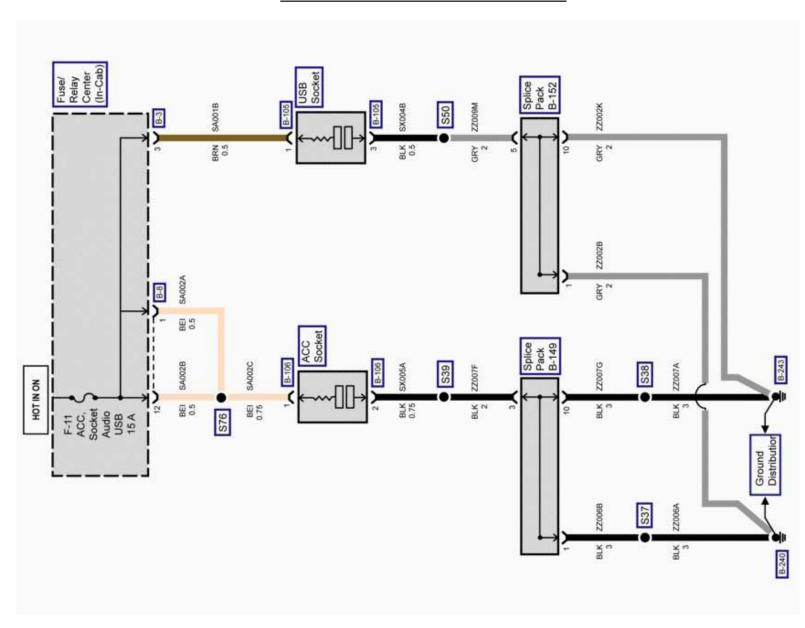
Back Up Light Circuit



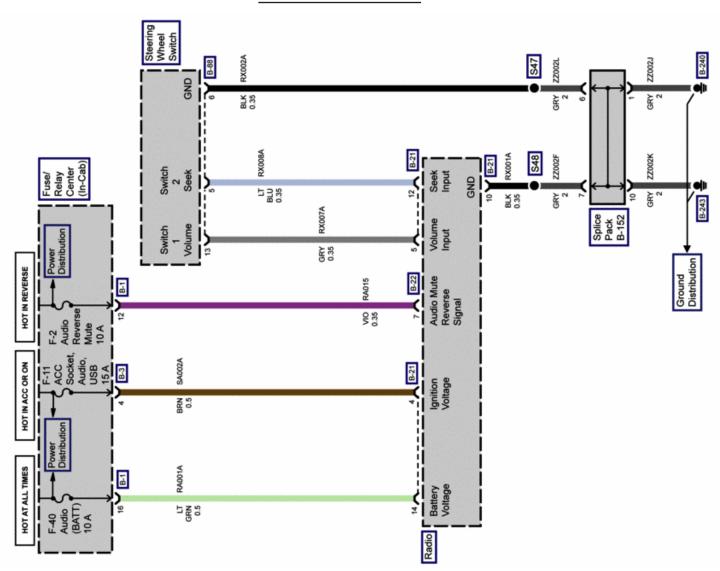
Back up Alarm Circuit



Power Outlet, USB Outlet

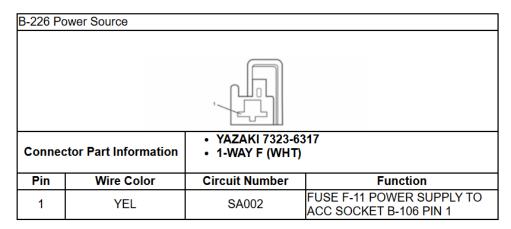


Radio Circuits

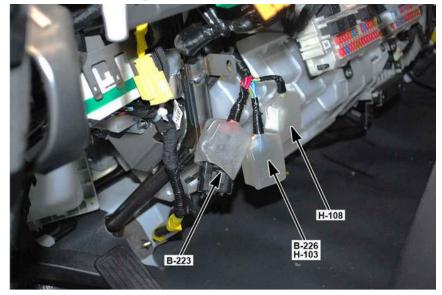


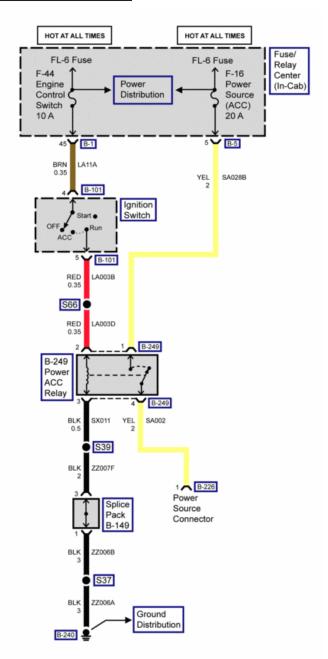
2026 Chevrolet Low Cab Forward

Auxiliary Power Source Circuit Diagram

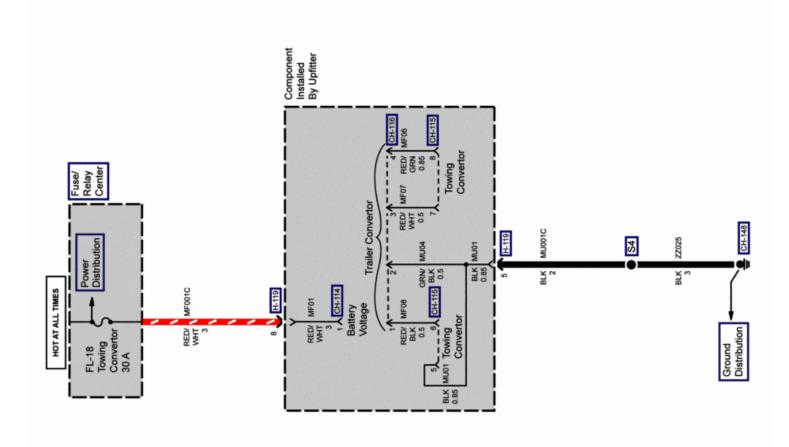


Lower Instrument Panel, Next to the Accelerator Pedal

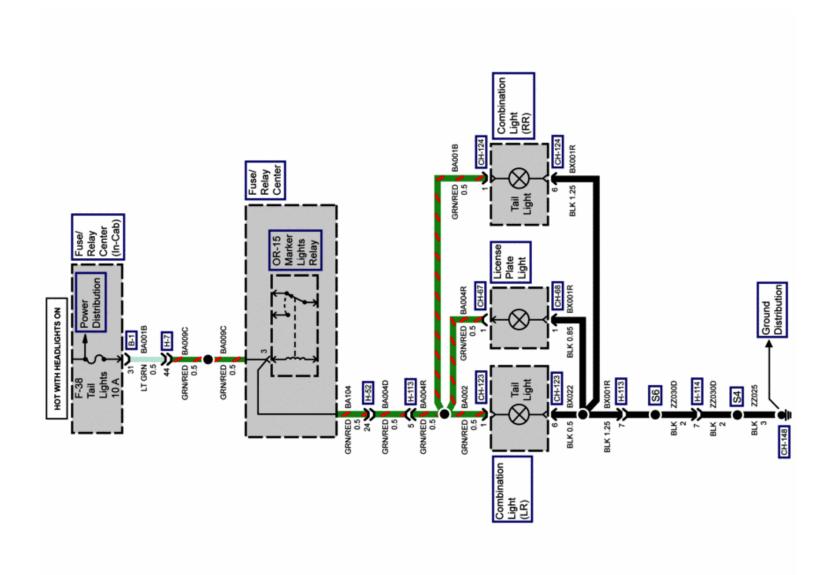




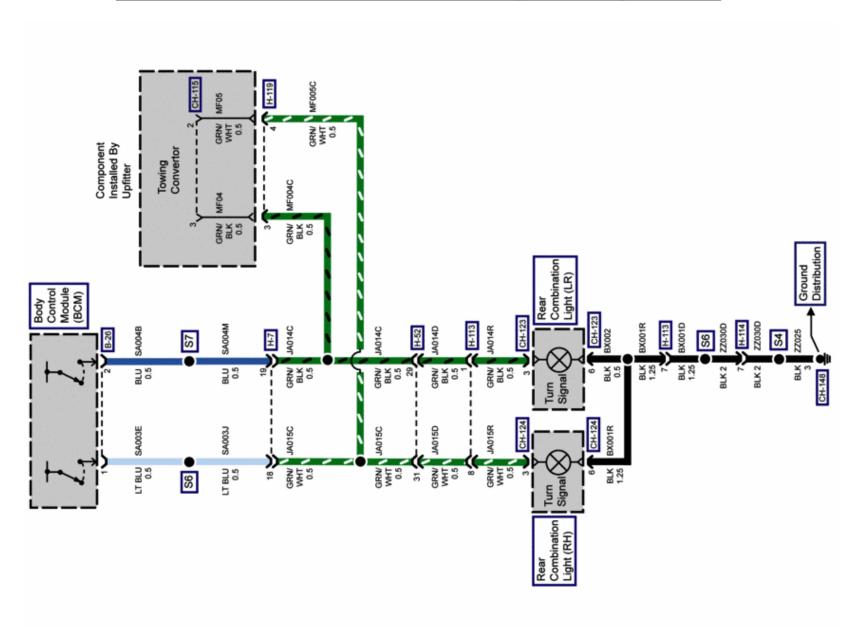
Trailer Brake Connector Circuit Diagram (Page 1 of 5)



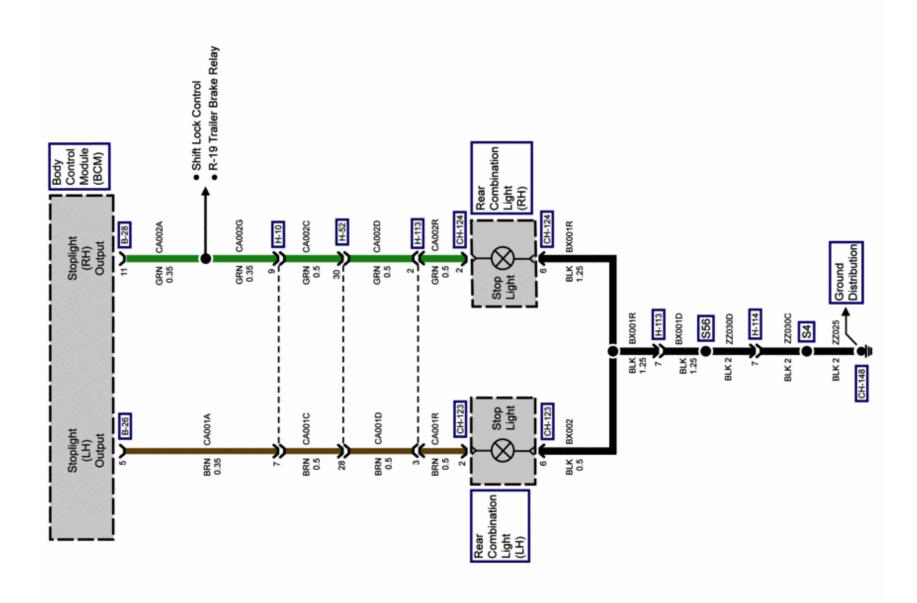
Trailer Brake Connector Circuit Diagram (Page 2 of 5)



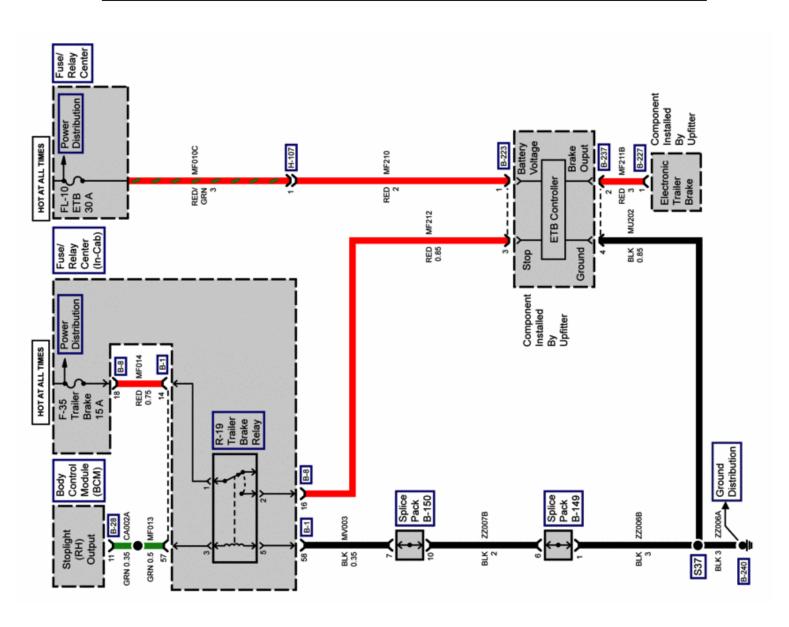
Trailer Brake Connector Circuit Diagram (Page 3 of 5)



Trailer Brake Connector Circuit Diagram (Page 4 of 5)



Trailer Brake Connector Circuit Diagram (Page 5 of 5)



Model Year Diesel Trailer Brake Controller Wiring, Activation and Trailer Wiring Connector

Introduction:

Beginning with the 2011 Model Year LCF feature integrated electronic trailer brake controller wiring and a dedicated chassis wiring harness for control of trailer stop, turn, and tail lamps. *Note: the electronic brake controller is not supplied with the vehicle.*

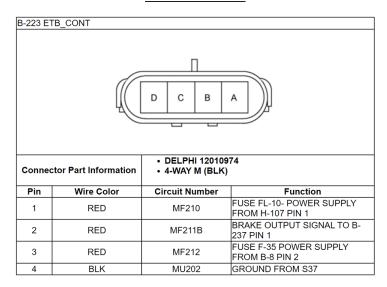
Integrated Electronic Brake Controller Wiring and Activation:

The connection point for an electronic trailer brake controller is located behind the dash panel within the 4-pin connector shown below (B-123). The brake signal wire in Pin 2 (MF211B) is activated by the installation of a relay in the "R-19" position within the in-cab relay console located in the center of the dash just above floor level.

B-223 Location

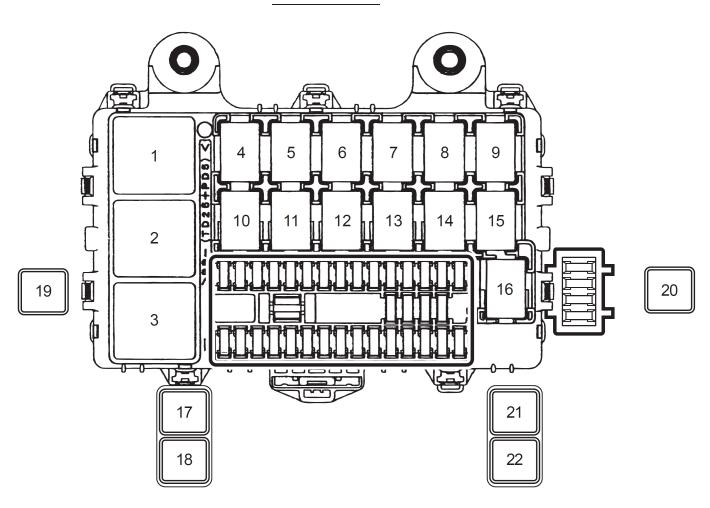


B-223 Connector

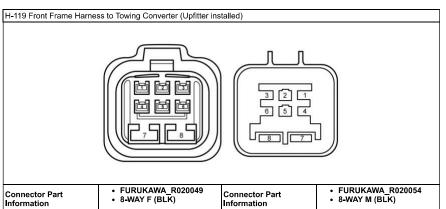


The R19 relay is not supplied with the vehicle. The relay can be ordered from your Authorized Chevrolet Dealer's parts Department.

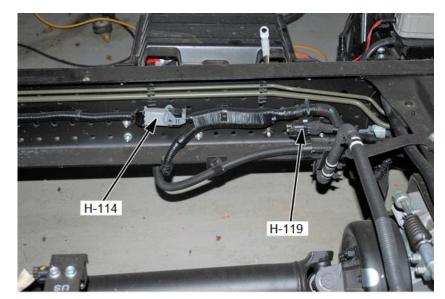
In-cab Fuse Panel



Trailer Wiring Connector Diagram



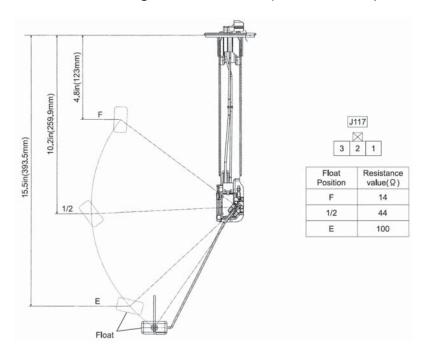
Connecte Informati		• FURUI • 8-WAY	KAWA_R020049 F (BLK)	Connecto Informati	Dr Part . O MAY M /E		KAWA_R020054 M (BLK)
Pin	Wire Color	Circuit No.	Function	Pin	Wire Color	Circuit No.	Function
1	GRN	MF02	STOP LIGHT (RH) TOWING OUTPUT TO CH-115 PIN 1	1	GRN	MF002C	STOP LIGHT (RH) TOWING OUTPUT FROM H-10 PIN 9
2	GRN/RED	MF03	FUSE F-38 POWER SUPPLY TO CH- 115 PIN 4	2	GRN/RED	MF203	FUSE F-38 POWER SUPPLY FROM H-7 PIN 44
3	GRN/BLK	MF04	LEFT REAR TOWING TURN SIGNAL TO CH-115 PIN 3	3	GRN/BLK	MF004C	LEFT REAR TOWING TURN SIGNAL FROM H-7 PIN 19
4	GRN/WHT	MF05	RIGHT REAR TOWING TURN SIGNAL TO CH-115 PIN 2	4	GRN/WHT	MF005C	RIGHT REAR TOWING TURN SIGNAL FROM H-7 PIN 18
5	BLK	MU01	GROUND TO CH- 115 PIN 5, CH-116 PIN 2	5	BLK	MU001C	GROUND FROM S4
6	-	-	NOT USED	6	RED/BLU	MF209C	NOT USED
7	-	-	NOT USED	7	RED	MF211C	NOT USED
8	RED/WHT	MF01	FUSE FL-18 POWER SUPPLY TO CH-114 PIN 1	8	RED/WHT	MF001C	FUSE FL-18 POWER SUPPLY



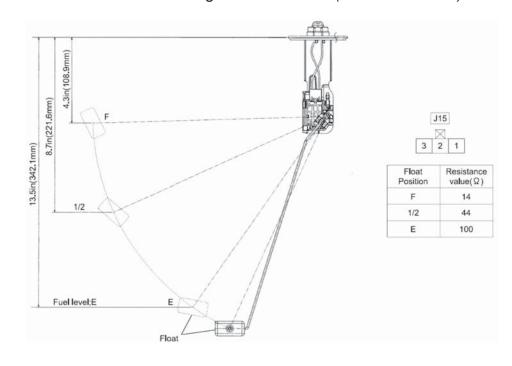
Left Inner Side of the Frame Rail, Next to the Batteries.

Fuel Tank Sending Unit Resistance (In-Frame Tank & Side Frame Tank)

Fuel Tank Sending Unit Resistance (In-Frame Tank)



Fuel Tank Sending Unit Resistance (Side Frame Tank)



CAN Interface Converter Information

CAN Interace Converter Overview

- Starting with the 2025MY LCF Diesel, read-only SAE J1939 CAN information is available from the chassis without the need for additional equipment.
 - LCF diesel chassis from 2017-2024MY require an optional CAN Interface Converter to access ready-only SAE J1939 CAN information. See the corresponding model year's Body Builder Guide for additional details.
- An optional extension harness is available that converts the standard connector into an SAE J1939 connector.
- The CAN data broadcasted from the CAN Interface Converter module is a read only SAE J1939 broadcast; commands, requests, and acknowledgements are not supported.
- The Isuzu N-Series uses twisted pair cables with no shield. The electrical properties (resistance, impedance, capacitance, etc.) are defined in SAE J1939-15 Reduced Physical Layer.

⁸ 15.36

Instructions for FMS Jumper Harness Installation

- The optional FMS Jumper Harness (P/N 7552536010) provides a standard 9-pin heavy duty connector for the integration of fleet management systems (FMS) and other telematics devices that require read-only CAN information from the chassis.
- To comply with California regulations, the final location of the provided 9-pin heavy duty connector (black) should not be within proximity of the existing chassis OBD connector. Figure 1 shows the restricted area where connector mounting should be avoided.
- The FMS Jumper Harness is located within the passenger side tray below the airbag as shown in Figure 2.
 - 1 Remove the FMS Jumper Harness from its bag and find the connectors on either end.
 - a) Identify the white 6-pin female connector located on one end of the harness shown in Figure 3.
 - b) Identify the black 9-pin heavy duty connector located on the other end of the harness Figure 3.
 - (2) Find the white 6-pin chassis side connector located at the edge of the dash adjacent to the cup holder as shown in Figure 4.
 - a) Connect the white 6-pin female end of the FMS Jumper Harness with this connector.
 - 3) Route the FMS Jumper Harness so that the 9-pin heavy duty connector's final location is outside of the restricted area indicated in Figure 1.
 - a) The harness is 3 feet in length. Harness routing and the mounting location of telematics devices are at the installer's discretion.
 - (4) Connect your FMS or other CAN device to the 9-pin heavy duty connector of the FMS Jumper Harness.

Important Note:

See Body Builder Guide Section 2 - Electrical Wiring and Harnessing for chassis wiring guidance

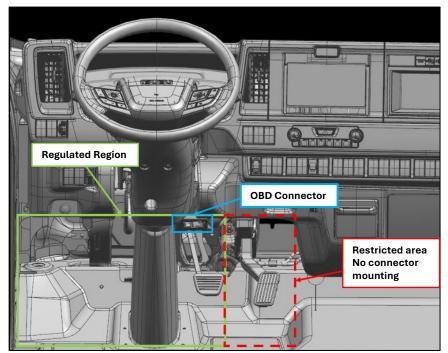
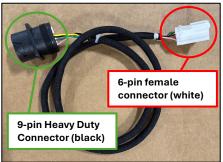




Figure 2



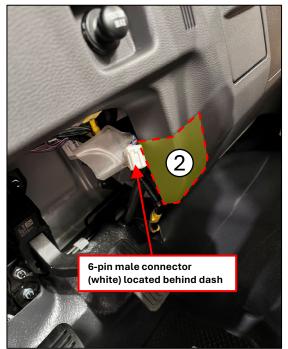


Figure 1 Figure 3 Figure 4

CAN Interface Converter General Guidelines

- Upfitters link their own control unit or telematics device to the CAN Interface Converter module via a connector. The upfitter is responsible for ensuring that the external CAN bus is used correctly.
- Control units connected to a CAN bus must be able to handle up to 100% of the CAN bus load and have no significant functional limitations or malfunctions.
- Avoid closing control loops over the CAN. The access time is relatively long and fast control loops require large amounts of bandwidth.
- Avoid CAN communication when the engine control switch is in the LOCK or ACC positions.
- Avoid CAN communication during the start sequence of the control units connected to the external CAN bus.
- During an engine start sequence (starter motor turning) the supply voltage can be low and communication from the CAN Interface Converter module cannot be guaranteed.
- Fault codes related to communication with the CAN Interface Converter module should not be set when the system voltage is under 9V.
- When the engine control switch is turned to the ON position, the CAN Interface Converter module starts sending messages within a few seconds.

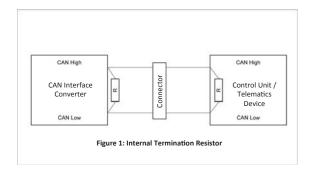
CAN Interace Converter Connection Guidelines

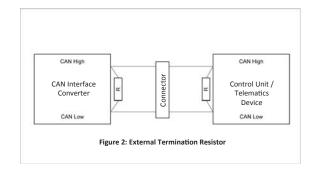
Termination Resistor

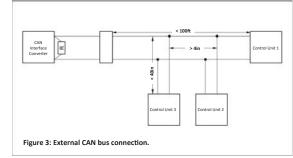
- The CAN bus cable must be connected using a 120 Ohm resistor at each end in accordance with SAE J1939-15 Physical Layer. This allows CAN communication without interference.
 - The CAN Interface Converter harness contains one of the two 120 Ohm resistors.
 - The second termination resistor is required at the control unit / telematics device end of the harness.
- Certain devices have a built-in termination resistor (Figure 1) while others are not terminated. If the control unit is not equipped with an internal termination resistor, an external termination resistor must be connected as close to the control unit as possible (Figure 2).

Harness Connection

- The harness should be as short as possible to minimize the effect of electromagnetic interference.
- The length of the main cable must not exceed 100 feet between the CAN Interface Converter connector and Control Unit 1 (Figure 3).
- If more than one control unit is connected, the length of the cables between the main cable and additional control unit should not exceed 40 inches (Figure 3).
- There should be at least 4 inches between the nodes of each control unit cable on the main bus cable (Figure 3).
- The number of devices in the external CAN network should not exceed 9 control units.

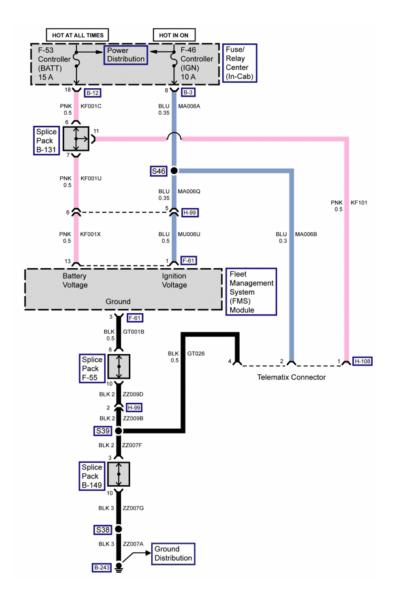




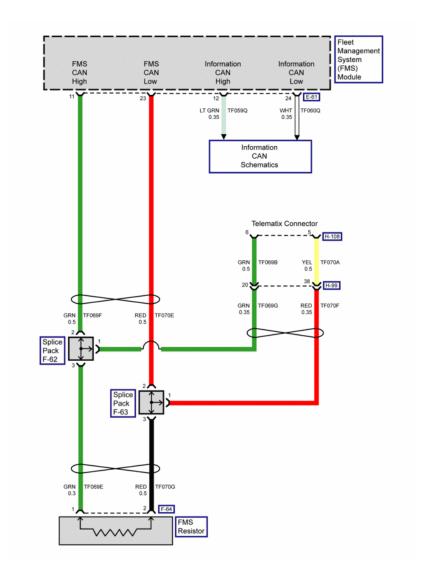


CAN Interface Converter Circuit Diagram

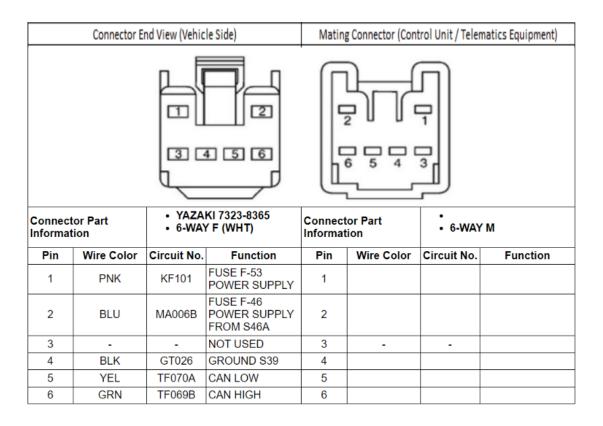
Module Power and Ground



Communication



CAN Interface Converter Connector



CAN Interface Converter Output

Summary of the messages supported by the CAN interface. (Messages are sent to the external CAN bus from the vehicle.)

Message sent from vehicle	Identifier (Hex)	Specification	ISUZU FMS Interface
Cruise Control/Vehicle Speed 1	18 FE F1 00	SAE J1939-71	*
DM1(DTC record)	18 FE CA **	SAE J1939-73	*
Electronic Engine Controller 1	0C F0 04 00	SAE J1939-71	*
Electronic Engine Controller 2	0C F0 03 00	SAE J1939-71	*
Electronic Transmission Controller 5	1C FE C3 41	SAE J1939-71	*
Electronic Transmission Controller 2	18 F0 05 03	SAE J1939-71	*
Engine Hours, Revolutions	18 FE E5 41	SAE J1939-71	*
Engine Temperature 1	18 FE EE 00	SAE J1939-71	*
FMS-standard Interface Identity/Capabilities	1C FD D1 41	SAE J1939-71	*
Fuel Consumption (Liquid)	18 FE E9 41	SAE J1939-71	*
Fuel Economy (Liquid)	18 FE F2 41	SAE J1939-71	*
High Resolution Vehicle Distance	18 FE C1 41	SAE J1939-71	*
Idle Operation	18 FE DC 41	SAE J1939-71	*
Auxiliary Input/Output Status 1	18 FE D9 00	SAE J1939-71	*
Time/Date	18 FE E6 41	SAE J1939-71	*
Vehicle Distance	18 FE E0 41	SAE J1939-71	*
Vehicle Identification	18 FE EC 41	SAE J1939-71	*
Wheel Speed Information	18 FE BF 0B	SAE J1939-71	*

NOTES

^{*} CAN Interface provides this message. Ap-

^{**} plies to all values between 00h and FFh.

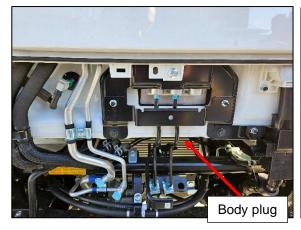
Cab Body Plug

To avoid drilling through the cab floor for electrical wiring, there is a body plug access point for routing wires into/out of the cab. Follow the instructions below to access this body plug.

Disassembly of Front Grille

- 1. Remove one (1) phillips head screw <REUSE>.
- 2. Remove grille from cab by gently pulling outward to release five (5) top clips, one center clip, and two (2) lower clips.

3. From front of vehicle, locate body plug in middle of vehicle behind brake lines. Remove plug, cut approximately a 1"x1" X in the middle, set aside.





Upper Dash Trim Removal

• <u>STEP 1</u>: Remove radio trim (1.A) and retaining screw (1.B). Gently pull dash trim (no more than 1/2") outward.



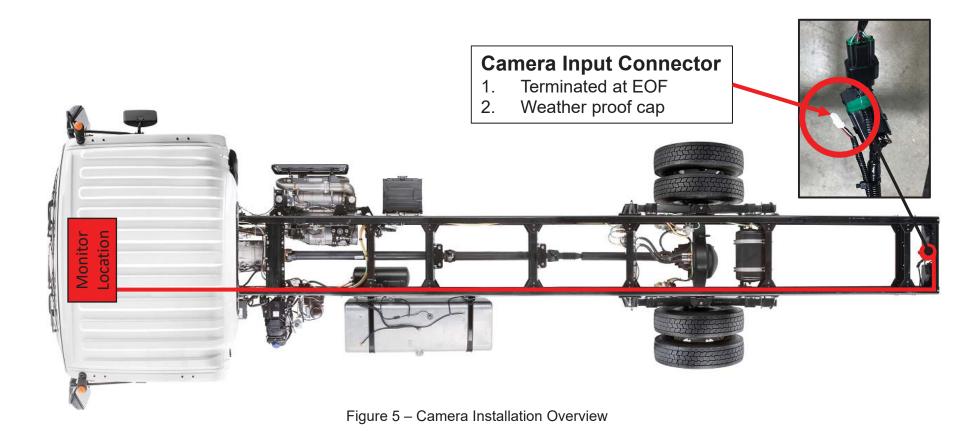
• <u>STEP 2</u>: Remove air bag indicator trim (2.A) and air bag indicator harness (2.B). Remove connectors from switches and or blanking plates (make note of each connectors position before removal). Set aside dash trim.



Back Up Camera Installation Information

Back Up Camera Installation Overview

- The Alpine HCE-C1100 Back Up Camera is available with RPO code I2V (Audio system with 7" diagonal color touch screen with backup camera).
- RPO codes I1V (Audio system with 7" diagonal color touch screen) and I2V (Audio system with 7" diagonal color touch screen with backup camera) will both include a pre-wired camera input connection at the end of the chassis frame. (Figure 5)



Back Up Camera Installation Kit Part Numbers

KIT PART N	IUMBER:	8975462720	
NO.	PART NUMBER	DESCRIPTION	QTY
1	8975438760	HCE-C1100 Back Up Camera	1
2	8975438730	Camera Bracket/Shroud	1
3	8975438750	23' Camera Extension Harness	1

Figure 6 – Camera Install Kit Part Numbers

- When RPO code I2V (Audio system with 7" diagonal color touch screen with backup camera) is selected, the Back Up Camera Kit will be shipped in the cab, in a poly bag, band tied to the center seat. (Figure 9).
- The Back Up Camera Kit will include the parts listed in Figure 6, provided in a sealed package. The package also includes a piece of shrink tube that should be used to protect the connection between the camera pigtail and the 23' extension harness (see the circled location in Figure 8 below).



Figure 7 – Camera Install Kit



Figure 8 – Camera Install Kit Shipping Location



Figure 9 – Camera Install Kit Shipping Location

Back Up Camera Mounting Information

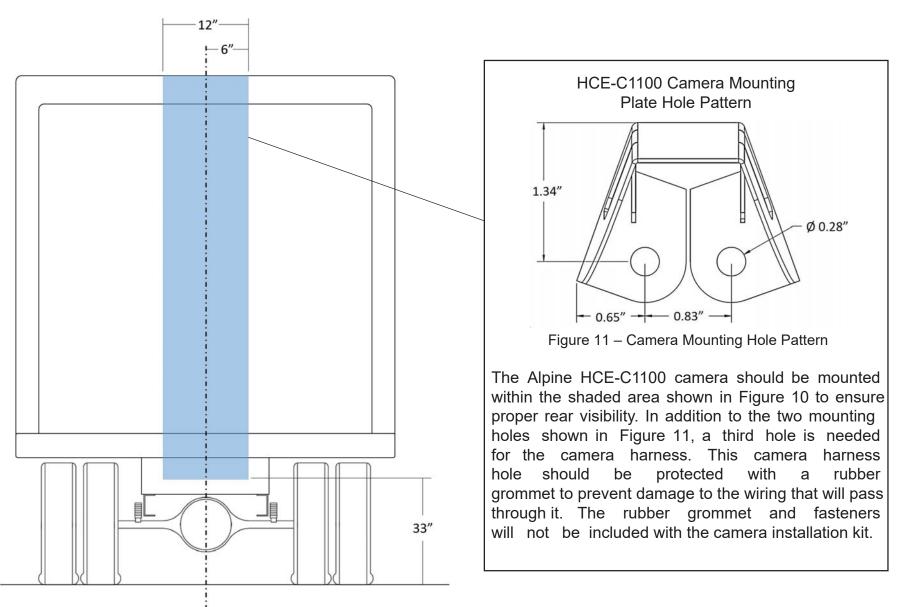


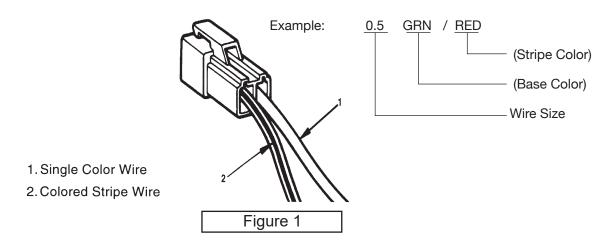
Figure 10 - Camera Mounting Area

Diesel Electrical Section

Additional information including complete chassis wiring schematics, connector locations, wire sizes, and pin connector diagrams can be obtained from our BBM

Wire Colors

All wires have color-coded insulation. Wires belonging to a system's main harness will have a single color. Wires belonging to a system's sub-circuits will have a colored stripe. Striped wires use the following code to show wire size and colors.

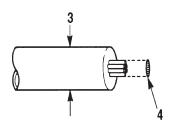


Abbreviations are used to indicate wire color within a circuit diagram. Refer to the following table.

Color-Coding	Meaning	Color-Coding	Meaning
В	Black	BR	Brown
W	White	LG	Light Green
R	Red	GR	Grey
G	Green	Р	Pink
Υ	Yellow	LB	Light Blue
L	Blue	V	Violet
0	Orange		

Wire Sizes

The size of wire used in a circuit is determined by the amount of current (amperage), the length of the circuit, and the voltage drop allowed. The following wire size and load capacity are specified by AWG (American Wire Gauge). (Nominal size means approximate cross sectional area.)



- 3. Outside Diameter
- 4. Cross Sectional Area

Figure 3

Nominal	Cross Sectional	Outside	Allowable	AWG Size
Size	Area (mm²)	Diameter (mm)	Current (A)	(Cross reference)
0.3	0.372	1.8	9	22
0.5	0.563	2.0	12	20
0.85	0.885	2.2	16	18
1.25	1.287	2.5	21	16
2	2.091	2.9	28	14
3	3.296	3.6	37.5	12
5	5.227	4.4	53	10
8	7.952	5.5	67	8
15	13.36	7.0	75	6
20	20.61	8.2	97	4

Fuses

Replacing Fuses

- 1. Before replacing fuses, apply the parking brake, then move the selector lever to the "P" (Park) position, and turn the engine control switch to the "LOCK" position.
- 2. Place the fuse puller on the fuse and pull it out. (The fuse puller is stored in the fuse box inside the cab.)
- 3. If the fuse appears as shown in the right hand side of the diagram at left, the fuse is blown. Replace with a spare fuse. (Spare fuses are stored in the fuse box inside the cab.)

Replacing Relays

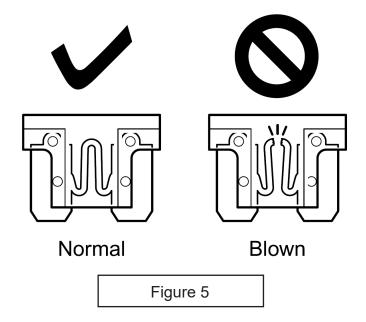
1. Before replacing the relays, contact the nearest Chevrolet Dealer.

Fusible Links

- 1. The fusible link is primarily used to protect circuits where high amounts of current flow and where it would not be practical to use a fuse. For example, the starter circuit. When a current overload occurs, the fusible link melts open and interrupts the flow of current so as to prevent the rest of the wiring harness from burning.
- 2. Determine the cause of the overload before replacing the fusible link. The replacement fusible link must have the same amperage specification as the original fusible link.
- 3. Never replace a blown fusible link with fusible link of a different amperage specification. Doing so can result in an electrical fire or other serious circuit damage.

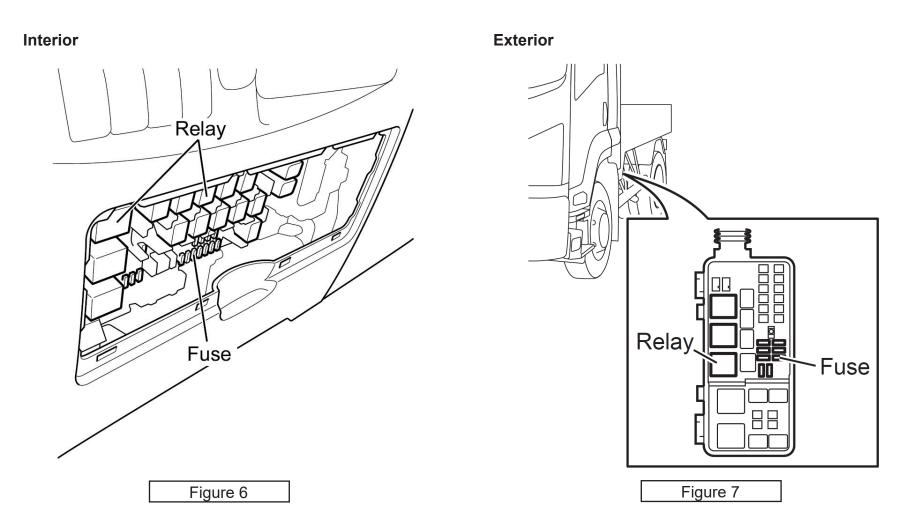
A CAUTION

- Always use fuses specified by Isuzu.
 Using fuses with a rating other than that specified, or using wire or tin foil, etc., could result in fire or damage.
- If the new fuses blow right away and the cause is unknown, contact the nearest Isuzu Dealer.
- Do not inspect or replace fuses when the engine control switch is in the "ON" position. Doing so may lead to an accident.
- When inspecting fuses, be sure to park the vehicle on flat, level ground and apply chocks to the wheels.

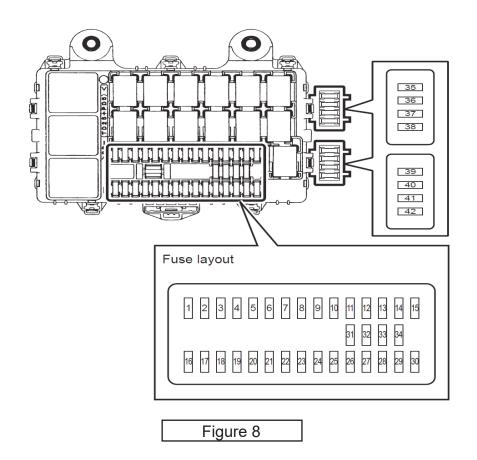


16.4

Fuse and Relay Box Locations



Fuse Location (interior)



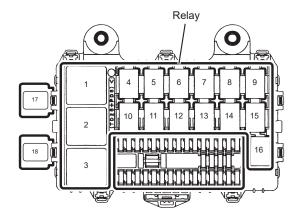
No.	Description	Rating	Ν
1	_	25A	1
2	SPARE	5A	1
3	ROOM LAMP, AUDIO	10A	1
4	DOOR LOCK	15A	1
5	_	15A	2
6	P/ WINDOW	25A	2
7	ABS	10A	2
8	WIPER	25A	2
9	H / LAMP LO (LH)	10A	2
10	LAMPS (BATT)	10A	2
11	H / LAMP LO (RH)	10A	2
12	BRAKE LAMPS	10A	2
13	STARTER	10A	2
14	H / LAMP HI (LH)	10A	2
15	H / LAMP HI (RH)	10A	3

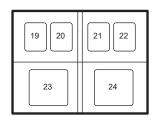
No.	Description	Rating
16	MIRROR HEATER	15A
17	IGNITION2	10A
18	IGNITION1	10A
19	_	_
20	ECM	5A
21	METER	10A
22	ECU (BATT)	5A
23	MIRROR	10A
24	ACC	15A
25	HORN	15A
26	TURN, HAZARD	15A
27	TAIL LAMPS	10A
28	ILLUMINATIONS	10A
29	CORNERING LAMPS	10A
30	AIR CONDITIONER	10A

No.	Description	Rating
31	SPARE	
32	SPARE	_
33	SPARE	
34	SPARE	
35	CIGAR	20A
36	ACCESSORIES SOCKET	15A

No.	Description	Rating
37	POWER SOURCE	20A
38	REVERSE LAMPS	10A
39	MIRROR HEATER DR	20A
40	SERVICE, REVERSE	10A
41	AUDIO, REVERSE	10A
42	MIRROR HEATER AS	20A

Relay Location (interior)





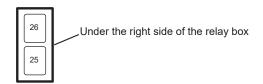


Figure 10

Figure 11

No. Description 1 BRAKE LAMP 2 DAYTIME RUNNING LAMP 3 KEY ON 4 DAYTIME RUNNING LAMP CUT 5 CORNERING LAMP 6 WIPER MAIN 7 HORN 8 WIPER HI LO 9 BLANK 10 BLANK 11 DOOR SWITCH (ALLISON2500RDS MODEL ONLY) 12 POWER WINDOW 13 HEAD LAMP LO 14 AIR DUMP (AIR SUSPENSION VEHICLE) 15 HEAD LAMP HI 16 TAIL LAMP 17 POWER ACC 18 BLOWER MOTOR 19 BRAKE LAMP SWITCH 20 CONDENSER FAN 21 REVERSE LAMP 22 CIGAR LIGHTER 23 MIRROR HEATER AS 24 MIRROR HEATER DR 25 COOLANT LEVEL SWITCH 26 BLANK		
2 DAYTIME RUNNING LAMP 3 KEY ON 4 DAYTIME RUNNING LAMP CUT 5 CORNERING LAMP 6 WIPER MAIN 7 HORN 8 WIPER HI LO 9 BLANK 10 BLANK 11 DOOR SWITCH (ALLISON2500RDS MODEL ONLY) 12 POWER WINDOW 13 HEAD LAMP LO 14 AIR DUMP (AIR SUSPENSION VEHICLE) 15 HEAD LAMP HI 16 TAIL LAMP 17 POWER ACC 18 BLOWER MOTOR 19 BRAKE LAMP SWITCH 20 CONDENSER FAN 21 REVERSE LAMP 22 CIGAR LIGHTER 23 MIRROR HEATER AS 24 MIRROR HEATER DR 25 COOLANT LEVEL SWITCH	No.	Description
3 KEY ON 4 DAYTIME RUNNING LAMP CUT 5 CORNERING LAMP 6 WIPER MAIN 7 HORN 8 WIPER HI LO 9 BLANK 10 BLANK 11 DOOR SWITCH (ALLISON2500RDS MODEL ONLY) 12 POWER WINDOW 13 HEAD LAMP LO 14 AIR DUMP (AIR SUSPENSION VEHICLE) 15 HEAD LAMP HI 16 TAIL LAMP 17 POWER ACC 18 BLOWER MOTOR 19 BRAKE LAMP SWITCH 20 CONDENSER FAN 21 REVERSE LAMP 22 CIGAR LIGHTER 23 MIRROR HEATER AS 24 MIRROR HEATER DR 25 COOLANT LEVEL SWITCH	1	BRAKE LAMP
4 DAYTIME RUNNING LAMP CUT 5 CORNERING LAMP 6 WIPER MAIN 7 HORN 8 WIPER HI LO 9 BLANK 10 BLANK 11 DOOR SWITCH (ALLISON2500RDS MODEL ONLY) 12 POWER WINDOW 13 HEAD LAMP LO 14 AIR DUMP (AIR SUSPENSION VEHICLE) 15 HEAD LAMP HI 16 TAIL LAMP 17 POWER ACC 18 BLOWER MOTOR 19 BRAKE LAMP SWITCH 20 CONDENSER FAN 21 REVERSE LAMP 22 CIGAR LIGHTER 23 MIRROR HEATER AS 24 MIRROR HEATER DR 25 COOLANT LEVEL SWITCH	2	DAYTIME RUNNING LAMP
5 CORNERING LAMP 6 WIPER MAIN 7 HORN 8 WIPER HI LO 9 BLANK 10 BLANK 11 DOOR SWITCH (ALLISON2500RDS MODEL ONLY) 12 POWER WINDOW 13 HEAD LAMP LO 14 AIR DUMP (AIR SUSPENSION VEHICLE) 15 HEAD LAMP HI 16 TAIL LAMP 17 POWER ACC 18 BLOWER MOTOR 19 BRAKE LAMP SWITCH 20 CONDENSER FAN 21 REVERSE LAMP 22 CIGAR LIGHTER 23 MIRROR HEATER AS 24 MIRROR HEATER DR 25 COOLANT LEVEL SWITCH	3	KEY ON
6 WIPER MAIN 7 HORN 8 WIPER HI LO 9 BLANK 10 BLANK 11 DOOR SWITCH (ALLISON2500RDS MODEL ONLY) 12 POWER WINDOW 13 HEAD LAMP LO 14 AIR DUMP (AIR SUSPENSION VEHICLE) 15 HEAD LAMP HI 16 TAIL LAMP 17 POWER ACC 18 BLOWER MOTOR 19 BRAKE LAMP SWITCH 20 CONDENSER FAN 21 REVERSE LAMP 22 CIGAR LIGHTER 23 MIRROR HEATER AS 24 MIRROR HEATER DR 25 COOLANT LEVEL SWITCH	4	DAYTIME RUNNING LAMP CUT
7 HORN 8 WIPER HI LO 9 BLANK 10 BLANK 11 DOOR SWITCH (ALLISON2500RDS MODEL ONLY) 12 POWER WINDOW 13 HEAD LAMP LO 14 AIR DUMP (AIR SUSPENSION VEHICLE) 15 HEAD LAMP HI 16 TAIL LAMP 17 POWER ACC 18 BLOWER MOTOR 19 BRAKE LAMP SWITCH 20 CONDENSER FAN 21 REVERSE LAMP 22 CIGAR LIGHTER 23 MIRROR HEATER AS 24 MIRROR HEATER DR 25 COOLANT LEVEL SWITCH	5	CORNERING LAMP
8 WIPER HI LO 9 BLANK 10 BLANK 11 DOOR SWITCH (ALLISON2500RDS MODEL ONLY) 12 POWER WINDOW 13 HEAD LAMP LO 14 AIR DUMP (AIR SUSPENSION VEHICLE) 15 HEAD LAMP HI 16 TAIL LAMP 17 POWER ACC 18 BLOWER MOTOR 19 BRAKE LAMP SWITCH 20 CONDENSER FAN 21 REVERSE LAMP 22 CIGAR LIGHTER 23 MIRROR HEATER AS 24 MIRROR HEATER DR 25 COOLANT LEVEL SWITCH	6	WIPER MAIN
9 BLANK 10 BLANK 11 DOOR SWITCH (ALLISON2500RDS MODEL ONLY) 12 POWER WINDOW 13 HEAD LAMP LO 14 AIR DUMP (AIR SUSPENSION VEHICLE) 15 HEAD LAMP HI 16 TAIL LAMP 17 POWER ACC 18 BLOWER MOTOR 19 BRAKE LAMP SWITCH 20 CONDENSER FAN 21 REVERSE LAMP 22 CIGAR LIGHTER 23 MIRROR HEATER AS 24 MIRROR HEATER DR 25 COOLANT LEVEL SWITCH	7	HORN
10 BLANK 11 DOOR SWITCH (ALLISON2500RDS MODEL ONLY) 12 POWER WINDOW 13 HEAD LAMP LO 14 AIR DUMP (AIR SUSPENSION VEHICLE) 15 HEAD LAMP HI 16 TAIL LAMP 17 POWER ACC 18 BLOWER MOTOR 19 BRAKE LAMP SWITCH 20 CONDENSER FAN 21 REVERSE LAMP 22 CIGAR LIGHTER 23 MIRROR HEATER AS 24 MIRROR HEATER DR 25 COOLANT LEVEL SWITCH	8	WIPER HI LO
11 DOOR SWITCH (ALLISON2500RDS MODEL ONLY) 12 POWER WINDOW 13 HEAD LAMP LO 14 AIR DUMP (AIR SUSPENSION VEHICLE) 15 HEAD LAMP HI 16 TAIL LAMP 17 POWER ACC 18 BLOWER MOTOR 19 BRAKE LAMP SWITCH 20 CONDENSER FAN 21 REVERSE LAMP 22 CIGAR LIGHTER 23 MIRROR HEATER AS 24 MIRROR HEATER DR 25 COOLANT LEVEL SWITCH	9	BLANK
MODEL ONLY) 12 POWER WINDOW 13 HEAD LAMP LO 14 AIR DUMP (AIR SUSPENSION VEHICLE) 15 HEAD LAMP HI 16 TAIL LAMP 17 POWER ACC 18 BLOWER MOTOR 19 BRAKE LAMP SWITCH 20 CONDENSER FAN 21 REVERSE LAMP 22 CIGAR LIGHTER 23 MIRROR HEATER AS 24 MIRROR HEATER DR 25 COOLANT LEVEL SWITCH	10	BLANK
13 HEAD LAMP LO 14 AIR DUMP (AIR SUSPENSION VEHICLE) 15 HEAD LAMP HI 16 TAIL LAMP 17 POWER ACC 18 BLOWER MOTOR 19 BRAKE LAMP SWITCH 20 CONDENSER FAN 21 REVERSE LAMP 22 CIGAR LIGHTER 23 MIRROR HEATER AS 24 MIRROR HEATER DR 25 COOLANT LEVEL SWITCH	11	,
AIR DUMP (AIR SUSPENSION VEHICLE) 15 HEAD LAMP HI 16 TAIL LAMP 17 POWER ACC 18 BLOWER MOTOR 19 BRAKE LAMP SWITCH 20 CONDENSER FAN 21 REVERSE LAMP 22 CIGAR LIGHTER 23 MIRROR HEATER AS 24 MIRROR HEATER DR 25 COOLANT LEVEL SWITCH	12	POWER WINDOW
14 VEHICLE) 15 HEAD LAMP HI 16 TAIL LAMP 17 POWER ACC 18 BLOWER MOTOR 19 BRAKE LAMP SWITCH 20 CONDENSER FAN 21 REVERSE LAMP 22 CIGAR LIGHTER 23 MIRROR HEATER AS 24 MIRROR HEATER DR 25 COOLANT LEVEL SWITCH	13	HEAD LAMP LO
16 TAIL LAMP 17 POWER ACC 18 BLOWER MOTOR 19 BRAKE LAMP SWITCH 20 CONDENSER FAN 21 REVERSE LAMP 22 CIGAR LIGHTER 23 MIRROR HEATER AS 24 MIRROR HEATER DR 25 COOLANT LEVEL SWITCH	14	,
17 POWER ACC 18 BLOWER MOTOR 19 BRAKE LAMP SWITCH 20 CONDENSER FAN 21 REVERSE LAMP 22 CIGAR LIGHTER 23 MIRROR HEATER AS 24 MIRROR HEATER DR 25 COOLANT LEVEL SWITCH	15	HEAD LAMP HI
18 BLOWER MOTOR 19 BRAKE LAMP SWITCH 20 CONDENSER FAN 21 REVERSE LAMP 22 CIGAR LIGHTER 23 MIRROR HEATER AS 24 MIRROR HEATER DR 25 COOLANT LEVEL SWITCH	16	TAIL LAMP
19 BRAKE LAMP SWITCH 20 CONDENSER FAN 21 REVERSE LAMP 22 CIGAR LIGHTER 23 MIRROR HEATER AS 24 MIRROR HEATER DR 25 COOLANT LEVEL SWITCH	17	POWER ACC
20 CONDENSER FAN 21 REVERSE LAMP 22 CIGAR LIGHTER 23 MIRROR HEATER AS 24 MIRROR HEATER DR 25 COOLANT LEVEL SWITCH	18	BLOWER MOTOR
21 REVERSE LAMP 22 CIGAR LIGHTER 23 MIRROR HEATER AS 24 MIRROR HEATER DR 25 COOLANT LEVEL SWITCH	19	BRAKE LAMP SWITCH
22 CIGAR LIGHTER 23 MIRROR HEATER AS 24 MIRROR HEATER DR 25 COOLANT LEVEL SWITCH	20	CONDENSER FAN
23 MIRROR HEATER AS 24 MIRROR HEATER DR 25 COOLANT LEVEL SWITCH	21	REVERSE LAMP
24 MIRROR HEATER DR 25 COOLANT LEVEL SWITCH	22	CIGAR LIGHTER
25 COOLANT LEVEL SWITCH	23	MIRROR HEATER AS
	24	MIRROR HEATER DR
26 BLANK	25	COOLANT LEVEL SWITCH
	26	BLANK

Relay and Fuse Locations (exterior)

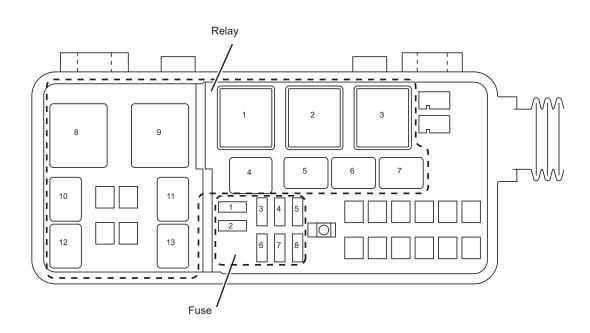


Figure 13

No.	Relay name
1	STARTER
2	TAIL LIGHT
3	NOx & DEF SENSOR
4	A/C COMPRESSOR
5	STARTER CUTOFF
6	RR DOME LIGHT
7	DEF PUMP
8	LINE HEATER3
9	NEUTRAL SAFETY GEAR
10	MARKER LIGHT
11	LINE HEATER1
12	LINE HEATER2
13	FUEL HEATER

No.	Fuse name	Rating
1	MARKER LIGHT	20A
2	TAIL MAIN	20A
3	ECM MAIN	10A
4	SCR	15A
5	ТСМ	15A
6	POWER SOURCE	15A
7	CONDENSER FAN	20A
8	A/C	10A

16.8

Ground Point Location

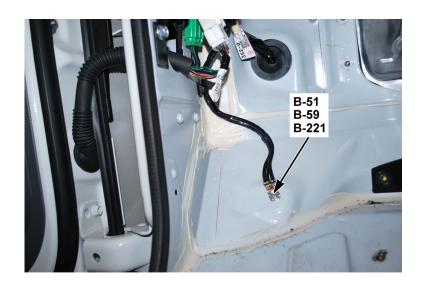




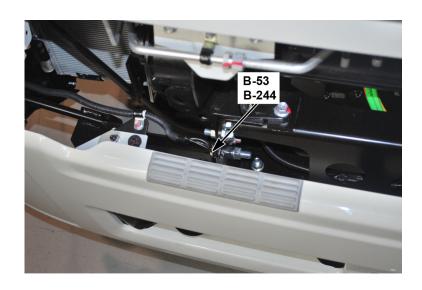
Figure 15

Figure 16

Note:

16.9

Ground Point Location



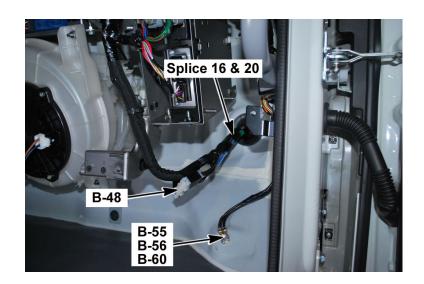


Figure 17

Figure 18

Note:

16.10

Ground Point Location



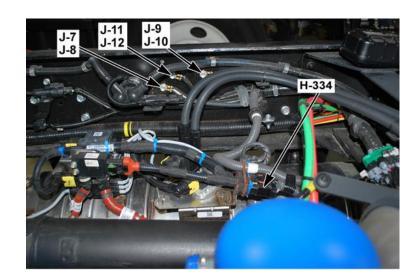


Figure 19

Figure 20

Note:

16.11

Ground Point Location

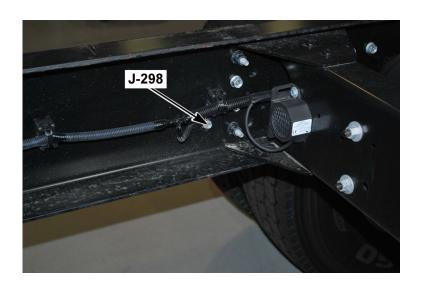




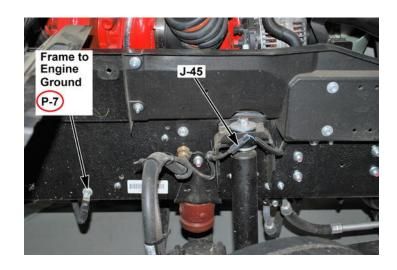
Figure 21

Figure 22

Note:

16.12

Ground Point Location



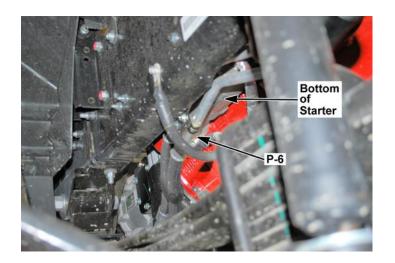


Figure 23

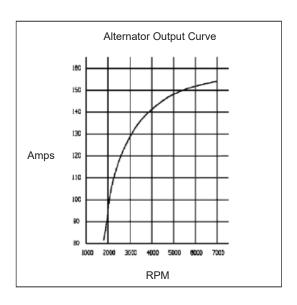
Figure 24

Note:

Alternator and Battery Information

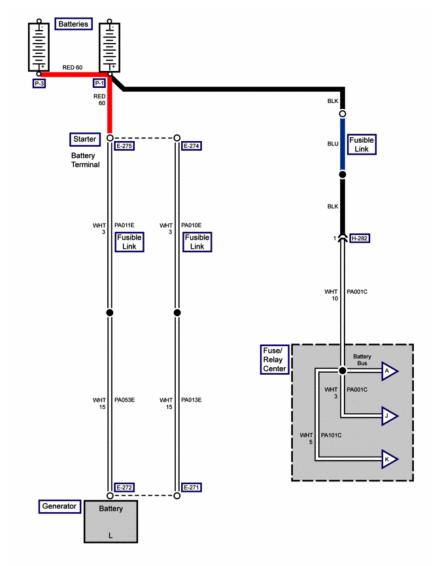
6500 XD Diesel Engine

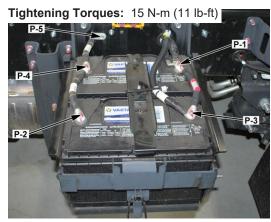
2.662: 1 alternator pulley to crankshaft pulley

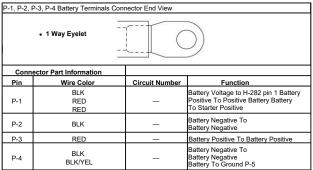


Battery	VARTA GR31
Cold Crank Capacity	750 AMP
Reserve Capacity (25 AMPS)	180 Minutes
Alternator	12V-160AMP

Battery

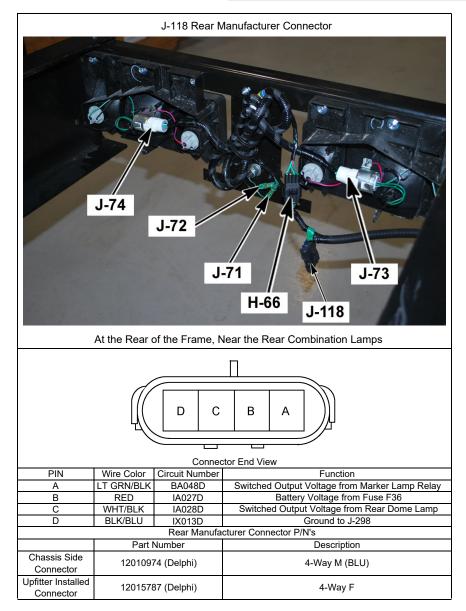






16.15

Rear Manufacturer Lighting Connector J-118



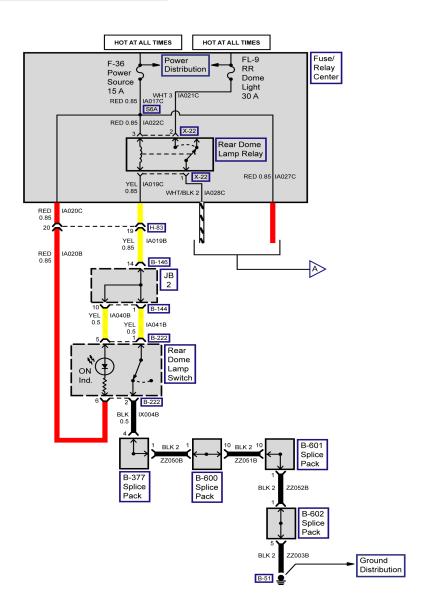
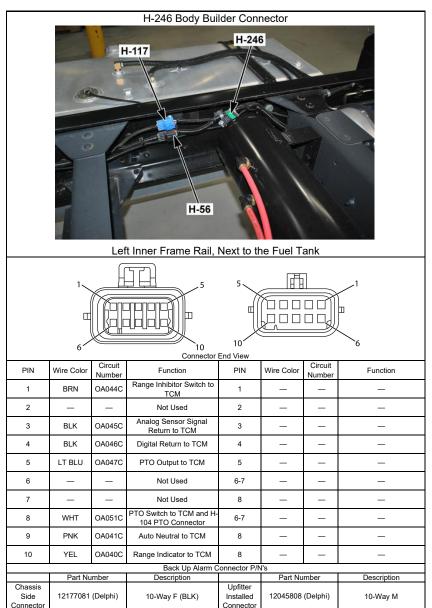


Figure 28

16.16

Body Builders Connector H-246



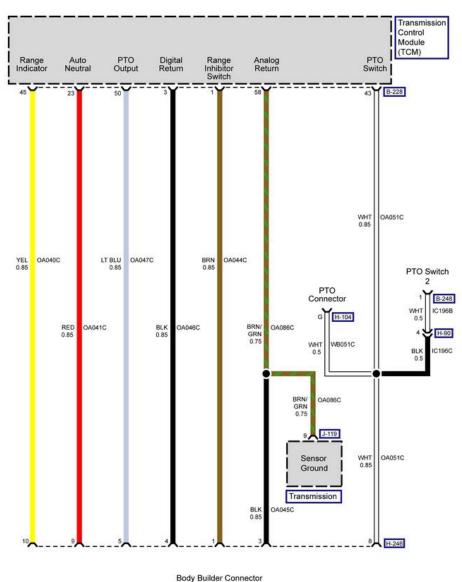
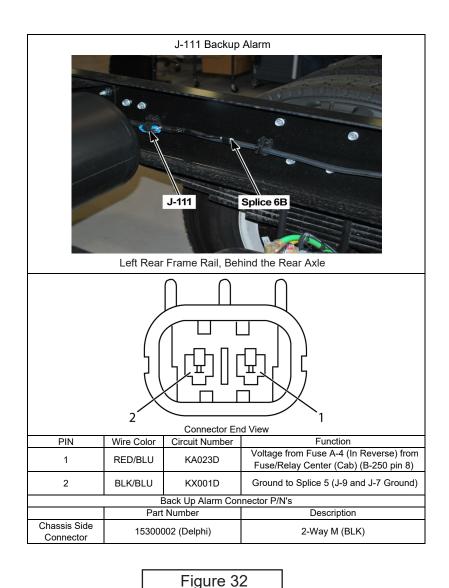
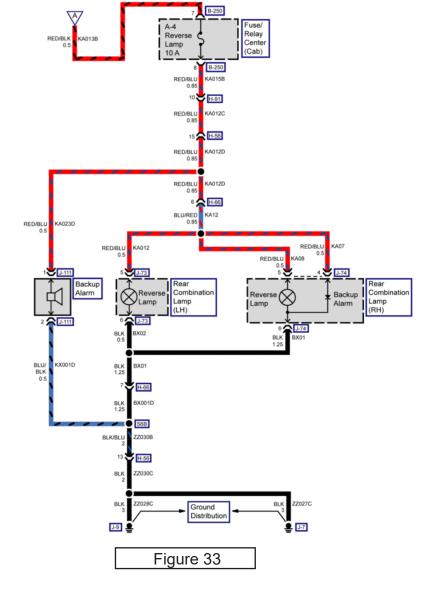


Figure 30

16.17

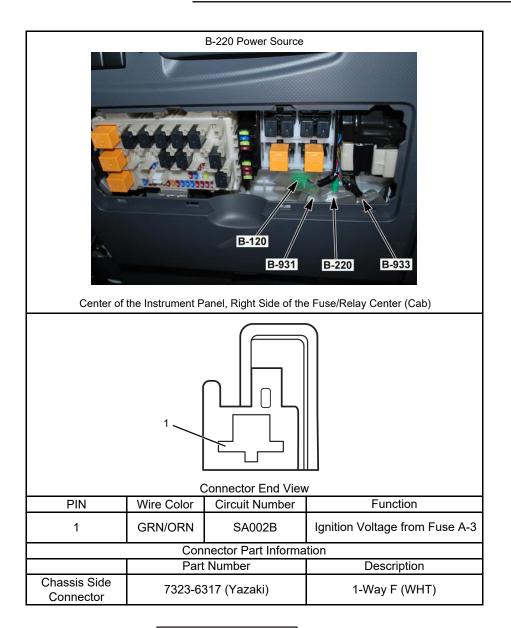
Back Up Lamp and Alarm Circuit J-111

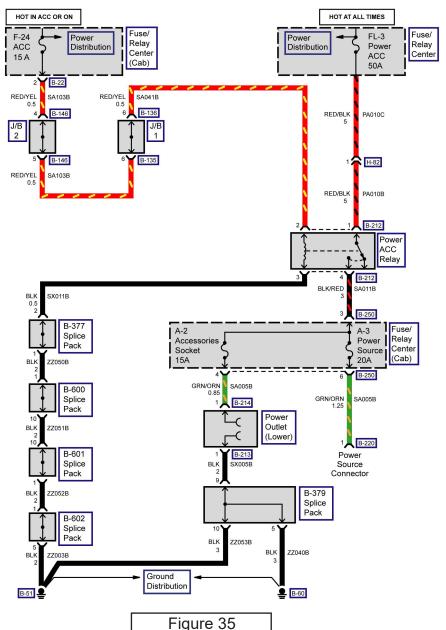




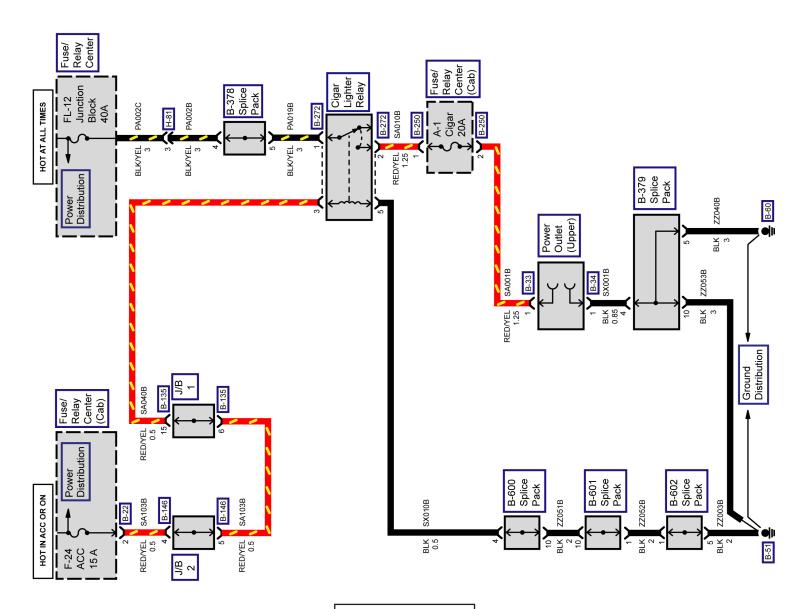
16.18

Power Source Connector B-220 and Lower Power Outlet

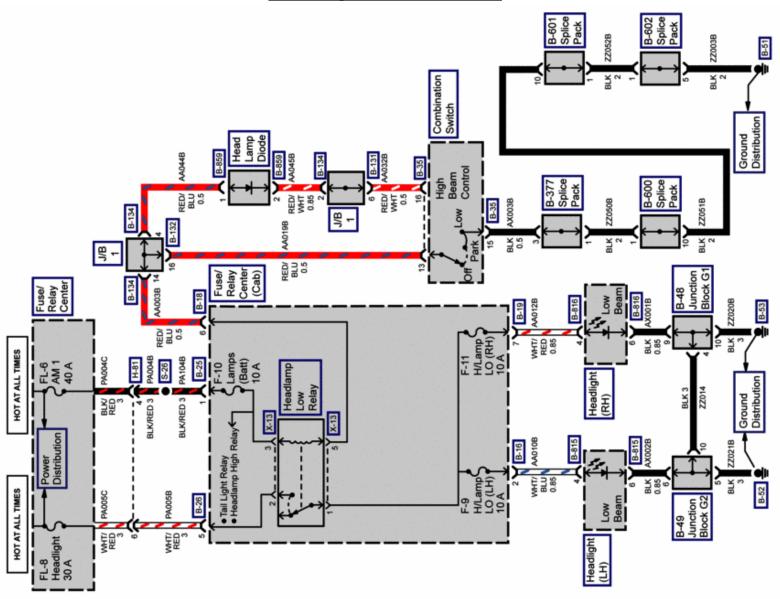




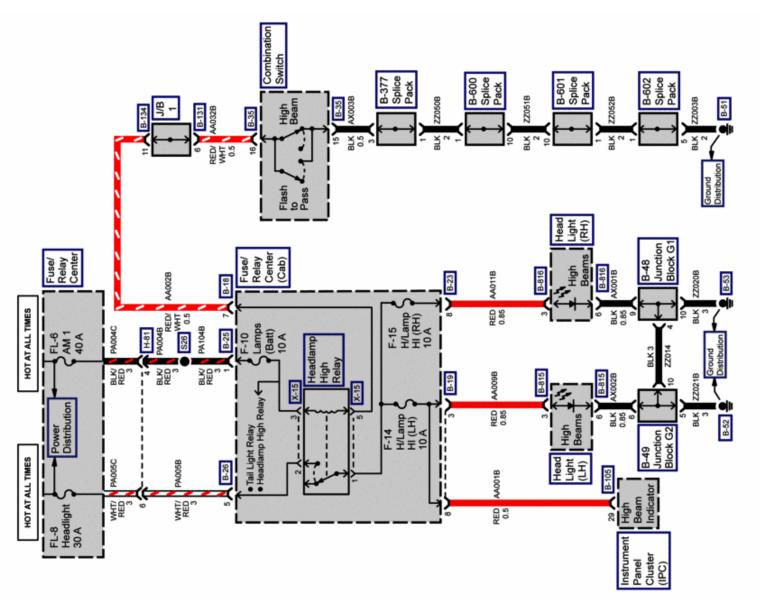
Upper Power Outlet



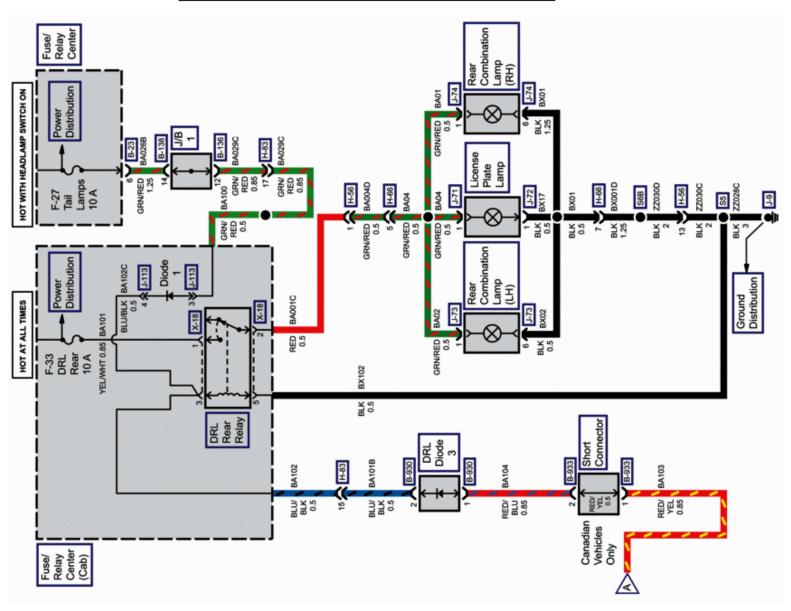
Headlights Low Beam



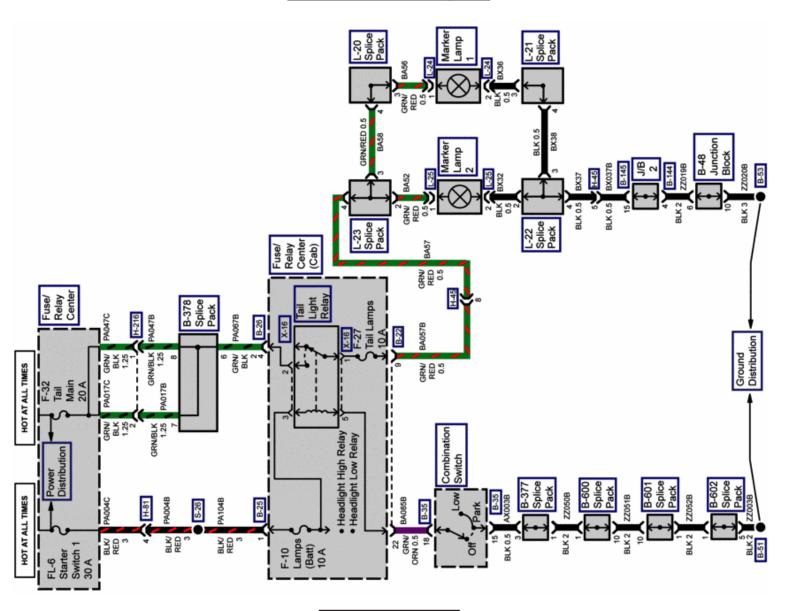
Headlights High Beam



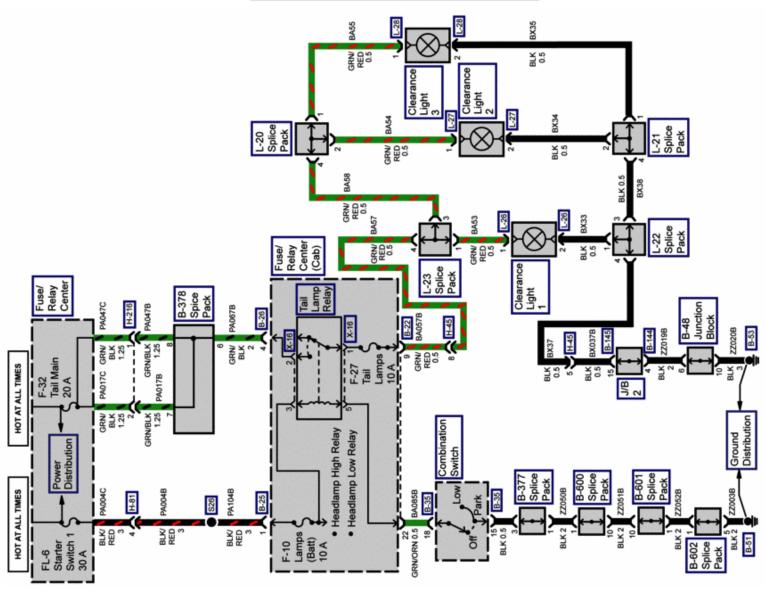
Taillamps and License Plate Lamps



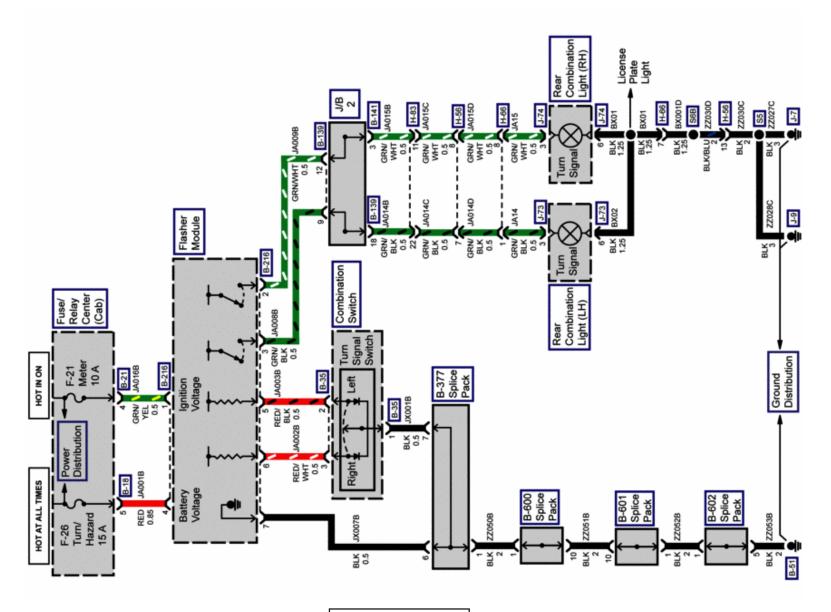
Roof Marker Lights



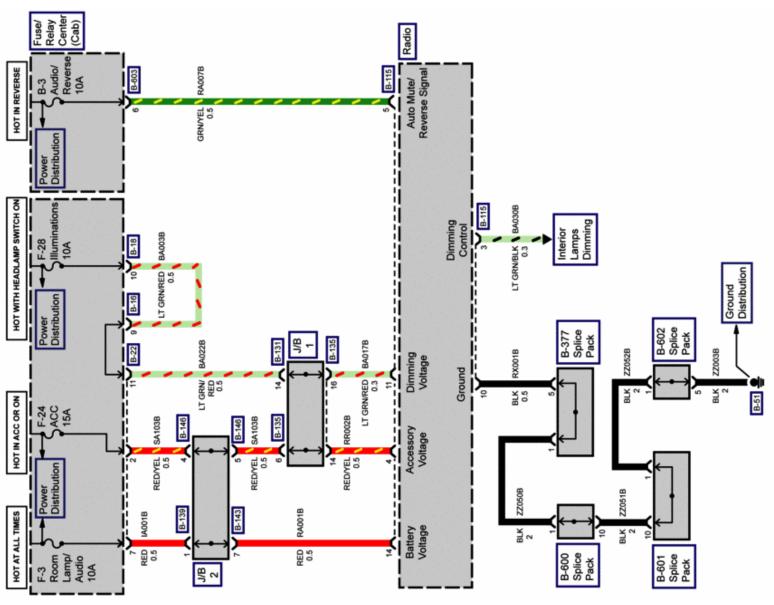
Roof Clearance Lights (AT)



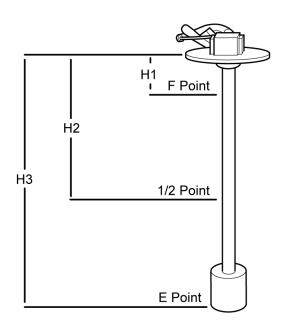
Rear Turn Signals Lights



Radio Circuits



Fuel Sending Unit Resistance Values



Float Position	Distance to Flange (mm)	Distance to Flange (in)	Resistance Value (ohms)
H1 - Full	132	5.20	14.1
H2 - Half	276	10.87	44.1
H3 - Empty	420	16.54	100

Electrical Symbols

	Fuse		Electronic Parts	 Coil (Inductor), Solenoid Magnetic Valve
	Fusible Link	- \\\\-	Resistor	Relay
	Fusible Link Wire		Speaker	
	Switch		Buzzer	Connector
	Switch		Circuit Breaker	Light-Emitting Diode
	Switch (Normal Close Type)		Bulb	Reed Switch
	Contact Wiring		Double-Filament Bulb	 Condenser
Q	Battery		Motor	Horn
	Diode		Variable Resistor Rheostat	Vacuum Switching Valve

Abbreviations

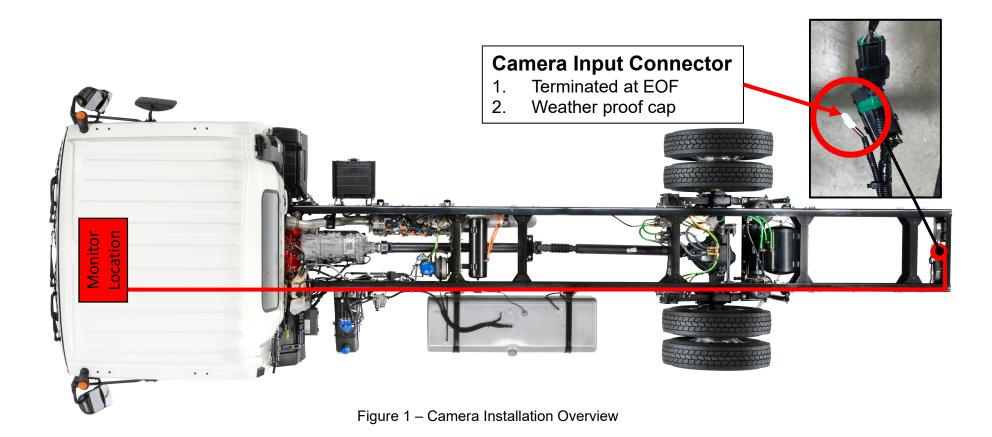
Abbreviation	Definition	Abbreviation	Definition	
3A/T	6-Speed Automatic Transmission	IG	Ignition	
4A/T	4-Speed Automatic Transmission	kW	kilowatt	
A/T	Automatic Transmission	LH	Left hand	
ABS	Anti-lock brake system	LO	Low	
APP	Accelerator pedal position	LWB	Long wheelbase	
ATF	Automatic Transmission Fluid	M/T	Manual Transmission	
AUTO	Automatic	M/V	Magnetic valve	
BRKT	Bracket	MAF	Mass airflow	
C/B	Circuit breaker	MIL	Check engine light	
CKP	Crankshaft position	OD	Over drive	
CMP	Camshaft position	OPT	Option	
COMB	Combination	PTO	Power Take Off	
CONT	Control	RH	Right hand	
D.R.L.	Day time running light	RR	Rear	
DC	Direct current	SCV	Suction control valve	
ECM	Electronic control module	ST	Start	
ECT	Engine coolant temperature	STD	Standard	
ECU	Electronic control unit	SW	Switch	
EGR	Exhaust gas reticulation	SWB	Short wheelbase	
EHCU	Electronic and hydraulic control unit	TCM	Transmission control module	
FL	Fusible link	V	Volt	
FRT	Front	VSV	Vacuum switching valve	
FT	Fuel Temperature	W	Watt (S)	
H/L	Headlight	W/ With		
HI	High	W/O	Without	
IAT	Intake air temperature	W/S	Weld splice	
IC	Integrated circuit	WOT	Wide-open throttle	

Figure 46

Back Up Camera Installation Information

Back Up Camera Installation Overview

- The Alpine HCE-C1100 Back Up Camera is available with RPO code I2V (Audio system with 7" diagonal color touch screen with backup camera).
- RPO codes I1V (Audio system with 7" diagonal color touch screen) and I2V (Audio system with 7" diagonal color touch screen with backup camera) will both include a pre-wired camera input connection at the end of the chassis frame. (Figure 1)



Back Up Camera Installation Kit Part Numbers

KIT PART N	KIT PART NUMBER: Contact Dealer						
NO.	PART NUMBER	DESCRIPTION	QTY				
1	8975438760	HCE-C1100 Back Up Camera	1				
2	8975438730	Camera Bracket/Shroud	1				
3	8975438750	23' Camera Extension Harness	1				

Figure 2 – Camera Install Kit Part Numbers

- When RPO code I2V (Audio system with 7" diagonal color touch screen with backup camera) is selected, the Back Up Camera Kit will be shipped in the cab, in a poly bag, band tied to the center seat. (Figure 5).
- The Back Up Camera Kit will include the parts listed in Figure 2, provided in a sealed package. The package also includes a piece of shrink tube that should be used to protect the connection between the camera pigtail and the 23' extension harness (see the circled location in Figure 4 below).



Figure 3 – Camera Install Kit



Figure 4 – Camera Install Kit Shipping Location



Figure 5 – Camera Install Kit Shipping Location

Back Up Camera Mounting Information

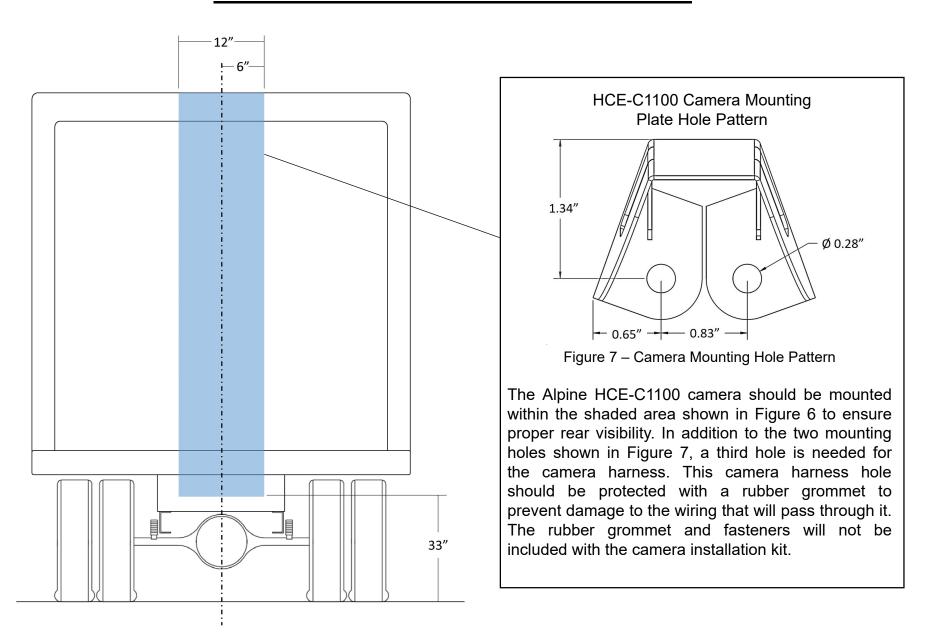


Figure 6 - Camera Mounting Area

⁸ 17.1

Power Take Off (PTO) System for LCF 5.2 L 4HK1

The engine control module (ECM) has the functionality to accommodate a variety of different PTO systems depending on up-fitter specification. These systems consist of the following:

- Stationary Preset PTO Mode
- Stationary Variable PTO Mode
- Mobile Variable PTO Mode
- Engine Shutdown Protection
- Speedometer Calibration

Each mode is used with the specification of upfitter installation, which can be programmed to a tailored use. Moreover, the following functions are common with each PTO mode:

- PTO Standby Speed
- PTO Maximum Engine Speed
- PTO Engine Shutdown
- PTO Engage Relay
- PTO (Relay Maximum) Engage Speed
- PTO Feedback

Each vehicle is factory equipped with two chassis PTO electrical connectors; PTO Harness 1 (H-126) and PTO Harness 2 (H-125). Connection points for both harnesses are located on the inner left frame rail next to the crossmember in front of the rear axle. The purpose of these connectors is to allow the upfitter to easily connect to the ECM PTO circuits without having to alter any of the factory-installed wiring.

PTO Controls

PTO (power take off) is a device that is used to provide engine power to special equipment directly from the engine or through the transmission. For details about the PTO operation, refer to the separate instruction manual provided by its maker. Improper operation of these switches may cause personal injury or damage.

NOTE

PTO mode must be enabled prior to PTO equipment operation. PTO mode can be enabled through the use of optional factory PTO switches (shown below) by pressing the PTO Main Switch and then pressing either +/- on the PTO Engine Speed Control Switch.

Installation of PTO Switches

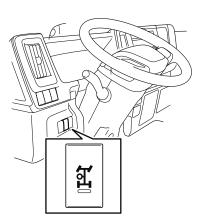
Parts List:

QTY 1 - PTO Switch

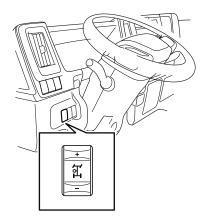
QTY 1 - PTO Adjustment

Switch Installation Instructions:

- 1) Remove dash cover
- 2) Remove two (2) hole covers (center and left) from left side dash and remove harness connectors from hole cover
- Insert PTO On/Off Switch in center slot and PTO Adjustment Switch in left slot
- 4) Attach green connector to PTO switch and orange connector to PTO Adjustment Switch
- 5) Re-install dash panel







PTO Engine Speed Control Switch

■ NOTE

The optional PTO main switch and PTO engine speed control switch can be used to increase the engine idle r/min without additional programming. Pressing the PTO main switch once increases the idle up speed to the preset 800 r/min, and pressing either +/- on the PTO engine speed control switch once activates the PTO mode. Once in PTO mode the PTO engine speed control switch can be used to adjust the idle speeds between the preset 1,300 and 1,700 r/min. Moving the selector lever from park or neutral, applying the brake pedal or releasing the parking brake will cancel PTO mode and return the engine idle speed to normal. For additional details about PTO programming, contact your local Chevrolet Dealer.

[₩] 17.3

Power Take Off (PTO) System for LCF 5.2 L 4HK1

I. Stationary Preset PTO Mode

In Stationary Preset PTO Mode, the PTO control is performed while the vehicle is stopped by arbitrarily selecting one of multiple preset (up to four not including PTO Standby Speed) engine speeds as the PTO desired engine speed. If the engine speed the driver requests by pressing on the accelerator pedal is higher than the PTO desired engine speed, the accelerator pedal engine speed is used. However, the accelerator pedal engine speed cannot go higher than the PTO Maximum Engine Speed.

Hardware Configuration - The Stationary Preset PTO Mode is enabled based on the following hardware inputs to the ECM.

- A. Factory Installed Switches (optional):
 - 1. PTO Main Switch: The factory-option dash mounted PTO Main Switch is used to enable or cancel PTO mode. The engine speed will be set to the PTO Standby Speed when the PTO main switch is pressed. The switch is a push-lock type switch. The input circuit is connected to the ECM 56 of CH-119 connector.
 - 2. PTO Engine Speed Control Switch: The factory-option dash mounted PTO Engine Speed Control Switch can be used in PTO mode to decrease or increase the engine speed when the switch is tapped or while this switch is pressed to (-) or (+). The switch is a momentary switch. The input circuits are connected to the ECM 54 and 69 of CH-119 connector.

17.4

Power Take Off (PTO) System for LCF 5.2 L 4HK1

B. Upfitter Installed Switches:

- 1. Remote PTO Set Switch: The upfitter-installed Remote PTO Set Switch can be used in PTO mode to set the Remote PTO Set Switch (same engine speed as the PTO Set Speed) when this switch is pressed. The switch needs to be a momentary switch. The PTO harness 1 connector is equipped with an input circuit to the ECM 18 of CH-119 connector through the J of H-126 connector.
- 2. Remote PTO Resume Switch: The upfitter-installed Remote PTO Resume Switch can be used in PTO mode to set the Remote PTO Resume Switch (same engine speed as the PTO Resume Speed) when this switch is pressed. The switch needs to be a momentary switch. The PTO harness 1 connector equipped with input circuit to the ECM 42 of CH-119 connector through the K of H-126 connector.
- 3. Remote Set Speed A Switch: The upfitter-installed Remote Set Speed A Switch can be used in PTO mode to set the PTO Set Speed A when this switch is pressed. The switch needs to be a toggle or push-lock switch. The PTO harness 1 connector equipped with input circuit to the ECM 30 of CH-119 connector through the D of H-126 connector.
- 4. Remote Set Speed B Switch: The upfitter-installed Remote Set Speed B Switch can be used in PTO mode to set the PTO Set Speed B when this switch is pressed. The switch needs to be a toggle or push-lock switch. The PTO harness 1 connector equipped with an input circuit to the ECM 46 of CH-119 connector through C of H-126 connector.
- 5. PTO Engage Relay: The upfitter-installed PTO Engage Relay can be used to supply switched battery voltage to operate a PTO hydraulic solenoid. The solenoid in turn allows fluid to flow to a PTO hydraulic pump. The relay is controlled via the ECM grounding the relay coil control circuit. The PTO harness 2 C of H-125 connector is equipped with the voltage feed circuit to the relay. Also, the PTO harness 2 connector is equipped with a grounding circuit to ECM 3 of CH-119 connector through B of the H-125 connector.
- 6. PTO Feedback Switch: Some applications require that the operator press an upfitter installed momentary switch usually located outside the cab before entering any PTO set speed (not PTO Standby Speed). The switch is normally tied into the PTO Engage Relay switch circuit. Once the switch is pressed with the relay turned ON, the ECM should detect a high voltage at the PTO Feedback Switch input. This momentarily high input will allow the operator to use any of the PTO speeds above the PTO Standby Speed until PTO mode is cancelled. The PTO harness 1 A of H-126 connector is equipped with a voltage feed circuit to the PTO Engage Relay. Also, the PTO harness 2 connector is equipped with an input circuit to the ECM 68 of CH-119 connector through A of H-125 connector.
- 7. PTO Engine Shutdown Switch: The upfitter-installed PTO Engine Shutdown Switch can be used in PTO mode to turn Off the engine. The switch needs to be a toggle or push-lock switch. The PTO harness 1 connector equipped with an input circuit to the ECM 55 of CH-119 connector through the F of H-126 connector.

⁸ 17.5

Power Take Off (PTO) System for LCF 5.2 L 4HK1

II. Stationary Variable PTO Mode

In Stationary Variable PTO Mode, the PTO control is performed while the vehicle is stopped by arbitrarily selecting an engine speed as the PTO desired engine speed. If the engine speed the driver requests by pressing on the accelerator pedal is higher than the PTO desired engine speed, the accelerator pedal engine speed is used.

Hardware Configuration - The Stationary Variable PTO Mode is enabled based on the following hardware inputs to the ECM.

- A. Factory Installed Switches (Optional):
 - 1. PTO Main Switch: The factory-option dash mounted PTO Main Switch is used to enable or cancel PTO mode. The engine speed will be set to the PTO Standby Speed when the PTO main switch is pressed. The switch is a pushlock type switch. The input circuit is connected to the ECM 56 of CH-119 connector.
 - 2. PTO Engine Speed Control Switch: The factory-option dash mounted PTO Engine Speed Control Switch can be used in PTO mode to decrease or increase the engine speed when the switch is tapped or while this switch is pressed to (-) or (+). The switch is a momentary switch. The input circuits are connected to the ECM 54 and 69 of CH-119 connector.

⁸ 17.6

Power Take Off (PTO) System for LCF 5.2 L 4HK1

B. Upfitter-installed Switches:

- 1. Remote PTO Set Switch: The upfitter-installed Remote PTO Set Switch can be used in PTO mode to decrease the engine speed when this switch is tapped or while this switch is pressed. The switch needs to be a momentary switch. The PTO harness 1 connector equipped with an input circuit to the ECM 18 of CH-119 connector through the J of H-126 connector.
- 2. Remote PTO Resume Switch: The upfitter-installed Remote PTO Resume Switch can be used in PTO mode to increase the engine speed at when this switch is tapped or while this switch is pressed. The switch needs to be a momentary switch. The PTO harness 1 connector equipped with input circuit to the ECM 42 of CH-119 connector through the K of H-126 connector.
- 3. Remote PTO Throttle: The upfitter-installed Remote PTO Throttle can be used in PTO mode to increase or decrease the engine speed the same as an accelerator pedal. The device needs to be a potentiometer. The ECM supplies 5 volts reference circuit to the Remote PTO Throttle from the ECM 14 of CH-119 connector through the E of H-125 connector. The ECM also provides a ground on the low reference circuit from the ECM 20 of CH-119 connector through the G of H-125 connector. The ECM monitors the Remote PTO Throttle signal on the ECM 11 of CH-119 connector through the F of H-125 connector.
 - a) It is necessary to program the Remote PTO Throttle signal inputs to the ECM at position 0% and 100%.
 - (1) Preset value at 0%: 0.85 volts
 - (2) Preset value at 100%: 3.75 volts
 - b) If the ECM then detects the Remote PTO Throttle signal more than 4.9 volts, DTC P254D will set. The Remote PTO Throttle MUST be enabled (programmed) in the ECM.
- 4. PTO Engage Relay: The upfitter-installed PTO Engage Relay can be used to supply switched battery voltage to operate a PTO hydraulic solenoid. The solenoid in turn allows fluid to flow to a PTO hydraulic pump. The relay is controlled via the ECM grounding the relay coil control circuit. The PTO harness 2 C of H-125 connector is equipped with the voltage feed circuit to the relay. Also, the PTO harness 2 connector is equipped with a grounding circuit to ECM 3 of CH-119 connector through B of the H-125 connector.
- 5. PTO Feedback Switch: Some applications require that the operator press an upfitter installed momentary switch usually located outside the cab before entering any PTO set speed (not PTO Standby Speed). The switch is normally tied into the PTO Engage Relay switch circuit. Once the switch is pressed with the relay turned ON, the ECM should detect a high voltage at the PTO Feedback Switch input. This momentarily high input will allow the operator to use any of the PTO speeds above the PTO Standby Speed until PTO mode is canceled. The PTO harness 1 A of H-126 connector is equipped with a voltage feed circuit to the PTO Engage Relay. Also, the PTO harness 2 connector is equipped with an input circuit to the ECM 68 of CH-119 connector through A of H-102 connector.

Power Take Off (PTO) System for LCF 5.2 L 4HK1

- 6. PTO Engine Shutdown Switch: The upfitter-installed PTO Engine Shutdown Switch can be used in PTO mode to turn Off the engine. The switch needs to be a toggle or push-lock switch. The PTO harness 1 connector equipped with an input circuit to the ECM 55 of J-419 connector through the F of H-126 connector.
- 7. PTO Engine Shutdown Switch input MUST be enabled (programmed) in the ECM AND the ECM must detect a low voltage input at pin 55 of CH-119 connector. These both are necessary for this shutdown feature to operate.

III. Mobile Variable PTO Mode

In Mobile Variable PTO Mode, the PTO control is performed while the vehicle is running by arbitrarily selecting engine speeds as the PTO desired engine speed. The system allows increases or decreases above the PTO Standby Speed by two switch inputs into the ECM while the vehicle is moving. If the engine speed the driver requests by pressing on the accelerator pedal is higher than the PTO desired engine speed, the accelerator pedal engine speed is used.

The PTO Maximum Vehicle Speed for Mobile Variable PTO Mode can change within the following allowable range:

Minimum: 0 MPH (0 km/h)
 Maximum: 75 MPH (120 km/h)
 Preset value: 75 MPH (120 km/h)

In order to burn off the accumulated PM in the diesel particulate filter (DPF) during the mobile variable mode, entering the regeneration event is allowed via ECM programming.

Preset Value: No

17.8

Power Take Off (PTO) System for LCF 5.2 L 4HK1

Hardware Configuration - Mobile Variable Mode uses only switches in the cab and is enabled based on the following hardware inputs to the ECM.

A. Factory Installed Switches (Optional):

- 1. PTO Main Switch: The factory-option dash mounted PTO Main Switch is used to enable or cancel PTO mode. The engine speed will be set to the PTO Standby Speed when the PTO main switch is pressed. The switch is a push-lock type switch. The input circuit is connected to the ECM 56 of CH-119 connector.
- 2. PTO Engine Speed Control Switch: The factory-option dash mounted PTO Engine Speed Control Switch can be used in PTO mode to decrease or increase the engine speed when the switch is tapped or while this switch is pressed to (-) or (+). The switch is a momentary switch. The input circuits are connected to the ECM 54 and 69 of CH-119 connector.

B. Upfitter-installed:

- 1. PTO Engage Relay: The upfitter-installed PTO Engage Relay can be used to supply switched battery voltage to operate a PTO hydraulic solenoid. The solenoid in turn allows fluid to flow to a PTO hydraulic pump. The relay is controlled via the ECM grounding the relay coil control circuit. The PTO harness 2 C of H-125 connector is equipped with the voltage feed circuit to the relay. Also, the PTO harness 2 connector is equipped with a grounding circuit to ECM 3 of CH-119 connector through B of the H-125 connector.
- 2. PTO Feedback Switch: Some applications require that the operator press an upfitter installed momentary switch usually located outside the cab before entering any PTO set speed (not PTO Standby Speed). The switch is normally tied into the PTO Engage Relay switch circuit. Once the switch is pressed with the relay turned ON, the ECM should detect a high voltage at the PTO Feedback Switch input. This momentarily high input will allow the operator to use any of the PTO speeds above the PTO Standby Speed until PTO mode is cancelled. The PTO harness 1 A of H-126 connector is equipped with a voltage feed circuit to the PTO Engage Relay. Also, the PTO harness 2 connector is equipped with an input circuit to the ECM 68 of CH-119 connector through A of H-125 connector.
- 3. PTO Engine Shutdown Switch: The upfitter-installed PTO Engine Shutdown Switch can be used in PTO mode to turn Off the engine. The switch needs to be a toggle or push-lock switch. The PTO harness 1 connector equipped with an input circuit to the ECM 55 of CH-119 connector through the F of H-126 connector.
 - a) PTO Engine Shutdown Switch input MUST be enabled (programmed) in the ECM AND the ECM must detect a low voltage input at pin 55 of CH-119 connector. These both are necessary for this shutdown feature to operate.

⁸ 17.9

Caution About Regeneration

- 1. The check engine malfunction indicator light and reduced engine power indicator light may come on and the power output may be limited if driving or power take-off (PTO) operation is continued for a long time with the regeneration required warning light or selectable (switch) regeneration required warning light (amber/red) on.
- 2. This is to prevent the DPF from being damaged. When operating PTO during parking, check to ensure that the regeneration required warning light or selectable (switch) regeneration required warning light (amber/red) on the MID is not on.
- 3. The exhaust pipe is extremely hot immediately after vehicle operation. Before parking, make sure the area is free of flammable material (for example, grass, waste paper, oil or old tires).
- 4. Take particular care when parking in a garage.
- 5. Use caution concerning exhaust gases while the engine is idling. Be particularly careful when the power take-off (PTO) is operating (if your vehicle is equipped with a PTO) or the DPF is regenerating while the engine is idling.

Additional PTO Functions

These additional functions can be programed into the ECM:

- A. Manual Regeneration only for GSE vehicles
 For certain applications the automatic regeneration function can be inhibited and manual regeneration only can be programed.

 (Example Airport Ground Support vehicles).
- B. Allow Automatic Regeneration in PTO Mode For certain applications the Automatic regeneration function can be enabled in the PTO stationary mode (Example Lawn care and carpet cleaning).
- C. Allow Automatic Regeneration in PTO Mode For certain applications the Automatic regeneration function can be enabled in the PTO mobile mode (Example Line painting).

Procedure for Setting Manual Regeneration in Power Take-off Mode

- 1. Choose the correct Model Year, Model and Transmission type using IDSS, then click 'Submit'.
- 2. Click on 'Controller Programming' in the table of contents on the left.
- 3. Click on Engine Control Module > Vehicle Options, then choose the PTO Options tab on the right.
- 4. Select the correct PTO Options for the vehicle that is being setup. Manual DPF Regeneration in PTO
- 5. Click Download when all of the PTO options have been changed, then follow the On-screen instructions to complete the programming process.

Procedure for Setting Auto Regeneration in Power Take-off Mode

- 1. Choose the correct Model Year, Model and Transmission type using IDSS, then click 'Submit'.
- 2. Click on 'Controller Programming' in the table of contents on the left.
- 3. Click on Engine Control Module > Vehicle Options, then choose the PTO Options tab on the right.
- 4. Select the correct PTO Options for the vehicle that is being setup. The two programmable options for automatic regeneration are as follows:
 - a. Auto DPF Regen in PTO within RPM Range. This is for use in Stationary PTO mode.
 - b. Auto DPF Regen in Mobile PTO Standby or Driving. This is for use in Mobile PTO mode
- 5. Click Download when all of the PTO options have been changed, then follow the On-screen instructions to complete the programming process.

17.11

Selectable DPF Regeneration - Only For Use With Ground Support Equipment (GSE) Vehicles

Certain applications require the Automatic Regeneration Function to be inhibited and Manual DPF Regeneration only to be used. The

ECM via the IDSS tool can be programed for this function.

IDSS Programing procedure:

Controller Programming\Engine Control Module\Vehicle Options\DPF Options

- 1. Change Auto DPF Regen Disable from NO to YES.
 - a. NO = Automatic Regen (factory default value)
 - b. YES = Selectable DPF Regeneration only

8 17.12

Performing a Selectable DPF Regeneration

During regeneration, white smoke may be temporarily produced from the exhaust pipe as a result of the combustion of particulate material; it does not indicate a failure.

To ensure the selectable DPF regeneration will take shortest amount of time to complete, the engine should be at operating temperature before starting.

Selectable DPF Regeneration will complete earlier when performed immediately after driving rather than when the engine is cold. The engine coolant temperature may rise during Selectable DPF Regeneration. The time needed to complete regeneration differs depending on the outside temperature.

The exhaust brake or exhaust throttle is activated during DPF regeneration. The exhaust brake or exhaust throttle starting to operate or being disengaged will produce a sound, but this does not indicate a failure.

CAUTION - To prevent a fire, make sure that there is no flammable material near the muffler, DPF and exhaust pipe. Remember that the temperature of exhaust gases is high enough to burn you.

When operating the PTO for a long time (if your vehicle is so equipped) make sure that the regeneration required warning light or selectable Regeneration Required warning light (amber) is not turning on.

Once the Selectable DPF Regeneration is started, it cannot be switched to the "Running" regeneration if interrupted.

When the "Switch" regeneration is selected, end regeneration in a single operation if possible.

During the regeneration, the engine speed may vary, causing the exhaust brake valve to be deactivated. However, while the regeneration is in progress, an indicator light (amber) appears showing regeneration is still taking place, so continue to perform regeneration until the message goes off.

Please see owner's manual for additional details, cautions, advice, and notes.

17.13

Performing a Selectable DPF Regeneration Continued

Procedure for performing a Selectable DPF Regeneration

- 1. To start, the following steps are required:
 - a. Engine is running
 - b. Transmission is in the Park position
 - c. The parking brake is applied
- 2. Press and hold the DPF regeneration switch. The MID will display "Checking PM Level", this will occur while the system is checking to see if a selectable DPF regeneration can be performed.
- 3. Release the switch, if the DPF does not need to be regenerated, the "Checking PM Level" light will stay out. If there is enough soot accumulation in the DPF to allow a selectable DPF regeneration the MID will display "Selectable Regen Required."
- 4. Press and release the switch again, the MID will display "Regeneration In Progress". The engine RPM will raise and the exhaust brake will close. The Regeneration will take approximately 20 minutes to complete. When the engine RPM returns to idle, the DPF regeneration is completed.

Note: Once a Selectable DPF Regeneration has been started, it must be completed. Failure to complete will result in the Automatic and Emergency Running DPF Regeneration functions being disabled.

Cruise Control

The cruise control function allows you to drive the vehicle at a constant speed without operating the accelerator pedal. Use this function when the vehicle speed is between 30 and 75 MPH (48 and 121 km/h). This function should only be used when driving without frequent starts and stops.

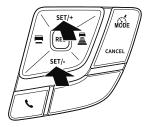
NOTE: Any time the cruise control switch is turned on, the PTO will not be engaged. Pressing the Cruise Control button to activate Cruise Control will pause PTO.

CAUTION: Cruise control can be dangerous where you cannot drive safely at a steady speed. Do not use cruise control on winding roads or in heavy traffic. Cruise control can be dangerous on slippery roads. On such roads, fast changes in tire traction can cause needless wheel spinning, and you could lose control. Do not use cruise control on slippery roads.

Cruise control main switch

Cruise control Set/Resume switch





Cruise Main Indicator Light



17.15

IDSS Programing Parameters

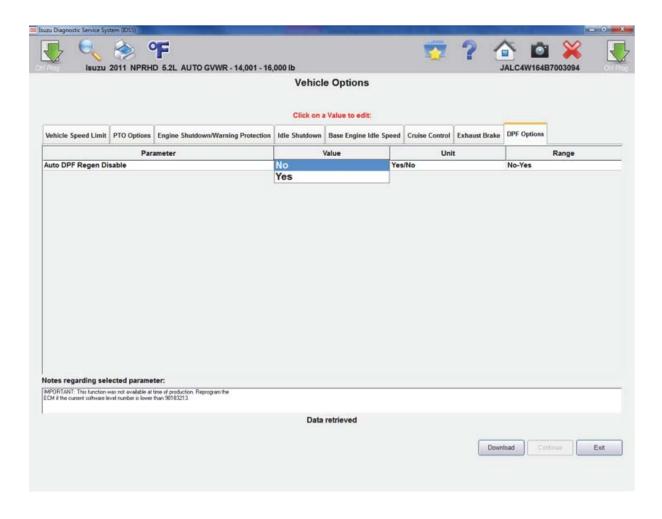
Parameter	Default	Unit	Range	Setting Criteria
			J	Must be an increment of 25 RPM
				Value cannot exceed PTO Max Engage Speed
				Value cannot exceed PTO Set Speed
				Value cannot exceed PTO Resume Speed
PTO Standby Speed	800	RPM	650-3150	Value cannot exceed Remote PTO Set Speed A
l 10 Stantas) spess	000		333 3.33	Value cannot exceed Remote PTO Set Speed B
				Value cannot exceed PTO Max Engine Speed
				Value cannot exceed Remote PTO Throttle Max Engine Speed
				Value cannot exceed PTO Standby Speed Limit Value cannot exceed PTO Standby Speed Limit
				PTO Max Engine Speed must be an increment of 25 RPM
				Value cannot be less than PTO Standby Speed
				Value cannot be less than PTO Max Engage Speed
				Value cannot be less than PTO Set Speed Value cannot be less than PTO Set Speed
PTO Standby Speed Limit	1300	RPM	650-3150	Value cannot be less than PTO Resume Speed
1				Value cannot be less than Remote PTO Set Speed A
				Value cannot be less than Remote PTO Set Speed B
				Value must be higher than PTO Set Speed, PTO Resume Speed, Remote PTO Set Speed
				Value cannot be less than Remote PTO Throttle Engine Speed Range
				Value cannot exceed PTO Max Engine Speed with Vehicle Moving
PTO Max Engine Speed	1050	RPM	650-3150	Must be an increment of 25 RPM
PTO Max Eligille Speed	1030		030-3130	Value cannot be less than PTO Max Engine Speed
PTO Max Engine Speed with Vehicle Moving	3050	RPM	650-3150	-
PTO Max Vehicle Speed	75	mph/kmh	0-75 MPH (0-120 km/h)	
PTO Engage Relay	No	Yes/No	No-Yes	
	1050	RPM	650-3150	Must be an increment of 25 RPM
PTO Max Engage Speed				Value cannot exceed PTO Max Engage Speed
				Value cannot exceed PTO Standby SpeedValue cannot exceed Remote PTO Throttle
PTO Feedback	No	Yes/No	No-Yes	, , , , , , , , , , , , , , , , , , , ,
PTO Shutdown with Circuit Input	No	Yes/No	No-Yes	Will only shut down PTO if PTO Engine Shutdown with Circuit Input is not selected
PTO Engine Shutdown with Circuit Input	No	Yes/No	No-Yes	PTO Shutdown with Circuit Input must also be selected
PTO Shutdown Vehicle Speed	1	mph/kmh	0-75 MPH (0-120 km/h)	Will only shut down PTO if PTO Engine Shutdown with Circuit Input is not selected
PTO Engine Shutdown Time Delay	0	Hrs:min:sec	00:00:00-24:00:00	Will only office down 1 10 in 10 Engine office office of order in pactor for colocica
Disable Cab Controls	No	Yes/No	No-Yes	If YES, Disable Cab Controls with Circuit Input must be set to NO
Disable Cab Controls with Circuit Input	No	Yes/No	No-Yes	If YES, Disable Cab Controls with Great input must be set to NO
PTO Brake/Clutch Override with Circuit Input	No	Yes/No	No-Yes	II 1 E.S., Disable Cab Controls must be set to NO
FTO Brake/Clutch Overhide with Circuit input	INO	1 65/110	No-Tes	When this parameter is set to YES, automatic DPF regeneration will occur in any PTO
				· · · · · · · · · · · · · · · · · · ·
Auto DPF Regen in PTO within RPM Range	No	Yes/No	No-Yes	mode with engine speed between 1050 and 1700 RPM.
				When this parameter is set to YES, automatic DPF regeneration will occur only during
Auto DPF Regen in Mobile PTO Standby or Driving	No	Yes/No	No-Yes	driving and standby speed when in Mobile PTO mode.
Auto DFF Regell III Wobile FTO Stallaby of Driving	INO	Y es/INO	No-Yes	
Manual DDE Danas and in DTC	N.	V /N1 -	N. V.	If this value is YES, then PTO mode must equal Mobile Variable.
Manual DPF Regeneration in PTO	No	Yes/No	No-Yes	PTO 0 40 4 44 5 4 605 PRO
				PTO Set Speed must be an increment of 25 RPM
		RPM	650-3150	Value cannot exceed PTO Resume Speed
PTO Set Speed	1300			Value cannot exceed PTO Max Engine Speed
				Value cannot be less than PTO Standby Speed
				Value must be 25 RPM less than PTO Resume Speed

17.16

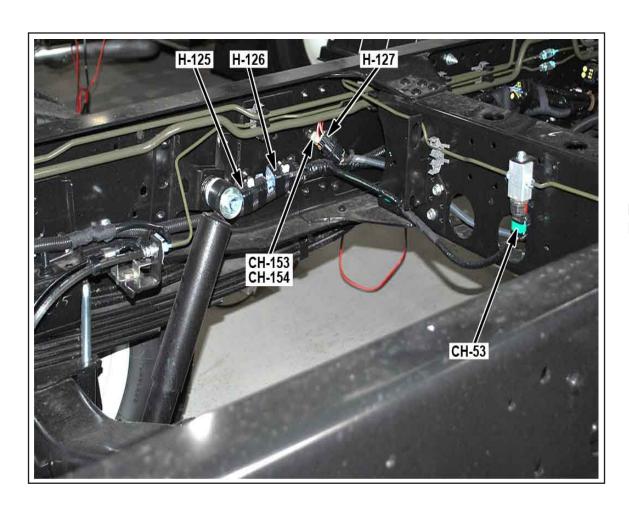
IDSS Programing Parameters

Parameter	Default	Unit	Range	Setting Criteria
			650-3150	PTO Set Speed must be an increment of 25 RPM
				Value cannot exceed PTO Max Engine Speed
PTO Resume Speed	1700	RPM		Value cannot be less than PTO Standby Speed
				Value cannot be less than PTO Set Speed
				Value must be 25 RPM greater than PTO Set Speed
Remote PTO Set Speed AB Switches	No	Yes/No	No-Yes	
				Remote PTO Set Speed A must be an increment of 10 RPM
			650-3150	Value cannot exceed Remote PTO Set Speed B
Remote PTO Set Speed A	800	RPM		Value cannot exceed PTO Max Engine Speed
				Value cannot be less than PTO Standby Speed
	!			Will not work if Remote PTO Throttle is set to Yes
	800	RPM	650-3150	Remote PTO Set Speed B must be an increment of 10 RPM
				Value cannot exceed PTO Max Engine Speed
Remote PTO Set Speed B				Value cannot be less than PTO Standby Speed
				Value cannot be less than Remote PTO Set Speed A
				Will not work if Remote PTO Throttle is set to Yes
PTO Increase/Decrease RPM	25	RPM	25-1000	
PTO Accel RPM Rate	20	RPM per second	25-1000	
PTO Reduce RPM Rate	30	RPM per second	25-1000	
Remote PTO Set/Resume Switches	Yes	Yes/No	No-Yes	
Remote PTO Throttle	Yes	Yes/No	No-Yes	
Remote PTO Throttle 0%	0.85	Volts	0-5	Remote PTO Throttle 0% must be an increment of 0.05 Volts
Remote PTO Throttle 100%	3.75	Volts	0-5	Remote PTO Throttle 100% must be an increment of 0.05 Volts
	d Range 2100	RPM		Remote PTO Throttle Engine Speed Range must be an increment of 10 RPM
Remote PTO Throttle Engine Speed Range			0-2500	Value cannot be less than PTO Standby Speed
				Value cannot exceed PTO Max Engine Speed

IDSS Programing Screen



PTO Switch Harness H-125 & H-126



NOTE: Left Inner Frame Rail, In Front of the Left Rear Upper Shock Mount

H-125 Rear Frame Harness to the PTO

Additional information and connector drawings are available at www.powerandsignal.com and at http://connectors2.delphi.com/ desgdmcs/homepage.aspx

Pins and seals vary with wire size. Parts listed at the right are for the mating connector 12045808.

Please confirm parts via web sites listed above.

H-125 R	ear Chassis Han	ness to PTO I	Harness				
		E		H		-E	
Connector Part Information		• DELPHI 12047937 • 8-WAY F (BLK)		Connector Part Information		Upfitter Installed 8-WAY M (BLK)	
Pin	Wire Color	Circuit No.	Function	Pin	Wire Color	Circuit No.	Function
Α	BLK/WHT	IC172D	PTO Main Relay Signal	А	-		
В	PNK/GRN	IC173D	PTO Main Relay Coil Control	В	-	-	-
С	PNK	IC181D	PTO Main Switch (Toggle Switch Signal) From H-52 Pin 18	С	-	-	-
D	BLU/YEL	IC188D	PTO Engine Speed Control Switch Down (-) Signal (PTO Set)	D	-	-	-
E	BLU	IC037D	PTO Throttle Sensor 5V Reference Voltage From H-52 Pin 10	E	-	-	-
F	YEL	IC038D	PTO Throttle Sensor Signal From H-52 Pin 9	F	-	-	-
G	BLU/RED	IC039D	PTO Throttle Sensor Low Reference Voltage From H-52 Pin 8	G	-	-	-
Н	BLU/ORN	IC187D	PTO Engine Speed Control Switch Up (+) Signal (PTO Resume)	Н	-	-	-

Left Inner Frame Rail, In Front of the Left Rear Upper Shock Mount

Termianl Wide range 12045773 1.0-0.08 mm2 12077628 0.5-0.35 mm2 **TPA** PΝ 12124264 included with connector **Cable Seats** Loose PN Wide range Color 12048086 2.85-2.03 Dk.Red

2.15-1.60

1.70-1.29

Cavity ID

5.2mm

1.009-0.995

White

Color

Dk.Red

Blue

Tan

Connector H125 - H126

12089678

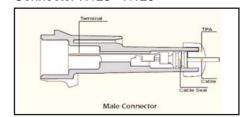
12048087

12084193

12059168

PΝ

Cavity Plug

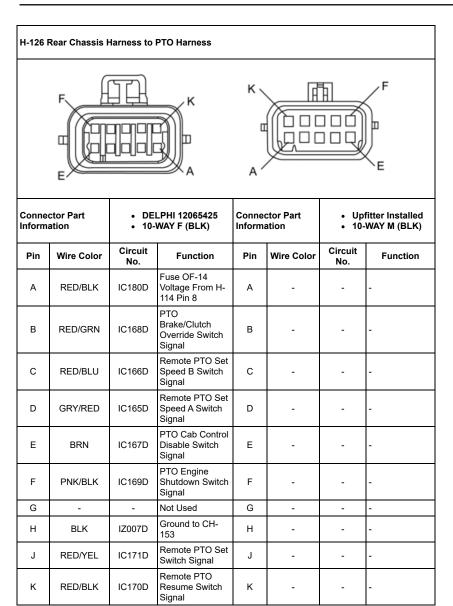


H-126 Rear Frame Harness to PTO Harness

Additional information and connector drawings are available at www.powerandsignal.com and at http://connectors2.delphi.com/dcsgdmcs/homepage.aspx

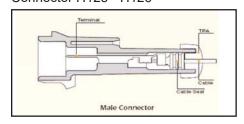
Pins and seals vary with wire size. Parts listed at the right are for the mating connector 12045808.

Please confirm parts via web sites listed above.

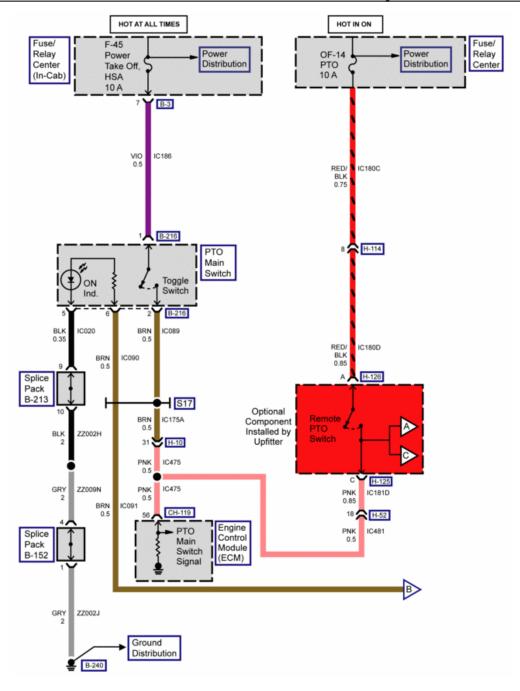


Termianl PNWide range 1.0-0.08 mm2 12045773 12077628 0.5-0.35 mm2 **TPA** PN12124264 included with connector **Cable Seats** Loose PN Wide range Color 12048086 2.85-2.03 Dk.Red 12089678 2.15-1.60 White Blue 12048087 1.70-1.29 1.009-0.995 12084193 Tan **Cavity Plug** Cavity ID PNColor 12059168 5.2mm Dk.Red

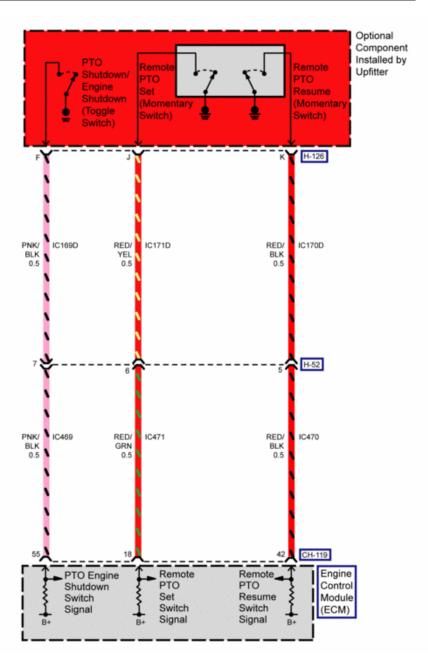
Connector H125 - H126



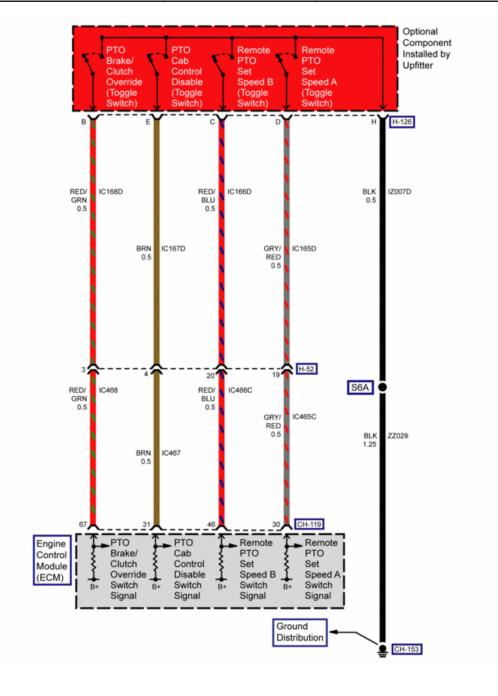
Power Take-Off Switch and Vehicle Speed Sensor 2



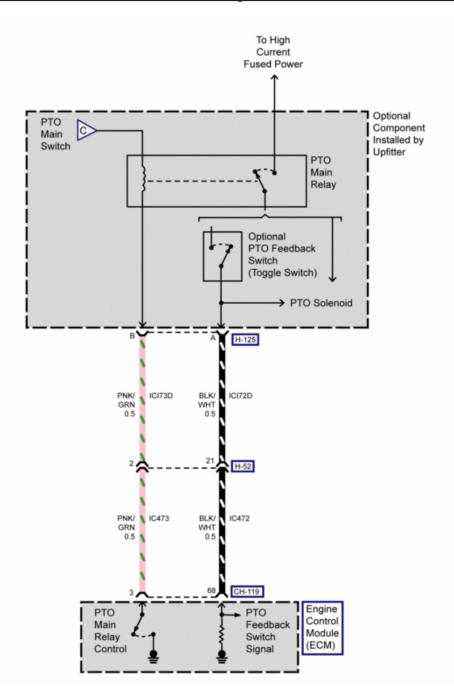
PTO Resume, Disable and Set Switch



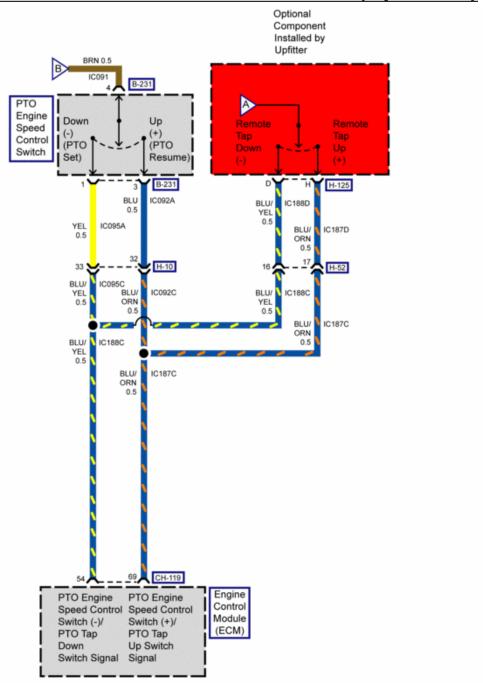
Brake Clutch Override, Cab Disable, Set Switches A and B



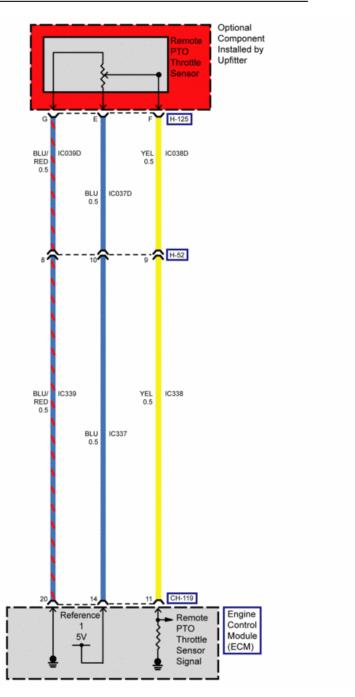
Power Take-Off Enable Relay Automatic Transmission



Power Take-Off Set Resume Switches (Up-Down)



Power Take-Off Throttle Sensor



PTO Pressure and Lubrication Port Locations - Aisin A450

Model Years: 1999-2007

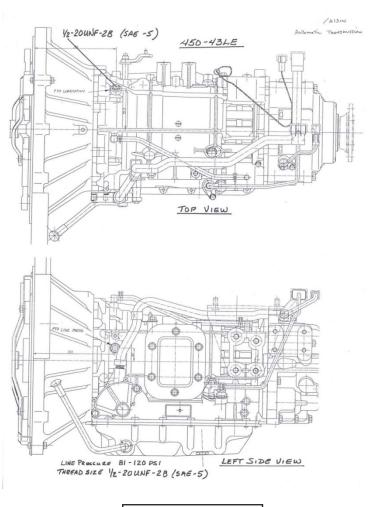
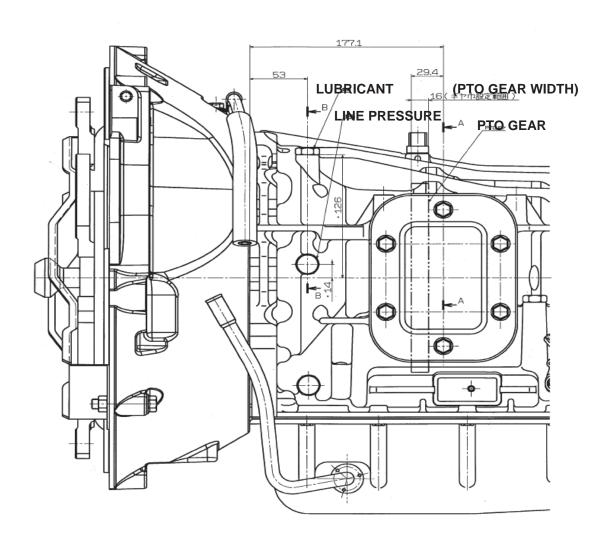


Figure 13

PTO Pressure and Lubrication Port Locations - Aisin A460

Model Years: 2011-2018



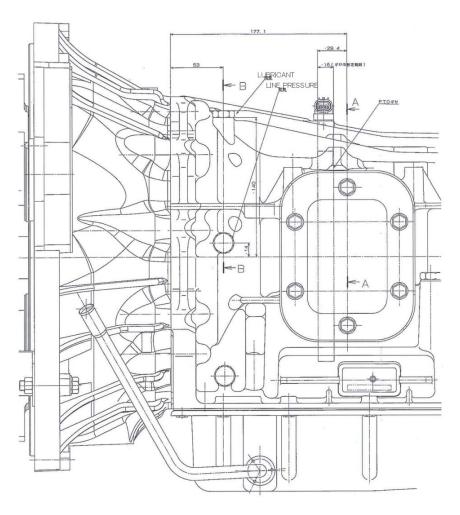
Line pressure: 261PSI (1.8MPa)

Fixing Torque:

Nominal 15.5 ft-lb (21Nm) 14.0-17.7 ft-lb (19-24 Nm)

PTO Pressure and Lubrication Port Locations - Aisin A465

Model Years: 2007-2019



Line pressure: 261PSI (1.8MPa)

Fixing Torque:

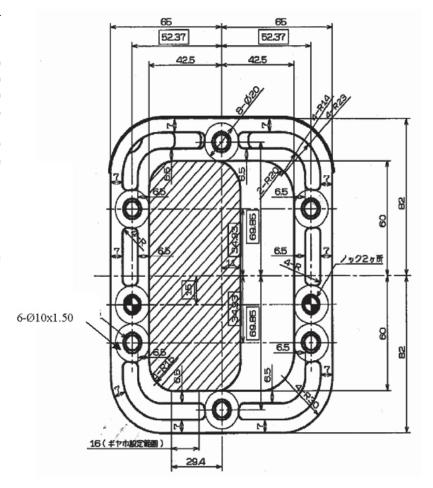
Nominal 15.5 ft-lb (21Nm) 14.0-17.7 ft-lb (19-24 Nm)

Transmission Opening Diagram - Aisin A460 and A465

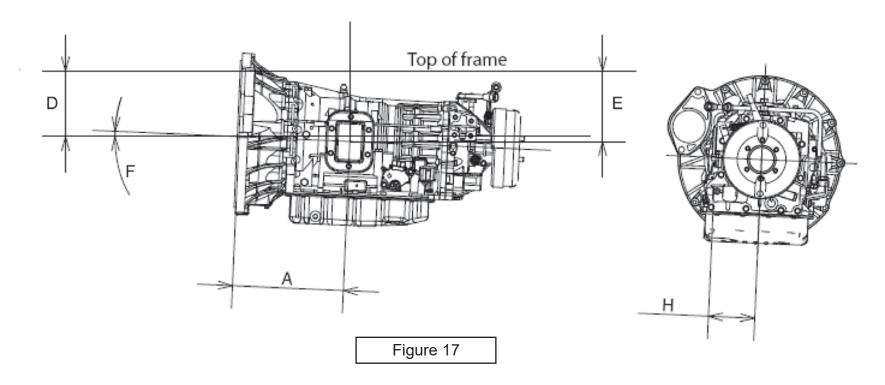
Aisin A460 and A465 Automatic Torque Converter Lock Up Function.

In either the Stationary Preset PTO Mode (A460 and A465) or Stationary Variable PTO Mode (A460 and A465), when engine speed exceeds 1200 RPM, the torque converter will lock up. The engine speed can not be modified and the lockup function cannot be turned off. Please note that with PTO applications that operate around 1200 RPM, the transmission software holds the torque converter in lockup until engine speed falls below 1100 RPM.

The lock up function will cancel if the transmission shift lever is moved from the park or neutral positions which will remove the transmission from the stationary mode.



PTO Location, Drive Gear, and Opening Information - Aisin A465 and A465id



Transmission	Opening Location	Bolt Pattern	Α	B ₁	С	D	E	F	Н	PTO Drive Gear	Ratio of PTO Drive Gear Speed to Engine Speed	Number of Teeth	Pitch	Helix Angle	Max Output Torque
Aisin A465	Left	(Dr 2)	12.4	36.9	0	7.85	7.31	2.5°	5.16	PTO Gear	1:1 with turbine	69	N/A	00	134 lbs-ft @ 1700 RPM
Aisin A465id	Left	(Dr 2)	12.4	36.9	0	7.37	7.88	2.5°	5.16	PTO Gear	1:1 with turbine	69	N/A	0°	134 lbs-ft @ 1700 RPM

Notes: 1. Centerline of PTO to centerline of front axle

Note: Dimensions in inches

17.33

<u>PTO Pressure and Lubrication Port Comparision - Aisin</u> <u>A465 vs A465id</u>

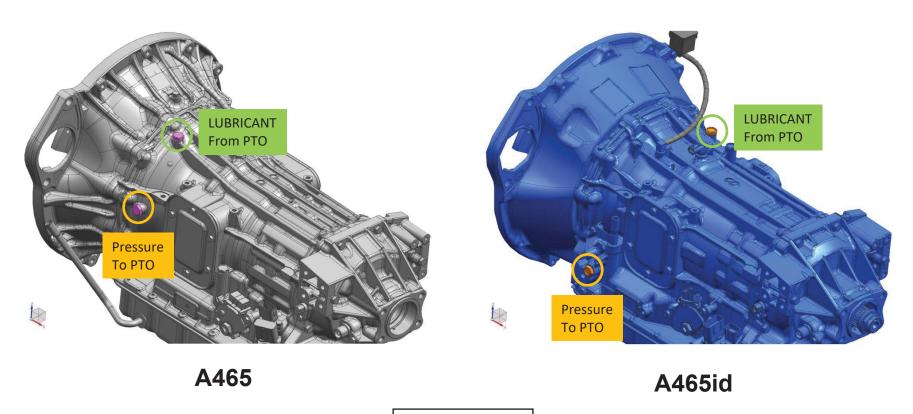
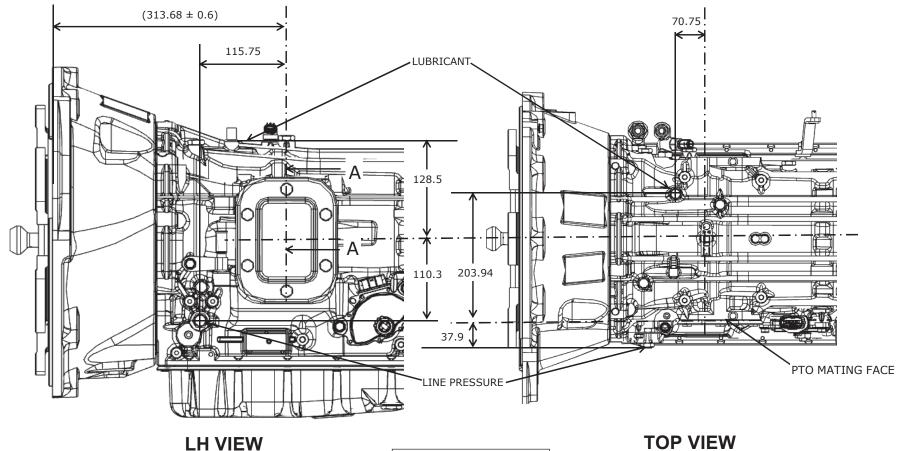


Figure 18

PTO Pressure and Lubrication Port Locations - Aisin A465id

Model Years: 2020-Present

PTO Specifications								
Line Pressure:	261 PSI (1.8 Mpa)							
Fixing Torque:	Nominal: 15.5 ft-lb (21 Nm) 14.0 - 17.7 ft-lb (19 - 24 Nm)							
PTO Mounting Bolt Fixing Torque:	Nominal: 19.5 ft-lb (26.5 Nm) 18.4 - 21.4 ft-lb (25 - 29 Nm)							
Recommended Backlash:	0.0118 - 0.0177 in (0.3 - 0.45 mm)							



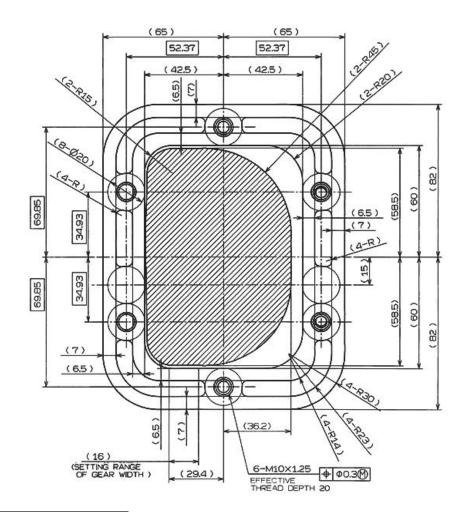
TOP VIEW

Transmission Opening Diagram - Aisin A465id

Aisin A465id Automatic Torque Converter Lock Up Function.

In either the Stationary Preset PTO Mode or Stationary Variable PTO Mode, when engine speed exceeds 1200 RPM, the torque converter will lock up. The engine speed can not be modified and the lockup function cannot be turned off. Please note that with PTO applications that operate around 1200 RPM, the transmission software holds the torque converter in lockup until engine speed falls below 1000 RPM.

The lock up function will cancel if the transmission shift lever is moved from the park or neutral positions which will remove the transmission from the stationary mode.



Power Take Off for Cummins 6500 & 7500 Trucks

The Chevrolet 6500 XD & 7600 XD has a variety of Power Take Off (PTO) functions designed to accommodate a range of vehicle applications. A PTO is a device used to provide engine power to auxiliary equipment directly from the engine or through the transmission. For details about specific PTO equipment operation, refer to the documentation provided by its manufacturer. Access to Cummins INSITE Electronic Service Tools will be necessary to modify programming functions that control the PTO feature. The following pages will cover the main topics shown below:

- 1. Types of PTO modes:
 - a. Cab PTO
 - b. Remote PTO
 - c. Remote Station PTO
- 2. Remote Accelerator Engine Control
- 3. Overview of Programming Options
- 4. Wiring and Connector Diagrams

*Note: Not all engine calibrations within a model year support all modes. Check your specific engine calibration.

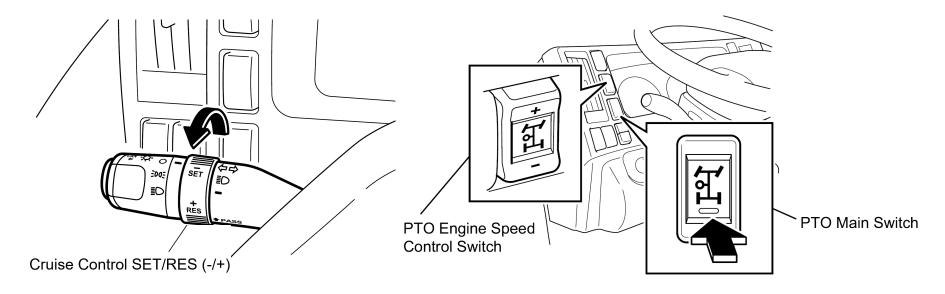
Introduction

- The PTO feature is intended to maintain engine speed at an operator-selectable level, and is typically used to drive auxiliary equipment mounted to the vehicle.
- The PTO feature can be split into two types:
 - The "Cab" version of PTO is intended for operation in the vehicle cab.
 - The "Remote" versions of PTO are intended to be operated outside of the cab and take priority over Cab PTO if both (Cab
 and one of the Remote PTO modes) are enabled at the same time.
- The PTO feature can be controlled by either Cab PTO Switches or the Remote PTO Switch(es). The Cab PTO switches, and the traditional single Remote PTO Switch can be either hardwired or SAE J1939 Data Link multiplexed. The Remote Station PTO switches can only be hardwired.
 - Switches can be hardwired to the ECM or multiplexed (multiplexed devises added by the body builder must have source addresses that do not conflict with OEM equipment).

Cab PTO Controls

Optional dash mounted PTO controls integrate the PTO Main Switch and Engine Speed Control Switch into the cab. These Chevrolet supplied switches can be installed at a factory level if selected during chassis ordering, or they can also be purchased through Chevrolet dealer and easily integrated into the chassis wiring harness.

In PTO mode, Cruise Set/Resume Switch can be used exactly the same as PTO Engine Speed Control Switch. Improper operation of these switches may cause personal injury or damage.



Installation of PTO Switches

Parts

- (1) PTO Main Switch
- (1) PTO Engine Speed Adjustment Switch

Installation Instructions

- 1) Remove dash cover.
- 2) Remove two (2) hole covers (middle and bottom) from left side dash and remove harness connectors from hole cover
- 3) Insert PTO On/Off Switch in bottom slot and PTO Adjustment Switch in middle slot
- 4) Attach green connector to PTO switch and orange connector to PTO Adjustment Switch
- 5) Re-install dash panel

PTO Modes

Cab PTO Mode

- Cab PTO uses OEM installed Cruise Control / PTO switches to engage the engine at a preset speed from within the cab of the
 vehicle. There is also additional functionality when compared to the Remote PTO feature. Cab PTO has its own enable parameter
 that should be enabled to access its additional features.
 - Two speeds can be programmed (Set or Resume).
 - Alternate PTO Allows engine speed to be ramped up from Idle speed and then ramped back down again. This helps eliminate jarring the driveline when engaging set speeds.

Remote PTO Modes - Remote PTO or Remote Station PTO

Any given vehicle can only have one remote PTO mode enabled at a time – Remote PTO or Remote Station PTO

- Remote PTO uses one switch to toggle between up to 5 speeds. In INSITE you can program up to 5 distinct target engine speeds
 - Each time the switch is toggled from ON-OFF-ON the engine will go to the next speed.
 - If at the 5th speed and the switch is toggled again the engine speed will match the 1st speed
- Remote Station PTO can provide up to 3 pre-programmed speeds and engine speed ramping functionality.
 - Offers more functionality than the Remote PTO feature. Very similar to Cab PTO mode and duplicates the cab switches
 outside of the cab.
 - To use both the Cab PTO and the Remote Station PTO features on the same vehicle, the Cab PTO switches must be multiplexed. The Remote Station PTO switches must be hardwired to the ECM.
 - Set, Resume and Additional target speeds can be programmed in INSITE

Additional PTO Feature - Remote Accelerator

- Allows the use of a remotely mounted accelerator, potentiometer, hand throttle, or foot pedal.
- A toggle switch input is required at H104 PIN 6 in order to activate the remote accelerator.
- Up to two throttles can be used, and one or more can be multiplexed.
- Must not be used to drive the vehicle on the road

PTO Programming Overview

- Accelerator Pedal or Lever Override with Maximum Engine Speed
 - If this functionality is disabled, then any installed accelerator pedal or lever will be disabled.
 - If pedal override is desired, then set the Enable parameter to Enable and enter in the maximum engine speed allowed with the accelerator.
- Maximum Engine Load Used to limit the engine torque in order to protect sensitive PTO pumps, etc.
- Maximum Speed During PTO operation engine speed will not be allowed to exceed this speed.
- Maximum Vehicle Speed During PTO operation if vehicle speed exceeds this value the PTO governor will disengage unless the
 parameter "Ignore Vehicle Speed Source in PTO" is enabled. This parameter will also not permit PTO to be engaged if vehicle speed
 is above this value.
- Minimum Speed Minimum speed that PTO can command. If Low Speed Governor (LSG) has a higher setting, then engine speed will not drop below the LSG setting.
- Ramp Rate Ramp rate used when first engaging PTO or when ramping up and down with Cab PTO. In order to ramp the engine speed PTO Speed Adjustment must be enabled. This is a desired rate and physical limitations of the engine, especially due to emissions requirements, will impact the ramp rate.
- Ignore Vehicle Source in PTO When enabled the Maximum Vehicle Speed parameter will be ignored and so will Vehicle Speed Sensor faults. If Transmission Driven PTO is enabled then this parameter must be set to Disable.
- Parking Brake Interlock Type This setting decides whether or not to allow PTO operations based on Parking Brake Position. There
 are 4 choices:
 - All All PTO modes require Parking Brake engagement.
 - Cab Only Only applies to Cab PTO mode, but does not apply to Remote PTO modes.
 - Remote Only Only Remote PTO modes require Parking Brake engagement.
 - None All PTO modes will ignore the Parking Brake.
- PTO Pump Mode For applications where the vehicle's main driveshaft is used to drive auxiliary equipment with the PTO feature engaged.
- PTO Speed Adjustment When enabled it allows engine speed to be ramped up or down based on the customer selectable ramp rate.

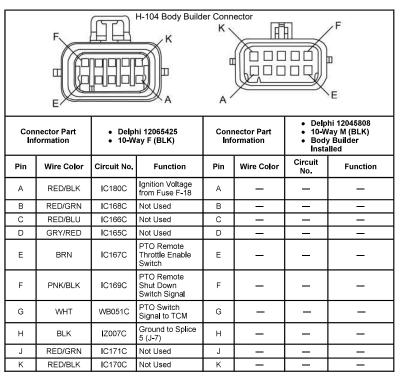
18.5

PTO Programming Overview

- Remote PTO Service Brake and Clutch Override –This must be enabled for PTO Mode to be cancelled by Service Brake Pedal operation. Service Brake Override must be set to enable in order to use this feature.
- Transmission Driven PTO Used for split shaft operations.
- Transmission Neutral Interlock If enabled PTO will not operate unless the transmission is in Neutral.
- Zero Vehicle Speed Source Limit If enabled engine speed is limited by the Maximum Engine Speed with Zero VSS which is set under Vehicle Speed Source.

18.6

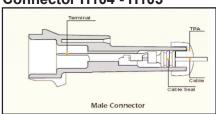
PTO Switch and Relay Harnesses H-104 & H-105





Connectors are located between the frame rails, on the crossmember next to the fuel tank.

Connector H104 - H105



	H-105 Body Builder Connector H A A D										
	nector Part formation		hi 12047937 ıy F (BLK)		ector Part ormation	Delphi 1204931 8-Way M (BLK) Body Builder Installed					
Pin	Wire Color	Circuit No.	Function	Pin	Wire Color	Circuit No.	Function				
А	BLK/WHT	IC172C	PTO Engage Switch Signal	А	_	_	_				
В	PNK/GRN	IC173C	Not Used	В	_	_	_				
С	PNK	IC181C	Low Reference ECM	С	ı		_				
D	BLU/YEL	IC188C	Remote PTO Set Switch	D	ı	I	ı				
E	BLU	IC037C	PTO Throttle Sensor Reference Voltage	Е	ı	l	ı				
F	YEL	IC038C	PTO Throttle Sensor Signal	F							
G	BLU/RED	IC039C	PTO Throttle Sensor Low Reference	G	_		_				
Н	BLU/ORN	IC187C	Remote PTO Resume Switch	Н	_	_	_				

Terminal

PN Wide range 12045773 1.0-0.08 mm2 12077628 0.5-0.35 mm2

TPA

PN

12124264

included with connector

Cable Seats

 Loose PN
 Wide range
 Color

 12048086
 2.85-2.03
 Dk.Red

 12089678
 2.15-1.60
 White

 12048087
 1.70-1.29
 Blue

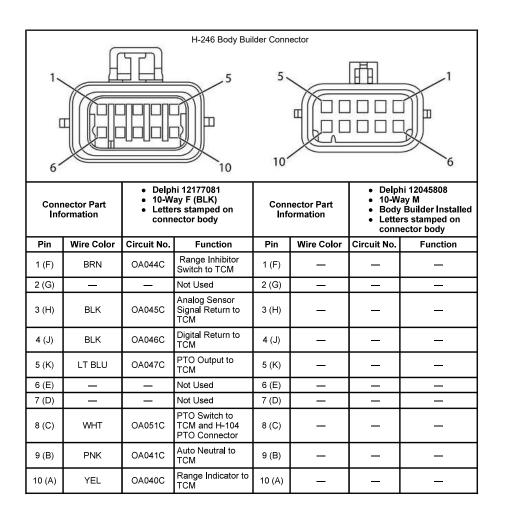
 12084193
 1.009-0.995
 Tan

Cavity Plug

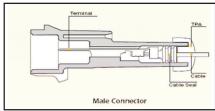
PN Cavity ID Color 12059168 5.2mm Dk.Red



PTO Transmission Harness H-246



Connector H-246



Terminal

PN Wide range 12045773 1.0-0.08 mm2 12077628 0.5-0.35 mm2

TPA

PΝ

12124264

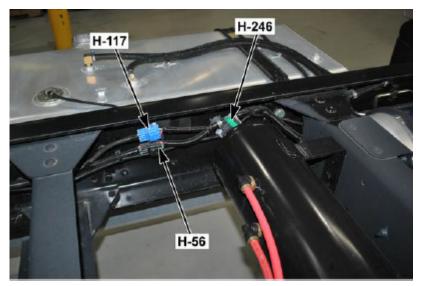
included with connector

Cable Seats

Loose PN	Wide range	Color
12048086	2.85-2.03	Dk.Red
12089678	2.15-1.60	White
12048087	1.70-1.29	Blue
12084193	1.009-0.995	Tan

Cavity Plug

PN Cavity ID Color 12059168 5.2mm Dk.Red



Connector is located within the frame rails, next to the fuel tank.

18.8

PTO Programming Overview

Parameter	Defaults	Unit	Range	Setting Criteria
PTO	Υ	Y = Enable N = Disable	N or Y	Remote PTO and Remote Station PTO take priority over Cab PTO if both are enabled at the same time.
Cab PTO	Y	Y = Enable N = Disable	N or Y	Cab PTO cannot be enabled if PTO is disabled.
Remote PTO	Y	Y = Enable N = Disable	N or Y	Remote PTO cannot be enabled if PTO is disabled.
Remote Station PTO	N	Y = Enable N = Disable	N or Y	Remote Station PTO cannot be enabled if PTO is disabled.
Diesel Particulate Filter Regeneration Allowed in PTO and Other Modes	Y	Y = Enable N = Disable	N or Y	
Fast Idle Warmup PTO Load Threshold	10	%	Min: 0 Max: 50	Fast Idle Warmup PTO Load Threshold cannot be programmed if Fast Idle Warmup is disabled.
Idle Shutdown in PTO	Y	Y = Enable N = Disable	N or Y	Idle Shutdown in PTO cannot be enabled if Idle Shutdown is disabled. Idle Shutdown in PTO cannot be enabled if PTO is disabled.
PTO Set Switch Engine Speed	950	rpm	Min: 500 Max: 2600	PTO Set Switch Engine Speed cannot be programmed if PTO is disabled.
PTO Resume Switch Engine Speed	950	rpm	Min: 500 Max: 2600	PTO Resume Switch Engine Speed cannot be programmed if PTO is disabled.
PTO Additional Switch Engine Speed	950	rpm	Min: 500 Max: 2600	PTO Additional Switch Engine Speed cannot be programmed if PTO is disabled.
PTO Service Brake Override	Y	Y = Enable N = Disable	N or Y	PTO Service Brake Override cannot be enabled if PTO is disabled. PTO Service Brake Override cannot be enabled if Service Brake Switch is disabled. PTO Service Brake Override cannot be disabled if Transmission Type is set to Automated Without Clutch.
PTO Clutch Override	Y	Y = Enable N = Disable	N or Y	PTO Clutch Override cannot be enabled if PTO is disabled. PTO Clutch Override cannot be enabled if Clutch Switch is disabled.
PTO Speed Adjustment Enable	N	Y = Enable N = Disable	N or Y	Cannot be enabled if PTO Enable is Disabled
PTO Speed Adjustment Rate	50	rpm	Min: 25 Max: 1000	Cannot be enabled if PTO Enable is Disabled Cannot be enabled if PTO Speed Adjustment Enable is Disabled
Remote PTO Speed Setting 1	950	rpm	Min: 500 Max: 2600	Remote PTO Speed Setting 1 cannot be programmed if Remote PTO is disabled.
Remote PTO Speed Setting 2	950	rpm	Min: 500 Max: 2600	Remote PTO Speed Setting 2 cannot be programmed if Remote PTO is disabled.
Remote PTO Speed Setting 3	950	rpm	Min: 500 Max: 2600	Remote PTO Speed Setting 3 cannot be programmed if Remote PTO is disabled.
Remote PTO Speed Setting 4	950	rpm	Min: 500 Max: 2600	Remote PTO Speed Setting 4 cannot be programmed if Remote PTO is disabled.
Remote PTO Speed Setting 5	950	rpm	Min: 500 Max: 2600	Remote PTO Speed Setting 5 cannot be programmed if Remote PTO is disabled.
Remote PTO Number of Speed Settings	1	none	Min: 1 Max: 5	Remote PTO Number of Speed Settings cannot be programmed if Remote PTO is disabled.
Remote Station PTO Set Switch Engine Speed	950	rpm	Min: 500 Max: 2600	Remote Station PTO Set Engine Speed cannot be enabled if PTO is disabled.
Remote Station PTO Resume Switch Engine Speed	950	rpm	Min: 500 Max: 2600	Remote Station PTO Resume Engine Switch Engine Speed cannot be enabled if PTO is disabled.

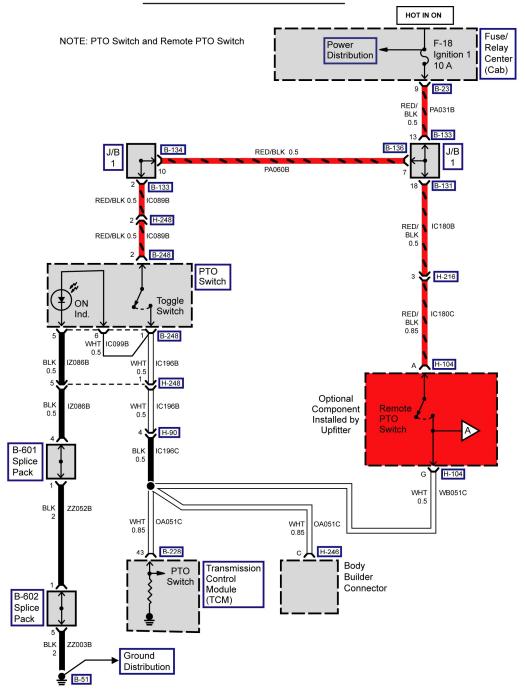
18.9

PTO Programming Overview

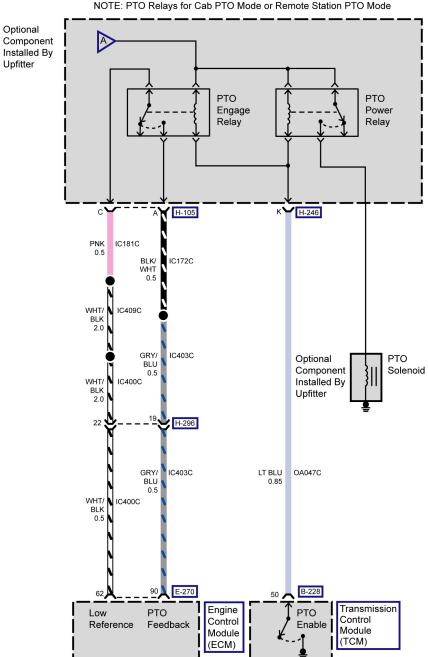
Parameter	Defaults	Unit	Range	Setting Criteria
Remote PTO Service Brake and Clutch Override	N	Y = Enable N = Disable	N or Y	Remote PTO Service Brake and Clutch Override cannot be enabled if PTO is disabled.
PTO Maximum Engine Speed	2400	rpm	Min: 500 Max: 2600	PTO Maximum Engine Speed cannot be programmed if PTO is disabled. PTO Maximum Engine Speed must be greater than or equal to PTO Minimum Engine Speed AND it must be less than or equal to PTO Accelerator Override Maximum Engine Speed.
PTO Minimum Engine Speed	700	rpm	Min: 500 Max: 2600	PTO Minimum Engine Speed cannot be programmed if PTO is disabled. PTO Minimum Engine Speed must be less than or equal to PTO Maximum Engine Speed.
PTO Maximum Vehicle Speed	9.66	km/h	Min: 0 Max: 48.3	PTO Maximum Vehicle Speed cannot be programmed if PTO is disabled.
PTO Maximum Engine Load	1084	Nm	Min: 0 Max: 1625	PTO Maximum Engine Load cannot be programmed if PTO is disabled.
PTO Engine Speed Ramp Rate	250	rpm/s	Min: 0.5 Max: 2500	PTO Engine Speed Ramp Rate cannot be programmed if PTO is disabled.
PTO Accelerator Override Maximum Engine Speed	3000	rpm	Min: 500 Max: 3000	PTO Accelerator Override Maximum Engine Speed cannot be programmed if PTO Accelerator Override is disabled.
PTO Accelerator Override	N	Y = Enable N = Disable	N or Y	PTO Accelerator Override cannot be enabled if PTO is disabled.
Ignore Vehicle Speed Source in PTO	N	Y = Enable N = Disable	N or Y	Ignore Vehicle Speed Source in PTO cannot be enabled if PTO is disabled. Ignore Vehicle Speed Source in PTO cannot be enabled if Transmission Driven PTO is enabled.
PTO Pump Mode	N	Y = Enable N = Disable	N or Y	PTO Pump Mode cannot be enabled if PTO is disabled.
PTO Pump Mode Maximum Vehicle Speed	0	km/h	Min: 0 Max: 24	PTO Pump Mode Maximum Vehicle Speed cannot be enabled if PTO is disabled.
PTO Pump Mode Vehicle Speed Sensor Override	Υ	Y = Enable N = Disable	N or Y	PTO Pump Mode Vehicle Speed Sensor Override cannot be enabled if PTO is disabled.
PTO Transmission Neutral Interlock	N	Y = Enable N = Disable	N or Y	
PTO Parking Brake Interlock Type	0	n/a	Min: 0 Max: 3	0 = None; 1 = Cab Only; 2 = Remote Only; 3 = All
Remote Accelerator	N	Y = Enable N = Disable	N or Y	
Remote Accelerator Mode	1	n/a	0, 1, and 4	0 = Remote Accelerator Not Including Transition Verification; 1 = Remote Accelerator Including Transition Verification; 4 = Maximum Accelerator. Only remote accelerator modes; 0, 1, and 4 are supported at this time. Remote Accelerator Mode cannot be programmed if Remote Accelerator is disabled.
Transmission Driven PTO (split shaft) with Vehicle Speed Processing	N	Y = Enable N = Disable	N or Y	
Transmission Driven PTO (split shaft)	N	Y = Enable N = Disable	N or Y	Parking Brake Switch must be enabled when Transmission Driven PTO is enabled. Transmission Driven PTO cannot be enabled if Ignore Vehicle Speed Source in PTO is enabled.
Transmission Driven PTO Type (split shaft)	2	n/a	Min: 0 Max: 3	0 = Engine Driven - Steady Load; 1 = Transmission Driven - Steady Load; 2 = Transmission Driven - Irregular Load; 3 = Transmission Driven - Cyclic Load Transmission Driven PTO Type cannot be programmed if Transmission Driven PTO is set to disable.

18.10

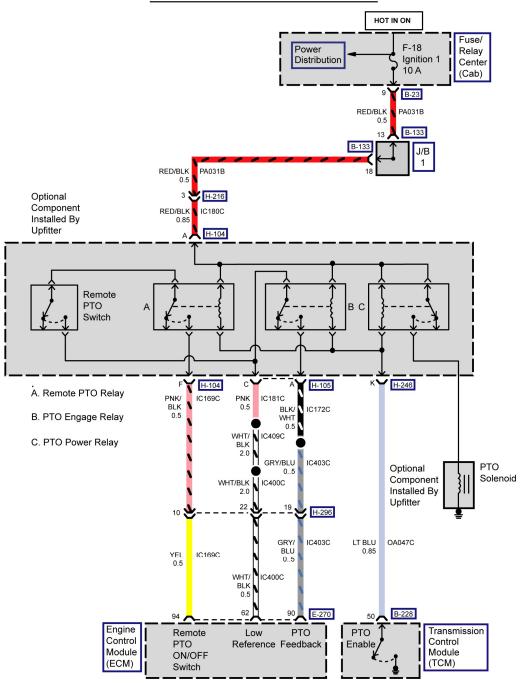
PTO Switch 1 of 2



PTO Switch 2 of 2

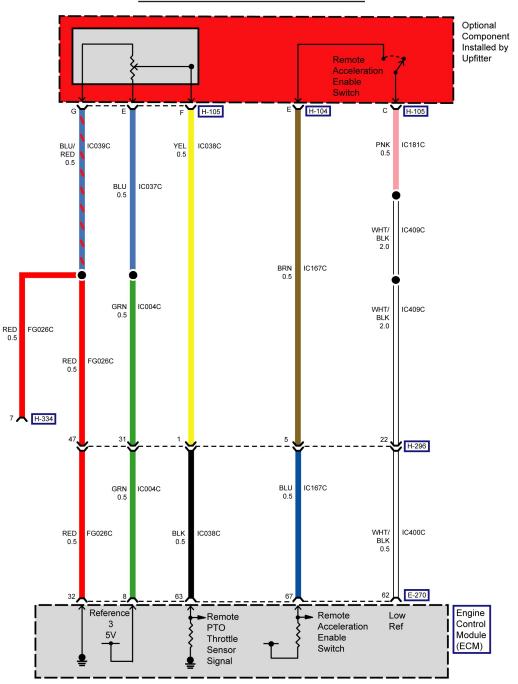


PTO Remote Switch

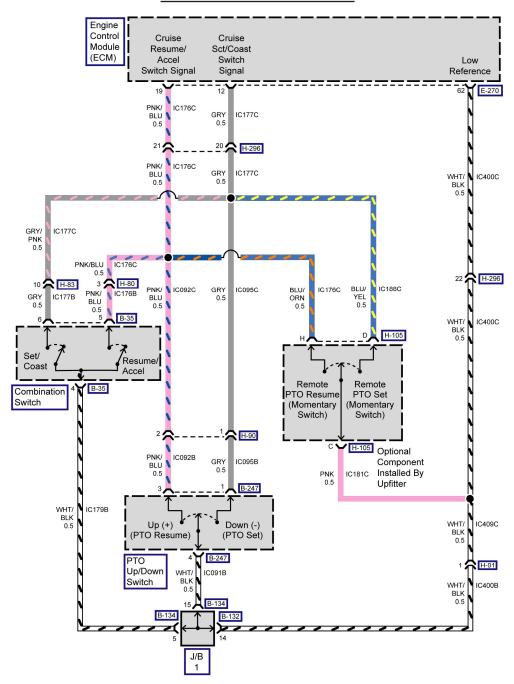


18.13

Remote Accelerator

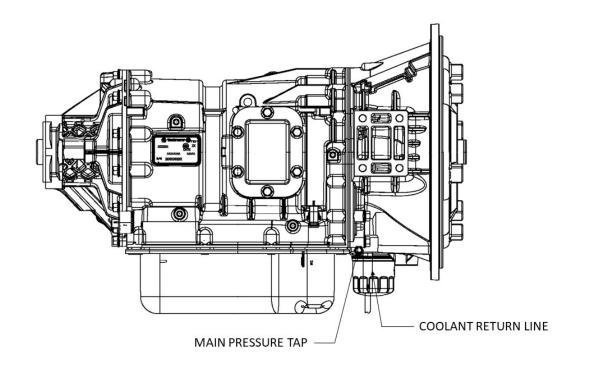


PTO Set/Resume



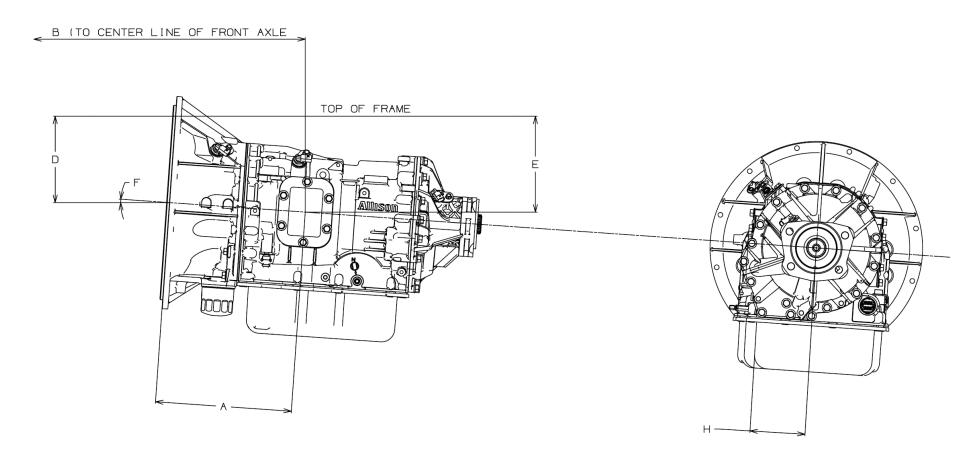
Transmission Model by Model Year and Vehicle Model

Transmission Model	Engine Model	Model Year	Chassis Model
Allison 2550 RDS	4HK1-TC	2018-2021	6500 HG
Allison 2550 RDS	B6.7	2022-Current	6500 HG
Allison 2500 RDS	B6.7	2022-Current	7500 XD & 7500 XD DR



18.16

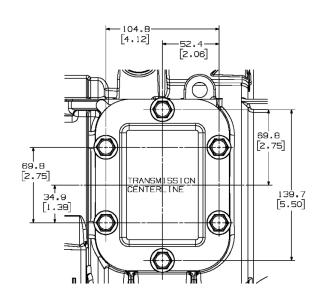
PTO Location, Drive Gear and Opening Information

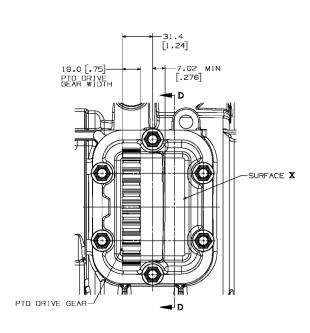


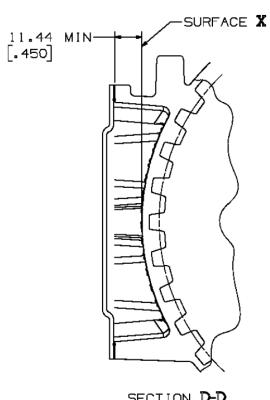
TRANSMISSION	OPENINING	BOLT	Α	В	D	E	F	Н	PTO DRIVE GEAR	RATIO OF PTO DRIVE GEAR	NUMBER OF	PITCH	MAX. OUTPUT
	LOCATION	PATTERN							LOCATION	SPEED TO ENGINE SPEED	TEETH		TORQUE
ALLISON	LEFT	DR 2	12.33	31.18	7.81	8.67	4.0°	4.99	PTO GEAR	1:1 WITH TURBINE	64	6.865	250 LB-FT

18.17

PTO Opening Information







SECTION D-D

19.1

DOCUMENT FOR INCOMPLETE VEHICLE APPLICABLE TO THE CHEVROLET 2025+ MY LCF

Isuzu Commercial Truck of America, Inc. 1400 S. Douglass Road, Suite 100 Anaheim, CA 92806

DO NOT REMOVE

THIS DOCUMENT MUST REMAIN WITH THIS VEHICLE UNTIL IT IS CERTIFIED AS A COMPLETED VEHICLE.

PLACE LABEL HERE

The Label affixed here includes the following information:

- The name of the incomplete vehicle manufacturer;
- The month and year the incomplete vehicle manufacturer performed its last manufacturing operation on the incomplete vehicle;
- The vehicle identification number (VIN);
- The Gross Vehicle Weight Rating (GVWR) expressed in kg (lb), intended for the vehicle when it is a completed vehicle;
- The Gross Axle Weight Rating (GAWR) expressed in kg (lb), intended for each axle of the vehicle when it is a completed vehicle, listed in order from front to rear
- Tire size, rim size, cold tire pressure.

This document is furnished as required by the Canada Motor Vehicle Safety Act (CVMSA) and United States (U.S.) Federal Motor Vehicle Safety Regulations (FMVSR) to aid intermediate and final stage manufacturers in their determination of conformity of the completed vehicle with applicable Canada Motor Vehicle Safety Standards (CMVSS), U.S. Federal Motor Vehicle Safety Standards (FMVSS), Canadian On-Road Vehicle and Engine Emission Regulations and Canada Interference Causing Equipment Standard - ICES-002. Also included are instructions, which must be followed in order to assure that U.S. Environmental Protection Agency (EPA) and California Air Resources Board (CARB)* emission certification requirements and U.S. National Highway Traffic Safety Administration (NHTSA) Fuel Economy Regulations and Canada/U.S. EPA Greenhouse Gas Regulations are met.

The label attached to this document will indicate this vehicle was either manufactured by Isuzu Motors Limited, Japan or by Builtmore Contract Manufacturing US, a division of The SHYFT Group, Inc. under a contractual agreement with Isuzu. All inquiries regarding the content of this document should be forwarded to Chevrolet through the www.gmupfiter.com website.

This document is not a substitute for knowledge and understanding of the requirements of the Canada Motor Vehicle Safety Act, Federal Motor Vehicle Safety Regulations (FMVSR); or applicable Canada Motor Vehicle Safety Standards (CMVSS) and U.S. Federal Motor Vehicle Safety Standards (FMVSS). Intermediate and final stage manufacturers should be familiar with the Regulations and Standards referred to above to be aware of their specific responsibilities as they relate to the final destination and sale of each incomplete vehicle.

Any intermediate or final stage manufacturer making material alterations to this incomplete vehicle during the process of manufacturing the complete vehicle should be constantly vigilant to recognize all effects, either direct or indirect, on other components, assemblies or systems caused by any alteration. No alteration should be made to the incomplete vehicle that directly or indirectly results in any component, assembly or system being in nonconformance with any applicable Canada Motor Vehicle Safety Standard or U.S. Federal Motor Vehicle Safety Standard or Emission Regulation or Fuel Economy/Greenhouse Gas Regulation.

The statements contained in this Incomplete Vehide Document are accurate as of the date of manufacture of the Incomplete Vehicle and can be relied on by any intermediate and/or final stage manufacturer as a basis for certification.

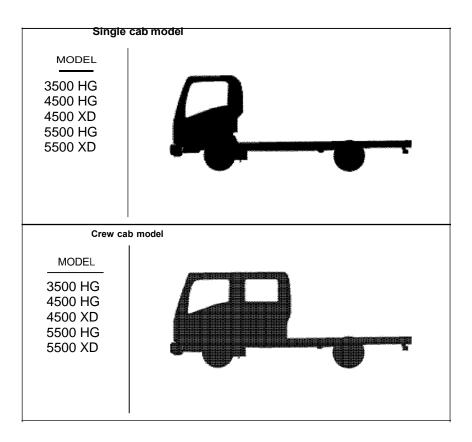
*Please see the Vehicle Emission Control Information to identify if the vehicle is California certified.

INTRODUCTION

This document contains information relative to conformance of this incomplete vehicle with the following:

- Part | U.S. FEDERAL MOTOR VEHICLE SAFETY STANDARDS AND CANADA MOTOR VEHICLE SAFETY STANDARDS
- Part II U.S. EPA, CALIFORNIA, AND CANADA EXHAUST & EVAPORATIVE EMISSION REQUIREMENTS AND EPA/ NHTSA / CANADA GREENHOUSE GAS EMISSIONS/FUEL ECONOMY REGULATIONS
- Part III CANADA INTERFERENCE CAUSING EQUIPMENT STANDARD

This document pertains to the following styles of trucks: Diesel or Gasoline engine



NOTE: Incomplete vehicle can be built into straight truck type vocational vehicles.

It cannot be built into a Truck Tractor or Bus

*Emission Certification:

To verify if this vehicle is certified to California emission standards, please locate the Vehicle Emission Control Information label generally located in the driver door area. The compliance statement on the label must say 'This vehicle complies with U.S. EPA and California regulations." If the label only states U.S EPA regulations, then the vehicle is not California certified.

PARTI

U.S. FEDERAL MOTOR VEHICLE SAFETY STANDARDS AND CANADA MOTOR VEHICLE SAFETY STANDARDS

This section contains a list of Canada Motor Vehicle Safety Standard (CMVSS), and U.S. Federal Motor Vehicle Safety Standards (FMVSS), followed by a section entitled Statements Regarding Canada Motor Vehicle Safety Standards (CMVSS), and Federal Motor Vehicle Safety Standards (FMVSS). An appropriate statement of applicability is made for each standard, and by vehicle model as it relates to the incomplete vehicle.

The identifiers TYPE 1, TYPE 2 or TYPE 3 prefix statements (of applicability) regarding Canada Motor Vehicle Safety Standards (CMVSS), and Federal Motor Vehicle Safety Standards (FMVSS). "Examples" of these statements follow:

- TYPE 1 A statement that the vehicle, when completed, will conform to the standard if no alterations are made in identified components of the incomplete vehicle. EXAMPLE: This vehicle when complete will conform to CMVSS 104 and FMVSS No. 104,. Windshield Wiping and Washing Systems, if no alterations are made in the windshield wiper components.
- TYPE 2 A statement of specific conditions of final manufacture under which the manufacturer specifies that the completed vehicle will conform to the standard. EXAMPLE: This vehicle when completed will conform to CMVSS 121 and FMVSS 121, Air Brake Systems, if it does not exceed any of the gross axle weight ratings, if the center of gravity at GVWR is not higher than## feet above the ground, and if no alterations are made. to any brake system component.
- TYPE 3 A statement that conformity with the standard cannot be determined based upon the components supplied on the incomplete vehicle, and that the incomplete vehicle manufacturer makes no representation to conformity with the standard.

In accordance with the requirements of Canada Motor Vehicle Safety Regulations, and Federal Motor Vehicle Safety Regulations Part 568.4, the following information is included on the label affixed to the front cover of this document:

- The name and mailing address of the incomplete vehicle manufacturer;
- The month and year the incomplete vehicle manufacturer performed its last manufacturing operation on the incomplete vehicle;
- The vehicle identification number (VIN);
- The Gross Vehicle Weight Rating (GVWR) expressed in kg (lb), intended for the vehicle when it is a
 completed vehicle;
- The Gross Axle Weight Rating (GAWR) expressed in kg (lb), intended for each axle of the vehicle when it is a completed vehicle. listed in order from front to rear.

In addition, the final stage manufacturer is responsible under Canada Motor Vehicle Safety Regulations, and Federal Motor Vehicle Safety Regulations and Part 567.5, to place the GVWR and the GAWR of each axle, on the Final Vehicle Certification Label. Required on label is the "Gross Vehicle Weight Rating" or "GVWR" followed by the appropriate value in kilograms and (pounds), which shall not be less than the sum of the unloaded vehicle weight, rated cargo load, and 68 kg (150 lb.) times the number of the vehicle's designated seating positions.

Unloaded Vehicle Weight means the weight of a vehicle with maximum capacity of all fluids necessary for operation of the vehicle, but without cargo or occupants or accessories that are ordinarily removed from the vehicle when they are not in use.

2026 Chevrolet Truck

1

19.4

During the completion of this vehicle, GVWR and GAWR may be affected in various ways, including but not limited to the following:

- The installation of a body or equipment that exceeds the rated capacities of the incomplete vehicle.
- The addition of designated seating positions that exceed the rated capacities of the incomplete vehicle.
- Alterations or substitution of any components such as axles, springs, tires, wheels, frames, steering and brake systems that may affect the rated capacities of the incomplete vehicle.

PART | - CHART A

LIST OF CANADA MOTOR VEHICLE SAFETY STANDARDS (CMVSS), AND FEDERAL MOTOR VEHICLE SAFETY STANDARDS (FMVSS), APPLICABLE TO GASOLINE OR DIESEL FUELED TRUCKS WITH A GVWR OF GREATER THAN 4536 kg (10,000 lb)

SEE STATEMENTS REGARDING CMVSS AND FMVSS ON PAGES THAT FOLLOW

CMVSS	FMVSS	TITLE	LCF
CMVSR Sec 6-7	Part 567""*	Labeling and Documentation Requirements	3
101	<u>101</u>	Controls and displays	1
102	102	Transmission shift lever sequence, starter interlock and transmission braking effect	1
103	103	Windshield defrosting and defogging systems	1
104	104	Windshield wiping and washing systems	1
105	105	Hydraulic brake systems	2
106	106	Brake hoses, Hydraulic, air and vacuum	1
108	-	Daytime Running Lights	2
108	108	Lamps, reflective devices and associated equipment	2
111	111	Mirrors and Rearview Visibility Systems	1
113	113	Hood Latch System	1
115	Part 565 **	Vehicle Identification Number	1
116	116	Motor-vehicle brake fluids	1
119	119	New pneumatic tires	1
120	120	Tire selection and rims	2
124	124	Accelerator control systems	1
-	125	Warning devices designed to be carried in motor vehicles	3
136	136	Electronic Stability Systems for Heavy Vehicles	3
205	205	Glazing materials	1
206	206	Door locks and door retention components	1
207	207	Seating systems	1
208	208	Occupant Crash Protection	1,3
209	209	Seat belt assemblies	1,3
210	210	Seat belt assembly anchorages	1,3
302	302	Flammability of interior materials	1
ICES-002	-	Canada interference causing equipment standard [PART III]	1
1106	40 CFR 202	Noise Emissions [PART II]	1

^{*} TYPE 1, 2 or 3 numbers to the right side of the table above designate the appropriate paragraph in the CMVSS or FMVSS standards that follow.

^{**} CFR Title 49 Transportation Part 565, Part 567

AGE

19.6

Statements Regarding Canada Motor Vehicle Safety Standards (CMVSS), and U.S. FederalJVlotor Vehide Safety Standards (FIVIVSS).

CMVSR SEC. 6 and 49 CFR 567 LABELING AND DOCUMENTATION REQUIREMENTS Applies to all models of incomplete vehicles contained in this document

TYPE 3 The following statement is applicable to all models of Incomplete Vehicles contained in this document.

This incomplete vehicle, when completed in stages by an intermediate and final stage manufacturer will comply with the requirements of Part 567 or the CMVSR Section 6, when the intermediate and final stage manufactures provide additional labeling to meet these requirements. GM makes no representation as to conformity.

CMVSS 101 and FMVSS 101- CONTROLS AND DISPLAYS Applies to all models of incomplete vehicles contained in this document

TYPE 1 The following statement is applicable to all models of Incomplete Vehicles contained in this document (unless otherwise noted on the cover).

This incomplete vehicle, when completed, will conform to CMVSS 101 and FMVSS 101 providing no alterations are made which affect the size, location, identification, or illumination of the controls and displays identified or the location, travel and type of driver's seat. If the driver's seat is installed by the intermediate or final stage manufacturer, the "H" point must be located as shown in the "Body Builder Manuals" and visibility and operation of the controls and displays listed below must meet the requirements of the standard.

The following controls must be operable, and the following displays for the following functions- and malfunctions shall be fitted in such a manner that they are identifiable, by the driver while the driver is seated in the driver's designated seating position with the driver's seat belt fastened around the driver in accordance with the manufacturer's instructions:

Hand operated controls (if equipped):

Automatic vehicle speed (cruise control)

Automatic transmission shift lever

Clearance lamps (switch)

Driver's Sunv1sor

Engine Idle Speed

Engine Start

Engine Stop

Hazard warning signal

Hazard warning switch

Headlamps

Headlamp high or low beam switch

Heating and air conditioning fan

Heating and air conditioning system

Horn control

Identification lamps (switch)

Ignition (switch)

Illumination intensity control

Master lighting switch

Position, side marker, end-outline marker,

identification or clearance lamps

Service brake

Steering wheel

Tail lamps

Turn signal

Windshield defogging and defrosting

systems

Windshield washer (washing system)

Windshield wiper (wiping system)

19.7

Foot operated controls (if equipped):

Accelerator Park brake (pedal) Service brake (pedal)

Displays (if equipped):

Air brake low pressure Air bag system readiness

Antilock brake system malfunction Battery charging condition Brake lining wear-out condition Brake system malfunction (*) Brake failure warning Electrical charge indicator

Fuel level

Gross loss of brake pressure condition

Hazard warning signal

Engine oil pressure

Engine coolant temperature display

Gear position DPF (Diesel Particulate Filter) Gauge Headlamp high beam Low fuel indicator

Low brake air pressure telltale Low brake fluid condition

Odometer(*)

Parking brake applied Passenger air bag status Seat belt (unfastened telltale)

Speedometer(*)

Transmission control position

Turn signal(s)

Variable brake proportioning system

malfunction

Multi information display (MID) DEF (Diesel Exhaust Fluid) Gauge

If the intermediate or final stage manufacturer installs any of the above controls and displays, those controls and displays will also have to meet the requirements of this standard.

CMVSS 102 and FMVSS 102 -TRANSMISSION SHIFT LEVER SEQUENCE, STARTER INTERLOCK AND TRANSMISSION BRAKING EFFECT Applies to all models of incomplete vehicles contained in this document

TYPE 1 The following statement is applicable to all incomplete vehicle models contained in this document (unless otherwise noted on the cover).

This incomplete vehicle, when completed, will conform to CMVSS 102 and FMVSS 102 providing no alterations are made which affect the function, physical, chemical, or mechanical properties, environment, location or vital spatial clearances of the components, assemblies or systems including but not limited to those listed below (if equipped):

Automatic Transmission (A/T) control and identification system,. including but not limited to:

A/T gear shift sequence and control logic (electrical or mechanical)

A/T steering column assembly

A/T control from floor shift mechanism

to transmission linkage A/T floor shift mechanism

A/T neutral safety switch assembly and wire

A/T position indicator dial

Brake - A/T interlock controls Engine starter interlock controls Vehicle & Chassis wiring harnesses A/T position indicator (pointer)

A/T position indicator actuating linkage Automatic transmission assembly Transmission shift position p.attern

(knob, plate or label)

^{*} For CMVSS only, when Canadian option is specified.

PAGE

19.8

CMVSS 103 and FMVSS 103 - WINDSHIELD DEFROSTING AND DEFOGGING SYSTEMS Applies to all models of incomplete vehicles contained in this document

TYPE 1 The following statement is applicable to all incomplete vehicle models contained in this document (unless otherwise noted on the cover).

This incomplete vehicle, when completed, will conform to CMVSS 103 and FMVSS 103 providing no alterations are made which affect the function, physical, chemical, or mechanical properties, environment, location or vital spatial clearances of the components, assemblies or systems including but not limited to those listed below (ff equipped):

Windshield defrosting and defogging systems, including but not limited to:

Chassis and instrument panel wiring

harness assembly

Defroster air distributor assembly

(manifold)

Defroster air duct assembly

Defroster air hoses - manifold to nozzle

Defroster air to windshield outlet

assembly (nozzle)

Defroster outlet to heater assembly adapter

Engine water outlet thermostat assembly Heater & defroster assembly- including

motor & blower

Heater & defroster control (mechanical)

Heater blower motor resistor assembly

(blower speed control)

Heater & water hoses and hose assemblies

Heater water inlet valve control

Windshield assembly

CMVSS 104 and FMVSS 104 -WINDSHIELD WIPING AND WASHER SYSTEMS Applies to all models of incomplete vehicles contained in this document

TYPE 1 The following statement is applicable to all models of incomplete vehicles contained in this document (unless otherwise noted on the cover).

This incomplete vehicle, when completed, will conform to CMVSS 104 and FMVSS 104 providing no alterations are made which affect the function, physical, chemical, or mechanical properties, environment, location or vital spatial clearances of the components, assemblies or systems including but not limited to those listed below (if equipped):

Windshield wiping and washing systems, including but not limited to:

Chassis wiring harness Washer reservoir cap

Water reservoir filler assembly

Windshield assembly

Windshield wiper arm assembly Windshield wiper blade assembly

Windshield wiper linkage assembly

Windshield wiper and washer control Windshield wiper and washer motor and

pump assembly

Windshield washer flUid reservoir Windshield washer system hoses

Windshield washer nozzle

CMVSS 105 and FMVSS 105 - HYDRAULIC BRAKE SYSTEMS Applies to all models of incomplete vehicles contained in this document

TYPE 2 The following statement is applicable to all models of incomplete vehicles contained in this document (unless otherwise noted on the cover).

This incomplete vehicle, if equipped with hydraulic brakes, when completed, will conform to CMVSS 105 and FMVSS 105 providing no alterations are made which affect the function, physical or mechanical properties, environment, location or vital spatial clearances of the components, assemblies or systems identified below. In addition, the maximum vertical center of gravity specified below must not be exceeded at maximum GVWR and rated front and rear GAWR.

Application
LCF Class 3,4,5

Maximum Center of Gravity millimeter (inches) above ground 1600 mm (63")

Hydraulic Brake Systems, including but not limited to:

Hydraulic brake lines, fittings and routings including gauges, warning devices and warning statements

Hydraulic brake valves and components

Hydraulic brake reservoir

Service and/or parking brake assemblies and components

(Power boosters, master cylinder, ABS module, calipers, wheel cylinders, etc.)

Tires

Wheelbases

Brake pedal, brake light switch, parking brake hand level and switch, and related mechanical components

Brake and ABS warning light

Vacuum pump, tank, pipes and hoses (including warning devices and statements)

Master cylinder reservoir warning statement

Hydraulic booster pump, pipes, hoses and reservoir (including warning devices)

CMVSS 106 and FMVSS 106 - BRAKE HOSES Applies to all models of incomplete vehicles contained in this document

TYPE 1 The following statement is applicable to all models of incomplete vehicles contained in this document (unless otherwise noted on the cover).

This incomplete vehicle, when completed, will conform to CMVSS 106 and FMVSS 106 providing no alterations are made which affect the function, physical, chemical, or mechanical properties, environment, location or vital spatial clearances of the components, assemblies or systems including but not limited to those listed below:

Hydraulic Air, and Vacuum Brake Hoses Hoses and hose end fittings Labeling requirements Brake Hose Assemblies - and Brake Hose End Fittings

CMVSS 108 - DAYTIME RUNNING LIGHTS Applies to all models of incomplete vehicles contained in this document

TYPE 1 The following statement is applicable to all models of incomplete vehicles contained in this document (unless otherwise noted on the cover).

This incomplete vehicle, when completed will conform to the Daytime Running Lamps (DRL) requirements of CMVSS108 providing no alterations are made to the ignition switch, DRL system components or wiring, and any vehicle forward lighting as manufactured by Chevrolet.

CMVSS 108 and FMVSS 108 - LAMPS, REFLECTIVE DEVICES AND ASSOCIATED EQUIPMENT Applies to all models of incomplete vehicles contained in this document

TYPE 2 The following statement is applicable to all models of incomplete vehicle.s contained in this document (unless otherwise noted on the cover).

This incomplete vehicle, when completed, will conform to CMVSS 108 and FMVSS 108 providing it is completed in accordance with the following specific conditions by the final stage manufacturer:

- 1. Body width must be between 2.032 m (80") and 2.438 m (96"). (2.184 m (86") MIN Body Width For Crew Cab).
- 2. Each of these devices must be properly installed on the completed vehicle and meet all the requirements of CMVSS 108 and FMVSS 108:
 - a. The following devices, when provided, located and/or wired by Chevrolet meet the requirements of this standard.

Headlamps or Daytime running lamps

Cab roof clearance and ID lamps (front) Turn signal lamps (front) Side marker lamp (Front) Turn signal operating unit

Vehicle hazard warning signal operating unit Side reflex reflectors (front) Turn signal flasher Vehicle hazard warning signal flasher

b. The following lamps and reflective devices are temporarily mounted on this incomplete vehicle as required for transportation. When relocating them, intermediate or final stage manufacturers must refer to the Chevrolet Body Builders Manual and assure conformance with the location, visibility, and operational requirements of CMVSS 108 and FMVSS 108.

License plate lamp

Rear combination lamps (tail lamps, stop lamps, turn signal lamps and back-up lamps)

Reflex reflectors (rear)

c. No part of the completed vehicle shall be installed so as to prevent any of the devices listed in (a) or (b) above from meeting their required photometric output at the specified test points. If such interference exists, the applicable devices may have to be relocated or additional devices added to meet the requirements of CMVSS 108 and FMVSS 108:

Any CMVSS 108 and FMVSS 108 part shall not be painted.

19.11

d. The following devices are not installed on this incomplete vehicle or supplied by Chevrolet. When added by intermediate or final stage manufacturers, they must also meet the requirements of CMVSS 108 and FMVSS 108:

Clearance lamps (rear)

Identification lamps (rear)

Side reflex reflectors (rear)

Side marker lamps (rear)

- e. The following additional devices must be installed on the van body and meet all requirements of this standard if the overall vehicle length is 9.1 m (30 feet) or greater.
 - Intermediate side marker lamps

Intermediate side reflex reflectors

3. No alterations (other than any relocation of Items in 2) b.) which may be necessary for conformance to CMVSS 108 and FMVSS 108 should be made which affect the location, mounting surfaces, function, environment or visibility clearance of the above listed devices which have been installed on this incomplete vehicle.

CMVSS 111 and FMVSS 111- REARVIEW MIRRORS Applies to all models of incomplete vehicles contained in this document

TYPE 1 The following statement is applicable to all models of incomplete vehicles contained in this document (unless otherwise noted on the cover of this document).

This incomplete vehicle, when completed, will conform to FMVSS 111 providing no alterations or substitutions are made to the outside rearview mirrors, the driver's seat location is not altered, and the body is installed symmetrical about the vehicle centerline. The overall width should be no greater than;

ModelMillimeter (inches)Width Limit with 102" wide mirror bracketsN-Series Class 3,4,52438 mm (96")2590 mm (102")

CMVSS 113 and FMVSS 113 - HOOD LATCH SYSTEM Applies to all models of incomplete vehicles contained in this document

TYPE 1 The following statement is applicable to all models of incomplete vehicles contained in this document (unless otherwise noted on the cover of this document).

This incomplete vehicle, when completed, will conform to CMVSS 113 providing no alterations are made which affect the function, physical, chemical, or mechanical properties, environment, location or vital spatial clearances of the components, assemblies or systems including but not limited to those listed below (if equipped)

Hood Latch System

19.12

CMVSS 115 and 49 CFR 565 -VEHICLE IDENTIFICATION NUMBER Applies to all models of incomplete vehicles contained in this document

TYPE 1 The following statement is applicable to all models of incomplete vehicles contained in this document (unless otherwise noted on the cover).

This incomplete vehicle, when completed, will conform to CMVSS 115 providing no alterations are made which affect the function, physical, chemical, or mechanical properties, environment, location or vital spatial clearances of the components, assemblies or systems including but not limited to those listed below:

Vehicle Identification Number (VIN)

VIN label or plate

VIN plate fasteners

CMVSS 116 and FMVSS 116 - MOTOR VEHICLE BRAKE FLUIDS Applies to all models of incomplete vehicles contained in this document

TYPE 1 The following statement is applicable to all models of incomplete vehicles contained in this document (unless otherwise noted on the cover).

This incomplete vehicle, when equipped with approved hydraulic brake fluid will conform to CMVSS 116 and FMVSS 116 providing no alterations are made which affect the physical or chemical properties of the brake fluid.

CMVSS 119 and FMVSS 119 - NEW PNEUMATIC TIRES FOR MOTOR VEHICLES WITH A GVWR OF MORE THAN 4,536 KILOGRAMS (10,000 POUNDS) Applies to all models of incomplete vehicles contained in this document

TYPE 1 The following statement is applicable to all models of incomplete vehicles contained in this document (unless otherwise noted on the cover).

This incomplete vehicle, when completed, will conform to CMVSS119 and FMVSS119 providing no alternation are made which affect the function, physical, chemical or mechanical properties, environment, location or vital spatial clearance of the components, assemblies or systems including but not limited to those listed below:

Tires Wheels

CMVSS 120 and FMVSS 12.0 - TIRE SELECTION AND RIMS FOR VEHICLES OTHER THAN PASSENGER CARS

Applies to all models of incomplete vehicles contained in this document

TYPE 2 The following statement is applicable to all models of incomplete vehicles contained in this document (unless otherwise noted on the cover).

This incomplete vehicle, when completed, will conform to CMVSS 120 and FMVSS 120 provided:

A. No alterations are made which affect the function, physical or mechanical properties, environment, location or vital spatial clearances of the components, assemblies or systems including but not limited to:

Owner Manual Instructions

Wheels

Tires

- B. GVWR, GAWR front and rear weight ratings as listed on the incomplete vehicle label affixed to the front cover of this document are not exceeded.
- C. The tire and wheel information shown on the incomplete vehicle label must be transferred to the final stage manufacturer's Certification label or Tire Information Label providing no equipment or tire pressure changes are made and the final stage manufacturer labels the vehicle in compliance with CMVSS 120 and FMVSS120.

NOTE: Incomplete Vehicles referenced in this document may be shipped with reduced tire pressures for shipping purposes only. Inflate tires to specified pressure before delivery to customers.

CMVSS 124 and FMVSS 124 - ACCELERATOR CONTROL SYSTEMS Applies to all models of incomplete vehicles contained in this document

TYPE 1 The following statement is applicable to all models of incomplete vehicles contained in this document (unless otherwise noted on the cover).

ThiS incomplete vehicle, when completed, will conform to CMVSS 124 and FMVSS 124 providing no alterations are made which affect the function, physical chemical, or mechanical properties, environment, location, or vital spatial clearances of the components, assemblies or systems including but not limited to those listed below:

Accelerator/throttle control systems, including but not limited to:

Accelerator pedal and attachments
Accelerator lever and supporting bracket assembly
Accelerator cable, support brackets, and seals
Accelerator return spring(s)
Attachment to injection pump lever - pin, hole, or ball stud
Downshift switch
Idling control cable assembly

19.14

FMVSS 125 -WARNING DEVICES Applies to all models of incomplete vehicles contained in this document

TYPE 1 The following statement is applicable to all models of incomplete vehicles contained in this document (unless otherwise noted on the cover).

This incomplete vehicle, when completed, will conform to FMVSS 125 providing no alterations are made which affect the function, physical chemical, or mechanical properties, environment, location, or vital spatial clearances of the components, assemblies or systems including but not limited to those listed below:

Warning devices (if equipped)

Safety warning triangles

Backup Alarm

Fire Extinguisher

CMVSS 136 and FMVSS 136 - ELECTRONIC STABILITY CONTROL SYSTEMS FOR HEAVY VEHICLES Applies to all models of incomplete vehicles contained in this document

TYPE 3 The following statement is applicable to all models of incomplete vehicles contained in this document (unless otherwise noted on the cover).

Conformity with CMVSS 136 and FMVSS 136 cannot be determined upon the components supplied on the incomplete vehicle, and Chevrolet makes no representation to conformity with the standard.

This incomplete vehicle has not been built, tested, or manufactured with an electronic stability control system.

NOTE: ThiS incomplete vehicle cannot be built into a Truck Tractor.

CMVSS 205 and FMVSS 205 - GLAZING MATERIALS Applies to all models of incomplete vehicles contained in this document

TYPE 1 The following statement is applicable to all models of incomplete vehicles contained in this document (unless otherwise noted on the cover).

This incomplete vehicle, when completed, will conform to CMVSS 205 and FMVSS 205 providing no alterations are made which affect the function, physical chemical, or mechanical properties, environment, location, or vital spatial clearances of the components, assemblies or systems including but not limited to those listed below:

Glazrng material Visibility of the monogram Monogram Windshield shade banding

Driver's Side Reference Point {SgRP}

Final compliance with CMVSS 205 and FMVSS 205 is the responsibility of the final stage manufacturer for any modifications, or added material, parts, components, or systems.

19.15

CMVSS. 206 and FMVSS 206 - DOOR LOCKS AND DOOR RETENTION COMPONENTS Applies to all models of incomplete vehicles contained in this document

TYPE 1 The following statement is applicable to all models of incomplete vehicles contained in this document (unless otherwise noted on the cover of this document).

This incomplete vehicle, when completed, will conform to CMVSS 206 and FMVSS 206 providing no alterations are made which affect the function, physical, chemical, or mechanical properties, environment, location or vital spatial clearances of the components, assemblies or systems including but not limited to those listed below:

Door lock Door hinge

Inside lock control linkage Door latch Door latch striker plate Exterior door handles

Final compliance with CMVSS 206 and FMVSS 206 is the responsibility of the final stage manufacturer for any modifications, or added material, parts, components, or systems.

CMVSS 207 and FMVSS 207 -ANCHORAGE OF SEATS Applies to all models of incomplete vehicles contained in this document

TYPE 1 The following statement is applicable to all models of incomplete vehicles contained in this document (unle.ss otherwise noted on the cover of this document).

This incomplete vehicle, when completed, will conform to CMVSS 207 and FMVSS 207 providing no alterations are made which affect the function, physical, chemical, or mechanical properties, environment, location or vital spatial clearances of the components, assemblies or systems including but not limited to those listed below:

Seating systems, including but not limited to:

Floor pan assemblies Seat assembly

Folding seat or seat back latch assembly Seat or seat back latch assembly

Seat adjuster assembly Seat or seat back latch release control

Seat anchorage's brackets reinforcements, Seat or seat back latch striker

attachment hardware, etc.

Seat riser

PAGE

19.16

CMVSS 208 and FMVSS 208 - OCCUPANT CRASH PROTECTION Applies to all models of incomplete vehicles contained in this document

TYPE 1 The following statement is applicable to all models of incomplete vehicles contained in this document (unless otherwise noted on the cover).

This incomplete vehicle, when completed, will conform to the seat belt provision sections of CMVSS 208 and FMVSS 208 providing no alterations are made which affect the function, physical, chemical, or mechanical properties, environment, location or vital spatial clearances of the components, assemblies or systems installed by Chevrolet including but not limited to:

Owner Manual Instructions

Location/configuration of designated seats

Seat anchorages
Seat assemblies

Seat belt assemblies
Seat belt warning system

Seat belt anchorages

TYPE 3 The following statement is applicable to all types of incomplete vehicles contained in this document with respect to any seats, seat belt assemblies or seat belt assembly anchorages installed by the intermediate or final stage manufacturer (unless otherwise noted on the cover).

Conformity with CMVSS 208 and FMVSS 208 cannot be determined based upon the components supplied by intermediate or final stage manufacturer, and Chevrolet makes n.o representation to conformity with the standard.

CMVSS 209 and FMVSS 209 - SEAT BELT ASSEMBLIES Applies to all models of incomplete vehicles contained in this document

TYPE 1 The following statement is applicable to all models of incomplete vehicles contained in this document (unless otherwise noted on the cover).

This incomplete vehicle, when completed, will conform to the CMVSS 209 and FMVSS 209 providing no alterations are made which affect the function, physical, chemical, or mechanical properties, environment, location or vital spatial clearances of the components, assemblies or systems installed by Chevrolet including but not limited to:

Owner Manual instructions

Location/configuration of designated seats

Seat anchorages

Seat belt assemblies
Seat belt warning system

Seat ass.emblies

Seat belt anchorages

Original attachment locations

TYPE 3 The following statement is applicable to all types of incomplete vehicles contained in this document with respect to any seats, seat belt assemblies or seat belt assembly anchorages installed by the intermediate or final stage manufacturer (unless otherwise noted on the cover).

Conformity with CMVSS 209 and FMVSS 209 cannot be determined based upon the components supplied by intermediate or final stage manufacturer, and Chevrolet makes no representation to conformity with the standard.

PAGE

19.17

CMVSS 210 and FMVSS 210-SEAT BELT ASSEMBLY ANCHORAGES Applies to all models of incomplete vehicles contained in this document

TYPE 1 The following statement is applicable to all models of incomplete vehicles contained in this document {unless otherwise noted on the cover}.

This incomplete vehicle, when completed, will conform to CMVSS 210 and FMVSS 210 providing no alterations are made which affect the function, physical, chemical, or mechanical properties, environment, location or vital spatial clearances of the components, assemblies or systems including but not limited to those listed below:

Seat assemblies Seat belt anchorage brackets, plates,

Seat belt assemblies and reinforcements

Floor pan assembly Child restraint system including anchorages,
Seat belt routing brackets, plates and reinforcements

Seat position/adjustment capability B or C pillar structures

Owner Manual instructions Roof structure

TYPE 3 The following statement is applicable to all types of incomplete vehicles contained in this document with respect to any seats, seat belt assemblies or seat belt assembly anchorages installed by the intermediate or final stage manufacturer (unless otherwise noted on the cover).

Conformity with CMVSS 210 and FMVSS 210 cannot be determined based upon the components supplied by intermediate or final stage manufacturer, and Chevrolet makes no representation to conformity with the standard.

CMVSS 302 and FMVSS 302-FLAMMABILITY OF INTERIOR MATERIALS Applies to all models of incomplete vehicles contained in this document

TYPE 1 The following statement is applicable to all models of incomplete vehicles contained in this document (unless otherwise noted on the cover).

This incomplete vehicle, when completed, will conform to CMVSS 302 and FMVSS 302 providing no alterations are made which affect the function, physical, chemical, or mechanical properties, environment, location or vital spatial clearances of the components, assemblies or systems including but not limited to those listed below, and installed by Chevrolet:

Arm rests Rear Organizer
Compartment shelves Seat assemblies
Console Seat backs
Engine compartment covers Seat belts
Floor coverings Seat cushions
Head restraints Shades
Headlining Sun visors

Instrument panel Wheel housing covers

All trim panels including door, front, rear and side panels.

NOTE: This list above includes any other interior materials, such as padding and crash deployed elements that are designed to absorb energy on contact by occupants in the event of a crash

PARTII

U.S. EPA, CALIFORNIA, AND CANADA EXHAUST & EVAPORATIVE EMISSION REQUIREMENTS AND EPA/ NHTSA / CANADA GREENHOUSE GAS EMISSIONS /FUEL ECONOMY REGULATIONS

Incomplete vehicles come in three major classifications: (1) Light Duty Vehicles, Light Duty Trucks, and Heavy Duty Vehicles (Including Medium Duty in California) are certified by the primary manufacturer and the vehicle is labeled as being in compliance with emission and fuel economy requirements. (2) Heavy Duty Vehicles are required to have an engine certified by the engine manufacturer and bear an engine emissions label, and if a gasoline vehicle bear an evaporative emissions label. (3) Light Duty Vehicles certified and labeled by the intermediate or final stage vehicle manufacturer as complying with emission and fuel economy requirements.

The incomplete vehicles contained in this document are classified as Heavy Duty Vehicles. The final stage manufacturer is responsible to not exceed the GVWR and GAWR listed on the incomplete vehicle certification label and to apply a Final Vehicle Certification Label. If any of these restrictions are exceeded, re-certification by the final stage manufacturer will be required.

In addition, all gasoline/gasoline-ethanol blend powered Federal/Callfornia Light Duty, Medium Duty and Heavy Duty Vehicles are required to have an approved fuel evaporative emission control system. Vehicles certified to Heavy Duty gasoline emission standards also require special evaporative emission labeling. In order to assure that Environmental Protection Agency (EPA), National Highway Traffic Safety Administration (NHTSA), California and Canada Emission Certification and/or Greenhouse Gas/Fuel Economy regulations are met, this vehicle must be completed in strict accordance with all instructions contained in this document, especially the following instructions which relate to:

- EMISSION RELATED COMPONENTS
- EVAPORATIVE EMISSION REQUIREMENTS
- FUEL PIPE AND FUEL NECKS (CALIFORNIA)
- LABELS
- EXTERIOR NOISE

EMISSION RELATED COMPONENTS EXHAUST AND EVAPORATIVE REQUIREMENTS.

TYPE 1 The following statement is applicable to all models of incomplete vehides contained in this document (unless otherwise noted on the cover).

This incomplete vehicle, when completed, conforms to U.S. EPA, CALIFORNIA, AND CANADIAN EXHAUST & EVAPORATIVE EMISSION REQUIREMENTS providing no alterations are made which affect the function, physicat chemical, or mechanical properties, environment, location or vital spatial clearances of the components, assemblies or systems including but not limited to those listed below (if equipped), and installed by Chevrolet:

Air inlet system

Axles*2

Catalytic converter

Coolant temperature sensor

Crankcase emission control system

Engine assembly*2

Engine electronics (ECM/PCM/VCM)

Engine speed sensor

Exhaust system*2

Evaporative emission

control system (t)*I

Fuel injection system

Fuel system*2

Ignition system (t)

Intake manifold

MAF Sensor

EGR system
Exhaust emission control system
Charge Air Cooler and related system
Exhaust oxygen sensors (if equipped)
Diesel Particulate Filter(tt)

Tires*2
Transmission Control Module (TCM)*2
A/C System (if equipped)
Owner Manual instructions
Selective Catalytic Reduction System(tt)

t Gasoline engine ttoiesel engine

- *1 All Federal/California gasoline powered heavy duty vehicles will have an evaporative emission control system that is certified for a fuel tank capacity not to exceed the amount shown on Vehicle Evaporative Emission Control Information Label.
- *2 All Federal certified heavy duty vehicles are required to meet Federal Green House Gas (GHG) requirements. Please check the Vehicle Emission Label located either on driver's side door or inside the engine compartment.

ORIGINAL TIRES for compliance to GHG requirements are described in the Owners Manual.

Refer to the Owners Manual for replacing of tires.

EXHAUST SYSTEM

TYPE 1 The following statement is applicable to all incomplete vehicle models contained in this document (unle.ss otherwise noted on the cover).

This incomplete vehicle, when completed, will conform to 49 CFR Part 393.83 providing no alterations are made which affect the function, physical, chemical, or mechanical properties, environment, location or vital spatial clearances of the components, assemblies or systems.

Vertical exhaust kit assembly provided by Chevrolet meets the Part 393.83 requirements, Chevrolet makes not statement of conformity with this standard for other vertical exhaust kits.

1

19.20

EVAPORATIVE EMISSION REQUIREMENTS.

TYPE 1 The following statement is applicable to all gasoline models of incomplete vehicles contained in this document (unless otherwise noted on the cover).

This incomplete vehicle, when completed, will conform to applicable exhaust and evaporative emission requirements providing no alterations are made which affect the function, physical, chemical, or mechanical properties, environment, location or vital spatial clearances of the components, assemblies or systems including but not limited to those listed below, and installed by Chevrolet:

Fuel Tank Assembly
Fuel feed hoses front and rear
Fuel return hoses front and rear
Fuel tank filler hoses to filler neck
Exhaust system

Fuel tank vent hoses to filler neck
Fuel vapor lines at canister
Fuel vapor lines from engine to chassis pipes
Fuel vapor lines from fuel tank
sender to chassis pipes

SPECIFICATION FOR FILL PIPES AND OPENINGS OF MOTOR VEHICLE FUEL TANKS (APPLICABLE ONLY TO CALIFORNIA GASOLINE/GASOLINE-ETHANOL BLEND POWERED VEHICLES)

TYPE 2 The following statement is applicable to all models of incomplete vehicles contained in this document (unless otherwise noted on the cover).

This incomplete vehicle, when completed, will conform to Title 13, California Code of Regulations Section 2235, and the "Specifications for Fill Pipes and Openings of 2015 and subsequent Model Year Motor Vehicle Fuel Tanks", dated March 22, 2012, providing no alterations are made which affect the function, physical, chemical, or mechanical properties, environment, location or vital spatial clearances of the fuel filler neck(s) and any intermediate or final stage manufacturer completes the fuel filler neck installation(s) according to the instructions which are furnished in the loose parts box.

LABELS

TYPE 2 The following statement is applicable to all types of incomplete vehicles contained in this document (unless otherwise noted on the cover).

This incomplete vehicle, when completed, will conform to U.S. EPA, CALIFORNIA, AND CANADIAN EXHAUST & EVAPORATIVE EMISSION REQUIREMENTS AND EPA/NHTSA GREENHOUSE GAS EMISSIONS/FUEL ECONOMY REGULATION labeling requirements providing no alterations are made which affect the function, physical, chemical, or mechanical properties, environment, location or vital spatial clearances of the Emission Control related Information Labels that are permanently affixed. The labels are required by government regulation and must not be obstructed from view or defaced so as to impair their visibility or legibility.

19.21

EXTERIOR NOISE

CMVSS 1106 - EXTERIOR NOISE

Applies to all models of incomplete vehi.cles contained in this document

TYPE 1 The following statement is applicable to all models of incomplete vehicles (unless otherwise noted on the cover of this document).

This incomplete vehicle, when completed, will conform to the above standards providing no alterations are made which affect the function, physical, chemical, or mechanical properties, environment, location or vital spatial clearances of the components, assemblies or systems including but not limited to those listed below (if equipped):

Air Induction System (tuning elements)

Alternator

Axles/halfshafts/propshaft

Catalytic converter and its location

(if equipped)
Engine assembly
Exhaust System

Exterior noise generating devices

Exterior rearview mirror assemblies

Front of dash sound deadening material Hood assembly including sound deadening

material and seals

Intake system (i.e. Air filter,

Mass Air flow (MAF) sensor, ducts))

Power steering pump

Powertrain control and logic

Powertrain cooling fan and motor assemblies

Radiator/condenser assembly to body seals

Tires (including correct tire pressure)
Transmission/Transaxle assembly

Underbody shields including air deflector

Wheel house liners and shields

Final compliance with CMVSS 1106 is the responsibility of the final stage manufacturer for any modifications, or added material, components, or systems..

PART III

CANADA INTERFERENCE CAUSING EQUIPMENT STANDARD

INTERFERENCE CAUSING EQUIPMENT STANDARD (CANADA ONLY) - ICES-002 Applies to all models of Incomp.lete Vehicles contained in this document

TYPE 1 The following statement is applicable to all types of incomplete vehicles propelled by an internal combustion engine, electrical means or both contained in this document (unless otherwise noted on the cover).

This incomplete vehicle, when completed, will conform to the performance requirements of the above standard provided no alterations made which affect the function, physical, chemical, or mechanical properties, environment, location or vital spatial clearances of the components, assemblies or systems including but not limited to those listed below:

Ignition wires & plugs
Ignition coil(s)

Low voltage battery

Charging system

Spark plug wlres

ECM/TCM/PCM

BCM/SDM

Each vehicle propelled by an internal combustion engine, electrical means or both shall bear a bi-lingual label that represents the manufacturer's Self-Declaration of Compliance (SDoC) to Innovation, Science and Economic Development Canada ICES-002. This label shall be permanently affixed to the vehicle propelled by an internal combustion engine, electrical means or both or displayed electronically and its text must be clearly legible.

The final stage manufacturer must provide a statement of compliance on the Final Stage Manufacturer's Compliance Label or an additional label with the following bllingual information in order to comply with Industry Canada's Interference Causing Equipment Standard ICES/NMB-002:

ICES/NMB-002

20.1

DOCUMENT FOR INCOMPLETE VEHICLE APPLICABLE TO THE CHEVROLET 2024+ MY LCF

Isuzu Commercial Truck of America, Inc. 1400 S. Douglass Road, Suite 100 Anaheim, CA 92806

DO NOT REMOVE

THIS DOCUMENT MUST REMAIN WITH THIS VEHICLE UNTIL IT IS CERTIFIED AS A COMPLETED VEHICLE.

PLACE LABEL HERE

The Label affixed here includes the following information:

- The name of the incomplete vehicle manufacturer;
- The month and year the incomplete vehicle manufacturer performed its last manufacturing operation on the incomplete vehicle;
- The vehicle identification number (VIN);
- The Gross Vehicle Weight Rating (GVWR) expressed in kg (lb), intended for the vehicle when it is a completed vehicle;
- The Gross Axle Weight Rating (GAWR) expressed in kg (lb), intended for each axle of the vehicle when it is a completed vehicle, listed in order from front to rear
- Tire size, rim size, cold tire pressure.

This document is furnished as required by the Canada Motor Vehicle Safety Act and United States (U.S.) Federal Motor Vehicle Safety Regulations (FMVSR) to aid intermediate and final stage manufacturers in their determination of conformity of the completed vehicle with applicable Canada Motor Vehicle Safety Standards (CMVSS), U.S. Federal Motor Vehicle Safety Standards (FMVSS), Canadian On-Road Vehicle and Engine Emission Regulations and Canada Interference Causing Equipment Standard – ICES-002. Also included are instructions, which must be followed in order to assure that U.S. Environmental Protection Agency (EPA) and California Air Resources Board (CARB)* emission certification requirements and U.S. National Highway Traffic Safety Administration (NHTSA) Fuel Economy Regulations and Canada/U.S. EPA Greenhouse Gas Regulations are met.

This label attached to this document will indicate this vehicle was manufactured by Builtmore Contract Manufacturing, a division of The SHYFT Group, Inc under a contractual agreement with Chevrolet. All inquiries regarding the content of this document should be forwarded to Chevrolet through the www.gmupfitter.com website.

This document is not a substitute for knowledge and understanding of the requirements of the Canada Motor Vehicle Safety Act, Federal Motor Vehicle Safety Regulations (FMVSR); or applicable Canada Motor Vehicle Safety Standards (CMVSS) and U.S. Federal Motor Vehicle Safety Standards (FMVSS). Intermediate and final stage manufacturers should be familiar with the Regulations and Standards referred to above to be aware of their specific responsibilities as they relate to the final destination and sale of each incomplete vehicle.

Any intermediate or final stage manufacturer making material alterations to this incomplete vehicle during the process of manufacturing the complete vehicle should be constantly vigilant to recognize all effects, either direct or indirect, on other components, assemblies or systems caused by any alteration. No alteration should be made to the incomplete vehicle that directly or indirectly results in any component, assembly or system being in nonconformance with any applicable Canada Motor Vehicle Safety Standard or U.S. Federal Motor Vehicle Safety Standard or Emission Regulation or Fuel Economy/Greenhouse Gas Regulation.

The statements contained in this Incomplete Vehicle Document are accurate as of the date of manufacture of the Incomplete Vehicle and can be relied on by any intermediate and/or final stage manufacturer as a basis for certification.

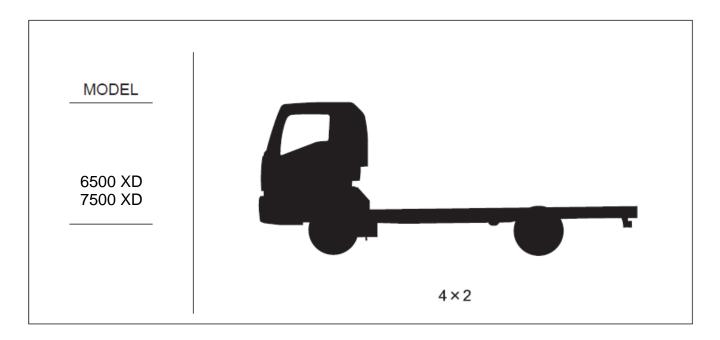
^{*}Please see the Vehicle Emission Control Information to identify if the vehicle is California certified.

INTRODUCTION

This document contains information relative to conformance of this incomplete vehicle with the following:

- Part I U.S. FEDERAL MOTOR VEHICLE SAFETY STANDARDS AND CANADA MOTOR VEHICLE SAFETY STANDARDS
- Part II U.S. EPA, CALIFORNIA, AND CANADA EXHAUST & EVAPORATIVE EMISSION REQUIREMENTS AND EPA / NHTSA / CANADA GREENHOUSE GAS EMISSIONS/FUEL ECONOMY REGULATIONS
- Part III CANADA INTERFERENCE CAUSING EQUIPMENT STANDARD

This document pertains to the following styles of truck:



NOTE: Incomplete vehicle can be built into straight truck type vocational vehicles.

It cannot be built into a Truck Tractor

*Emission Certification:

To verify if the incomplete vehicle is California emission certified, please locate the Vehicle Emission Control Information label generally located in the driver door area. The compliance statement on the label must say "This vehicle complies with U.S. EPA and California regulations." If the label only states U.S. EPA regulations, then the vehicle is not California certified.

PART I

U.S. FEDERAL MOTOR VEHICLE SAFETY STANDARDS AND CANADA MOTOR VEHICLE SAFETY STANDARDS

This section contains a list of Canada Motor Vehicle Safety Standard (CMVSS), and U.S. Federal Motor Vehicle Safety Standards (FMVSS), followed by a section entitled "Statements Regarding Canada Motor Vehicle Safety Standards (CMVSS), and Federal Motor Vehicle Safety Standards (FMVSS). An appropriate statement of applicability is made for each standard, and by vehicle model as it relates to the incomplete vehicle.

The identifiers TYPE 1, TYPE 2 or TYPE 3 prefix statements (of applicability) regarding Canada Motor Vehicle Safety Standards (CMVSS), and Federal Motor Vehicle Safety Standards (FMVSS). "Examples" of these statements follow:

- TYPE 1 A statement that the vehicle when completed will conform to the standard if no alterations are made in identified components of the incomplete vehicle. EXAMPLE: This vehicle when complete will conform to CMVSS 104 and FMVSS No. 104, Windshield Wiping and Washing Systems, if no alterations are made in the windshield wiper components.
- TYPE 2 A statement of specific conditions of final manufacture under which the manufacturer specifies that the completed vehicle will conform to the standard. EXAMPLE: This vehicle when completed will conform to CMVSS 121 and FMVSS 121, Air Brake Systems, if it does not exceed any of the gross axle weight ratings, if the center of gravity at GVWR is not higher than ## feet above the ground, and if no alterations are made to any brake system component.
- TYPE 3 A statement that conformity with the standard cannot be determined based upon the components supplied on the incomplete vehicle, and that the incomplete vehicle manufacturer makes no representation to conformity with the standard.

In accordance with the requirements of Canada Motor Vehicle Safety Regulations, and Federal Motor Vehicle Safety Regulations Part 568.4, the following information is included on the label affixed to the front cover of this document:

- The name and mailing address of the incomplete vehicle manufacturer;
- The month and year the incomplete vehicle manufacturer performed its last manufacturing operation on the incomplete vehicle;
- The vehicle identification number (VIN);
- The Gross Vehicle Weight Rating (GVWR) expressed in kg (lb), <u>intended for the vehicle when it is a</u> completed vehicle;
- The Gross Axle Weight Rating (GAWR) expressed in kg (lb), <u>intended for each axle of the vehicle when it</u> is a completed vehicle, listed in order from front to rear.

In addition, the final stage manufacturer is responsible under Canada Motor Vehicle Safety Regulations, and Federal Motor Vehicle Safety Regulations and Part 567.5, to place the GVWR and the GAWR of each axle, on the Final Vehicle Certification Label. Required on label is the "Gross Vehicle Weight Rating" or "GVWR" followed by the appropriate value in kilograms and (pounds), which shall not be less than the sum of the unloaded vehicle weight, rated cargo load, and 68 kg (150 lb.) times the number of the vehicle's designated seating positions.

Unloaded Vehicle Weight means the weight of a vehicle with maximum capacity of all fluids necessary for operation of the vehicle, but without cargo or occupants or accessories that are ordinarily removed from the vehicle when they are not in use.

During the completion of this vehicle, GVWR and GAWR may be affected in various ways, including but not limited to the following:

- The installation of a body or equipment that exceeds the rated capacities of the incomplete vehicle.
- The addition of designated seating positions that exceed the rated capacities of the incomplete vehicle.
- Alterations or substitution of any components such as axles, springs, tires, wheels, frames, steering and brake systems that may affect the rated capacities of the incomplete vehicle.

PART I – CHART A

LIST OF CANADA MOTOR VEHICLE SAFETY STANDARDS (CMVSS), AND FEDERAL MOTOR VEHICLE SAFETY STANDARDS (FMVSS), APPLICABLE TO GASOLINE OR DIESEL – FUELED TRUCKS WITH A GVWR OF GREATER THAN 4536 kg (10,000 lb)

SEE STATEMENTS REGARDING CMVSS AND FMVSS ON PAGES THAT FOLLOW

CMVSS	FMVSS	TITLE	F*R
CMVSR Sec 6-7	Part 567**	Labeling and Documentation Requirements	3
101	101	Controls and displays	1
102	102	Transmission shift lever sequence, starter interlock and transmission braking effect	1
103	103	Windshield defrosting and defogging systems	1
104	104	Windshield wiping and washing systems	1
106	106	Brake hoses, Hydraulic, air and vacuum	1
108	-	Daytime Running Lights	2
108	108	Lamps, reflective devices and associated equipment	2
111	111	Mirrors and Rearview Visibility Systems	1
113	113	Hood Latch System	1
115	Part 565 **	Vehicle Identification Number	1
119	119	New pneumatic tires	1
120	120	Tire selection and rims	2
121	121	Air Brake Systems	1
124	124	Accelerator control systems	1
-	125	Warning devices designed to be carried in motor vehicles	3
136	136	Electronic Stability Systems for Heavy Vehicles	3
205	205	Glazing materials	1
206	206	Door locks and door retention components	1
207	207	Seating systems	1
208	208	Occupant Crash Protection	1,3
209	209	Seat belt assemblies	1,3
210	210	Seat belt assembly anchorages	1,3
302	302	Flammability of interior materials	1
ICES-002	-	Canada interference causing equipment standard [PART III]	1
1106	NA	Noise Emissions [PART II]	1

^{*} TYPE 1, 2 or 3 numbers to the right hand side of the table above designate the appropriate paragraph in the CMVSS or FMVSS standards that follow.

^{**} CFR Title 49 Transportation Part 565, Part 567

20.6

Statements Regarding Canada Motor Vehicle Safety Standards (CMVSS), and U.S. Federal Motor Vehicle Safety Standards (FMVSS).

CMVSR SEC. 6 and 49 CFR 567 LABELING AND DOCUMENTATION REQUIREMENTS Applies to all models of incomplete vehicles contained in this document

TYPE 3 The following statement is applicable to all models of Incomplete Vehicles contained in this document.

This incomplete vehicle, when completed in stages by an intermediate and final stage manufacturer will comply with the requirements of Part 567 or the CMVSR Section 6, when the intermediate and final stage manufactures provide additional labeling to meet these requirements.

CMVSS 101 and FMVSS 101 – CONTROLS AND DISPLAYS Applies to all models of incomplete vehicles contained in this document

TYPE 1 The following statement is applicable to all models of Incomplete Vehicles contained in this document (unless otherwise noted on the cover).

This incomplete vehicle, when completed, will conform to CMVSS 101 and FMVSS 101 providing no alterations are made which affect the size, location, identification, or illumination of the controls and displays identified or the location, travel and type of driver's seat. If the driver's seat is installed by the intermediate or final stage manufacturer, the "H" point must be located as shown in the "Body Builder Manuals" and visibility and operation of the controls and displays listed below must meet the requirements of the standard.

The following controls must be operable, and the following displays for the following functions and malfunctions shall be fitted in such a manner that they are identifiable, by the driver while the driver is seated in the driver's designated seating position with the driver's seat belt fastened around the driver in accordance with the manufacturer's instructions:

Hand operated controls (if equipped):

Automatic vehicle speed (cruise control)

Automatic transmission shift lever

Clearance lamps (switch)

Driver's Sunvisor Engine Idle Speed

Engine Start Engine Stop

Hazard warning signal Hazard warning switch

Headlamps

Headlamp high or low beam switch Heating and air conditioning fan Heating and air conditioning system

Horn control

Identification lamps (switch)

Ignition (switch)

Illumination intensity control

Master lighting switch

Position, side marker, end-outline marker,

identification or clearance lamps

Service brake Steering wheel Tail lamps Turn signal

Windshield defogging and defrosting

systems

Windshield washer (washing system) Windshield wiper (wiping system)

Foot operated controls (if equipped):

Accelerator

Service brake (pedal)

Park brake (pedal)

Displays (if equipped):

Air brake low pressure

Air bag system readiness

Antilock brake system malfunction

Battery charging condition
Brake lining wear-out condition
Brake system malfunction (*)

Brake failure warning
Diesel Particulate Filter Gauge
Diesel Exhaust Fluid Gauge
Electrical charge indicator

Engine oil pressure

Fuel level

Gross loss of brake pressure condition

Hazard warning signal

Engine coolant temperature display

Gear position

Headlamp high beam Low fuel indicator

Low brake air pressure telltale Low brake fluid condition

Odometer (*)

Parking brake applied
Passenger air bag status
Seat belt (unfastened telltale)

Speedometer (*)

Transmission control position

Turn signal(s)

Variable brake proportioning system

malfunction

Multi information display (MID)

If the intermediate or final stage manufacturer installs any of the above controls and displays, those controls and displays will also have to meet the requirements of this standard.

CMVSS 102 and FMVSS 102 – TRANSMISSION SHIFT LEVER SEQUENCE, STARTER INTERLOCK AND TRANSMISSION BRAKING EFFECT Applies to all models of incomplete vehicles contained in this document

TYPE 1 The following statement is applicable to all incomplete vehicle models contained in this document (unless otherwise noted on the cover).

This incomplete vehicle, when completed, will conform to CMVSS 102 and FMVSS 102 providing no alterations are made which affect the function, physical, chemical, or mechanical properties, environment, location or vital spatial clearances of the components, assemblies or systems including but not limited to those listed below (if equipped):

Automatic Transmission (A/T) control and identification system, including but not limited to:

A/T gear shift sequence and control logic

(electrical or mechanical)

A/T steering column assembly

A/T control from floor shift mechanism

to transmission linkage

A/T floor shift mechanism

A/T neutral safety switch assembly and wire

A/T position indicator dial

Brake – A/T interlock controls

Engine starter interlock controls

Vehicle & Chassis wiring harnesses

A/T position indicator (pointer)

A/T position indicator actuating linkage

Automatic transmission assembly

Transmission shift position pattern

(knob, plate or label)

^{*} For CMVSS only, when Canadian option is specified.

CMVSS 103 and FMVSS 103 – WINDSHIELD DEFROSTING AND DEFOGGING SYSTEMS Applies to all models of incomplete vehicles contained in this document

TYPE 1 The following statement is applicable to all incomplete vehicle models contained in this document (unless otherwise noted on the cover).

This incomplete vehicle, when completed, will conform to CMVSS 103 and FMVSS 103 providing no alterations are made which affect the function, physical, chemical, or mechanical properties, environment, location or vital spatial clearances of the components, assemblies or systems including but not limited to those listed below (if equipped):

Windshield defrosting and defogging systems, including but not limited to:

Chassis and instrument panel wiring harness assembly
Defroster air distributor assembly (manifold)
Defroster air duct assembly
Defroster air hoses – manifold to nozzle
Defroster air to windshield outlet assembly (nozzle)
Defroster outlet to heater assembly adapter

Engine water outlet thermostat assembly
Heater & defroster assembly – including
motor & blower
Heater & defroster control (mechanical)
Heater blower motor resistor assembly
(blower speed control)
Heater & water hoses and hose assemblies
Heater water inlet valve control
Windshield assembly

CMVSS 104 and FMVSS 104 – WINDSHIELD WIPING AND WASHER SYSTEMS Applies to all models of incomplete vehicles contained in this document

TYPE 1 The following statement is applicable to all models of incomplete vehicles contained in this document (unless otherwise noted on the cover).

This incomplete vehicle, when completed, will conform to CMVSS 104 and FMVSS 104 providing no alterations are made which affect the function, physical, chemical, or mechanical properties, environment, location or vital spatial clearances of the components, assemblies or systems including but not limited to those listed below (if equipped):

Windshield wiping and washing systems, including but not limited to:

Washer reservoir cap
Water reservoir filler assembly
Windshield assembly
Windshield wiper arm assembly
Windshield wiper blade assembly

Chassis wiring harness

Windshield wiper linkage assembly
Windshield wiper and washer control
Windshield wiper and washer motor and
pump assembly
Windshield washer fluid reservoir
Windshield washer system hoses
Windshield washer nozzle

CMVSS 106 and FMVSS 106 – BRAKE HOSES Applies to all models of incomplete vehicles contained in this document

TYPE 1 The following statement is applicable to all models of incomplete vehicles contained in this document (unless otherwise noted on the cover).

This incomplete vehicle, when completed, will conform to CMVSS 106 and FMVSS 106 providing no alterations are made which affect the function, physical, chemical, or mechanical properties, environment, location or vital spatial clearances of the components, assemblies or systems including but not limited to those listed below:

Hydraulic Air, and Vacuum Brake Hoses Hoses and hose end fittings Labeling requirements Brake Hose Assemblies – and Brake Hose End Fittings

CMVSS 108 – DAYTIME RUNNING LIGHTS Applies to all models of incomplete vehicles contained in this document

TYPE 2 The following statement is applicable to all models of incomplete vehicles contained in this document (unless otherwise noted on the cover).

This incomplete vehicle, when completed will conform to the Daytime Running Lamps (DRL) requirements of CMVSS108 providing no alterations are made to the ignition switch, DRL system components or wiring, and any vehicle forward, side, or rear lighting as manufactured by Chevrolet.

CMVSS 108 and FMVSS 108 – LAMPS, REFLECTIVE DEVICES AND ASSOCIATED EQUIPMENT <u>Applies to all models of incomplete vehicles contained in this document</u>

TYPE 2 The following statement is applicable to all models of incomplete vehicles contained in this document (unless otherwise noted on the cover).

This incomplete vehicle, when completed, will conform to CMVSS 108 and FMVSS 108 providing it is completed in accordance with the following specific conditions by the final stage manufacturer:

- 1. Body width must be a minimum of 2.032 m (80").
- 2. Each of these devices must be properly installed on the completed vehicle and meet all the requirements of CMVSS 108 and FMVSS 108:
 - a. The following devices, when provided, located and/or wired by Chevrolet meet the requirements of this standard.

Headlamps or Daytime running lamps (DRL) Cab roof clearance and ID lamps (front)

Side marker lamp (Front)
Side reflex reflectors (front)

Turn signal flasher

Turn signal lamps (front)
Turn signal operating unit

Vehicle hazard warning signal operating unit

Vehicle hazard warning signal flasher

BAGE 2

20.10

b. The following lamps and reflective devices are temporarily mounted on this incomplete vehicle as required for transportation. When relocating them, intermediate or final stage manufacturers must refer to the Body Builders Manual and assure conformance with the location, visibility, and operational requirements of CMVSS 108 and FMVSS 108.

License plate lamp

Rear combination lamps (tail lamps, stop lamps, turn signal lamps and back-up lamps)

Reflex reflectors (rear)

Daytime Running Lamps

c. No part of the completed vehicle shall be installed so as to prevent any of the devices listed in (a) or (b) above from meeting their required photometric output at the specified test points. If such interference exists, the applicable devices may have to be relocated or additional devices added to meet the requirements of CMVSS 108 and FMVSS 108:

Any CMVSS 108 and FMVSS 108 part shall not be painted.

d. The following devices are not installed on this incomplete vehicle or supplied by Chevrolet. When added by intermediate or final stage manufacturers, they must also meet the requirements of CMVSS 108 and FMVSS 108:

Clearance lamps (rear)

Identification lamps (rear)

Side reflex reflectors (rear)

Side marker lamps (rear)

e. The following additional devices must be installed on the van body and meet all requirements of this standard if the overall vehicle length is 9.1 m (30 feet) or greater.

Intermediate side marker lamps

Intermediate side reflex reflectors

3. No alterations (other than any relocation of Items in 2) b.) which may be necessary for conformance to CMVSS 108 and FMVSS 108 should be made which affect the location, mounting surfaces, function, environment or visibility clearance of the above listed devices which have been installed on this incomplete vehicle.

CMVSS 111 and FMVSS 111 – REARVIEW MIRRORS Applies to all models of incomplete vehicles contained in this document

TYPE 1 The following statement is applicable to all models of incomplete vehicles contained in this document (unless otherwise noted on the cover of this document).

This incomplete vehicle, when completed, will conform to FMVSS 111 providing no alterations or substitutions are made to the outside rearview mirrors, the driver's seat location is not altered, and the body is installed symmetrical about the vehicle centerline. The overall width should be no greater than;

	Width Limit	Width Limit with 102" wide mirror brackets
<u>Model</u>	millimeter (inches)	millimeter (inches)
F*R	2438 mm (96")	2590 mm (102'')

CMVSS 113 and FMVSS 113 – HOOD LATCH SYSTEM Applies to all models of incomplete vehicles contained in this document

TYPE 1 The following statement is applicable to all models of incomplete vehicles contained in this document (unless otherwise noted on the cover of this document).

This incomplete vehicle, when completed, will conform to CMVSS 113 providing no alterations are made which affect the function, physical, chemical, or mechanical properties, environment, location or vital spatial clearances of the components, assemblies or systems including but not limited to those listed below (if equipped)

Hood

Hood Latch System

CMVSS 115 and 49 CFR 565 – VEHICLE IDENTIFICATION NUMBER Applies to all models of incomplete vehicles contained in this document

TYPE 1 The following statement is applicable to all models of incomplete vehicles contained in this document (unless otherwise noted on the cover).

This incomplete vehicle, when completed, will conform to CMVSS 115 providing no alterations are made which affect the function, physical, chemical, or mechanical properties, environment, location or vital spatial clearances of the components, assemblies or systems including but not limited to those listed below:

Vehicle Identification Number (VIN)

VIN label or plate VIN plate fasteners

CMVSS119 and FMVSS119 - NEW PNEUMATIC TIRES FOR MOTOR VEHICLES WITH A GVWR OF MORE THAN 4,536 KILOGRAMS (10,000 POUNDS)

Applies to all models of incomplete vehicles contained in this document

TYPE 1 The following statement is applicable to all models of incomplete vehicles contained in this document (unless otherwise noted on the cover).

This incomplete vehicle, when completed, will conform to CMVSS119 and FMVSS119 providing no alternation are made which affect the function, physical, chemical or mechanical properties, environment, location or vital spatial clearance of the components, assemblies or systems including but not limited to those listed below:

Γires	Whe	els

20.12

CMVSS 120 and FMVSS 120 – TIRE SELECTION AND RIMS FOR VEHICLES OTHER THAN PASSENGER CARS

Applies to all models of incomplete vehicles contained in this document

TYPE 2 The following statement is applicable to all models of incomplete vehicles contained in this document (unless otherwise noted on the cover).

This incomplete vehicle, when completed, will conform to CMVSS 120 and FMVSS 120 provided:

A. No alterations are made which affect the function, physical or mechanical properties, environment, location or vital spatial clearances of the components, assemblies or systems including but not limited to:

Owner Manual Instructions

Wheels

Tires

- B. GVWR, GAWR front and rear weight ratings as listed on the incomplete vehicle label affixed to the front cover of this document are not exceeded.
- C. The tire and wheel information shown on the incomplete vehicle label must be transferred to the final stage manufacturer's Certification label or Tire Information Label providing no equipment or tire pressure changes are made and the final stage manufacturer labels the vehicle in compliance with CMVSS 120 and FMVSS120.

NOTE: Incomplete Vehicles referenced in this document may be shipped with reduced tire pressures for shipping purposes only. Inflate tires to specified pressure before delivery to customers.

CMVSS 121 and FMVSS 121 – AIR BRAKE SYSTEMS Applies to all models of incomplete vehicles contained in this book

TYPE 1 The following statement is applicable to all types of incomplete vehicles equipped with Air Brakes and contained in this document (unless otherwise noted on the cover).

This incomplete vehicle, if equipped with air brakes, when completed, will conform to CMVSS 121 and FMVSS 121, providing no alterations are made which affect the function, physical, chemical, or mechanical properties, environment, location or vital spatial clearances of the components, assemblies or systems including but not limited to those listed below:

Air brake systems, including but not limited to:

Air brake chambers and slack adjusters
Air brake lines, fittings, and routing
including gauges and warning devices
Air brake reservoirs
Air brake valves and components
Air compressor and drive
Anti-Lock brake system
Brake assemblies and components

Brake pedal and mechanical components, including switch
Brake System gauges and warning devices
Spring brake chambers and actuation valve
Tires and wheel speed sensors, and wheel speed sensor wiring
Wheelbase

The maximum vertical center of gravity of the total vehicle at maximum GVWR is not exceeded:

Maximum Center of Gravity millimeter (inches) above ground
1778 mm (70")

<u>Application</u>

F*R

CMVSS 124 and FMVSS 124 – ACCELERATOR CONTROL SYSTEMS Applies to all models of incomplete vehicles contained in this document

TYPE 1 The following statement is applicable to all models of incomplete vehicles contained in this document (unless otherwise noted on the cover).

This incomplete vehicle, when completed, will conform to CMVSS 124 and FMVSS 124 providing no alterations are made which affect the function, physical chemical, or mechanical properties, environment, location, or vital spatial clearances of the components, assemblies or systems including but not limited to those listed below:

Accelerator/throttle control systems, including but not limited to:

Accelerator pedal and attachments
Accelerator lever and supporting bracket assembly
Accelerator cable, support brackets, and seals
Accelerator return spring(s)
Attachment to injection pump lever - pin, hole, or ball stud
Downshift switch
Idling control cable assembly

FMVSS 125 –WARNING DEVICES Applies to all models of incomplete vehicles contained in this document

TYPE 1 The following statement is applicable to all models of incomplete vehicles contained in this document (unless otherwise noted on the cover).

This incomplete vehicle, when completed, will conform to FMVSS 125 providing no alterations are made which affect the function, physical chemical, or mechanical properties, environment, location, or vital spatial clearances of the components, assemblies or systems including but not limited to those listed below:

Warning devices (if equipped)

Safety warning triangles Fire Extinguisher Backup Alarm

CMVSS 136 and FMVSS 136 – ELECTRONIC STABILITY CONTROL SYSTEMS FOR HEAVY VEHICLES Applies to all models of incomplete vehicles contained in this document

TYPE 3 The following statement is applicable to all models of incomplete vehicles contained in this document (unless otherwise noted on the cover).

Conformity with CMVSS 136 and FMVSS 136 cannot be determined upon the components supplied on the incomplete vehicle, and Chevrolet makes no representation to conformity with the standard.

This incomplete vehicle has not been built, tested, or manufactured with an electronic stability control system.

NOTE: This incomplete vehicle cannot be built into a Truck Tractor.

20.14

CMVSS 205 and FMVSS 205 – GLAZING MATERIALS Applies to all models of incomplete vehicles contained in this document

TYPE 1 The following statement is applicable to all models of incomplete vehicles contained in this document (unless otherwise noted on the cover).

This incomplete vehicle, when completed, will conform to CMVSS 205 and FMVSS 205 providing no alterations are made which affect the function, physical chemical, or mechanical properties, environment, location, or vital spatial clearances of the components, assemblies or systems including but not limited to those listed below:

Glazing material Monogram Driver's Side Reference Point (SgRP) Visibility of the monogram Windshield shade banding

Final compliance with CMVSS 205 and FMVSS 205 is the responsibility of the final stage manufacturer for any modifications, or added material, parts, components, or systems.

CMVSS 206 and FMVSS 206 – DOOR LOCKS AND DOOR RETENTION COMPONENTS Applies to all models of incomplete vehicles contained in this document

TYPE 1 The following statement is applicable to all models of incomplete vehicles contained in this document (unless otherwise noted on the cover of this document).

This incomplete vehicle, when completed, will conform to CMVSS 206 and FMVSS 206 providing no alterations are made which affect the function, physical, chemical, or mechanical properties, environment, location or vital spatial clearances of the components, assemblies or systems including but not limited to those listed below:

Door lock Door hinge

Door latch Inside lock control linkage
Door latch striker plate Exterior door handles

Final compliance with CMVSS 206 and FMVSS 206 is the responsibility of the final stage manufacturer for any modifications, or added material, parts, components, or systems.

20.15

CMVSS 207 and FMVSS 207 – ANCHORAGE OF SEATS Applies to all models of incomplete vehicles contained in this document

TYPE 1 The following statement is applicable to all models of incomplete vehicles contained in this document (unless otherwise noted on the cover of this document).

This incomplete vehicle, when completed, will conform to CMVSS 207 and FMVSS 207 providing no alterations are made which affect the function, physical, chemical, or mechanical properties, environment, location or vital spatial clearances of the components, assemblies or systems including but not limited to those listed below:

Seating systems, including but not limited to:

Floor pan assemblies Seat assembly

Folding seat or seat back latch assembly
Seat or seat back latch assembly
Seat or seat back latch release control

Seat anchorage's brackets reinforcements, Seat or seat back latch striker

attachment hardware, etc. Seat riser

CMVSS 208 and FMVSS 208 – OCCUPANT CRASH PROTECTION Applies to all models of incomplete vehicles contained in this document

TYPE 1 The following statement is applicable to all models of incomplete vehicles contained in this document (unless otherwise noted on the cover).

This incomplete vehicle, when completed, will conform to the seat belt provision sections of CMVSS 208 and FMVSS 208 providing no alterations are made which affect the function, physical, chemical, or mechanical properties, environment, location or vital spatial clearances of the components, assemblies or systems installed by Chevrolet including but not limited to:

Owner Manual instructions Location/configuration of designated seats

Seat anchorages Seat belt assemblies
Seat assemblies Seat belt warning system

Seat belt anchorages

TYPE 3 The following statement is applicable to all types of incomplete vehicles contained in this document with respect to any seats, seat belt assemblies or seat belt assembly anchorages installed by the intermediate or final stage manufacturer (unless otherwise noted on the cover).

Conformity with CMVSS 208 and FMVSS 208 cannot be determined based upon the components supplied on the incomplete vehicle, and Chevrolet makes no representation to conformity with the standard.

CMVSS 209 and FMVSS 209 – SEAT BELT ASSEMBLIES Applies to all models of incomplete vehicles contained in this document

TYPE 1 The following statement is applicable to all models of incomplete vehicles contained in this document (unless otherwise noted on the cover).

This incomplete vehicle, when completed, will conform to the CMVSS 209 and FMVSS 209 providing no alterations are made which affect the function, physical, chemical, or mechanical properties, environment, location or vital spatial clearances of the components, assemblies or systems installed by Chevrolet including but not limited to:

Owner Manual instructions Location/configuration of designated seats

Seat anchoragesSeat belt assembliesSeat assembliesSeat belt warning systemSeat belt anchoragesOriginal attachment locations

TYPE 3 The following statement is applicable to all types of incomplete vehicles contained in this document with respect to any seats, seat belt assemblies or seat belt assembly anchorages installed by the intermediate or final stage manufacturer (unless otherwise noted on the cover).

Conformity with CMVSS 209 and FMVSS 209 cannot be determined based upon the components supplied on the incomplete vehicle, and Chevrolet makes no representation to conformity with the standard.

CMVSS 210 and FMVSS 210 – SEAT BELT ASSEMBLY ANCHORAGES Applies to all models of incomplete vehicles contained in this document

TYPE 1 The following statement is applicable to all models of incomplete vehicles contained in this document (unless otherwise noted on the cover).

This incomplete vehicle, when completed, will conform to CMVSS 210 and FMVSS 210 providing no alterations are made which affect the function, physical, chemical, or mechanical properties, environment, location or vital spatial clearances of the components, assemblies or systems including but not limited to those listed below:

Seat assemblies Seat belt anchorage brackets, plates,

Seat belt assemblies and reinforcements

Floor pan assembly Child restraint system including anchorages,
Seat belt routing brackets, plates and reinforcements

Seat position/adjustment capability B or C pillar structures

Owner Manual instructions Roof structure

TYPE 3 The following statement is applicable to all types of incomplete vehicles contained in this document with respect to any seats, seat belt assemblies or seat belt assembly anchorages installed by the intermediate or final stage manufacturer (unless otherwise noted on the cover).

Conformity with CMVSS 210 and FMVSS 210 cannot be determined based upon the components supplied on the incomplete vehicle, and Chevrolet makes no representation to conformity with the standard.

20.17

CMVSS 302 and FMVSS 302 – FLAMMABILITY OF INTERIOR MATERIALS Applies to all models of incomplete vehicles contained in this document

TYPE 1 The following statement is applicable to all models of incomplete vehicles contained in this document (unless otherwise noted on the cover).

This incomplete vehicle, when completed, will conform to CMVSS 302 and FMVSS 302 providing no alterations are made which affect the function, physical, chemical, or mechanical properties, environment, location or vital spatial clearances of the components, assemblies or systems including but not limited to those listed below, and installed by Chevrolet:

Arm rests Rear Organizer
Compartment shelves Seat assemblies
Console Seat backs
Engine compartment covers Seat belts
Floor coverings Seat cushions

Head restraints Shades
Headlining Sun visors

Instrument panel Wheel housing covers

All trim panels including door, front, rear and side panels.

NOTE: This list above includes any other interior materials, such as padding and crash deployed elements that are designed to absorb energy on contact by occupants in the event of a crash

PART II

U.S. EPA, CALIFORNIA, AND CANADA EXHAUST & EVAPORATIVE EMISSION REQUIREMENTS AND EPA / NHTSA / CANADA GREENHOUSE GAS EMISSIONS /FUEL ECONOMY REGULATIONS

Incomplete vehicles come in three major classifications: (1) Light Duty Vehicles, Light Duty Trucks, and Heavy Duty Vehicles (Including Medium Duty in California) are certified by the primary manufacturer and the vehicle is labeled as being in compliance with emission and fuel economy requirements. (2) Heavy Duty Vehicles are required to have an engine certified by the engine manufacturer and bear an engine emissions label, and if a gasoline vehicle bear an evaporative emissions label. (3) Light Duty Vehicles certified and labeled by the intermediate or final stage vehicle manufacturer as complying with emission and fuel economy requirements.

The incomplete vehicles contained in this document are classified as Heavy Duty Vehicles. The final stage manufacturer is responsible to not exceed the GVWR and GAWR listed on the incomplete vehicle certification label and to apply a Final Vehicle Certification Label. If any of these restrictions are exceeded, re-certification by the final stage manufacturer will be required.

In addition, all gasoline/gasoline-ethanol blend powered Federal/California Light Duty, Medium Duty and Heavy Duty Vehicles are required to have an approved fuel evaporative emission control system. Vehicles certified to Heavy Duty gasoline emission standards also require special evaporative emission labeling. In order to assure that Environmental Protection Agency (EPA), National Highway Traffic Safety Administration (NHTSA), California and Canada Emission Certification and/or Greenhouse Gas/Fuel Economy regulations are met, this vehicle must be completed in strict accordance with all instructions contained in this document, especially the following instructions which relate to:

- EMISSION RELATED COMPONENTS
- EVAPORATIVE EMISSION REQUIREMENTS
- FUEL PIPE AND FUEL NECKS (CALIFORNIA)
- LABELS
- EXTERIOR NOISE

EMISSION RELATED COMPONENTS

TYPE 1 The following statement is applicable to all models of incomplete vehicles contained in this document (unless otherwise noted on the cover).

This incomplete vehicle, when completed, conforms to U.S. EPA, CALIFORNIA, AND CANADIAN EXHAUST & EVAPORATIVE EMISSION REQUIREMENTS providing no alterations are made which affect the function, physical, chemical, or mechanical properties, environment, location or vital spatial clearances of the components, assemblies or systems including but not limited to those listed below (if equipped), and installed by Chevrolet:

Air inlet system

Axles*2

Catalytic converter

Coolant temperature sensor

Crankcase emission control system

Engine assembly*2

Engine electronics (ECM/PCM/VCM)

Engine speed sensor

Exhaust system*2

Evaporative emission

control system (†)*1

Fuel injection system

Fuel system*2

Ignition system (†)

Intake manifold

MAF Sensor

PAGE

20.19

EGR system
Exhaust emission control system
Charge Air Cooler and related system
Exhaust oxygen sensors (if equipped)

Tires*2
Transmission Control Module (TCM)*2
A/C System(if equipped)
Owner Manual instructions

† Gasoline engine

- *1 All Federal/California gasoline powered heavy duty vehicles will have an evaporative emission control system that is certified for a fuel tank capacity not to exceed the amount shown on Vehicle Evaporative Emission Control Information Label.
- *2 All Federal certified heavy duty vehicles are required to meet Federal Green House Gas (GHG) requirements. Please check the Vehicle Emission Label located either on driver's side door or inside the engine compartment.

Conformance to U.S. EPA, California, and Canadian Exhaust & Green House Gas Emission requirements and restrictions for these incomplete vehicles.

ORIGINAL TIRES for compliance to GHG requirements are described in the Owners Manual.

Refer to the Owners Manual for tire replacement.

TYPE 3 The following statement is applicable to all types of incomplete vehicles contained in this document with respect to any tires installed by the intermediate or final stage manufacturer (unless otherwise noted on the cover).

Conformity with vocational vehicle GHG above 19,500 GVWR and at or below 33,000 GVWR cannot be determined based upon the components not supplied by Chevrolet on the incomplete vehicle and Chevrolet makes no representation to conformity with the standard.

EVAPORATIVE EMISSION REQUIREMENTS.

All models of incomplete vehicles contained in this book are operated on diesel fuel. Evaporative emissions are not required

SPECIFICATION FOR FILL PIPES AND OPENINGS OF MOTOR VEHICLE FUEL TANKS (APPLICABLE ONLY TO CALIFORNIA GASOLINE/GASOLINE-ETHANOL BLEND POWERED VEHICLES)

LABELS

TYPE 2 The following statement is applicable to all types of incomplete vehicles contained in this document (unless otherwise noted on the cover).

This incomplete vehicle, when completed, will conform to U.S. EPA, CALIFORNIA, AND CANADIAN EXHAUST & EVAPORATIVE EMISSION REQUIREMENTS AND EPA/NHTSA GREENHOUSE GAS EMISSIONS/FUEL ECONOMY REGULATION labeling requirements providing no alterations are made which affect the function, physical, chemical, or mechanical properties, environment, location or vital spatial clearances of the Emission Control related Information Labels that are permanently affixed. The labels are required by government regulation and must not be obstructed from view or defaced so as to impair their visibility or legibility.

PAGE

20.20

EXTERIOR NOISE

CMVSS 1106 – EXTERIOR NOISE Applies to all models of incomplete vehicles contained in this document

TYPE 1 The following statement is applicable to all models of incomplete vehicles (unless otherwise noted on the cover of this document).

This incomplete vehicle, when completed, will conform to the above standards providing no alterations are made which affect the function, physical, chemical, or mechanical properties, environment, location or vital spatial clearances of the components, assemblies or systems including but not limited to those listed below (if equipped):

Air Induction System (tuning elements)

Alternator

Axles/halfshafts/propshaft

Catalytic converter and its location

(if equipped) Engine assembly

Exhaust & After treatment Systems

Exterior noise generating devices

Exterior rearview mirror assemblies

Front of dash sound deadening material Hood assembly including sound deadening

material and seals

Intake system (i.e. Air filter,

Mass Air flow (MAF) sensor, ducts))

Power steering pump

Powertrain control and logic

Powertrain cooling fan and motor assemblies

Radiator/condenser assembly to body seals

Tires (including correct tire pressure)

Transmission/Transaxle assembly

Underbody shields including air deflector

Wheel house liners and shields

Final compliance with CMVSS 1106 is the responsibility of the final stage manufacturer for any modifications, or added material, components, or systems.

20.21

PART III

CANADA INTERFERENCE CAUSING EQUIPMENT STANDARD

INTERFERENCE CAUSING EQUIPMENT STANDARD (CANADA ONLY) – ICES-002 Applies to all models of Incomplete Vehicles contained in this document

TYPE 1 The following statement is applicable to all types of incomplete vehicles propelled by an internal combustion engine, electrical means or both contained in this document (unless otherwise noted on the cover).

This incomplete vehicle, when completed, will conform to the performance requirements of the above standard provided no alterations made which affect the function, physical, chemical, or mechanical properties, environment, location or vital spatial clearances of the components, assemblies or systems including but not limited to those listed below: (if equipped)

Ignition wires & plugs Ignition coil(s) Low voltage battery Charging system Spark plug wires ECM/TCM/PCM BCM/SDM

Each vehicle propelled by an internal combustion engine, electrical means or both shall bear a bi-lingual label that represents the manufacturer's Self-Declaration of Compliance (SDoC) to Innovation, Science and Economic Development Canada ICES-002. This label shall be permanently affixed to the vehicle propelled by an internal combustion engine, electrical means or both or displayed electronically and its text must be clearly legible.

The final stage manufacturer must provide a statement of compliance on the Final Stage Manufacturer's Compliance Label or an additional label with the following bilingual information in order to comply with Industry Canada's Interference Causing Equipment Standard ICES/NMB-002:

ICES/NMB-002

DOCUMENT FOR INCOMPLETE VEHICLE

APPLICABLE TO THE CHEVROLET 2024+ MY LCF SERIES

Isuzu Commercial Truck of America, Inc. 1400 S. Douglass Road, Suite 100 Anaheim, CA 92806

DO NOT REMOVE

THIS DOCUMENT MUST REMAIN WITH THIS VEHICLE UNTIL IT IS CERTIFIED AS A COMPLETED VEHICLE.

PLACE LABEL HERE

The Label affixed here includes the following information:

- The name of the incomplete vehicle manufacturer;
- The month and year the incomplete vehicle manufacturer performed its last manufacturing operation on the incomplete vehicle;
- The vehicle identification number (VIN);
- The Gross Vehicle Weight Rating (GVWR) expressed in kg (lb), intended for the vehicle when it is a completed vehicle;
- The Gross Axle Weight Rating (GAWR) expressed in kg (lb), intended for each axle of the vehicle when it is a completed vehicle, listed in order from front to rear
- Tire size, rim size, cold tire pressure.

This document is furnished as required by the Canada Motor Vehicle Safety Act and United States (U.S.) Federal Motor Vehicle Safety Regulations (FMVSR) to aid intermediate and final stage manufacturers in their determination of conformity of the completed vehicle with applicable Canada Motor Vehicle Safety Standards (CMVSS), U.S. Federal Motor Vehicle Safety Standards (FMVSS), Canadian On-Road Vehicle and Engine Emission Regulations and Canada Interference Causing Equipment Standard – ICES-002. Also included are instructions, which must be followed in order to assure that U.S. Environmental Protection Agency (EPA) and California Air Resources Board (CARB) emission certification requirements and U.S. National Highway Traffic Safety Administration (NHTSA) Fuel Economy Regulations and Canada/U.S. EPA Greenhouse Gas Regulations are met.

This label attached to this document will indicate this vehicle was manufactured by Builtmore Contract Manufacturing, a division of The SHYFT Group, Inc under a contractual agreement with Chevrolet. All inquiries regarding the content of this document should be forwarded to through the www.gmupfitter.com website.

This document is not a substitute for knowledge and understanding of the requirements of the Canada Motor Vehicle Safety Act, Federal Motor Vehicle Safety Regulations (FMVSR); or applicable Canada Motor Vehicle Safety Standards (CMVSS) and U.S. Federal Motor Vehicle Safety Standards (FMVSS). Intermediate and final stage manufacturers should be familiar with the Regulations and Standards referred to above to be aware of their specific responsibilities as they relate to the final destination and sale of each incomplete vehicle.

Any intermediate or final stage manufacturer making material alterations to this incomplete vehicle during the process of manufacturing the complete vehicle should be constantly vigilant to recognize all effects, either direct or indirect, on other components, assemblies or systems caused by any alteration. No alteration should be made to the incomplete vehicle that directly or indirectly results in any component, assembly or system being in nonconformance with any applicable Canada Motor Vehicle Safety Standard or U.S. Federal Motor Vehicle Safety Standard or Emission Regulation or Fuel Economy/Greenhouse Gas Regulation.

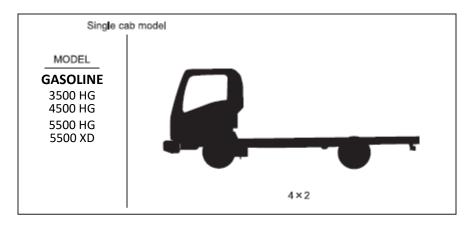
The statements contained in this Incomplete Vehicle Document are accurate as of the date of manufacture of the Incomplete Vehicle and can be relied on by any intermediate and/or final stage manufacturer as a basis for certification.

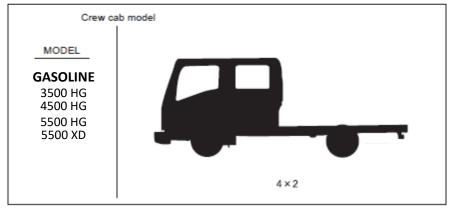
INTRODUCTION

This document contains information relative to conformance of this incomplete vehicle with the following:

- Part I U.S. FEDERAL MOTOR VEHICLE SAFETY STANDARDS AND CANADA MOTOR VEHICLE SAFETY STANDARDS
- Part II U.S. ENVIRONMENTAL PROTECTION AGENCY, STATE OF CALIFORNIA, AND CANADA EMISSION REQUIREMENTS AND NHTSA FUEL ECONOMY REQUIREMENTS, AND CANADA/ U.S. EPA GREENHOUSE GAS REGULATIONS
- Part III CANADA INTERFERENCE CAUSING EQUIPMENT STANDARD

This document pertains to the following styles of truck:





NOTE: Incomplete vehicle can be built into straight truck type vocational vehicles.

It cannot be built into a Truck Tractor or a Bus

PART I

U.S. FEDERAL MOTOR VEHICLE SAFETY STANDARDS AND CANADA MOTOR VEHICLE SAFETY STANDARDS

This section contains a list of Canada Motor Vehicle Safety Standard (CMVSS), and U.S. Federal Motor Vehicle Safety Standards (FMVSS), followed by a section entitled "Statements Regarding Canada Motor Vehicle Safety Standards (CMVSS), and Federal Motor Vehicle Safety Standards (FMVSS). An appropriate statement of applicability is made for each standard, and by vehicle model as it relates to the incomplete vehicle.

The identifiers TYPE 1, TYPE 2 or TYPE 3 prefix statements (of applicability) regarding Canada Motor Vehicle Safety Standards (CMVSS), and Federal Motor Vehicle Safety Standards (FMVSS). "Examples" of these statements follow:

- TYPE 1 A statement that the vehicle when completed will conform to the standard if no alterations are made in identified components of the incomplete vehicle. EXAMPLE: This vehicle when complete will conform to CMVSS 104 and FMVSS No. 104, Windshield Wiping and Washing Systems, if no alterations are made in the windshield wiper components.
- TYPE 2 A statement of specific conditions of final manufacture under which the manufacturer specifies that the completed vehicle will conform to the standard. EXAMPLE: This vehicle when completed will conform to CMVSS 121 and FMVSS 121, Air Brake Systems, if it does not exceed any of the gross axle weight ratings, if the center of gravity at GVWR is not higher than ## feet above the ground, and if no alterations are made to any brake system component.
- TYPE 3 A statement that conformity with the standard cannot be determined based upon the components supplied on the incomplete vehicle, and that the incomplete vehicle manufacturer makes no representation to conformity with the standard.

In accordance with the requirements of Canada Motor Vehicle Safety Regulations, and Federal Motor Vehicle Safety Regulations Part 568.4, the following information is included on the label affixed to the front cover of this document:

- The name and mailing address of the incomplete vehicle manufacturer;
- The month and year the incomplete vehicle manufacturer performed its last manufacturing operation on the incomplete vehicle;
- The vehicle identification number (VIN);
- The Gross Vehicle Weight Rating (GVWR) expressed in kg (lb), intended for the vehicle when it is a completed vehicle;
- The Gross Axle Weight Rating (GAWR) expressed in kg (lb), intended for each axle of the vehicle when it is a completed vehicle, listed in order from front to rear.

In addition, the final stage manufacturer is responsible under Canada Motor Vehicle Safety Regulations, and Federal Motor Vehicle Safety Regulations and Part 567.5, to place the GVWR and the GAWR of each axle, on the Final Vehicle Certification Label. Required on label is the "Gross Vehicle Weight Rating" or "GVWR" followed by the appropriate value in kilograms and (pounds), which shall not be less than the sum of the unloaded vehicle weight, rated cargo load, and 68 kg (150 lb.) times the number of the vehicle's designated seating positions, if known. However, for school buses the minimum occupant weight allowance shall be 54.4 kg (120 lb.) per passenger and 68 kg (150 lb.) for the driver.

Unloaded Vehicle Weight means the weight of a vehicle with maximum capacity of all fluids necessary for operation of the vehicle, but without cargo or occupants or accessories that are ordinarily removed from the vehicle when they are not in use.

During the completion of this vehicle, GVWR and GAWR may be affected in various ways, including but not limited to the following:

- The installation of a body or equipment that exceeds the rated capacities of the incomplete vehicle.
- The addition of designated seating positions that exceed the rated capacities of the incomplete vehicle.
- Alterations or substitution of any components such as axles, springs, tires, wheels, frames, steering and brake systems that may affect the rated capacities of the incomplete vehicle.

PART I - CHART A

LIST OF CANADA MOTOR VEHICLE SAFETY STANDARDS (CMVSS), AND FEDERAL MOTOR VEHICLE SAFETY STANDARDS (FMVSS), APPLICABLE TO GASOLINE OR DIESEL – FUELED TRUCKS WITH A GVWR OF GREATER THAN 4536 kg (10,000 lb)

SEE STATEMENTS REGARDING CMVSS AND FMVSS ON PAGES THAT FOLLOW

CMVSS	FMVSS	TITLE	3500/4500HG GASOLINE	5500HG/5500XG GASOLINE
CMVSR Sec 6-7	Part 567**	Labeling and Documentation Requirements	3	3
101	101	Controls and displays	1	1
102	102	Transmission shift lever sequence, starter interlock and transmission braking effect	1	1
103	103	Windshield defrosting and defogging systems	1	1
104	104	Windshield wiping and washing systems	1	1
105	105	Hydraulic brake systems	2	2
106	106	Brake hoses, Hydraulic, air and vacuum	1	1
108	-	Daytime Running Lights	1	1
108	108	Lamps, reflective devices and associated equipment	2	2
111	111	Mirrors and Rearview Visibility Systems	1	1
113	113	Hood Latch System	1	1
115	Part 565 **	Vehicle Identification Number	1	1
116	116	Motor-vehicle brake fluids	1	1
119	119	New pneumatic tires	1	1
120	120	Tire selection and rims	2	2
124	124	Accelerator control systems	1	1
-	125	Warning devices designed to be carried in motor vehicles	1	1
136	136	Electronic Stability Systems for Heavy Vehicles	3	3
205	205	Glazing materials	1	1
206	206	Door locks and door retention components	1	1
207	207	Seating systems	1	1
208	208	Occupant Crash Protection	1,3	1,3
209	209	Seat belt assemblies	1,3	1,3
210	210	Seat belt assembly anchorages	1,3	1,3
302	302	Flammability of interior materials	1	1
ICES-002	-	Canada interference causing equipment standard	1	1
1106	NA	Noise Emissions	1	1

^{*} TYPE 1, 2 or 3 numbers to the right hand side of the table above designate the appropriate paragraph in the CMVSS or FMVSS standards that follow.

^{**} CFR Title 49 Transportation Part 565, Part 567

Statements Regarding Canada Motor Vehicle Safety Standards (CMVSS), and U.S. Federal Motor Vehicle Safety Standards (FMVSS).

CMVSR SEC. 6 and 49 CFR 567 LABELING AND DOCUMENTATION REQUIREMENTS Applies to all models of incomplete vehicles contained in this document

TYPE 3 The following statement is applicable to all models of Incomplete Vehicles contained in this document.

This incomplete vehicle, when completed in stages by an intermediate and final stage manufacturer will comply with the requirements of Part 567 or the CMVSR Section 6, when the intermediate and final stage manufactures provide additional labeling to meet these requirements.

CMVSS 101 and FMVSS 101 – CONTROLS AND DISPLAYS Applies to all models of incomplete vehicles contained in this document

TYPE 1 The following statement is applicable to all models of Incomplete Vehicles contained in this document (unless otherwise noted on the cover).

This incomplete vehicle, when completed, will conform to CMVSS 101 and FMVSS 101 providing no alterations are made which affect the size, location, identification, or illumination of the controls and displays identified or the location, travel and type of driver's seat. If the driver's seat is installed by the intermediate or final stage manufacturer, the "H" point must be located as shown in the "Body Builder Manuals" and visibility and operation of the controls and displays listed below must meet the requirements of the standard.

The following controls must be operable, and the following displays for the following functions and malfunctions shall be fitted in such a manner that they are identifiable, by the driver while the driver is seated in the driver's designated seating position with the driver's seat belt fastened around the driver in accordance with the manufacturer's instructions:

Hand operated controls (if equipped):

Automatic vehicle speed (cruise control)

Automatic transmission shift lever

Clearance lamps (switch)

Driver's Sunvisor

Engine Idle Speed

Engine Start Engine Stop

Hazard warning signal

Hazard warning switch

Headlamps

Headlamp high or low beam switch Heating and air conditioning fan

Heating and air conditioning system

Horn control

Identification lamps (switch)

Ignition (switch)

Illumination intensity control

Master lighting switch

Position, side marker, end-outline marker,

identification or clearance lamps

Service brake

Steering wheel

Tail lamps

Turn signal

Windshield defogging and defrosting

systems

Windshield washer (washing system)

Windshield wiper (wiping system)

Foot operated controls (if equipped):

PAGE

21.7

Accelerator
Park brake (pedal)

Service brake (pedal)

Displays (if equipped):

Air brake low pressure Air bag system readiness

Antilock brake system malfunction

Battery charging condition Brake lining wear-out condition Brake system malfunction (*)

Brake failure warning Electrical charge indicator

Engine oil pressure

Fuel level

Gross loss of brake pressure condition

Hazard warning signal

Engine coolant temperature display

Gear position

Headlamp high beam Low fuel indicator

Low brake air pressure telltale Low brake fluid condition

Odometer (*)

Parking brake applied Passenger air bag status Seat belt (unfastened telltale)

Speedometer (*)

Transmission control position

Turn signal(s)

Variable brake proportioning system

malfunction

Multi information display (MID)

If the intermediate or final stage manufacturer installs any of the above controls and displays, those controls and displays will also have to meet the requirements of this standard.

CMVSS 102 and FMVSS 102 – TRANSMISSION SHIFT LEVER SEQUENCE, STARTER INTERLOCK AND TRANSMISSION BRAKING EFFECT Applies to all models of incomplete vehicles contained in this document

TYPE 1 The following statement is applicable to all incomplete vehicle models contained in this document (unless otherwise noted on the cover).

This incomplete vehicle, when completed, will conform to CMVSS 102 and FMVSS 102 providing no alterations are made which affect the function, physical, chemical, or mechanical properties, environment, location or vital spatial clearances of the components, assemblies or systems including but not limited to those listed below (if equipped):

Automatic Transmission (A/T) control and identification system, including but not limited to:

A/T gear shift sequence and control logic

(electrical or mechanical)

A/T steering column assembly

A/T control from floor shift mechanism

A/ I CONTROL FOR HOUSE SHIFT MECHANISE

to transmission linkage A/T floor shift mechanism

A/T neutral safety switch assembly and wire

A/T position indicator dial

Brake – A/T interlock controls Engine starter interlock controls

Vehicle & Chassis wiring harnesses A/T position indicator (pointer)

A/T position indicator actuating linkage

Automatic transmission assembly

Transmission shift position pattern

(knob, plate or label)

CMVSS 103 and FMVSS 103 – WINDSHIELD DEFROSTING AND DEFOGGING SYSTEMS

Applies to all models of incomplete vehicles contained in this document

^{*} For CMVSS only, when Canadian option is specified.

TYPE 1 The following statement is applicable to all incomplete vehicle models contained in this document (unless otherwise noted on the cover).

This incomplete vehicle, when completed, will conform to CMVSS 103 and FMVSS 103 providing no alterations are made which affect the function, physical, chemical, or mechanical properties, environment, location or vital spatial clearances of the components, assemblies or systems including but not limited to those listed below (if equipped):

Windshield defrosting and defogging systems, including but not limited to:

Chassis and instrument panel wiring harness assembly
Defroster air distributor assembly (manifold)
Defroster air duct assembly
Defroster air hoses – manifold to nozzle
Defroster air to windshield outlet assembly (nozzle)

Defroster outlet to heater assembly adapter

Heater & defroster assembly – including motor & blower

Heater & defroster control (mechanical)

Heater blower motor resistor assembly (blower speed control)

Heater & water hoses and hose assemblies

Heater water inlet valve control

Windshield assembly

Engine water outlet thermostat assembly

CMVSS 104 and FMVSS 104 – WINDSHIELD WIPING AND WASHER SYSTEMS Applies to all models of incomplete vehicles contained in this document

TYPE 1 The following statement is applicable to all models of incomplete vehicles contained in this document (unless otherwise noted on the cover).

This incomplete vehicle, when completed, will conform to CMVSS 104 and FMVSS 104 providing no alterations are made which affect the function, physical, chemical, or mechanical properties, environment, location or vital spatial clearances of the components, assemblies or systems including but not limited to those listed below (if equipped):

Windshield wiping and washing systems, including but not limited to:

Chassis wiring harness
Washer reservoir cap
Water reservoir filler assembly
Windshield assembly
Windshield wiper arm assembly
Windshield wiper blade assembly

Windshield wiper linkage assembly
Windshield wiper and washer control
Windshield wiper and washer motor and
pump assembly
Windshield washer fluid reservoir
Windshield washer system hoses
Windshield washer nozzle

CMVSS 105 and FMVSS 105 – HYDRAULIC BRAKE SYSTEMS Applies to all models of incomplete vehicles contained in this document

TYPE 2 The following statement is applicable to all models of incomplete vehicles contained in this document (unless otherwise noted on the cover).

This incomplete vehicle, if equipped with hydraulic brakes, when completed, will conform to CMVSS 105 and FMVSS 105 providing no alterations are made which affect the function, physical or mechanical properties, environment, location or vital spatial clearances of the components, assemblies or systems identified below. In addition, the maximum vertical center of gravity specified below must not be exceeded at maximum GVWR and rated front and rear GAWR.

Application

NPR/ NPR-HD Gas

NQR/NRR Gas

Maximum Center of Gravity millimeter (inches) above ground
1600 mm (63")

Hydraulic Brake Systems, including but not limited to:

Hydraulic brake lines, fittings and routings including gauges, warning devices and warning statements

Hydraulic brake valves and components

Hydraulic brake reservoir

Service and/or parking brake assemblies and components

(Power boosters, master cylinder, ABS module, calipers, wheel cylinders, etc.)

Tires

Wheelbases

Brake pedal, brake light switch, parking brake hand level and switch, and related mechanical components

Brake and ABS warning light

Vacuum pump, tank, pipes and hoses (including warning devices and statements)

Master cylinder reservoir warning statement

Hydraulic booster pump, pipes, hoses and reservoir (including warning devices)

CMVSS 106 and FMVSS 106 – BRAKE HOSES Applies to all models of incomplete vehicles contained in this document

TYPE 1 The following statement is applicable to all models of incomplete vehicles contained in this document (unless otherwise noted on the cover).

This incomplete vehicle, when completed, will conform to CMVSS 106 and FMVSS 106 providing no alterations are made which affect the function, physical, chemical, or mechanical properties, environment, location or vital spatial clearances of the components, assemblies or systems including but not limited to those listed below:

Hydraulic Air, and Vacuum Brake Hoses Hoses and hose end fittings Labeling requirements Brake Hose Assemblies – and Brake Hose End Fittings

CMVSS 108 - DAYTIME RUNNING LIGHTS Applies to all models of incomplete vehicles contained in this document

TYPE 1 The following statement is applicable to all models of incomplete vehicles contained in this document (unless otherwise noted on the cover).

This incomplete vehicle, when completed will conform to the Daytime Running Lamps (DRL) requirements of CMVSS108 providing no alterations are made to the ignition switch, DRL system components or wiring, and any vehicle forward lighting as manufactured by Chevrole

CMVSS 108 and FMVSS 108 – LAMPS, REFLECTIVE DEVICES AND ASSOCIATED EQUIPMENT Applies to all models of incomplete vehicles contained in this document

TYPE 2 The following statement is applicable to all models of incomplete vehicles contained in this document (unless otherwise noted on the cover).

This incomplete vehicle, when completed, will conform to CMVSS 108 and FMVSS 108 providing it is completed in accordance with the following specific conditions by the final stage manufacturer:

- 1. Body width must be between 2.032 m (80") and 2.438 m (96"). (2.184 m (86") MIN Body Width For Crew Cab).
- 2. Each of these devices must be properly installed on the completed vehicle and meet all the requirements of CMVSS 108 and FMVSS 108:
- a. The following devices, when provided, located and/or wired by Chevrole meet the requirements of this standard.

Headlamps or Daytime running lamps

Cab roof clearance and ID lamps (front)

Side reflex reflectors (front)

Side marker lamp (Front)

Turn signal flasher

Turn signal lamps (front) Turn signal operating unit

Vehicle hazard warning signal operating unit

Vehicle hazard warning signal flasher

b. The following lamps and reflective devices are temporarily mounted on this incomplete vehicle as required for transportation. When relocating them, intermediate or final stage manufacturers must refer to the Body Builders Manual and assure conformance with the location, visibility, and operational requirements of CMVSS 108 and FMVSS 108.

License plate lamp

Rear combination lamps (tail lamps, stop lamps, turn signal lamps and back-up lamps)

Reflex reflectors (rear)

c. No part of the completed vehicle shall be installed so as to prevent any of the devices listed in (a) or (b) above from meeting their required photometric output at the specified test points. If such interference exists, the applicable devices may have to be relocated or additional devices added to meet the requirements of CMVSS 108 and FMVSS 108:

Any CMVSS 108 and FMVSS 108 part shall not be painted.

21.11

d. The following devices are not installed on this incomplete vehicle or supplied by Chevrole. When added by intermediate or final stage manufacturers, they must also meet the requirements of CMVSS 108 and FMVSS 108:

Clearance lamps (rear)

Identification lamps (rear)

Side reflex reflectors (rear)

Side marker lamps (rear)

e. The following additional devices must be installed on the van body and meet all requirements of this standard if the overall vehicle length is 9.1 m (30 feet) or greater.

Intermediate side marker lamps

Intermediate side reflex reflectors

3. No alterations (other than any relocation of Items in 2) b.) which may be necessary for conformance to CMVSS 108 and FMVSS 108 should be made which affect the location, mounting surfaces, function, environment or visibility clearance of the above listed devices which have been installed on this incomplete vehicle.

CMVSS 111 and FMVSS 111 – REARVIEW MIRRORS Applies to all models of incomplete vehicles contained in this document

TYPE 1 The following statement is applicable to all models of incomplete vehicles contained in this document (unless otherwise noted on the cover of this document).

This incomplete vehicle, when completed, will conform to FMVSS 111 providing no alterations or substitutions are made to the outside rearview mirrors, the driver's seat location is not altered, and the body is installed symmetrical about the vehicle centerline. The overall width should be no greater than;

Model
NPR / NPR-HD Gas
NQR / NRR Gas

Width Limit millimeter (inches) 2438 mm (96")

Width Limit with 102" wide mirror brackets millimeter (inches)
2590 mm (102")

CMVSS 113 and FMVSS 113 – HOOD LATCH SYSTEM Applies to all models of incomplete vehicles contained in this document

TYPE 1 The following statement is applicable to all models of incomplete vehicles contained in this document (unless otherwise noted on the cover of this document).

This incomplete vehicle, when completed, will conform to CMVSS 113 providing no alterations are made which affect the function, physical, chemical, or mechanical properties, environment, location or vital spatial clearances of the components, assemblies or systems including but not limited to those listed below (if equipped)

Hood

Hood Latch System

21.12

CMVSS 115 and 49 CFR 565 – VEHICLE IDENTIFICATION NUMBER Applies to all models of incomplete vehicles contained in this document

TYPE 1 The following statement is applicable to all models of incomplete vehicles contained in this document (unless otherwise noted on the cover).

This incomplete vehicle, when completed, will conform to CMVSS 115 providing no alterations are made which affect the function, physical, chemical, or mechanical properties, environment, location or vital spatial clearances of the components, assemblies or systems including but not limited to those listed below:

Vehicle Identification Number (VIN)

VIN label or plate VIN plate fasteners

CMVSS 116 and FMVSS 116 – MOTOR VEHICLE BRAKE FLUIDS Applies to all models of incomplete vehicles contained in this document

TYPE 1 The following statement is applicable to all models of incomplete vehicles contained in this document (unless otherwise noted on the cover).

This incomplete vehicle, when equipped with approved hydraulic brake fluid will conform to CMVSS 116 and FMVSS 116 providing no alterations are made which affect the physical or chemical properties of the brake fluid.

CMVSS 119 and FMVSS 119 - NEW PNEUMATIC TIRES FOR MOTOR VEHICLES WITH A GVWR OF MORE THAN 4,536 KILOGRAMS (10,000 POUNDS)

Applies to all models of incomplete vehicles contained in this document

TYPE 1 The following statement is applicable to all models of incomplete vehicles contained in this document (unless otherwise noted on the cover).

This incomplete vehicle, when completed, will conform to CMVSS119 and FMVSS119 providing no alternation are made which affect the function, physical, chemical or mechanical properties, environment, location or vital spatial clearance of the components, assemblies or systems including but not limited to those listed below:

Tires Wheels

CMVSS 120 and FMVSS 120 – TIRE SELECTION AND RIMS FOR VEHICLES OTHER THAN PASSENGER CARS

Applies to all models of incomplete vehicles contained in this document

TYPE 2 The following statement is applicable to all models of incomplete vehicles contained in this document (unless otherwise noted on the cover).

This incomplete vehicle, when completed, will conform to CMVSS 120 and FMVSS 120 provided:

A. No alterations are made which affect the function, physical or mechanical properties, environment, location or vital spatial clearances of the components, assemblies or systems including but not limited to:

Owner Manual Instructions

Wheels

Tires

- B. GVWR, GAWR front and rear weight ratings as listed on the incomplete vehicle label affixed to the front cover of this document are not exceeded.
- C. The tire and wheel information shown on the incomplete vehicle label must be transferred to the final stage manufacturer's Certification label or Tire Information Label providing no equipment or tire pressure changes are made and the final stage manufacturer labels the vehicle in compliance with CMVSS 120 and FMVSS120.

NOTE: Incomplete Vehicles referenced in this document may be shipped with reduced tire pressures for shipping purposes only. Inflate tires to specified pressure before delivery to customers.

CMVSS 124 and FMVSS 124 – ACCELERATOR CONTROL SYSTEMS Applies to all models of incomplete vehicles contained in this document

TYPE 1 The following statement is applicable to all models of incomplete vehicles contained in this document (unless otherwise noted on the cover).

This incomplete vehicle, when completed, will conform to CMVSS 124 and FMVSS 124 providing no alterations are made which affect the function, physical chemical, or mechanical properties, environment, location, or vital spatial clearances of the components, assemblies or systems including but not limited to those listed below:

Accelerator/throttle control systems, including but not limited to: (for Gasoline Vehicles)

Accelerator pedal and attachments Accelerator lever and supporting bracket assembly Accelerator return spring(s)

FMVSS 125 –WARNING DEVICES Applies to all models of incomplete vehicles contained in this document

TYPE 1 The following statement is applicable to all models of incomplete vehicles contained in this document (unless otherwise noted on the cover).

This incomplete vehicle, when completed, will conform to FMVSS 125 providing no alterations are made which affect the function, physical chemical, or mechanical properties, environment, location, or vital spatial clearances of the components, assemblies or systems including but not limited to those listed below:

Warning devices (if equipped)

Safety warning triangles

Backup Alarm

Fire Extinguisher

CMVSS 136 and FMVSS 136 – ELECTRONIC STABILITY CONTROL SYSTEMS FOR HEAVY VEHICLES Applies to all models of incomplete vehicles contained in this document

TYPE 3 The following statement is applicable to all models of incomplete vehicles contained in this document (unless otherwise noted on the cover).

Conformity with CMVSS 136 and FMVSS 136 cannot be determined upon the components supplied on the incomplete vehicle, and Chevrole makes no representation to conformity with the standard.

This incomplete vehicle has not been built, tested, or manufactured with an electronic stability control system.

NOTE: This incomplete vehicle cannot be built into a Truck Tractor.

CMVSS 205 and FMVSS 205 – GLAZING MATERIALS Applies to all models of incomplete vehicles contained in this document

TYPE 1 The following statement is applicable to all models of incomplete vehicles contained in this document (unless otherwise noted on the cover).

This incomplete vehicle, when completed, will conform to CMVSS 205 and FMVSS 205 providing no alterations are made which affect the function, physical chemical, or mechanical properties, environment, location, or vital spatial clearances of the components, assemblies or systems including but not limited to those listed below:

Glazing material
Monogram
Driver's Side Reference Point (SgRP)

Visibility of the monogram Windshield shade banding

Final compliance with CMVSS 205 and FMVSS 205 is the responsibility of the final stage manufacturer for any modifications, or added material, parts, components, or systems.

CMVSS 206 and FMVSS 206 – DOOR LOCKS AND DOOR RETENTION COMPONENTS Applies to all models of incomplete vehicles contained in this document

TYPE 1 The following statement is applicable to all models of incomplete vehicles contained in this document (unless otherwise noted on the cover of this document).

This incomplete vehicle, when completed, will conform to CMVSS 206 and FMVSS 206 providing no alterations are made which affect the function, physical, chemical, or mechanical properties, environment, location or vital spatial clearances of the components, assemblies or systems including but not limited to those listed below:

Door lock Door hinge

Door latch Inside lock control linkage Door latch striker plate Exterior door handles

Final compliance with CMVSS 206 and FMVSS 206 is the responsibility of the final stage manufacturer for any modifications, or added material, parts, components, or systems.

CMVSS 207 and FMVSS 207 – ANCHORAGE OF SEATS Applies to all models of incomplete vehicles contained in this document

TYPE 1 The following statement is applicable to all models of incomplete vehicles contained in this document (unless otherwise noted on the cover of this document).

This incomplete vehicle, when completed, will conform to CMVSS 207 and FMVSS 207 providing no alterations are made which affect the function, physical, chemical, or mechanical properties, environment, location or vital spatial clearances of the components, assemblies or systems including but not limited to those listed below:

Seating systems, including but not limited to:

Floor pan assemblies Seat assembly

Folding seat or seat back latch assembly Seat or seat back latch assembly

Seat adjuster assembly Seat or seat back latch release control

Seat anchorage's brackets reinforcements, Seat or seat back latch striker

at the folder 3 brackets removed ments,

attachment hardware, etc. Seat riser

CMVSS 208 and FMVSS 208 – OCCUPANT CRASH PROTECTION Applies to all models of incomplete vehicles contained in this document

TYPE 1 The following statement is applicable to all models of incomplete vehicles contained in this document (unless otherwise noted on the cover).

This incomplete vehicle, when completed, will conform to the seat belt provision sections of CMVSS 208 and FMVSS 208 providing no alterations are made which affect the function, physical, chemical, or mechanical properties, environment, location or vital spatial clearances of the components, assemblies or systems installed by Chevrole including but not limited to:

Owner Manual instructions Location/configuration of designated seats

Seat anchorages Seat belt assemblies
Seat assemblies Seat belt warning system

Seat belt anchorages

TYPE 3 The following statement is applicable to all types of incomplete vehicles contained in this document with respect to any seats, seat belt assemblies or seat belt assembly anchorages installed by the intermediate or final stage manufacturer (unless otherwise noted on the cover).

Conformity with CMVSS 208 and FMVSS 208 cannot be determined based upon the components supplied on the incomplete vehicle, and Chevrole makes no representation to conformity with the standard.

CMVSS 209 and FMVSS 209 – SEAT BELT ASSEMBLIES Applies to all models of incomplete vehicles contained in this document

TYPE 1 The following statement is applicable to all models of incomplete vehicles contained in this document (unless otherwise noted on the cover).

This incomplete vehicle, when completed, will conform to the CMVSS 209 and FMVSS 209 providing no alterations are made which affect the function, physical, chemical, or mechanical properties, environment, location or vital spatial clearances of the components, assemblies or systems installed by Chevrole including but not limited to:

Owner Manual instructions Location/configuration of designated seats

Seat anchoragesSeat belt assembliesSeat assembliesSeat belt warning systemSeat belt anchoragesOriginal attachment locations

TYPE 3 The following statement is applicable to all types of incomplete vehicles contained in this document with respect to any seats, seat belt assemblies or seat belt assembly anchorages installed by the intermediate or final stage manufacturer (unless otherwise noted on the cover).

Conformity with CMVSS 209 and FMVSS 209 cannot be determined based upon the components supplied on the incomplete vehicle, and Chevrole makes no representation to conformity with the standard.

CMVSS 210 and FMVSS 210 – SEAT BELT ASSEMBLY ANCHORAGES Applies to all models of incomplete vehicles contained in this document

TYPE 1 The following statement is applicable to all models of incomplete vehicles contained in this document (unless otherwise noted on the cover).

This incomplete vehicle, when completed, will conform to CMVSS 210 and FMVSS 210 providing no alterations are made which affect the function, physical, chemical, or mechanical properties, environment, location or vital spatial clearances of the components, assemblies or systems including but not limited to those listed below:

Seat assemblies
Seat belt assemblies
Floor pan assembly
Seat belt routing

Seat position/adjustment capability

Owner Manual instructions

Seat belt anchorage brackets, plates,

and reinforcements

Child restraint system including anchorages, brackets, plates and reinforcements

B or C pillar structures

Roof structure

TYPE 3 The following statement is applicable to all types of incomplete vehicles contained in this document with respect to any seats, seat belt assemblies or seat belt assembly anchorages installed by the intermediate or final stage manufacturer (unless otherwise noted on the cover).

Conformity with CMVSS 210 and FMVSS 210 cannot be determined based upon the components supplied on the incomplete vehicle, and Chevrole makes no representation to conformity with the standard.

CMVSS 302 and FMVSS 302 – FLAMMABILITY OF INTERIOR MATERIALS Applies to all models of incomplete vehicles contained in this document

TYPE 1 The following statement is applicable to all models of incomplete vehicles contained in this document (unless otherwise noted on the cover).

This incomplete vehicle, when completed, will conform to CMVSS 302 and FMVSS 302 providing no alterations are made which affect the function, physical, chemical, or mechanical properties, environment, location or vital spatial clearances of the components, assemblies or systems including but not limited to those listed below, and installed by Chevrole:

Arm rests

Compartment shelves

Console

Engine compartment covers

Floor coverings

Head restraints

Headlining

Rear Organizer

Seat assemblies

Seat backs

Seat belts

Seat cushions

Shades

Sun visors

Instrument panel Wheel housing covers

All trim panels including door, front, rear and side panels.

NOTE: This list above includes any other interior materials, such as padding and crash deployed elements that are designed to absorb energy on contact by occupants in the event of a crash

PART II

U.S. EPA, CALIFORNIA, AND CANADA EXHAUST & EVAPORATIVE EMISSION REQUIREMENTS AND EPA / NHTSA / CANADA GREENHOUSE GAS EMISSIONS /FUEL ECONOMY REGULATIONS

Incomplete vehicles come in three major classifications: (1) Light Duty Vehicles, Light Duty Trucks, and Heavy Duty Vehicles (Including Medium Duty in California) are certified by the primary manufacturer and the vehicle is labeled as being in compliance with emission and fuel economy requirements. (2) Heavy Duty Vehicles are required to have an engine certified by the engine manufacturer and bear an engine emissions label, and if a gasoline vehicle bear an evaporative emissions label. (3) Light Duty Vehicles certified and labeled by the intermediate or final stage vehicle manufacturer as complying with emission and fuel economy requirements.

The incomplete vehicles contained in this document are classified as Heavy Duty Vehicles. The final stage manufacturer is responsible to not exceed the GVWR and GAWR listed on the incomplete vehicle certification label and to apply a Final Vehicle Certification Label. If any of these restrictions are exceeded, re-certification by the final stage manufacturer will be required.

In addition, all gasoline/gasoline-ethanol blend powered Federal/California Light Duty, Medium Duty and Heavy Duty Vehicles are required to have an approved fuel evaporative emission control system. Vehicles certified to Heavy Duty gasoline emission standards also require special evaporative emission labeling. In order to assure that Environmental Protection Agency (EPA), National Highway Traffic Safety Administration (NHTSA), California and Canada Emission Certification and/or Greenhouse Gas/Fuel Economy regulations are met, this vehicle must be completed in strict accordance with all instructions contained in this document, especially the following instructions which relate to:

- EMISSION RELATED COMPONENTS
- EVAPORATIVE EMISSION REQUIREMENTS
- FUEL PIPE AND FUEL NECKS (CALIFORNIA)
- LABELS
- EXTERIOR NOISE

EMISSION RELATED COMPONENTS

TYPE 1 The following statement is applicable to all models of incomplete vehicles contained in this document (unless otherwise noted on the cover).

This incomplete vehicle, when completed, conforms to U.S. EPA, CALIFORNIA, AND CANADIAN EXHAUST & EVAPORATIVE EMISSION REQUIREMENTS providing no alterations are made which affect the function, physical, chemical, or mechanical properties, environment, location or vital spatial clearances of the components, assemblies or systems including but not limited to those listed below (if equipped), and installed by Chevrole:

Air inlet system

Axles*2

Catalytic converter

Coolant temperature sensor

Crankcase emission control system

Engine assembly*2

Engine electronics (ECM/PCM/VCM)

Engine speed sensor

EGR system

Exhaust system*2

Evaporative emission

control system (†)*1

Fuel injection system

Fuel system*2

Ignition system (†)

Intake manifold

MAF Sensor

Tires*2

PAGE

21.19

Exhaust emission control system Charge Air Cooler and related system Exhaust oxygen sensors (if equipped) Transmission Control Module (TCM)*2 A/C System(if equipped) Owner Manual instructions

† Gasoline engine

- *1 All Federal/California gasoline powered heavy duty vehicles will have an evaporative emission control system that is certified for a fuel tank capacity not to exceed the amount shown on Vehicle Evaporative Emission Control Information Label.
- *2 All Federal certified heavy duty vehicles are required to meet Federal Green House Gas (GHG) requirements. Please check the Vehicle Emission Label located either on driver's side door or inside the engine compartment.

Conformance to U.S. EPA, California, and Canadian Exhaust & Green House Gas Emission requirements and restrictions for these incomplete vehicles.

ORIGINAL TIRES for compliance to GHG requirements are described in the Owners Manual.

Refer to the Owners Manual for replacing of tires.

TYPE 3 The following statement is applicable to all types of incomplete vehicles contained in this document with respect to any tires installed by the intermediate or final stage manufacturer (unless otherwise noted on the cover).

Conformity with vocational vehicle GHG at or below 19,500 GVWR cannot be determined based upon the components supplied on the incomplete vehicle, and Chevrole makes no representation to conformity with the standard.

21.20

EVAPORATIVE EMISSION REQUIREMENTS.

TYPE 1 The following statement is applicable to all models of incomplete vehicles contained in this document (unless otherwise noted on the cover).

This incomplete vehicle, when completed, will conform to applicable exhaust and evaporative emission requirements providing no alterations are made which affect the function, physical, chemical, or mechanical properties, environment, location or vital spatial clearances of the components, assemblies or systems including but not limited to those listed below, and installed by Chevrole:

Fuel Tank Assembly Fuel feed hoses front and rear Fuel return hoses front and rear Fuel tank filler hoses to filler neck Exhaust system

Fuel tank vent hoses to filler neck Fuel vapor lines at canister Fuel vapor lines from engine to chassis pipes Fuel vapor lines from fuel tank sender to chassis pipes

SPECIFICATION FOR FILL PIPES AND OPENINGS OF MOTOR VEHICLE FUEL TANKS (APPLICABLE ONLY TO CALIFORNIA GASOLINE/GASOLINE-ETHANOL BLEND POWERED VEHICLES)

TYPE 2 The following statement is applicable to all models of incomplete vehicles contained in this document (unless otherwise noted on the cover).

This incomplete vehicle, when completed, will conform to Title 13, California Code of Regulations Section 2235, and the "Specifications for Fill Pipes and Openings of 2015 and subsequent Model Year Motor Vehicle Fuel Tanks", dated March 22, 2012, providing no alterations are made which affect the function, physical, chemical, or mechanical properties, environment, location or vital spatial clearances of the fuel filler neck(s) and any intermediate or final stage manufacturer completes the fuel filler neck installation(s) according to the instructions which are furnished in the loose parts box.

TYPE 3 The following statement is applicable to all types of incomplete vehicles contained in this document with respect to fuel neck assemblies installed by the intermediate or final stage manufacturer (unless otherwise noted on the cover).

Conformity with California's SPECIFICATION FOR FILL PIPES AND OPENINGS OF MOTOR VEHICLE FUEL TANKS cannot be determined based on the components supplied on the incomplete vehicle, and Chevrolet makes no representation to conformity with the standard.

LABELS

TYPE 2 The following statement is applicable to all types of incomplete vehicles contained in this document (unless otherwise noted on the cover).

This incomplete vehicle, when completed, will conform to U.S. EPA, CALIFORNIA, AND CANADIAN EXHAUST & EVAPORATIVE EMISSION REQUIREMENTS AND EPA/NHTSA GREENHOUSE GAS EMISSIONS/FUEL ECONOMY REGULATION labeling requirements providing no alterations are made which affect the function, physical, chemical, or mechanical properties, environment, location or vital spatial clearances of the Emission Control related Information Labels that are permanently affixed. The labels are required by government regulation and must not be obstructed from view or defaced so as to impair their visibility or legibility.

PAGE

21.21

EXTERIOR NOISE

CMVSS 1106 – EXTERIOR NOISE Applies to all models of incomplete vehicles contained in this document

TYPE 1 The following statement is applicable to all models of incomplete vehicles (unless otherwise noted on the cover of this document).

This incomplete vehicle, when completed, will conform to the above standards providing no alterations are made which affect the function, physical, chemical, or mechanical properties, environment, location or vital spatial clearances of the components, assemblies or systems including but not limited to those listed below (if equipped):

Air Induction System (tuning elements)

Alternator

Axles/halfshafts/propshaft

Catalytic converter and its location

(if equipped)
Engine assembly
Exhaust System

Exterior noise generating devices

Exterior rearview mirror assemblies

Front of dash sound deadening material Hood assembly including sound deadening

material and seals

Intake system (i.e. Air filter,

Mass Air flow (MAF) sensor, ducts))

Power steering pump

Powertrain control and logic

Powertrain cooling fan and motor assemblies Radiator/condenser assembly to body seals

Tires (including correct tire pressure)
Transmission/Transaxle assembly

Underbody shields including air deflector

Wheel house liners and shields

Final compliance with CMVSS 1106 is the responsibility of the final stage manufacturer for any modifications, or added material, components, or systems.

21.22

PART III

CANADA INTERFERENCE CAUSING EQUIPMENT STANDARD

INTERFERENCE CAUSING EQUIPMENT STANDARD (CANADA ONLY) – ICES-002 Applies to all models of Incomplete Vehicles contained in this document

TYPE 1 The following statement is applicable to all types of incomplete vehicles propelled by an internal combustion engine, electrical means or both contained in this document (unless otherwise noted on the cover).

This incomplete vehicle, when completed, will conform to the performance requirements of the above standard provided no alterations made which affect the function, physical, chemical, or mechanical properties, environment, location or vital spatial clearances of the components, assemblies or systems including but not limited to those listed below:

Ignition wires & plugs Ignition coil(s) Low voltage battery Charging system Spark plug wires ECM/TCM/PCM BCM/SDM

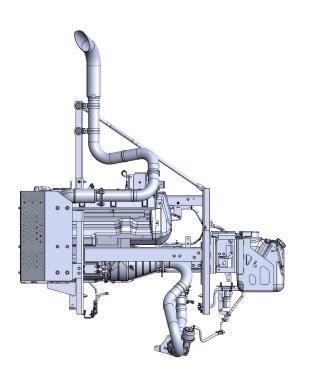
Each vehicle propelled by an internal combustion engine, electrical means or both shall bear a bi-lingual label that represents the manufacturer's Self-Declaration of Compliance (SDoC) to Innovation, Science and Economic Development Canada ICES-002. This label shall be permanently affixed to the vehicle propelled by an internal combustion engine, electrical means or both or displayed electronically and its text must be clearly legible.

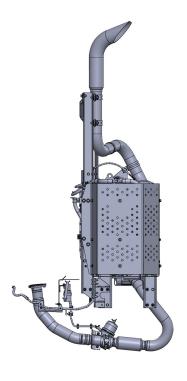
The final stage manufacturer must provide a statement of compliance on the Final Stage Manufacturer's Compliance Label or an additional label with the following bilingual information in order to comply with Industry Canada's Interference Causing Equipment Standard ICES/NMB-002:

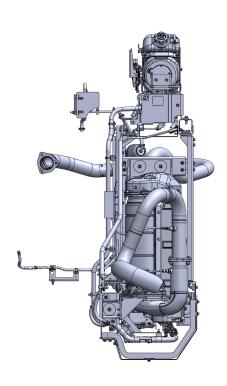
ICES/NMB-002

LCF Series Vertical Exhaust

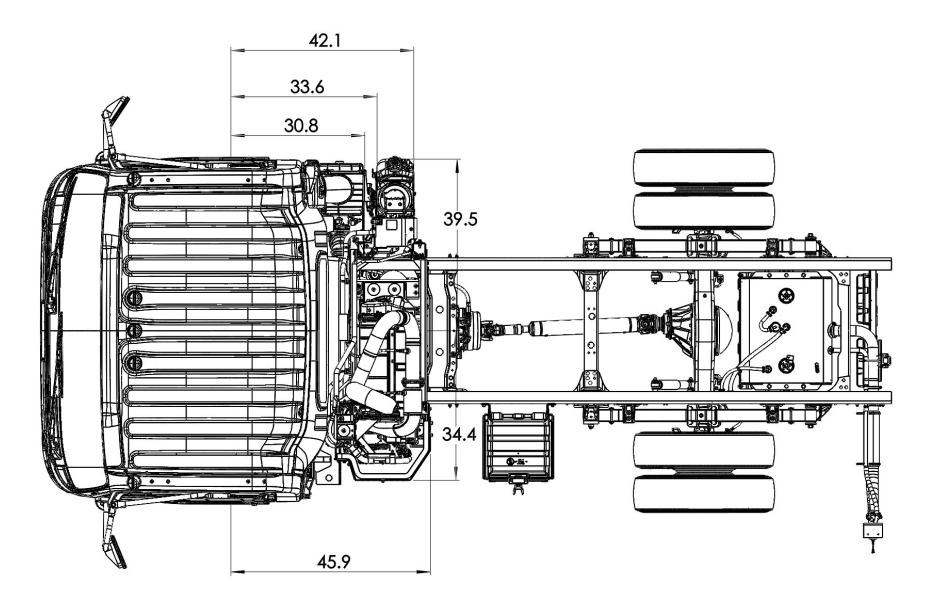
- · Available on 4500 HG 14,500 GVW,4500 XD 16,000 GVW, 5500 HD DERATE 17,950 GVW, and 550 HD 19,500 GVW
- · Vertical exhaust is available on 109, 132.5, 150, 176, 200, and 212 inch wheelbases
- · Option Code I0A
- · Not available on gas engine models
- · Available as a port installed option only
- · Available with in rail fuel tank only
- · Available with single cab only



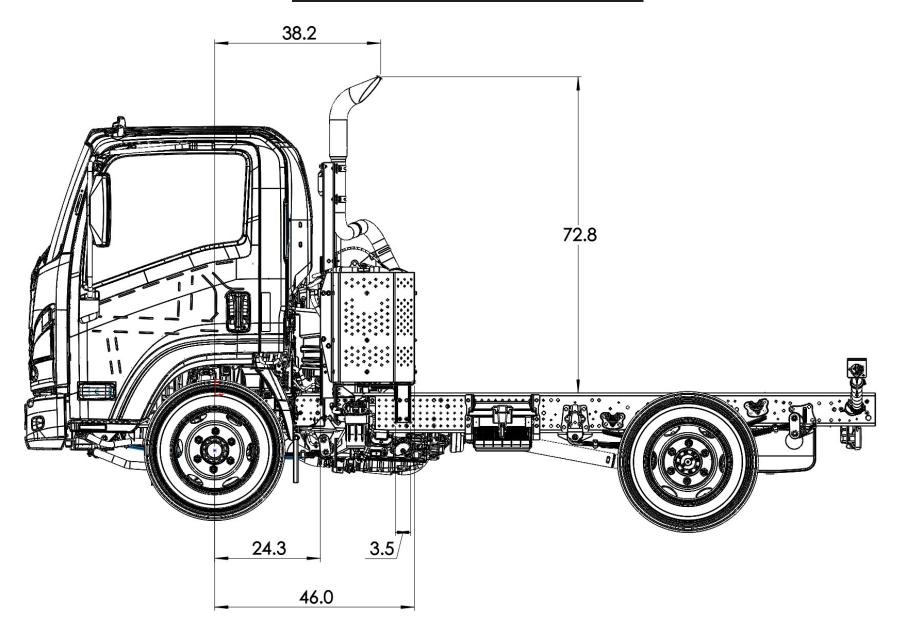




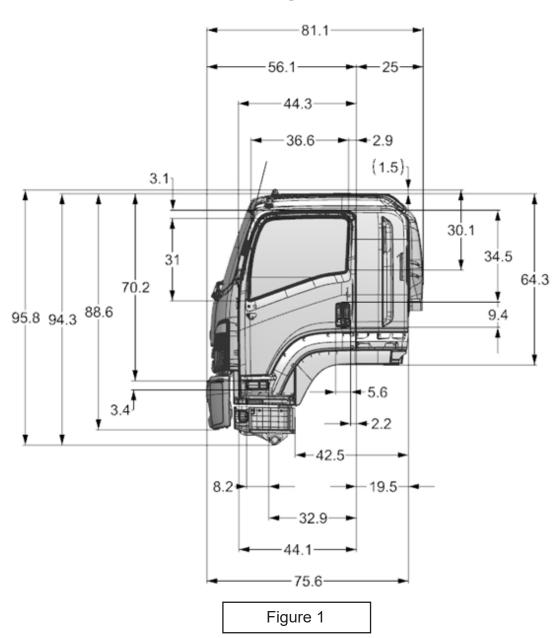
Vertical Exhaust - Top View



Vertical Exhaust - Driver Side View



6500 & 7600 Single Cab - Side View



6500 & 7500 Single Cab - Front View

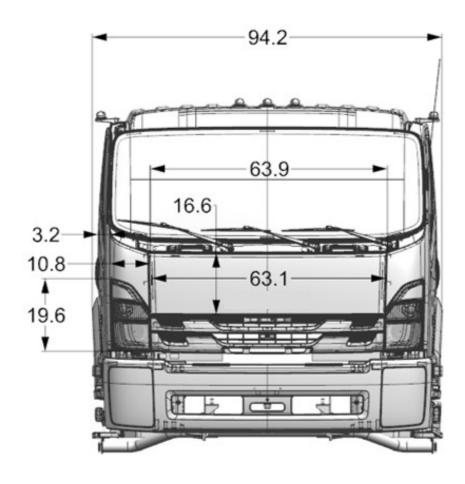


Figure 2

6500 & 7500 Single Cab - Rear View

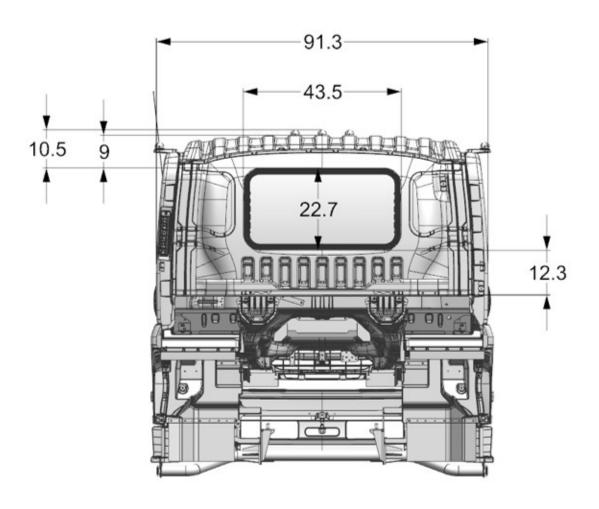
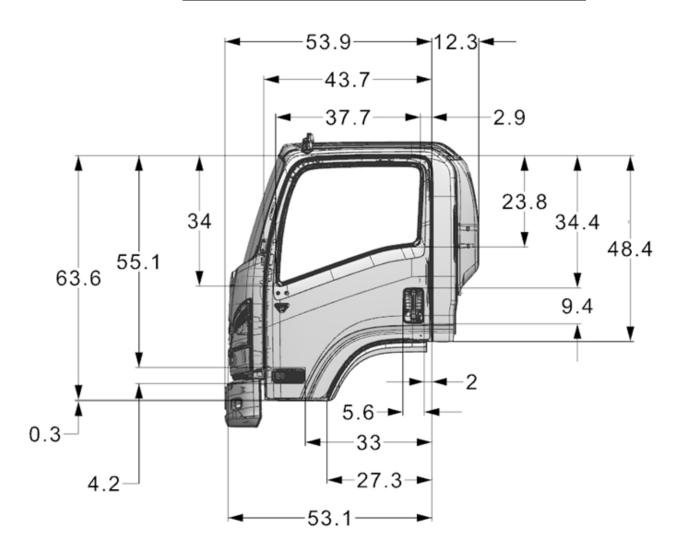
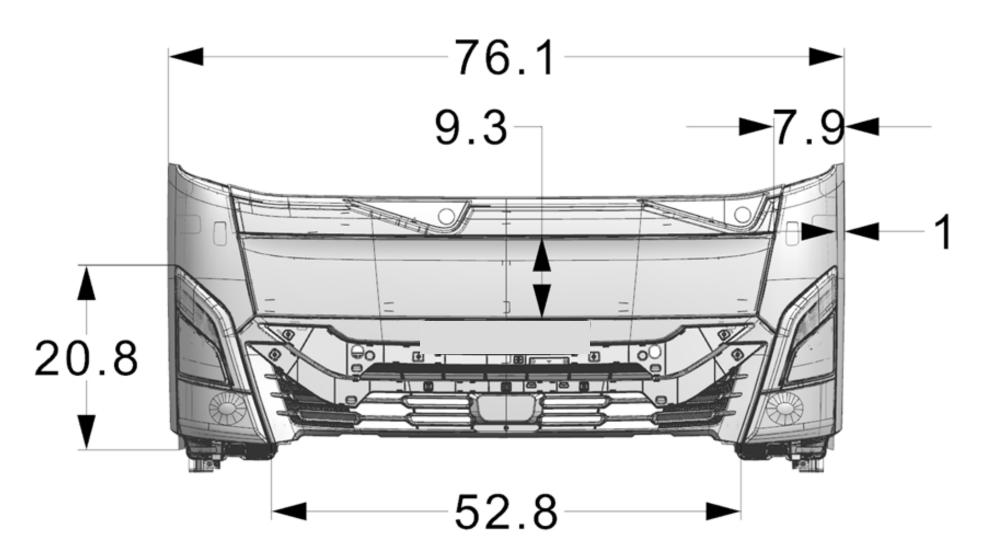


Figure 3

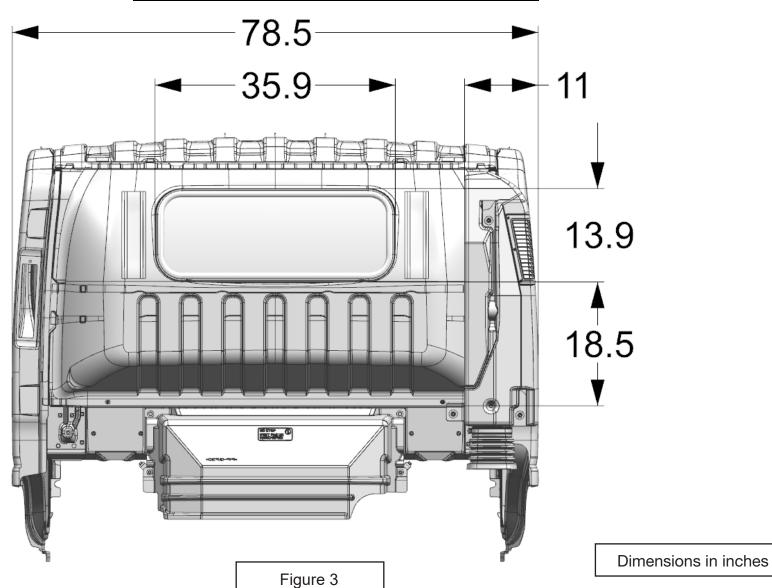
26MY Diesel Single Cab - Side View



26MY Diesel Single Cab - Front View



26MY Diesel Single Cab - Rear View



Note:

top of window to top of roof 7.64 inches top of window to top of cab roof lights 9.64 inches

26MY Diesel Crew Cab - Cab Side View

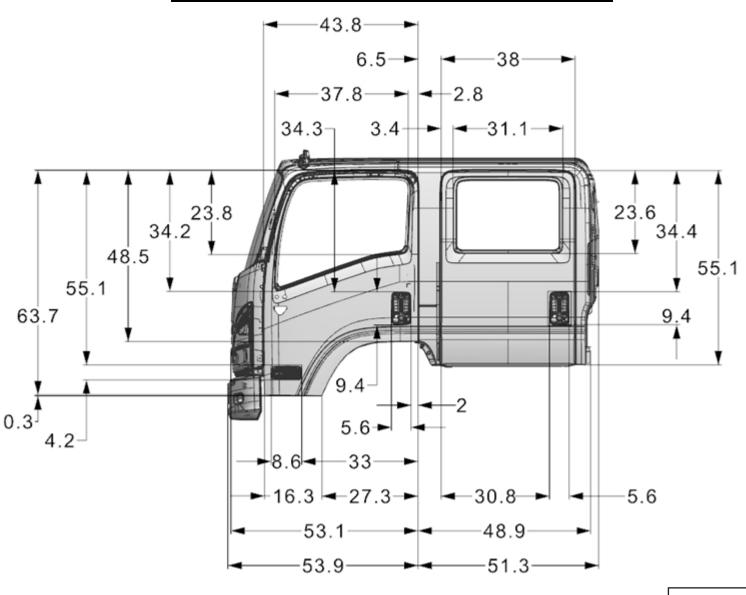


Figure 4

26MY Diesel Crew Cab - Front View

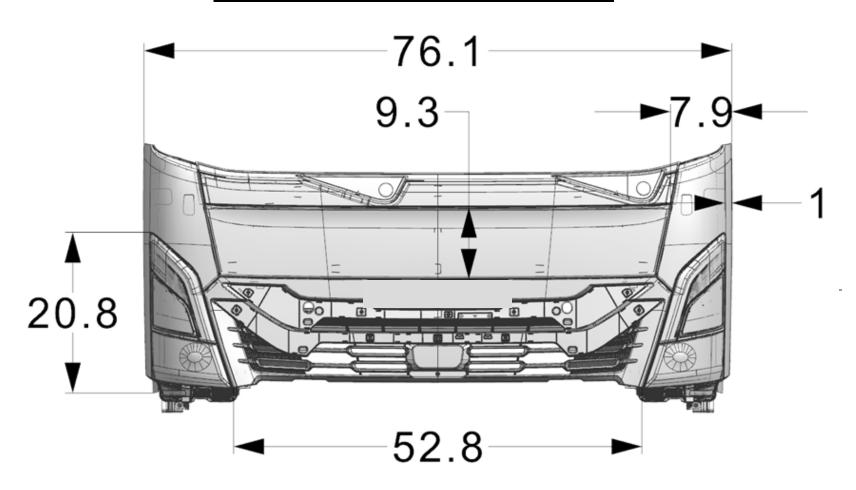
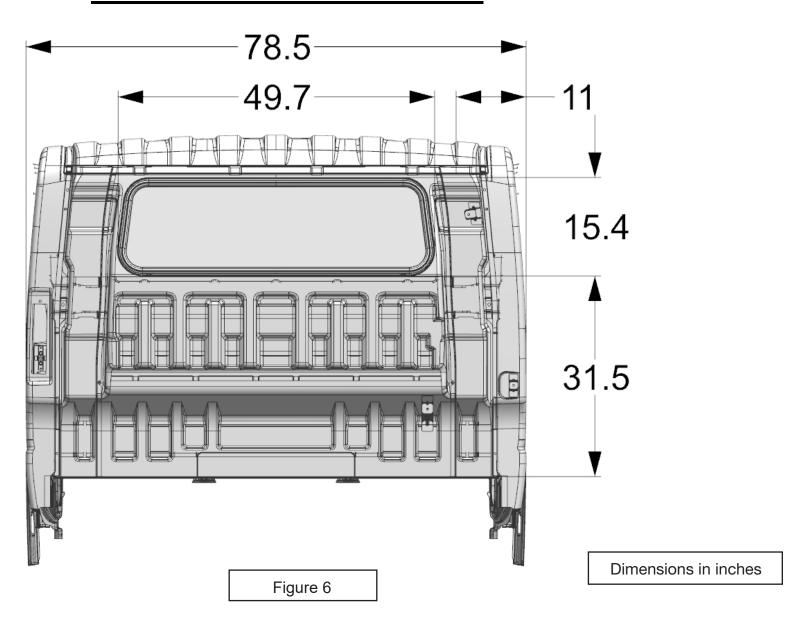
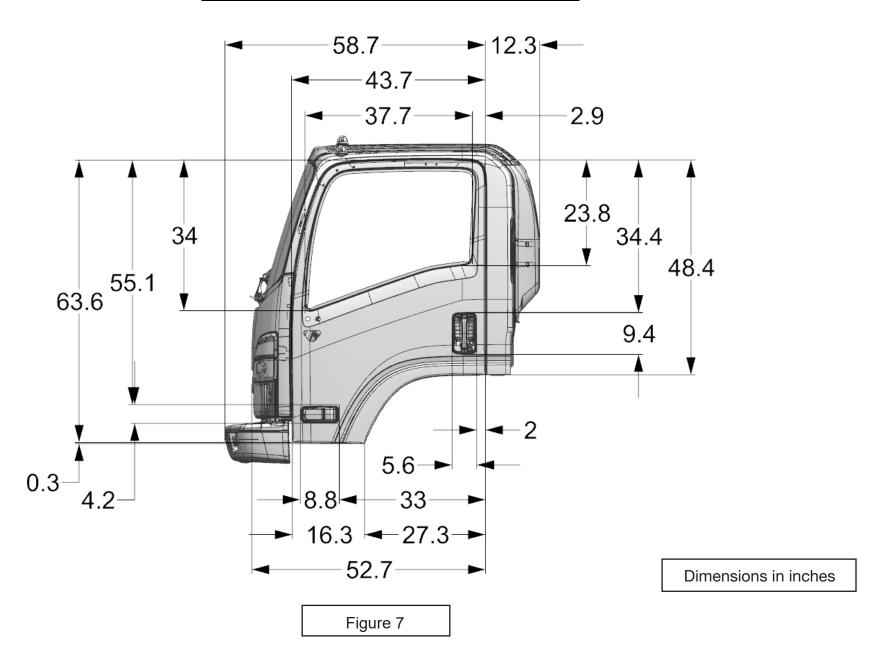


Figure 5

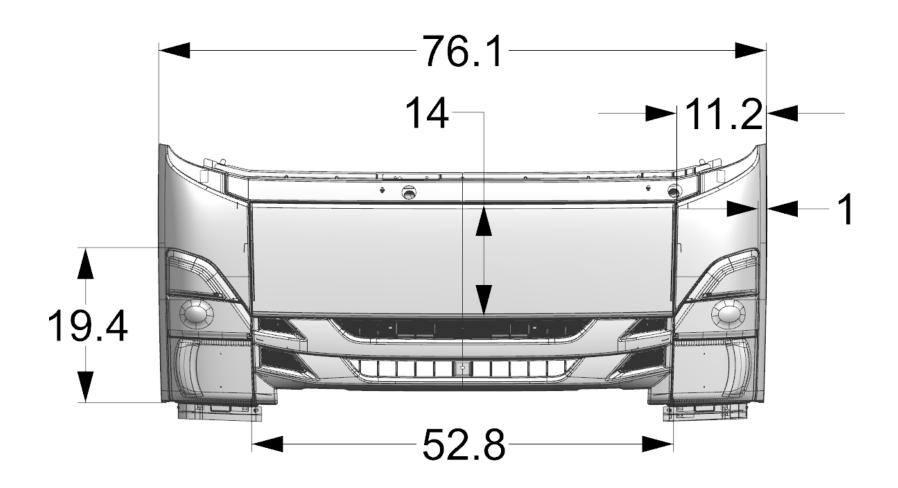
26MY Diesel Crew Cab - Rear View



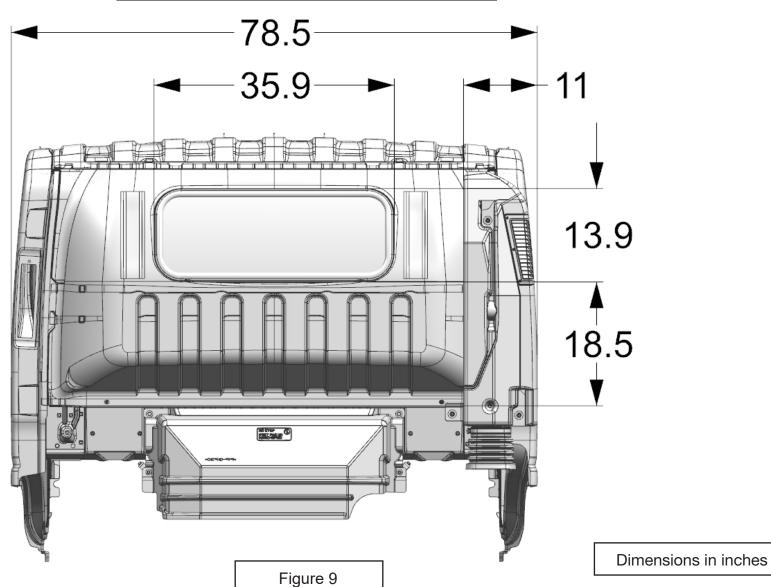
26MY Gas Single Cab - Side View



26MY Gas Single Cab - Front View



26MY Gas Single Cab - Rear View



Note:

top of window to top of roof 7.64 inches top of window to top of cab roof lights 9.64 inches

26MY Gas Crew Cab - Cab Side View

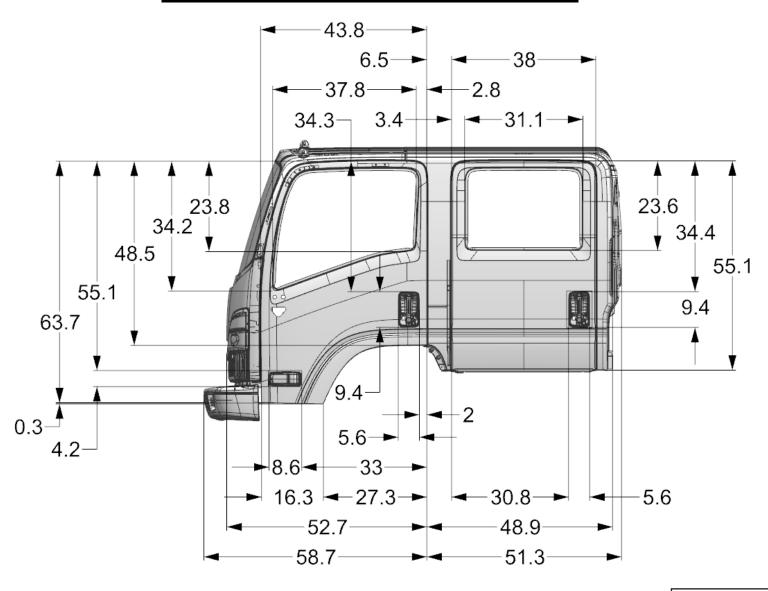


Figure 10

Dimensions in inches

26MY Gas Crew Cab - Front View

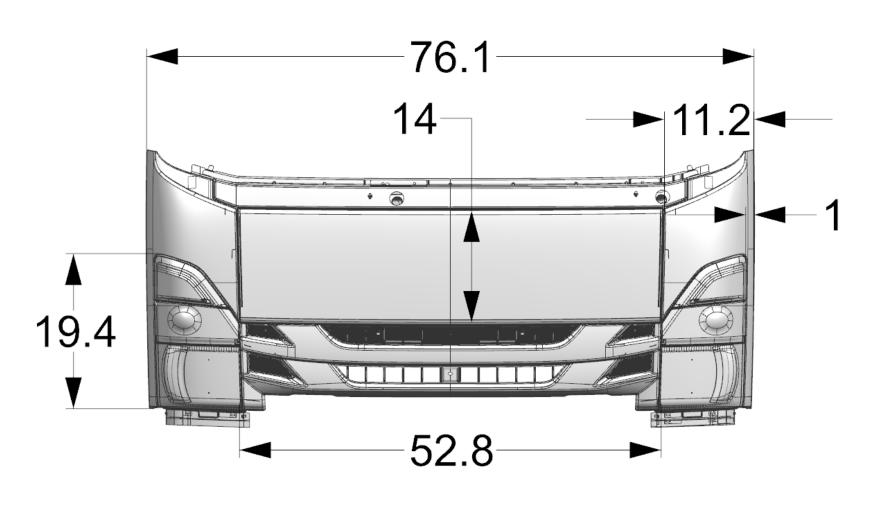
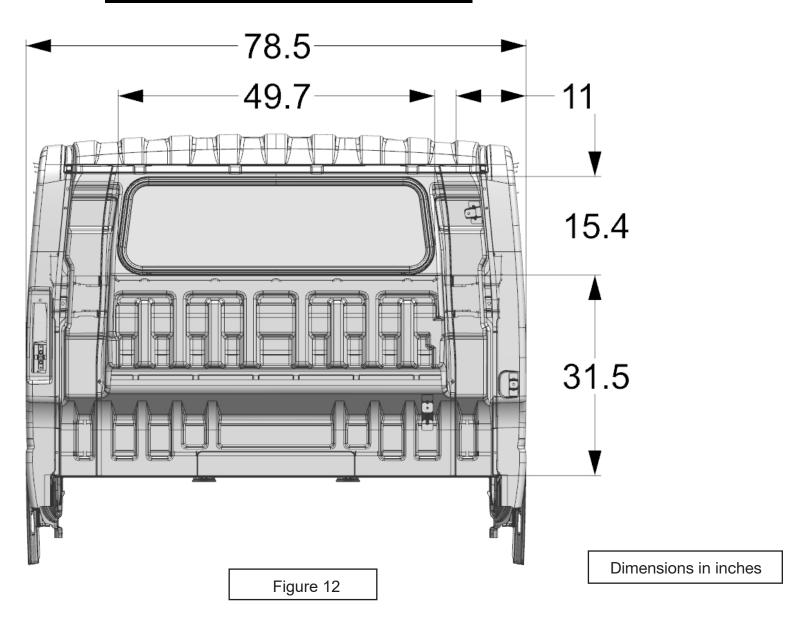


Figure 11

Dimensions in inches

26MY Gas Crew Cab - Rear View



Single Cab - Front and Side View (Air Shield on Single Cab only)

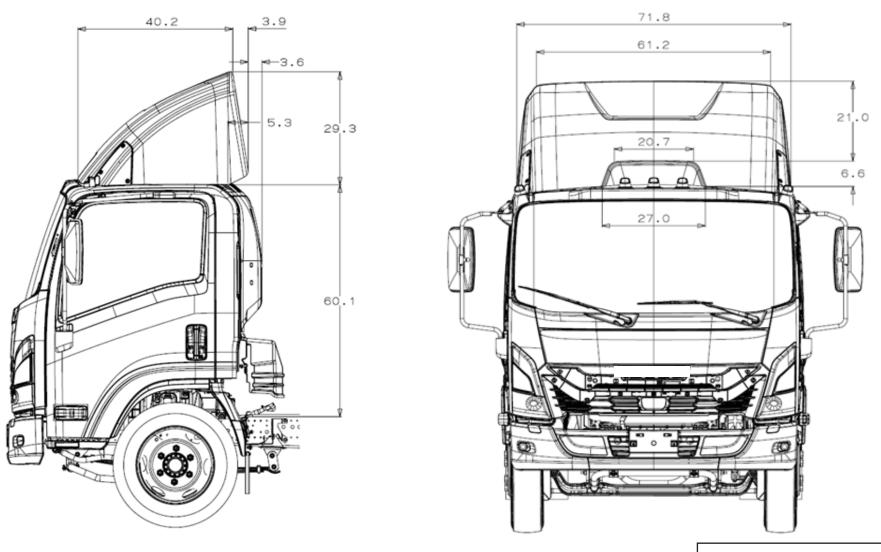


Figure 13

Dimensions in inches

26.

Understanding DPF Regeneration

Understanding SCR (Selective Catalyst Reduction) and Diesel Exhaust Fluid (DEF)

The Selective Catalyst Reduction (SCR) system reduces nitrogen oxide (NOx) emissions emitted from a diesel engine. The SCR system reduces NOx by adding (injecting) Diesel Exhaust Fluid (DEF) into the exhaust system and inducing a reaction converting NOx into water vapor and nitrogen. This reaction takes place without any driver involvement. In addition, as long as the DEF tank is regularly filled with good quality DEF and at a satisfactory level above empty, the driver may never notice the SCR system.

It is the driver's responsibility to keep a good supply of quality DEF in the DEF tank for the proper operation of the SCR system. The SCR system will continuously monitor itself and the NOx reduction performance for any condition that will reduce or stop this emission reduction. The information provided in the remainder of this bulletin will outline the SCR system functions, common characteristics of the SCR system, DEF quality requirements and indicator and warning lights should the SCR system detect an incorrect fluid or if the DEF level in the DEF tank becomes too low.

SCR System Operation and The Driver

The SCR system requires good quality DEF for proper operation. The system is equipped with various sensors to detect the proper fluid is added to the DEF tank. The driver's only responsibility is to add good quality DEF to the DEF tank as necessary. The DEF level gauge on the instrument cluster shows the amount of DEF remaining. In addition the Mutli Information Display (MID) will provide additional notice to encourage the driver to add DEF. In order to keep the SCR system operational and emissions compliant a warning system will activate when the DEF level becomes too low (see DEF Low Level Warning System).

After starting the engine the SCR control module will pressurize the system and based on various sensor inputs begin to reduce NOx emissions. No driver action is necessary for the SCR system to function. After the engine is turned "OFF" the SCR control module will reduce system pressure and recover all DEF in the system piping back to the DEF tank. This action is taken as cold weather protection.

Note: Drivers may notice a buzzing noise from the driver side of the vehicle near the DEF tank a few moments after turning "OFF" the engine. This is a function of the SCR system and should be considered normal.

During cold weather seasons DEF may freeze in the DEF tank. Once the engine is started, engine coolant circulates through the DEF tank to thaw it when frozen and prevent it from freezing while the engine is running. The vehicle can be driven normally when DEF is frozen in the DEF tank

Adding DEF

Under normal conditions DEF can be added simply by removing the DEF tank fill cap and pouring in DEF. A few points to be aware of when transferring DEF from its original container to the DEF tank are:

- 1. Be sure the outside of the container is clean from any debris
- 2. If using a funnel or pump to transfer DEF, be sure to use equipment exclusively for DEF made from polyethylene resin or stainless steel.
- 3. Do not overfill the DEF tank

Take care not to spill DEF. When DEF dries it will leave a crystalline residue. This condition is normal. Wash, with water, or wipe away the residue to prevent it from entering the DEF tank. If DEF is spilled on the body or frame, it may cause the metal to rust, so wipe it off and then rinse it away with water.

Note: For cold weather climates (ambient temperatures below -11°C/12°F)

Chevrolet does not recommend parking the vehicle for long periods with the refill diesel exhaust fluid (DEF) warning light on in cold weather. The DEF low level warning system may not reset when DEF is added. Take the following actions to avoid this condition in cold weather.

- 1. Refill the DEF as soon as possible after parked vehicle.
- 2. Turn the engine control switch to the "ON" position from the "LOCK" position.
- 3. Wait for the warning buzzers and warning lights to turn off.
- 4. If the buzzer does not stop, return the engine control switch back to the "LOCK" position and add more DEF, and then start over the step (2) above.
- 5. Turn the engine control switch to the "LOCK" position. Turn the engine control switch to the "ON" position from the "LOCK" position.
- 6. Wait for the warning buzzers and warning lights to turn off.
- 7. If the buzzer does not stop, return the control switch back to the "LOCK" position and add more DEF, and then start over the step (2) above.
- 8. Turn the engine control switch to the "LOCK" position.

DEF Low Level Warning System

To avoid running out of DEF the SCR system will turn on warning and indicator lights and reduce engine power in progressive stages to encourage adding DEF. The following is a summary of the diesel exhaust fluid (DEF) low level warning lights, indicator lights and engine power reductions. Continuing to drive for too long after these lights come on will eventually result in a severe vehicle speed limitation. These warning and indicator lights will go out automatically and engine power will be restored to normal after the SCR system detects that the DEF tank is refilled with DEF.

Stage 1: When the remaining level of DEF becomes excessively low the DEF gauge will change color from green to amber. In addition, warning and indicator lights will come on as shown in the table and engine power will be reduced so the vehicle speed will not exceed 55 MPH (89 km/h).

Stage 2: If driving is continued without adding DEF (approximately 200 miles (320 km)) the DEF gauge, warning and indicator lights will begin blinking. Again, engine power will be reduced so the vehicle speed will not exceed 35 MPH (56 km/h).

Stage 3: If driving is continued until the DEF tank is empty, the DEF gauge will change color from amber to red and the warning and indicator lights will begin to blink faster. Engine power will still be reduced so the vehicle speed will not exceed 35 MPH (56 km/h). The vehicle speed will be limited to 5 MPH (8 km/h) either when the vehicle is stopped after driving further on (approximately 35 miles (56 km)) or when the engine is restarted.

Stage 4: The DEF gauge is red, the indicator light is blinking and the buzzer is beeping continuously indicates the vehicle speed is limited to 5 MPH (8 km/h).

DEF Quality and Storage

Diesel Exhaust Fluid is a urea-based chemical reactant designed specifically for use in SCR systems to reduce NOx emissions. The raw materials used to produce DEF include natural gas, coal or other petroleum products. DEF is prepared by combining high purity urea with deionized water to create a 32.5% solution. DEF and similar urea-based products are widely used today for a variety of agricultural and industrial needs. Chevrolet DEF is API certified and meets ISO22241 specifications for purity and composition, while being:

- Non-toxic and non-polluting
- Non-flammable
- Stable and colorless
- Non-hazardous

DEF should be stored in an indoor place with good ventilation avoiding direct sunlight, if possible. Be sure containers are sealed properly to avoid contamination and evaporation. To maximize shelf life, ideal storage temperature is below 30°C/86°F and above -11°C/12°F to prevent freezing. If frozen DEF can be thawed and used without any concerns.

DEF Safety

Though it should be harmless for physical contact, there may be a rare case to induce inflammation depending on the body constitution, so make sure to take following actions.

- In the event that the fluid does come into contact with your skin, wash it off with water. Although it is rare, a person with sensitive skin may suffer from irritation. If you come into contact with DEF, flush the affected area with soap and/or water. If irritation or redness develops or persists, seek medical attention.
- If it is accidentally swallowed, drink 1- 2 glasses of water or milk and seek immediate medical attention.
- If it does come into contact with the eyes, immediately rinse it off with a large amount of water for at least 15 minutes, and then seek medical attention.

Customer Assistance in locating DEF

DEF is available from all authorized Chevrolet dealers. In addition, the U.S. Department of Energy has created an on-line DEF locator that can be accessed at www.afdc.energy.gov/afdc/locator/def/. The American Petroleum Institute (API) also maintains a list of API-certified distributors of DEF on their web page at http://www.apidef.org/

Preparation of New Vehicles for Storage Beyond 30-days

In the event new vehicles are to be stored for extended periods beyond thirty (30) days, the following additional maintenance items are suggested:

NOTE: When new vehicles are stored outside, particularly along coastal areas, paint and bright metal deterioration will be more rapid due to prevailing saltwater atmosphere and high humidity. For this reason, it may be necessary to wash each vehicle and wax the chrome and stainless steel metal parts at least once a month.

NOTE: To prevent the possibility of a build-up of mildew, open the doors to air out each vehicle at least once a month depending upon climatic condition. If there is condensation, wipe the condensation dry with a clean cloth and air out the vehicles.

- A. "Block out" mechanical clutches by holding the clutch pedal partially depressed (approximately 1/2 way) with wooden blocks or bracing. This will prevent clutch plates from rusting to the flywheel and clutch pressure plate.
- B. Remove windshield wiper arms and blades and store in the vehicle.

In addition, the following procedures are to be carried out at thirty (30)-day intervals and instituted after the first thirty (30) days of vehicle storage.

- A. Check the battery water level and specific gravity. If voltage is under 12.20 volts, recharge the battery.
- B. Connect the battery ground cable. Start engine in P range and let idle for at least twenty (20) seconds.
 - C. Raise the idle up to 2,000 rpm for fifteen (15) minutes. Be sure there is sufficient fuel in tank. Each new vehicle is supplied with approximately 1.5 gallons of fuel. Do not let the tank run dry.
- D. Shift the transmission lever to all positions while the engine is running.
- E. Move the vehicle for a distance of at least thirty (30) feet to lubricate the wheel bearings.
 - NOTE: The vehicle should be re-parked so that a different area of the tires is in contact with the ground to reduce the possibility of tire damage.
- F. Turn the steering wheel lock-to-lock while the vehicle is moving slowly.
- G. Apply and release the service and parking brakes several times (do not apply the parking brake when the vehicle is moving).
- Stop the engine.
- I. After warm-up operation, check under the vehicle to make sure there is no oil or fluid leakage.
- J. Disconnect the battery ground cable.
- K. Drain the brake air reservoirs (if appropriate) and close the drain cocks.

New Vehicles Stored Beyond One Year

In the event new vehicles are to be stored for extended periods beyond one (1) year, the following additional maintenance is required every twelve (12) months:

- Replace engine oil, coolant, brake fluid, transmission oil, differential gear oil and all other fluids.
- B. Drain and refill diesel exhaust fluid (DEF).
- C. Drain and refill fuel (diesel and gasoline).
- D. Replace fuel filters (diesel only).

26.5

Modes of Regeneration Quick Reference Guide

2011-2015MY Chevrolet LCF Equipped with Diesel Particulate Filter (DPF)

BULLETIN NUMBER:
IB14-L-001
ISSUE DATE:
MARCH 2014
GROUP:
FUEL

N-Series - Understanding DPF Regeneration; Modes of Regeneration Quick Reference Guide

2011 - 2015 Isuzu NPR/NPRHD/NQR/NRR

2012 - 2014 Isuzu NPR

SERVICE INFORMATION

AFFECTED VEHICLES

• 2011-2015MY Isuzu N-Series Equipped with Diesel Particulate Filter (DPF)

This bulletin supersedes bulletin IB07-L-002B. This bulletin is being revised to update Model Years and Service Information. Please discard bulletin IB07-L-002B.

SERVICE INFORMATION

Isuzu has found that many times customers are unfamiliar with the overall operation of the DPF system (including the importance of completing a regeneration), which leads to unnecessary vehicle downtime. Please make sure your sales and service staff is completely familiar with the DPF system functionality and operation so when a new truck is delivered or comes in for service, the dealership team can instruct customers on proper operation which will minimize vehicle downtime.

The quick reference information below is provided to assist dealer personnel in better understanding the DPF Emission System Operation. Additional information regarding DPF Regeneration can be found in the Owner's Manual, Service Manual, the driver side sunvisor label, or on the Emission System Operation video. For your convenience, this video may be downloaded from www.isuzucv.com.

IMPORTANT: DPF cleaning is due every 100,000 miles or 3,000 hours of operation (whichever occurs first). Some applications (such as sweepers, trucks that idle for extended periods, along with frequent stop/go), may require more frequent cleaning. Please see the appropriate owner's manual for specific cleaning instructions.



26.6

IMPORTANT: Before starting DPF regeneration, ensure that the exhaust area is clear of grass, leaves, or any dry debris that could ignite, as this area will become very hot during regeneration.

MID Message	Action Required	Description
FREGEN. IN PROGRESS	No Action Required	DPF filter is in Regeneration Mode.
REGEN. REGUIRED	When Possible	Perform Running Regeneration – Drive vehicle above 30 mph (50 km/h) for approximately 20 minutes until "REGEN IN PROGRESS" message
RECENT	Immediately	goes off or, if that is not possible, perform the Switch Regeneration described below. A REGEN can also occurwhen stationary with the transmission in "P".
	When Possible	Perform Selectable (Switch) Regeneration – Idle in "P" (A/T) or neutral (M/T) with the parking brake on, press the switch and continue idling
SEL REGEN RECURRED	Immediately	approximately 20 minutes until "REGEN IN PROGRESS" message goes off.
OFFICKING PALEVEL	When Possible	Illuminates when the DPF switch is held down. When ON, the system is checking whether or not Selectable (Switch) regeneration is possible, and then changes to the required warning light. If the switch does not change, regeneration is not required.

IMPORTANT: Before starting DPF regeneration, ensure that the exhaust area is clear of grass, leaves, or any dry debris that could ignite, as this area will become very hot during regeneration.

REGENERATION MODES

Mode Name	Description		
Automatic Regeneration	ECM monitors sensor inputs and determines if DPF regeneration is necessary The ECM will command "REGEN IN PROGRESS" message Vehicle should be driven normally		
	Note: If idling at a stop or in "Park" during this regeneration mode, the engine RPM will increase and the exhaust brake will activate.		
	Note: DPF regeneration may be initiated automatically during prolonged idling. The "REGEN IN PROGRESS" light will illuminate – this is normal and does not indicate a failure.		
Emergency Regeneration	Yellow or Red "REGEN REQUIRED" light comes "ON" Driver must choose one of the following options to perform this regeneration. If one of the following options is not completed, Limp Home Mode may be activated.		
	Running Option 1: Operate vehicle above 30mph for approximately 20 minutes ECM will determine if regeneration is necessary Drive until the "REGEN IN PROGRESS" message goes off, or if that is not possible, perform the Switch Regeneration as described below		
	Switched Option 2: Set the parking brake with engine running and transmission in Park or Neutral Position Press the DPF button Continue idling for approximately 20 minutes until the "REGEN IN PROGRESS" message goes off		
	IMPORTANT: Once Emergency Switched or Selectable Regeneration Modes have been selected, the Emergency Running Modes are no longer available. Automatic and Emergency Running Modes will become available after Switched or Selectable DPF regeneration is completed.		
Selectable Regeneration GEORNG MILEVEL PRIND 2.1	NOTE: For quickest possible regeneration, be sure the vehicle is at operating temperature before performing selectable regeneration. • Engine is running and in "Park" position. • Parking brake is applied. • Press and hold the DPF button. • "CHECKING PM LEVEL" will turn "ON" when the system is checking if "Selectable" regeneration is possible. • If the regeneration light does not stay "ON", regeneration is not necessary.		

26.7

	If the "REGEN IN PROGRESS" light turns "ON", regeneration will start and will take about 20 minutes Engine RPM will increase and the exhaust brake will activate If the selectable regeneration mode is interrupted, the red "SEL REGEN REQUIRED" light will flash and will go into reduced power condition
	CAUTION: The following actions will interrupt the stationary type regeneration. Failure to restart and complete the regeneration cycle will result in filter clogging.
	Applying the accelerator pedal Shifting into gear (Automatic Transmission) Pressing the clutch pedal (Manual Transmission)
Limp Home Mode	This condition should only be diagnosed and repaired by an Isuzu trained technician MIL lamp is on, vehicle speed is reduced Technician diagnosis required IDSS induced regeneration (fast or slow) based on diagnosis Slow process – will take 2 hours

IMPORTANT: If the truck continues be operated without regenerating you will notice:

- Engine reduced power condition with the red "REGEN REQUIRED" light
- Illuminated check engine light
- · You must take vehicle to dealer for service

Limited Slip Differential Fluid

Should it become necessary to add fluid to the rear axle of a chassis equipped with a limited slip differential please consult the Owners Manual for the appropriate selection of lubricants to be used.

Axle Housing Stamp					
Ratio	Stand	LSD			
	Axle	Axle			
4.300	SO	HO			
4.555	C9	D9			
4.777	S9	H9			
5.125	C8	D8			
5.375	S8	H8			
5.571	A7	B7			
5.857	C7	D7			

CAN Interface Converter Information

2026 Chevrolet Low Cab Forward

g 27.29

Instructions for FMS Jumper Harness Installation

- The optional FMS Jumper Harness provides a standard 9-pin heavy duty connector for the integration of fleet management systems (FMS) and other telematics devices that require read-only CAN information from the chassis.
- To comply with California regulations, the final location of the provided 9-pin heavy duty connector (black) should not be within proximity of the existing chassis OBD connector. Figure 1 shows the restricted area where connector mounting should be avoided.
- The FMS Jumper Harness is located within the passenger side tray below the airbag as shown in Figure 2.
 - 1 Remove the FMS Jumper Harness from its bag and find the connectors on either end.
 - a) Identify the white 6-pin female connector located on one end of the harness shown in Figure 3.
 - b) Identify the black 9-pin heavy duty connector located on the other end of the harness Figure 3.
 - (2) Find the white 6-pin chassis side connector located at the edge of the dash adjacent to the cup holder as shown in Figure 4.
 - a) Connect the white 6-pin female end of the FMS Jumper Harness with this connector.
 - B) Route the FMS Jumper Harness so that the 9-pin heavy duty connector's final location is outside of the restricted area indicated in Figure 1.
 - a) The harness is 3 feet in length. Harness routing and the mounting location of telematics devices are at the installer's discretion.
 - (4) Connect your FMS or other CAN device to the 9-pin heavy duty connector of the FMS Jumper Harness.

Important Note:

See Body Builder Guide Section 2 - Electrical Wiring and Harnessing for chassis wiring guidance

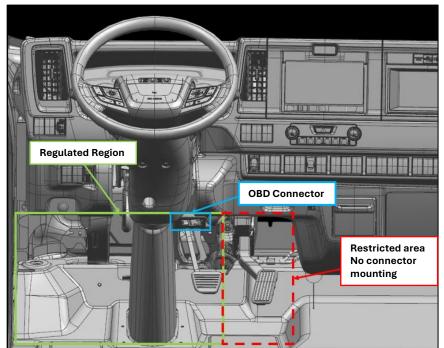
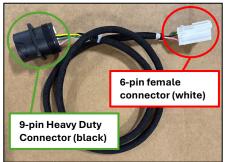




Figure 2



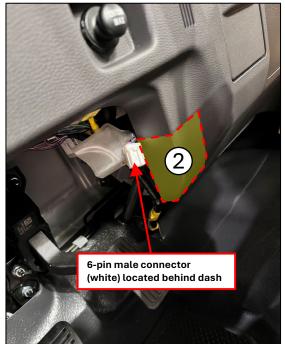


Figure 1 Figure 3 Figure 4

2026 Chevrolet Low Cab Forward

CAN Interface Converter General Guidelines

- Upfitters link their own control unit or telematics device to the CAN Interface Converter module via a connector. The upfitter is responsible for ensuring that the external CAN bus is used correctly.
- Control units connected to a CAN bus must be able to handle up to 100% of the CAN bus load and have no significant functional limitations or malfunctions.
- Avoid closing control loops over the CAN. The access time is relatively long and fast control loops require large amounts of bandwidth.
- Avoid CAN communication when the engine control switch is in the LOCK or ACC positions.
- Avoid CAN communication during the start sequence of the control units connected to the external CAN bus.
- During an engine start sequence (starter motor turning) the supply voltage can be low and communication from the CAN Interface Converter module cannot be guaranteed.
- Fault codes related to communication with the CAN Interface Converter module should not be set when the system voltage
 is under 9V.
- When the engine control switch is turned to the ON position, the CAN Interface Converter module starts sending messages within a few seconds.

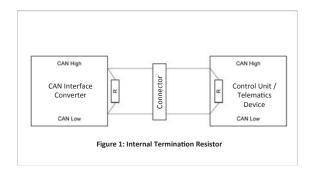
CAN Interace Converter Connection Guidelines

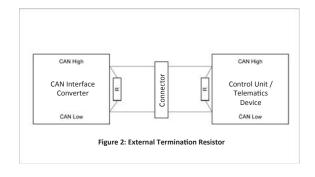
Termination Resistor

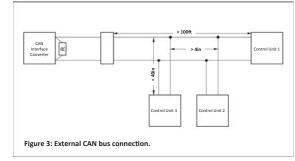
- The CAN bus cable must be connected using a 120 Ohm resistor at each end in accordance with SAE J1939-15 Physical Layer. This allows CAN communication without interference.
 - The CAN Interface Converter harness contains one of the two 120 Ohm resistors.
 - The second termination resistor is required at the control unit / telematics device end of the harness.
- Certain devices have a built-in termination resistor (Figure 1) while others are not terminated. If the control unit is not equipped with an internal termination resistor, an external termination resistor must be connected as close to the control unit as possible (Figure 2).

Harness Connection

- The harness should be as short as possible to minimize the effect of electromagnetic interference.
- The length of the main cable must not exceed 100 feet between the CAN Interface Converter connector and Control Unit 1 (Figure 3).
- If more than one control unit is connected, the length of the cables between the main cable and additional control unit should not exceed 40 inches (Figure 3).
- There should be at least 4 inches between the nodes of each control unit cable on the main bus cable (Figure 3).
- The number of devices in the external CAN network should not exceed 9 control units.

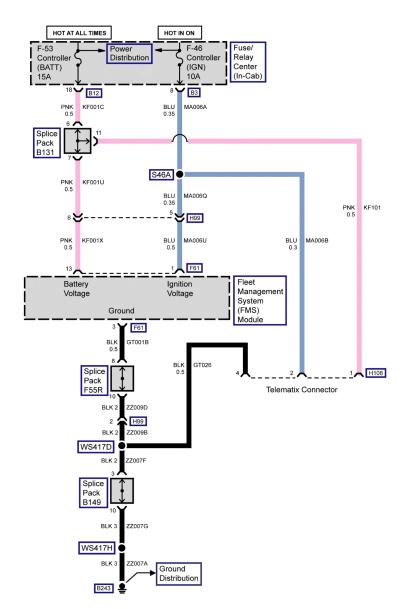




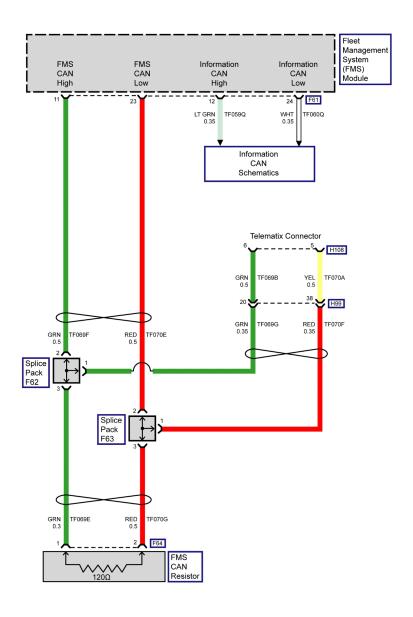


CAN Interface Converter Circuit Diagram

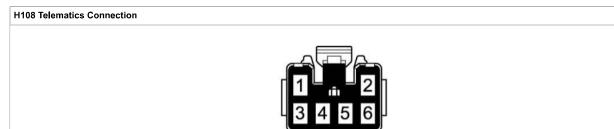
Module Power and Ground



Communication



CAN Interface Converter Connector



con0125

Connector Part Information • YAZAK • 6-WAY			(17323-8365 F (WHT)	Connector Part Information		• 6-WAY M	
Pin	Wire Color	Circuit No.	Function	Pin	Wire Color	Circuit No.	Function
1	PNK	KF101	FUSE F-53 POWER SUPPLY FROM SPLICE PACK B131 PIN 11	1	_	_	_
2	BLU	MA006B	FUSE F-46 CONTROLLER (IGN) 10A SUPPLY VOLTAGE FROM SPLICE S46A	2	_	_	_
3	_	_	NOT USED	3	_	_	NOT USED
4	BLK	GT026	GROUND TO WS417D (F84 GROUND)	4	_	_	_
5	YEL	TF070A	FMS CAN LOW FROM H99 PIN 38	5	_	_	_
6	GRN	TF069B	FMS CAN HIGH FROM H99 PIN 20	6	_	_	_

CAN Interface Converter Output

Summary of the messages supported by the CAN interface. (Messages are sent to the external CAN bus from the vehicle.)

Message sent from vehicle	Identifier (Hex)	Specification	ISUZU FMS Interface
Cruise Control/Vehicle Speed 1	18 FE F1 00	SAE J1939-71	*
DM1(DTC record)	18 FE CA **	SAE J1939-73	*
Electronic Engine Controller 1	0C F0 04 00	SAE J1939-71	*
Electronic Engine Controller 2	0C F0 03 00	SAE J1939-71	*
Electronic Transmission Controller 5	1C FE C3 41	SAE J1939-71	*
Electronic Transmission Controller 2	18 F0 05 03	SAE J1939-71	*
Engine Hours, Revolutions	18 FE E5 41	SAE J1939-71	*
Engine Temperature 1	18 FE EE 00	SAE J1939-71	*
FMS-standard Interface Identity/Capabilities	1C FD D1 41	SAE J1939-71	*
Fuel Consumption (Liquid)	18 FE E9 41	SAE J1939-71	*
Fuel Economy (Liquid)	18 FE F2 41	SAE J1939-71	*
High Resolution Vehicle Distance	18 FE C1 41	SAE J1939-71	*
Idle Operation	18 FE DC 41	SAE J1939-71	*
Auxiliary Input/Output Status 1	18 FE D9 00	SAE J1939-71	*
Time/Date	18 FE E6 41	SAE J1939-71	*
Vehicle Distance	18 FE E0 41	SAE J1939-71	*
Vehicle Identification	18 FE EC 41	SAE J1939-71	*
Wheel Speed Information	18 FE BF 0B	SAE J1939-71	*

NOTES

^{*} GM CAN Interface provides this message.

^{**} Applies to all values between 00h and FFh.

2026 Chevrolet Low Cab Forward

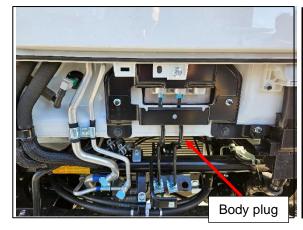
Cab Body Plug

To avoid drilling through the cab floor for electrical wiring, there is a body plug access point for routing wires into/out of the cab. Follow the instructions below to access this body plug.

Disassembly of Front Grille

- 1. Remove one (1) phillips head screw <REUSE>.
- 2. Remove grille from cab by gently pulling outward to release five (5) top clips, one center clip, and two (2) lower clips.

3. From front of vehicle, locate body plug in middle of vehicle behind brake lines. Remove plug, cut approximately a 1"x1" X in the middle, set aside.





Upper Dash Trim Removal

• <u>STEP 1</u>: Remove radio trim (1.A) and retaining screw (1.B). Gently pull dash trim (no more than 1/2") outward.



• <u>STEP 2</u>: Remove air bag indicator trim (2.A) and air bag indicator harness (2.B). Remove connectors from switches and or blanking plates (make note of each connectors position before removal). Set aside dash trim.



Back Up Camera Installation Information

Back Up Camera Mounting Information

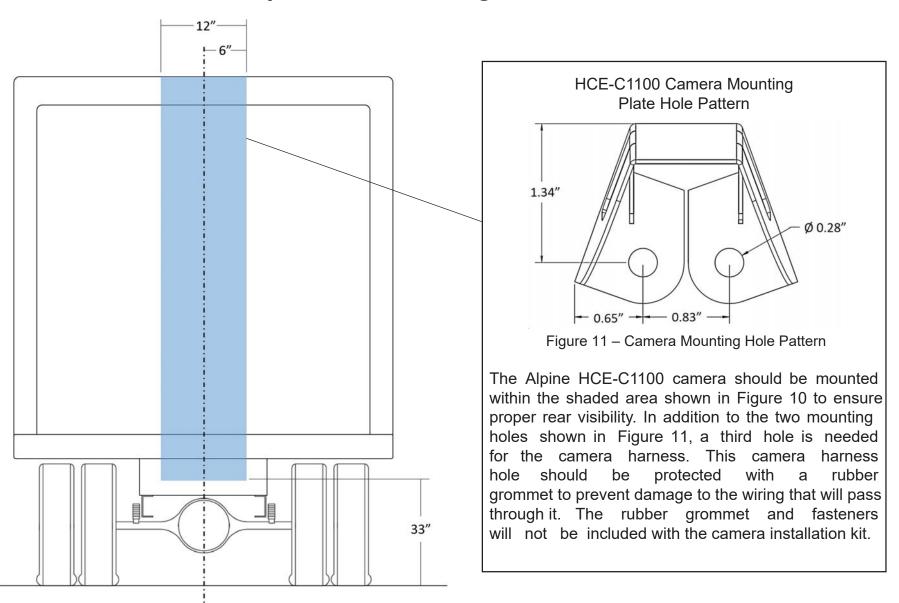


Figure 10 - Camera Mounting Area