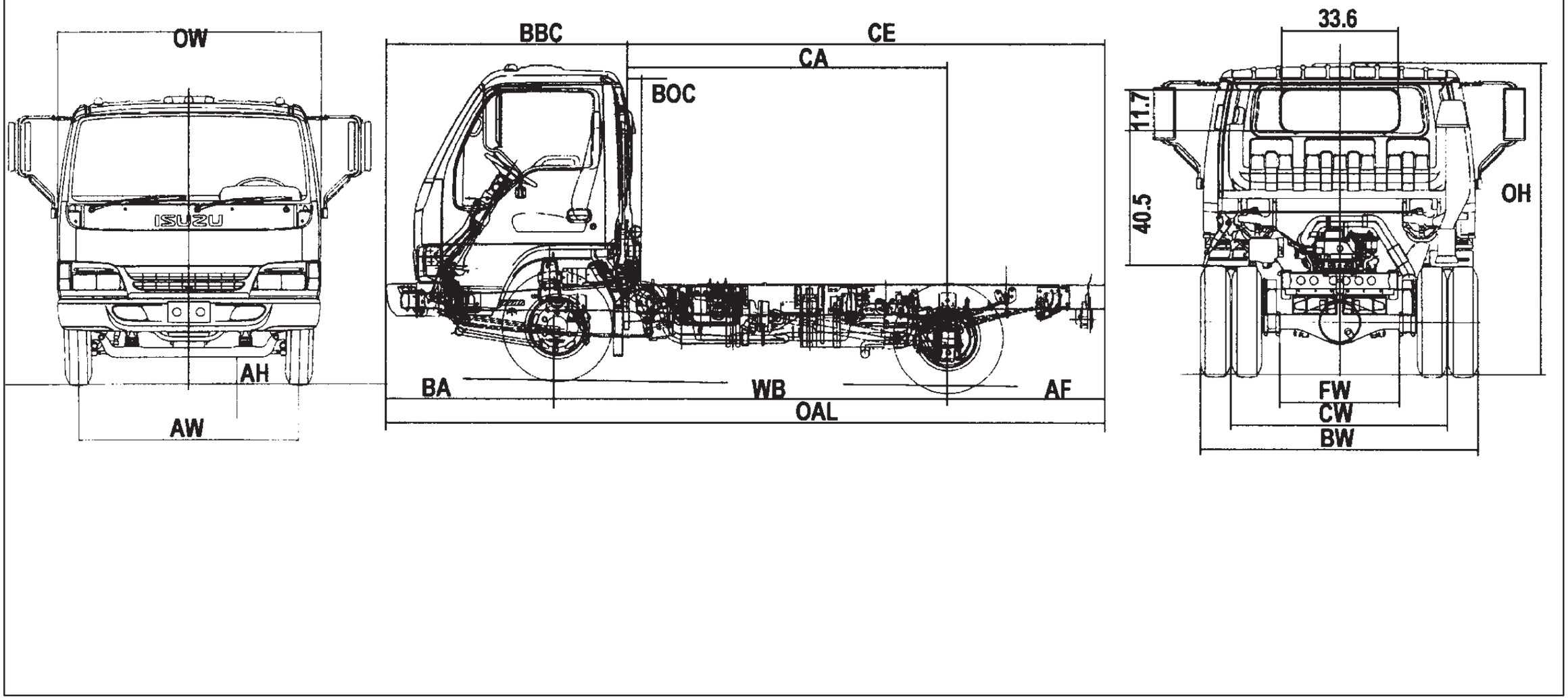
W3500/W4500 DIESEL

SPECIFICATIONS

Model	W3500 Diesel	W4500 Diesel
GVWR	12,000 lb.	14,500 lb.
WB	109 in./132.5 in./150 in./176 in.	
Engine	GM/Isuzu 4-cylinder, in-line 4-cycle, turbocharged, intercooled, direct injection diesel.	
Model/Displacement	4HE1-TC/290 CID (4.75 liters)	
HP (Gross)	142 HP/2800 RPM (Manual Transmission)	175 HP/2700 RPM (Automatic Transmission)
Torque (Gross)	275 lb. ft. torque/1300 RPM	347 lb. ft. torque/2000 RPM
Equipment	Dry element air cleaner with vertical intake; 2 rows 506 in^2 radiator; 6 blade 18.7 in. diameter fan with viscous drive. Cold weather starting device and an oil cooler.	
Clutch	Single, dry plate, 11.8 in. dia., actuated by self adjusting hydraulic master/slave cylinder.	
Transmission	MXA5C 5-speed manual, all forward gears synchronized. Fifth gear is direct.	
Steering	Integral power steering 20.9:1 ratio. Tilt and telescoping steering column.	
Front Axle	Reverse Elliot “I” Beam rated at 6,830 lb.	
Suspension	Semi-elliptical steel alloy leaf springs with stabilizer bar and shock absorbers.	
GAWR	4700 lb.	5360 lb.
Rear Axle	Full floating single speed with hypoid gearing rated at 11,020 lb.	
Suspension	Semi-elliptical steel alloy leaf springs and shock absorbers.	
GAWR	7950 lb.	9880 lb.
Wheels	16 x 6.0 6–hole disc wheels, painted white.	
Tires	215/85R-16E (10 pr) tubeless steel belted radials, all season front and rear.	
Brakes	Dual circuit vacuum assisted hydraulic service brakes with load sensing proportioning valve in rear brake circuit and a metering valve between the master cylinder and 6-way joint on the front brake lines. Disc front and self-adjusting outboard mounted drum rear. The parking brake is a mechanical, cable actuated, internal expanding drum type, transmission mounted. The exhaust brake is standard and is vacuum operated.	
Fuel Tank	33 gal. cylindrical steel fuel tank mounted on right hand rail with fuel water separator mounted on rail.	
Frame	Ladder type channel section straight frame rail 33.5 in. wide through the total length of the frame. Yield strength 44,000 psi section modulus 7.20 in^3. RBM 316,800.	
Cab	All steel low cab forward, BBC 68.0 in., 45° mechanical tilt with torsion assist.	
Equipment	Jersey knit covered high back driver’s seat with two occupant passenger seat. Two-way roof ventilator, dual cab mounted exterior mirrors. Tilt and telescoping steering column. Tinted glass.	
Electrical	12 Volt, negative ground, dual Delco maintenance free batteries, 750 CCA each, 80 Amp alternator with integral regulator.	
Options	Air Conditioning; AM/FM cassette stereo radio; PTO; engine block heater; engine oil pan heater; heated fuel/water separator; spare wheel; 6” stainless steel convex mirrors.	
Transmissions	Aisin 450-43 LE 4-speed overdrive automatic transmission with lock-up capability in 2nd, 3rd and 4th and PTO capability. PTO gears are available in the 109 & 132.5 WB only.	

NOTE: These selected specifications are subject to change without notice.

VEHICLE WEIGHTS, DIMENSIONS AND RATINGS



W3500/W4500 DIESEL

Variable Chassis Dimensions					
Unit	**WB**	**CA***	**CE***	**OAL**	**AF**
Inch	109.0	88.4	131.5	199.5	43.1
Inch	132.5	111.9	155.0	223.0	43.1
Inch	150.0	129.4	172.5	240.5	43.1
Inch	176.0	155.4	198.5	266.3	43.1

* Effective CA & CE are CA or CE less BOC.

Dimension Constants					
Code	**Inches**	**Code**	**Inches**	**Code**	**Inches**
AH	7.9	BW	83.3	FH	32.0
AW	65.6	CW	65.0		
BA	47.4	FW	33.5		
BBC	68.0	OH	87.4		
BOC	9.25	OW	78.5		

12,000 lb. GVWR Manual Transmission Model						
Chassis Cab and Maximum Payload Weights						
Model	**WB**	**Unit**	**Front**	**Rear**	**Total**	**Payload**
NA1	109.0 in.	lb.	3,638	1,587	5,225	6,775
NA2	132.5 in.	lb.	3,682	1,609	5,291	6,709
NA3	150.0 in.	lb.	3,726	1,631	5,357	6,643
NA4	176.0 in.	lb.	3,770	1,653	5,423	6,577

14,500 lb. GVWR Manual Transmission Model						
Chassis Cab and Maximum Payload Weights						
Model	**WB**	**Unit**	**Front**	**Rear**	**Total**	**Payload**
NE1	109.0 in.	lb.	3,649	1,587	5,236	9,264
NE2	132.5 in.	lb.	3,693	1,609	5,302	9,198
NE3	150.0 in.	lb.	3,737	1,631	5,368	9,132
NE4	176.0 in.	lb.	3,781	1,653	5,434	9,066

12,000 lb. GVWR with Aisin Automatic Transmission Model						
Chassis Cab and Maximum Payload Weights						
Model	**WB**	**Unit**	**Front**	**Rear**	**Total**	**Payload**
NB1	109.0 in.	lb.	3,704	1,631	5,335	6,665
NB2	132.5 in.	lb.	3,748	1,653	5,401	6,599
NB3	150.0 in.	lb.	3,792	1,675	5,467	6,533
NB4	176.0 in.	lb.	3,836	1,698	5,534	6,466

14,500 lb. GVWR with Aisin Automatic Transmission Model						
Chassis Cab and Maximum Payload Weights						
Model	**WB**	**Unit**	**Front**	**Rear**	**Total**	**Payload**
NF1	109.0 in.	lb.	3,715	1,631	5,346	9,154
NF2	132.5 in.	lb.	3,759	1,653	5,412	9,088
NF3	150.0 in.	lb.	3,803	1,675	5,478	9,022
NF4	176.0 in.	lb.	3,847	1,698	5,545	8,955

Vehicle weight Limits:

GVWR		
Designed Maximum	12,000 lb.	14,500 lb.
GAWR, Front	4,700 lb.	5,360 lb.
GAWR, Rear	7,950 lb.	9,880 lb.

Technical Notes:

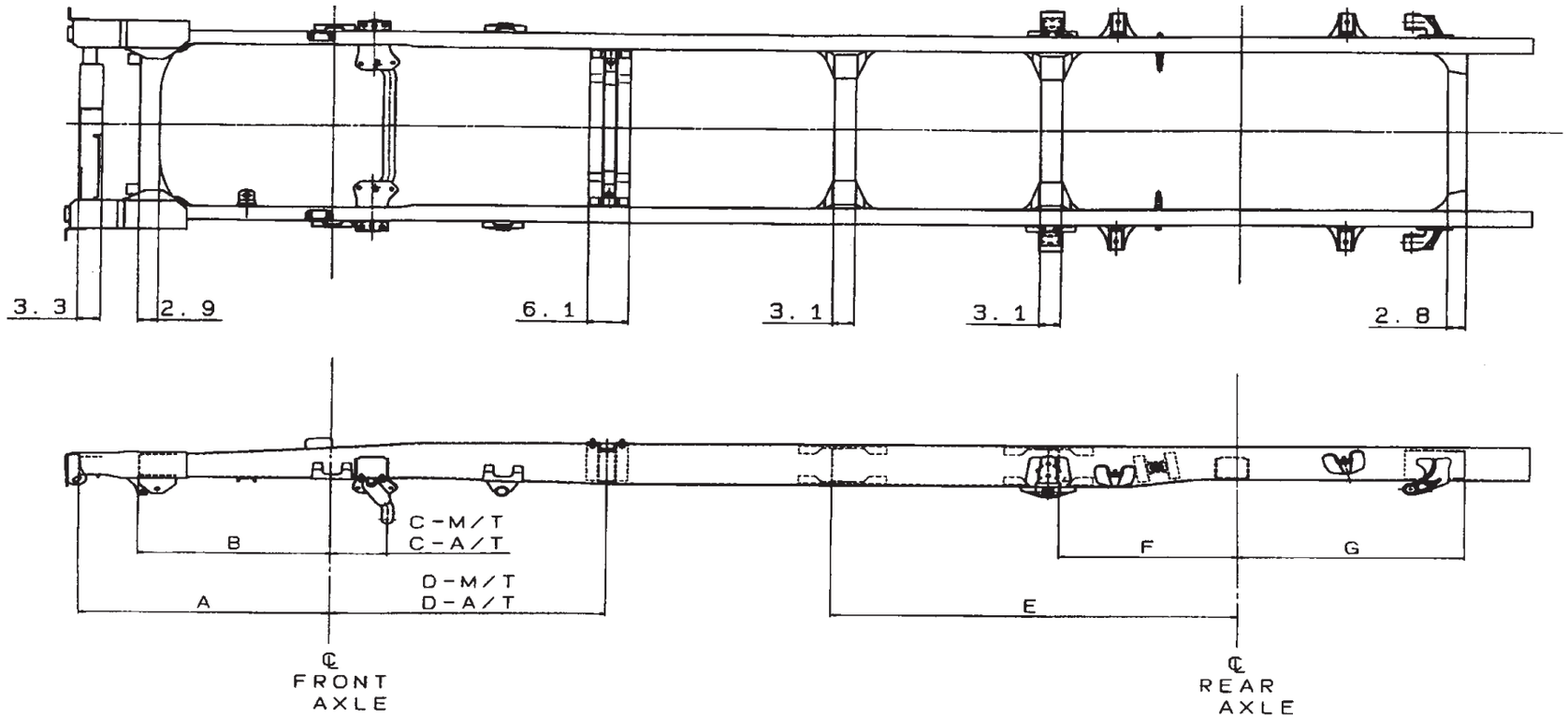
Chassis Curb Weight reflects standard equipment and fuel, but no driver or payload.

Maximum Payload Weight is the allowed maximum for equipment, body, payload and driver and is calculated by subtracting chassis curb weight from the GVWR.

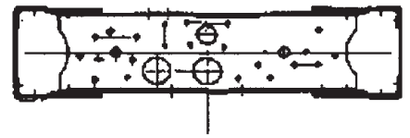
Model Descriptions

The W3500/W4500 Series Diesel features a low cab forward design that is ideally suited for inter-city type applications. The low cab forward design minimizes overall length for a given body length and in conjunction with the set back front axle positioning provides excellent weight distribution. The 42.5° inside wheel cut angle coupled with integral power steering make it an extremely well maneuverable truck.

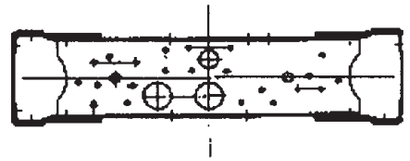
FRAME & CROSSMEMBER SPECIFICATIONS



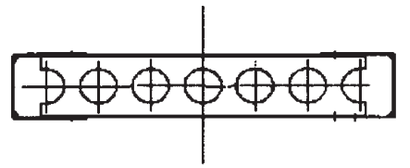
Type AA



Type BB



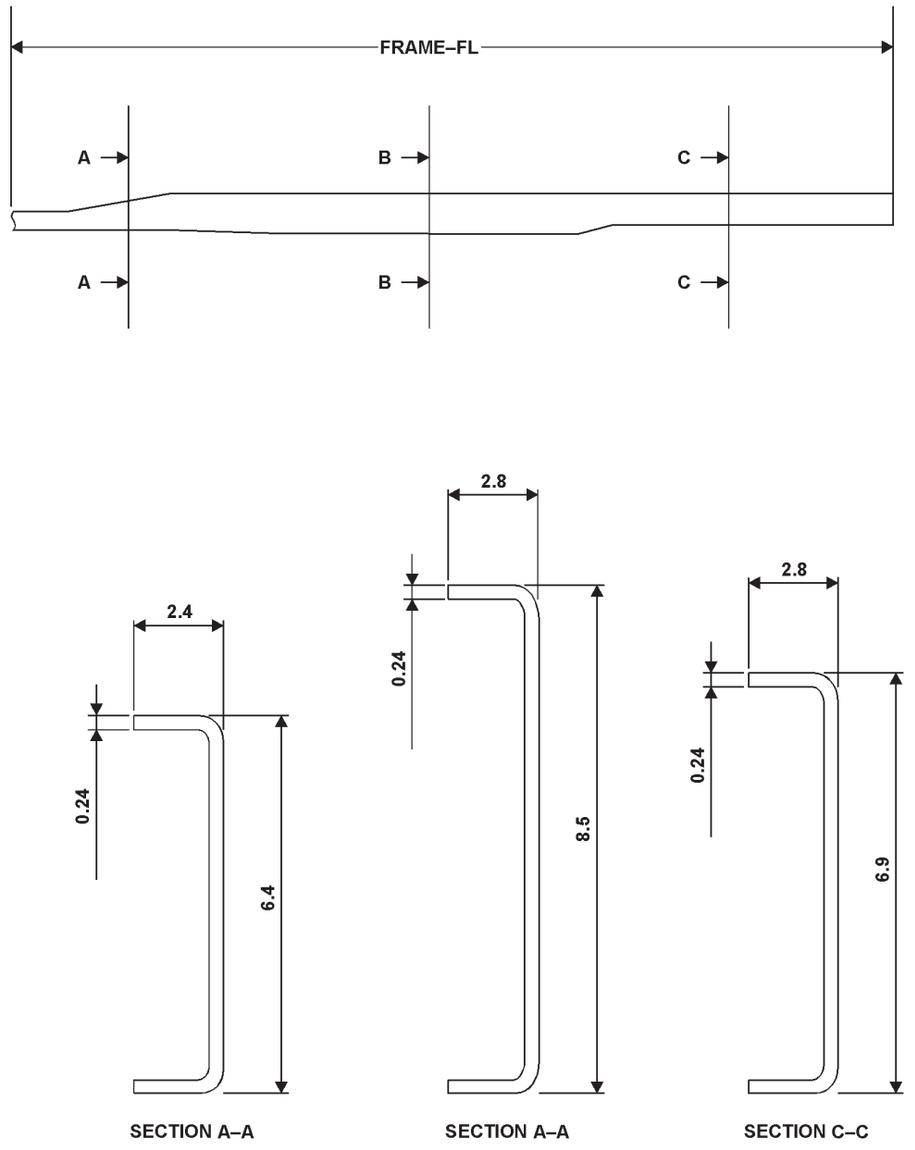
Type CC



Type DD

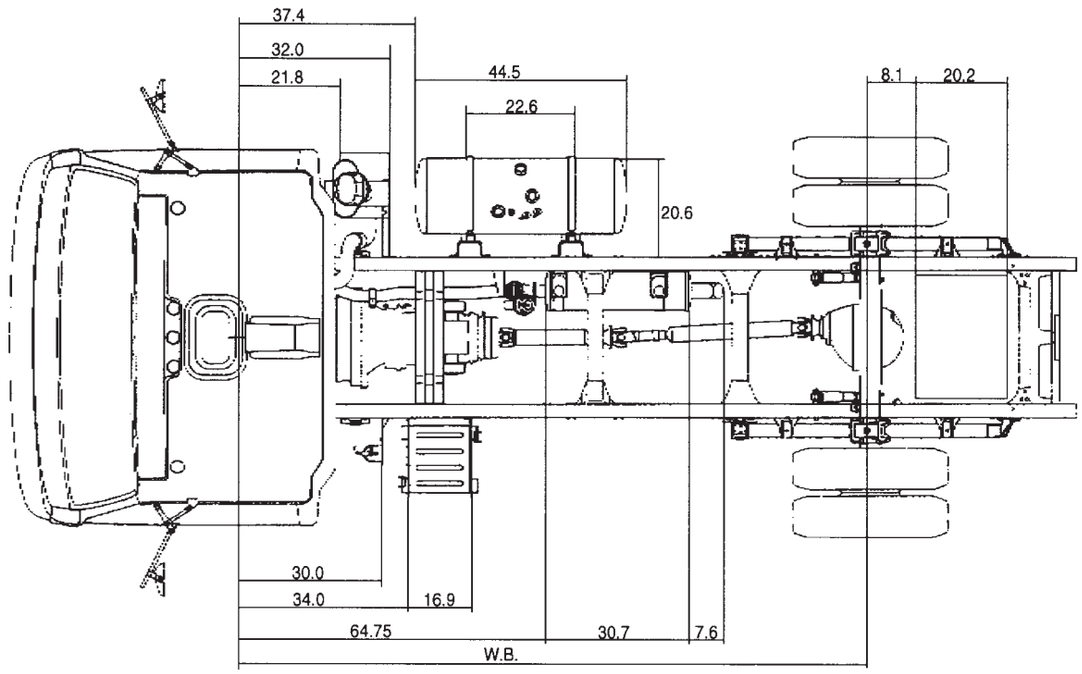
Model	Wheel Base	Frame Thick	Cross Member Type/Location								
			A	B	C-M/T	C-A/T	D-M/T	D-A/T	E	F	G
W3500/W4500	109	0.24	37.0	28.3	8.4	8.4	AA 40.5	AA 44.7	—	CC 26.0	DD 33.0
W3500/W4500	132.5	0.24	37.0	28.3	8.4	8.4	AA 40.5	AA 44.7	BB 59.4	CC 26.0	DD 33.0
W3500/W4500	150.0	0.24	37.0	28.3	8.4	8.4	AA 40.5	AA 44.7	BB 59.4	CC 26.0	DD 33.0
W3500/W4500	176.0	.024	37.0	28.3	8.4	8.4	40.5	44.7	59.4	26.0	33.0

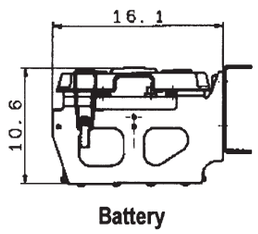
FRAME CHART

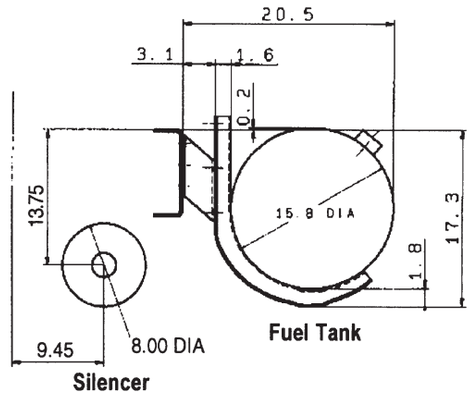


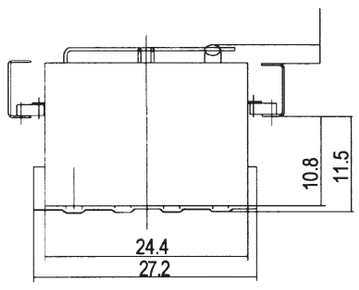
Vehicle Model	Wheel Base	Frame FL	Frame Thickness
W3500/W4500	109.0	186.0	0.24
W3500/W4500	132.5	209.6	0.24
W3500/W4500	150.0	227.4	0.24
W3500/W4500	176.0	253.4	0.24

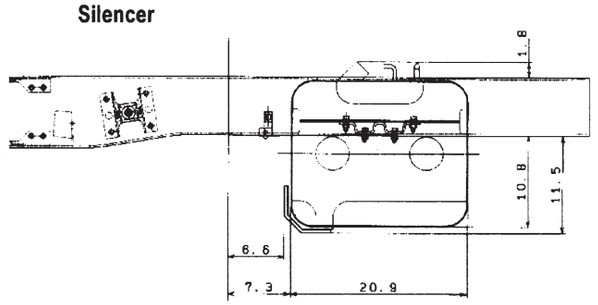
AUXILIARY VIEWS











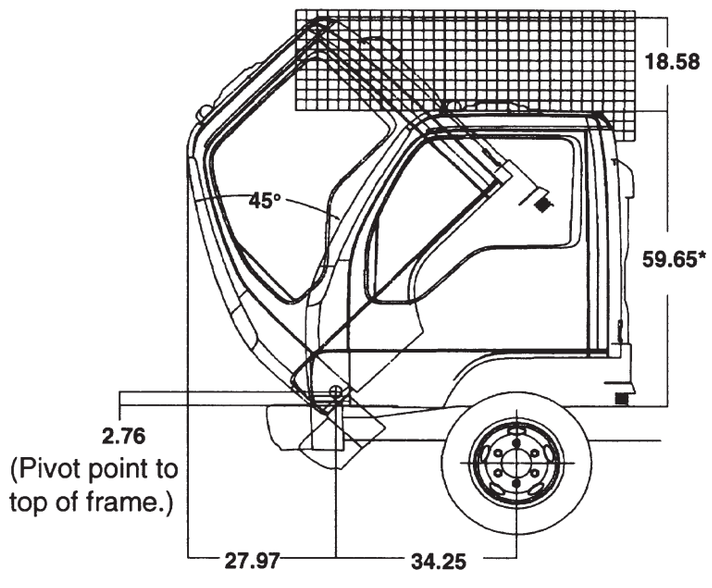
NOTE: Frame mounted fuel tank available on 109:, 132.5”, 150: and 176” WB: In frame mounted tank available as optional replacement for frame mounted tank on 109”, 132.5”, 150” and 176” WB.

* Allow 3” additional for battery box opening clearance.

BODY BUILDER WEIGHT INFORMATION CHART

GVWR	Axle	Wheel Base								Unsprung Weight
		109 in.		132.5 in.		150 in.		176 in.		
		Man. Trans.	Auto. Trans.	Man. Trans.	Auto. Trans..	Man. Trans.	Auto. Trans..	Man. Trans.	Auto. Trans..	
12,000	Front	3,638	3,704	3,682	3,748	3,729	3,792	3,770	3,836	573
	Rear	1,587	1,631	1,609	1,653	1,631	1,675	1,653	1,698	871
	Total	5,225	5,335	5,291	5,401	5,357	5,467	5,423	5,534	1,444
14,500	Front	3,649	3,715	3,693	3,759	3,737	3,803	3,781	3,847	573
	Rear	1,587	1,631	1,609	1,653	1,631	1,675	1,653	1,698	904
	Total	5,236	5,346	5,302	5,412	5,368	5,478	5,434	5,545	1,477

Cab Tilt



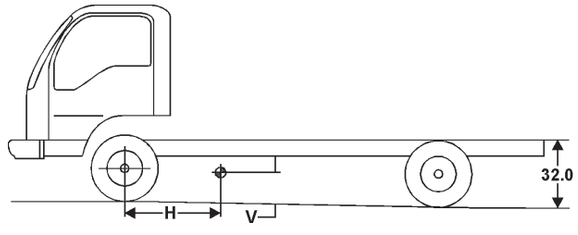
GRID SCALE:
One sqare is 2 in x 2 in

NOTE: Roof vent adds 1.5 inches to overall cab height.

RADIUS FROM PIVOT TO OUTER EXTENT OF CAB:
Radius - 79.02

Center of Gravity

GVWR	WB	V	H	
			Manual Trans.	Auto. Trans.
12,000	109	22.1	33.1	33.3
	132.5	20.6	40.3	40.6
	150	20.5	45.7	46.5
	176	18.9	53.6	54.0
14,500	109	22.1	33.0	33.3
	132.5	20.6	40.2	40.5
	150	20.5	45.6	45.9
	176	18.9	53.5	53.6

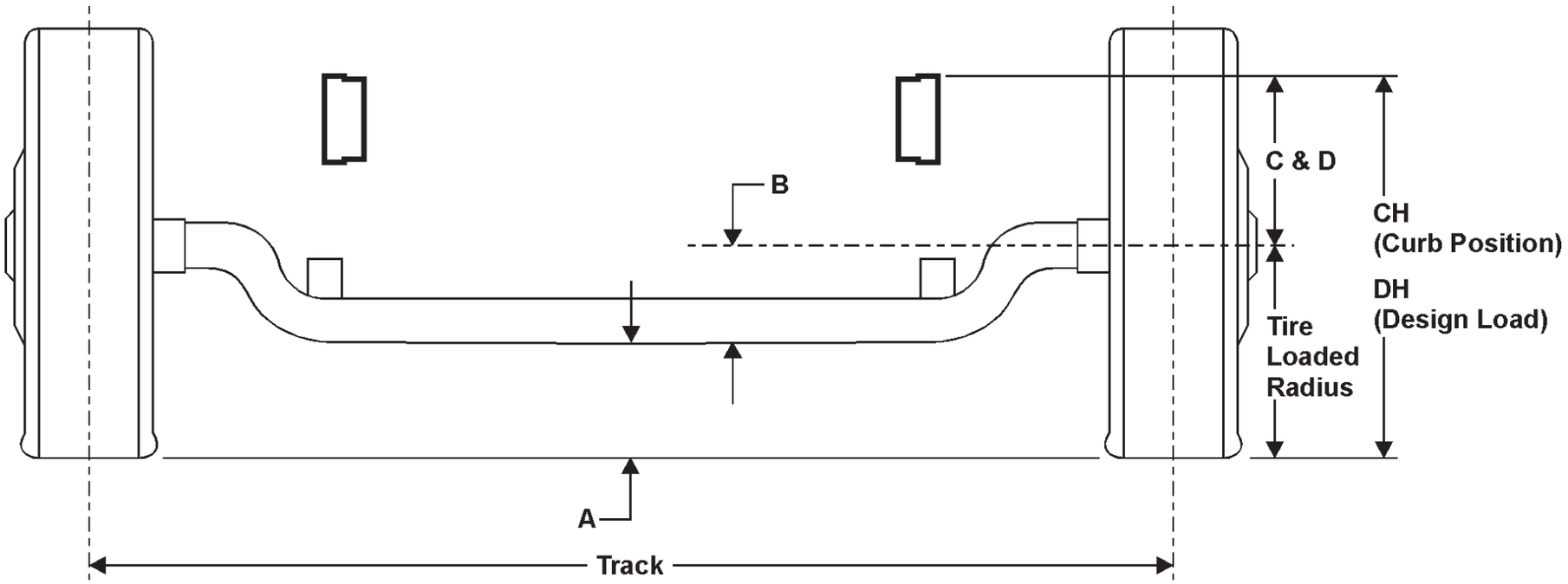


V = Vertical Center of Gravity
H = Horizontal Center of Gravity

The center of gravity of the completed vehicle with a full load should not exceed 54 inches above ground level for the 12,000 lb. GVWR, 58 inches above ground level for the 14,500 GVWR, and must be located horizontally between the centerlines of the front and rear axles.

NOTE: The maximum dimensions for a body installed on the W3500/W4500 are 96 inches wide (outside) by 90 inches high (inside). Any larger body applications must be approved by GM/Isuzu Application Engineering. In the West Coast call 1-562-699-0500, extension 2385 and in the East Coast call 1-770-475-9195 extension 353.

FRONT AXLE CHART

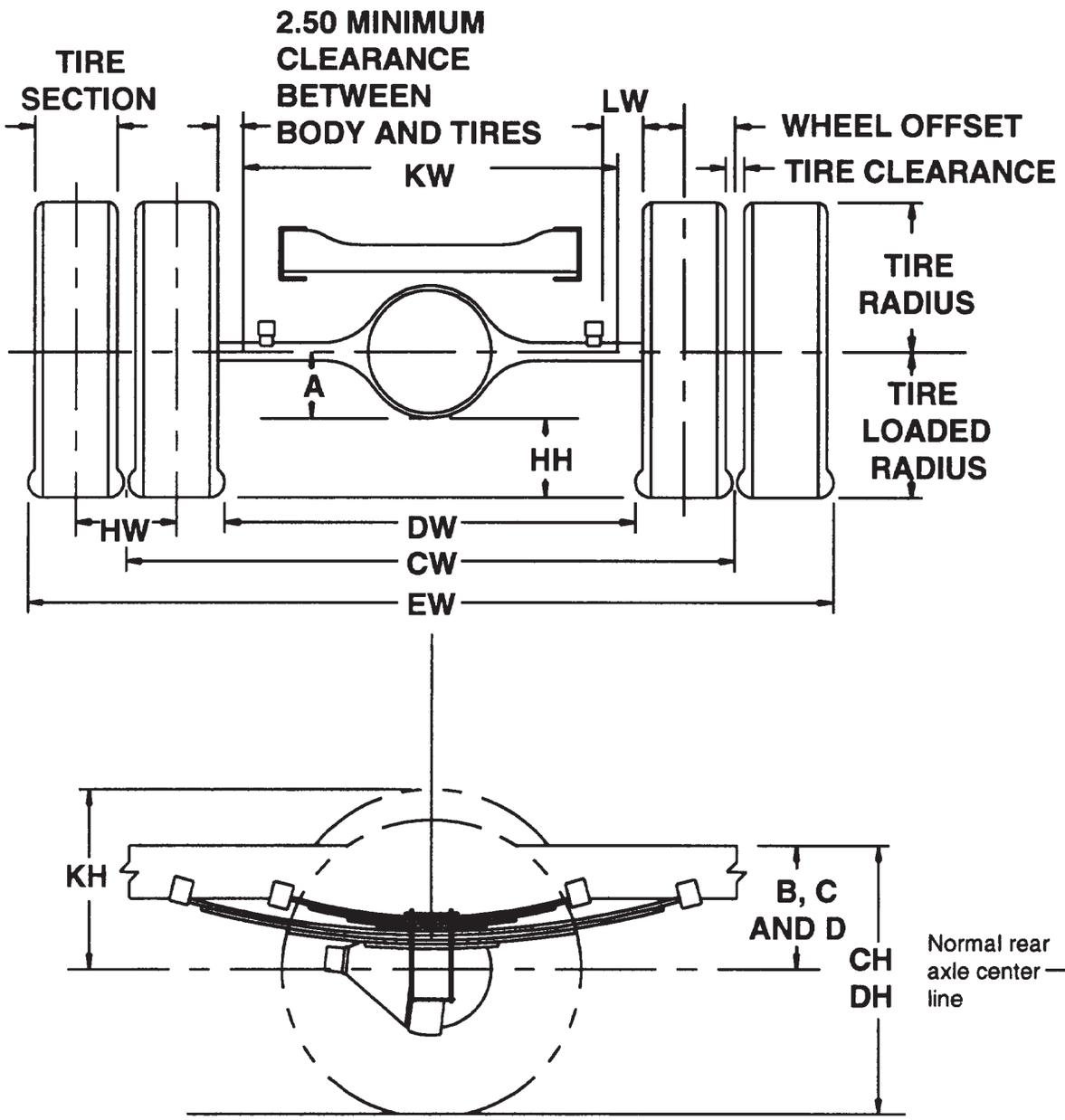


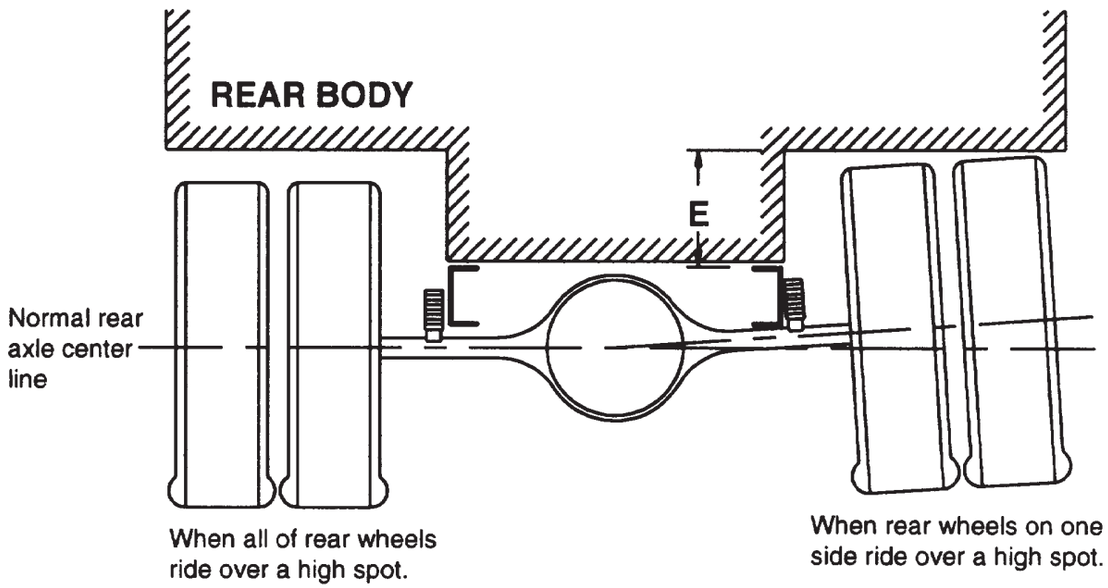
Formulas for calculating height dimensions:

A = Tire Loaded Radius-B
C = Centerline of Axle to Top of Frame Rail at Curb Position
D = Centerline of Axle to Top of Frame Rail at Design Load
CH = C + Tire Unloaded Radius
DH = D + Tire Loaded Radius

Tire	GVWR	GAWR	A	B	C	D	CH	DH	Track	Tire Radius	
										Unload	Load
215/85R 16-E	11,050 lb.	4,700 lb.	7.7	6.4	13.0	12.5	27.3	26.6	65.6	14.3	14.1
	14,500 lb.	5,360 lb.	7.7	6.4	13.0	12.5	27.3	26.6	65.6	14.3	14.1

REAR AXLE CHART





Definitions			
A	Center line of axle to bottom of axle bowl.	DH	Rear Frame Height: Vertical distance between the normal top of frame rail and the ground-line through the center line of the rear axle at design load.
B	Center line of axle to top of frame rail at metal to metal position.	DW	Minimum distance between the inner surfaces of the rear tires.
C	Center line of axle to top of frame rail at curb position.	EW	Maximum Rear Width: Overall width of the vehicle measured at the outer most surface of the rear tires.
D	Center line of axle to top of frame rail at design load.	HH	Rear Tire Clearance: Minimum clearance between the rear axle and the ground-line.
E	Rear Tire Clearance: Minimum clearance required for tires and chain measured from the top of the frame at the vertical center line of the rear axle, when rear wheels on one side ride over a high spot.	HW	Dual Tire Spacing: Distance between the center lines of the minimum distance required for tire bounce as measured from the center line of the rear axle and the top of the rear tire when one wheel rides over a high spot.
CH	Rear Frame Height: Vertical distance between the normal top of frame rail and the ground-line through the center line of the rear axle at curb position.	CW	Track Dual Rear Wheel Vehicles: Distance between the center lines of the distance between the center lines of the dual wheels measured at the ground-line.
Tire Section Tire Radius Tire Loaded Radius Tire Clearance		See Tire Chart for Values	

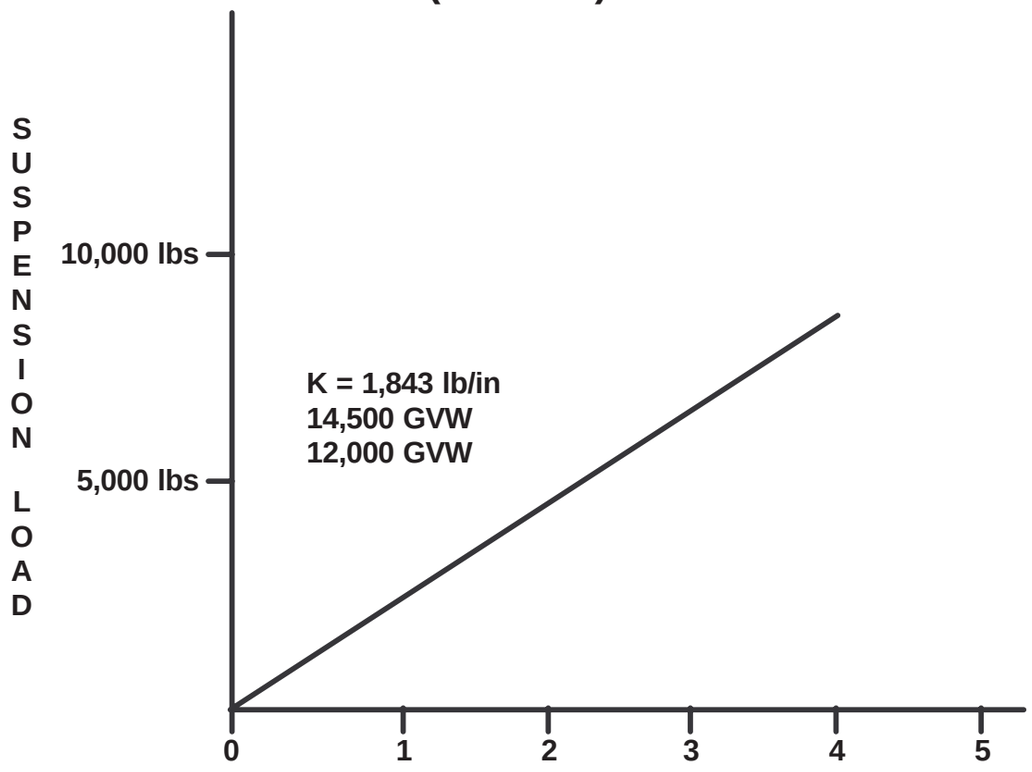
Formulas for Calculating Rear Width and Height Dimensions			
CW	= Track	HH	= Tire loaded radius – A
CH	= Tire loaded radius + C	JH	= KH – B
DH	= Tire loaded radius + D	KH	= Tire radius + 3.00 inches
DW	= Track + 2 tire sections – tire clearance	KW	= DW – 5.00 inches
EW	= Track + 2 tire sections + tire clearance	LW	= 1.00 inch minimum clearance between tires and springs

NOTE: Track and overall width may vary with optional equipment.

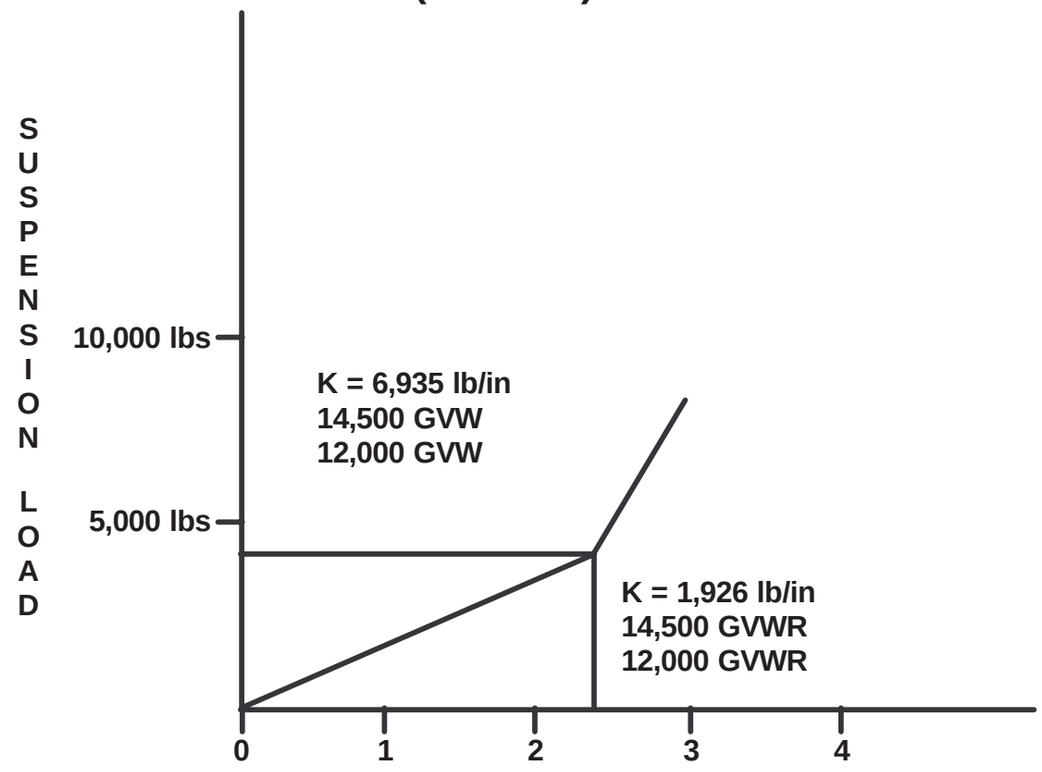
Tire	GAWR	Track CW	A	B	C	D	E
215/85R16-E	7950/9880 lb.	65.0	10.6	10.6	14.9	13.3	7.8

SUSPENSION DEFLECTION CHARTS

Front Leaf Spring Load vs. Deflection (Per Axle)



Rear Leaf Spring Load vs. Deflection (Per Axle)



TIRE AND DISC WHEEL CHART

Tire

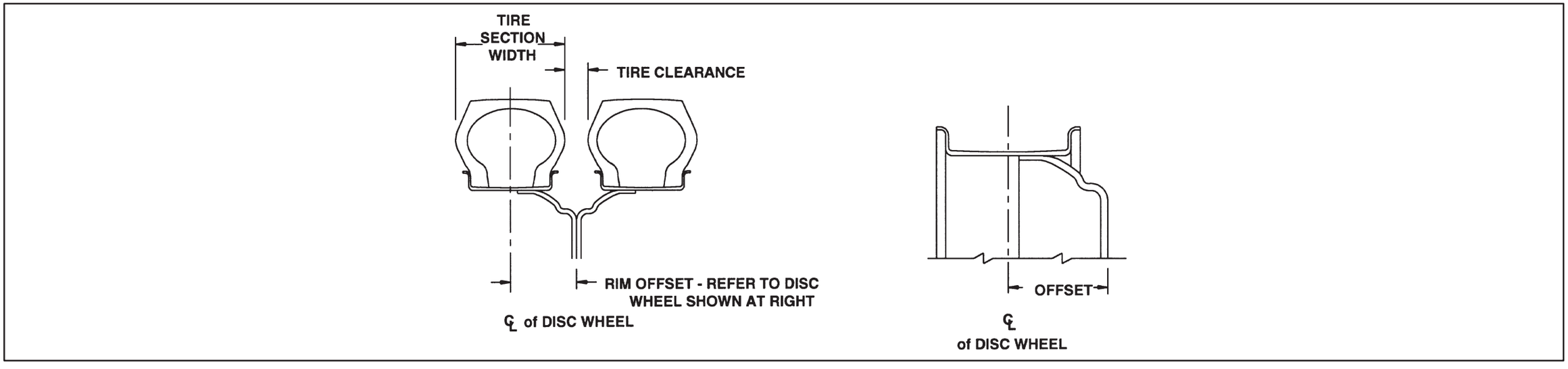
Tire Size	Tire Load Limit and Cold Inflation Pressures				Maximum Tire Load Limits		GVWR (Lb.)
	Single		Dual		Front	Rear	
	Lb.	PSI	Lb.	PSI	2 Single	4 Dual	
215/85R 16-E	2430	70	2210	70	4860	8840	12,000
215/85R 16-E	2680	80	2470	80	5360	9880	14,000

Tire Size	GVWR (Lb)	Tire Radius				Tire Section Width	Tire Clearance	Design Rim Width
		Loaded		Unloaded				
		Front	Rear	Front	Rear			
215/85R 16-E	12,000	14.1	14.1	14.3	14.7	8.2	1.8	6.0
215/85R 16-E	14,500	14.1	14.1	14.3	14.7	8.2	1.8	6.0

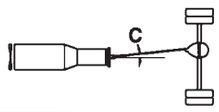
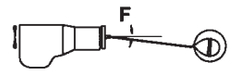
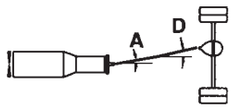
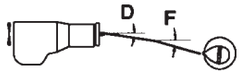
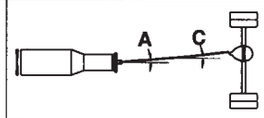
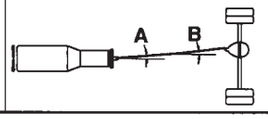
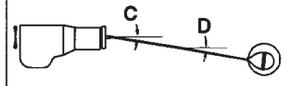
Disc Wheel

Wheel Size	Bolt Holes	Bolt Circle Dia.	Ft./Rr Nut Size*	Rear Stud Size*	Nut/Stud Torque Specs.	Inner Circle	Outside Offset	Disc Thickness	Rim Type	Material Mfg.
16 x 6.00K	6 JIS	8.75	1.6142 (41 mm) BUD HEX	0.8268 (21 mm) SQUARE	289 ft-lb (392 N•m)	6.46	5.0	0.35	5° DC	Steel TOPY

* O.D. Wrench Sizes



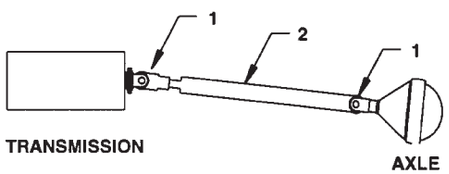
PROPELLER SHAFT

WB	PLANE VIEW	SIDE VIEW
109 in		
132.5 in		
150 in		
176 in		

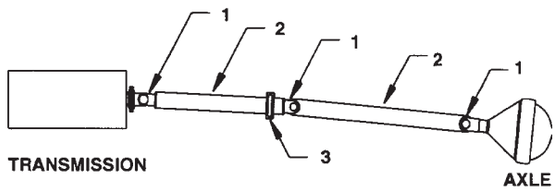
TYPICAL INSTALLATIONS SHOWING YOKES "IN PHASE". "IN PHASE" MEANS THAT THE YOKES AT EITHER END OF A GIVEN PROPELLER SHAFT ASSEMBLY ARE IN THE SAME PLANE.

NPR

(109 in WB)



(132.5 in, 150 and 176 in WB)



1. UNIVERSAL JOINT
2. PROPELLER SHAFT
3. CENTER CARRIER BEARING

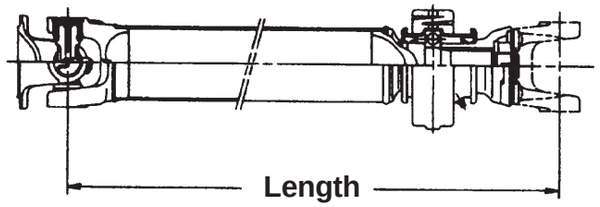
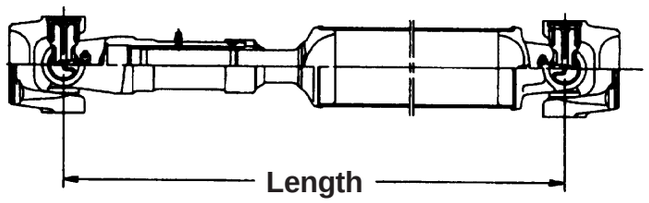
Wheel Base	Plan View				Side View			
	A Manual Trans.	A Auto. Trans.	B Manual Trans.	B Auto. Trans.	C Manual Trans.	C Auto. Trans.	D Manual Trans.	D Auto. Trans.
109 in.	—	—	2.0°	2.3°	—	—	8.3°	—
132.5 in.	0°	0°	2.4°	2.4°	4.4°	5°	6.2°	6.1°
150 in.	0°	0°	2.4°	2.4°	2.5°	2.6°	6.4°	6.4°
176 in.	0°	0°	1.7°	1.7°	2.8°	2.8°	4.5°	4.5°

NOTE: All driveline angles are at unloaded condition (Curb position with typical cargo body).

W3500/W4500 DIESEL

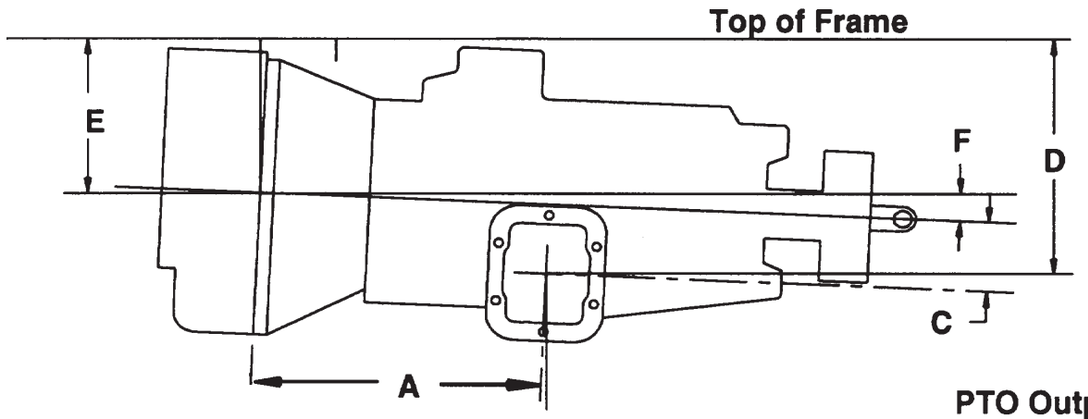
Unit: Inch

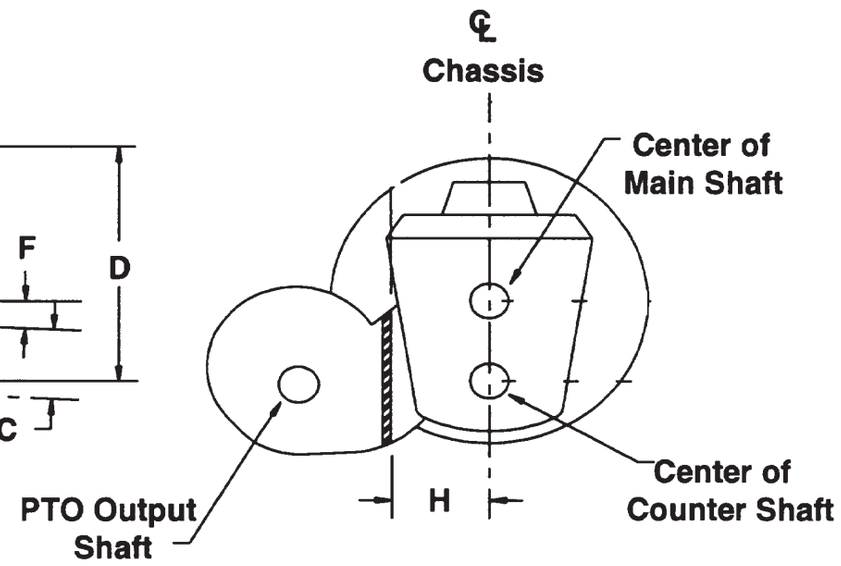
Wheel Base	109		132.5		150		176	
No. of Shafts	1		2		2		2	
Trans. Type	5 Manual Trans.	4 Auto. Trans.	5 Manual Trans.	4 Auto. Trans.	5 Manual Trans.	4 Auto. Trans.	5 Manual Trans.	4 Auto. Trans.
Shaft #1 O.D.	3.25							
Thickness	0.091							
Length	44.5	39.1	29.7	24.3	47.4	41.9	59.1	53.7
Type	B	B	A	A	A	A	A	A
Shaft #2 O.D.	3.25							
Thickness	0.091							
Length	N/A	N/A	38.3	38.3	38.3	38.3	52.6	52.6
Type	N/A	N/A	B	B	B	B	B	B

Type	Description	Illustration
Type A	1st shaft in 2 piece driveline	
Type B	1st shaft in 1 piece driveline 2nd shaft in 2 piece driveline	

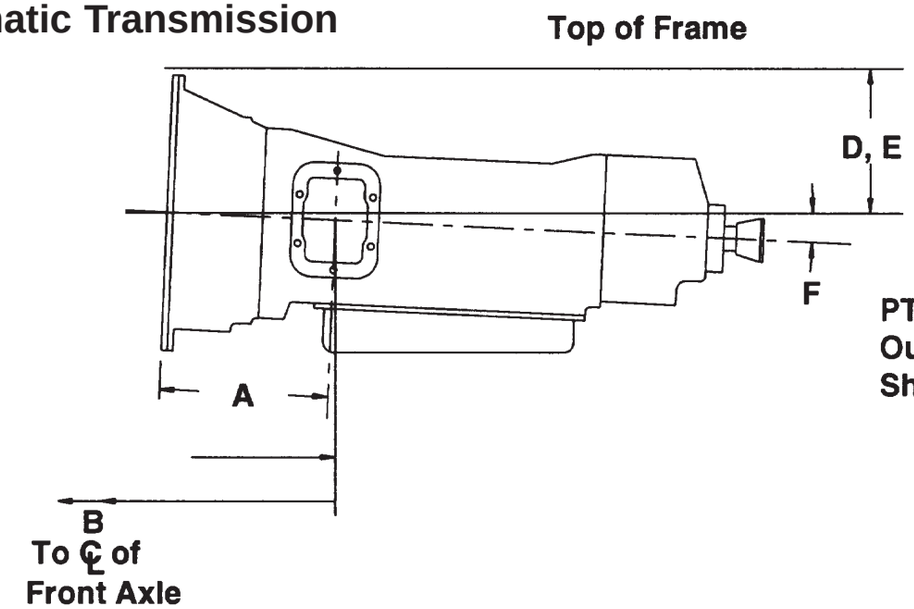
PTO LOCATION, DRIVE GEAR AND OPENING INFORMATION

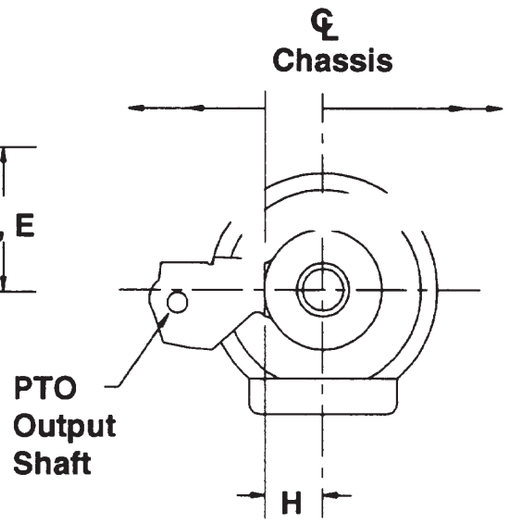
Manual Transmission





Automatic Transmission

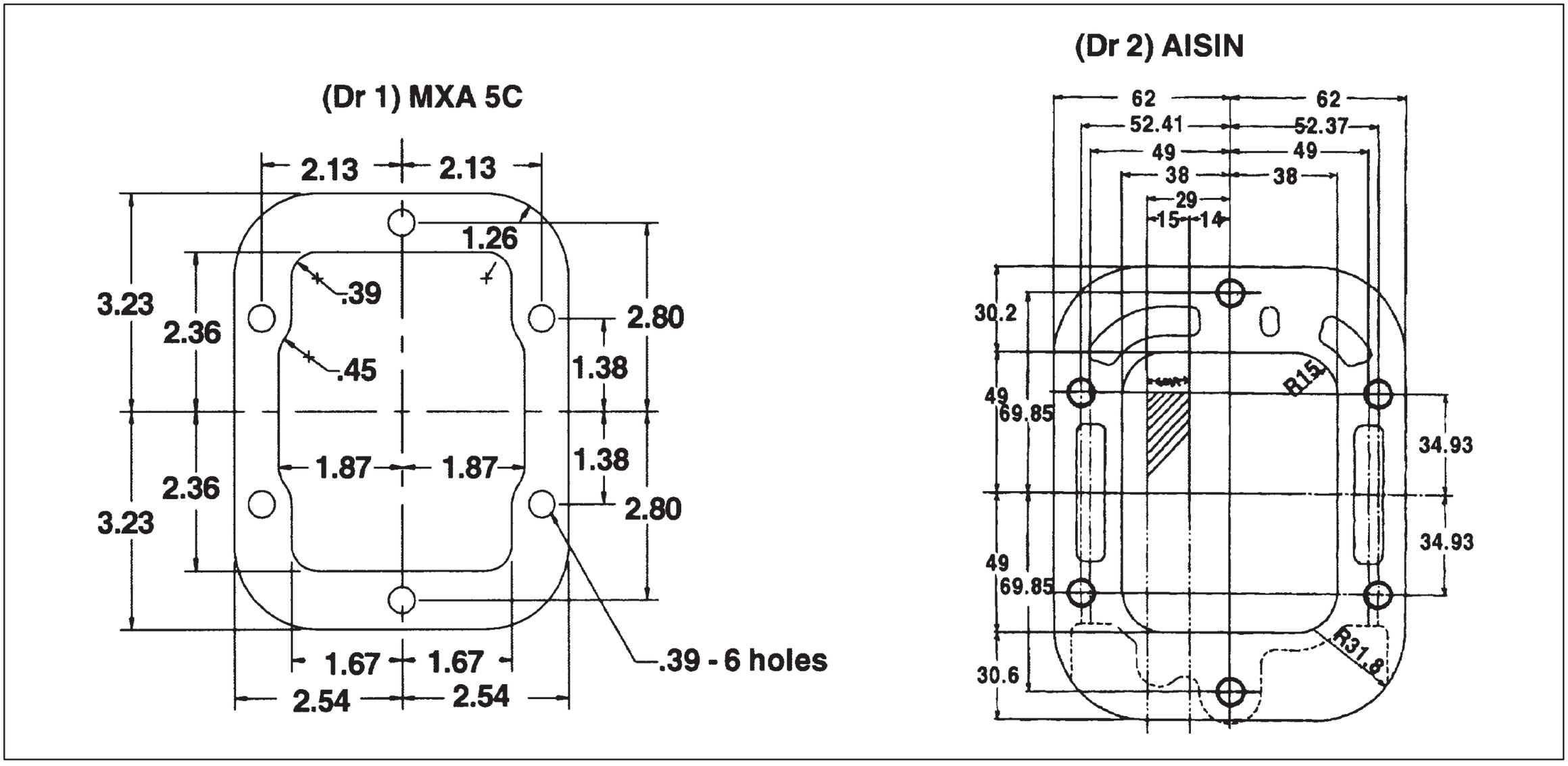




Trans.	Opening Location	Bolt Pattern	A	B	C	D	E	F	H	PTO Drive Gear Location	Ration of PTO Drv Gear Spd to Eng Spd	No. of Teeth	Pitch	Helix Angle	Max. Output Torque
MXA 5C	Left	(Dr 1)	13.2	39	3.4	11.2	7.1	2.5°	4.1	2nd Gear Trans. Countershaft	25/49 = .51	20	3.175	15°	145 lb-ft @ 1000 RPM
Aisin[1)]	Left	(Dr 2)	12.6	38.59	0	8	7.5	2.5°	4.48	PTO Gear	1:1 with turbine	58	N/A	0	134 lb-ft @ 1500 RPM

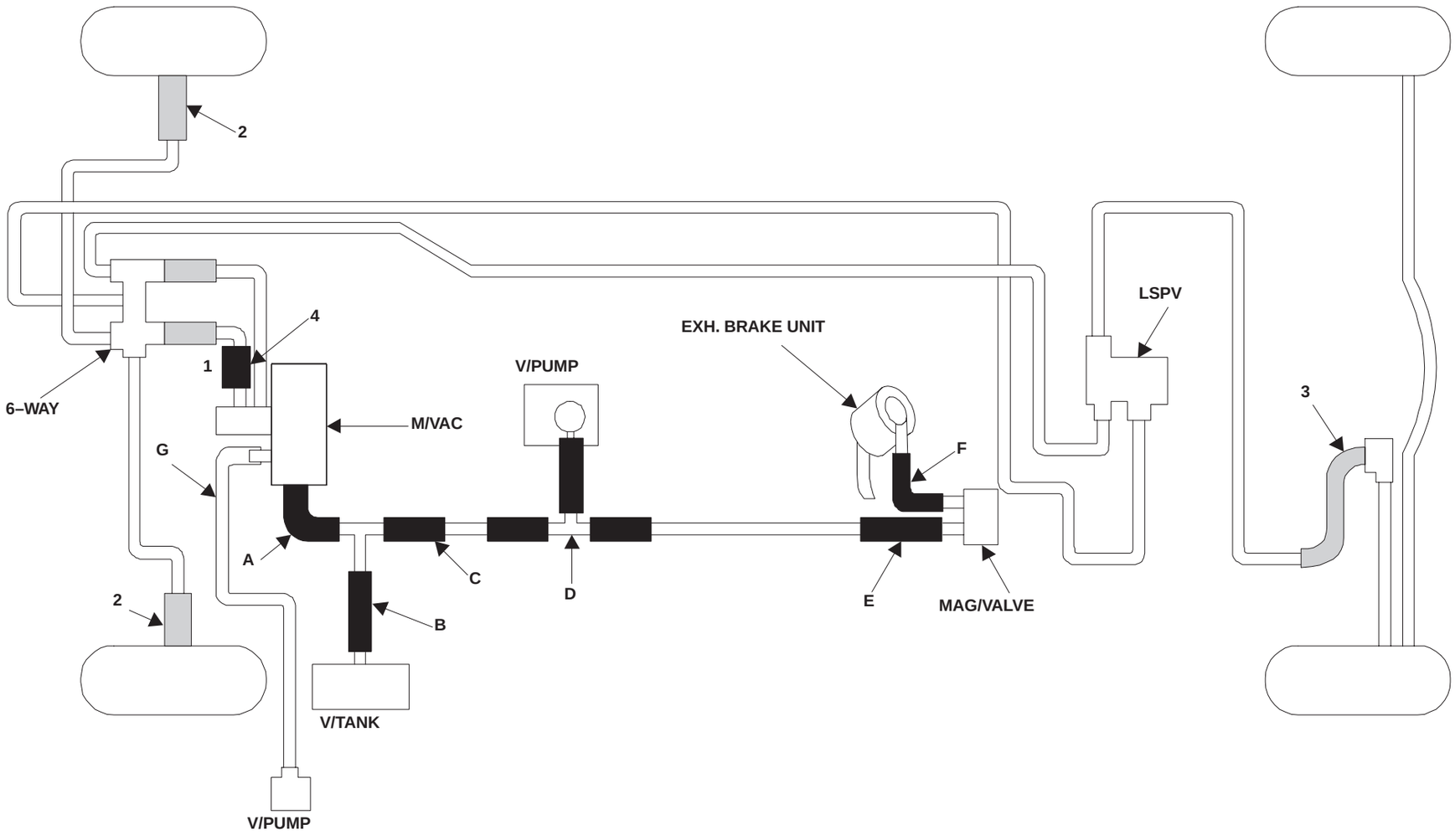
1) No PTO gear in the 150” WB models

Opening Diagram



BRAKE SYSTEM SCHEMATIC

Vacuum Over Hydraulic



Brake Hose

Vacuum Hose

Brake Hose

1. Brake Hose M/V 6–Way
2. Brake Hose FT
3. Brake Hose RR
4. Metering Valve

Vacuum Hose

A. V/Hose; M/VAC–Pipe
B. V/Hose; V/Tank–Pipe
C. V/Hose; Floor–Frame
D. 3–Way Joint Asm.; V/Pump
E. V/Hose; M/Valve–Pipe
F. V/Hose; M/Valve–E/Unit
G. V/Hose; M/VAC–V/Pump

1999 MODEL DIESEL FUEL FILLER

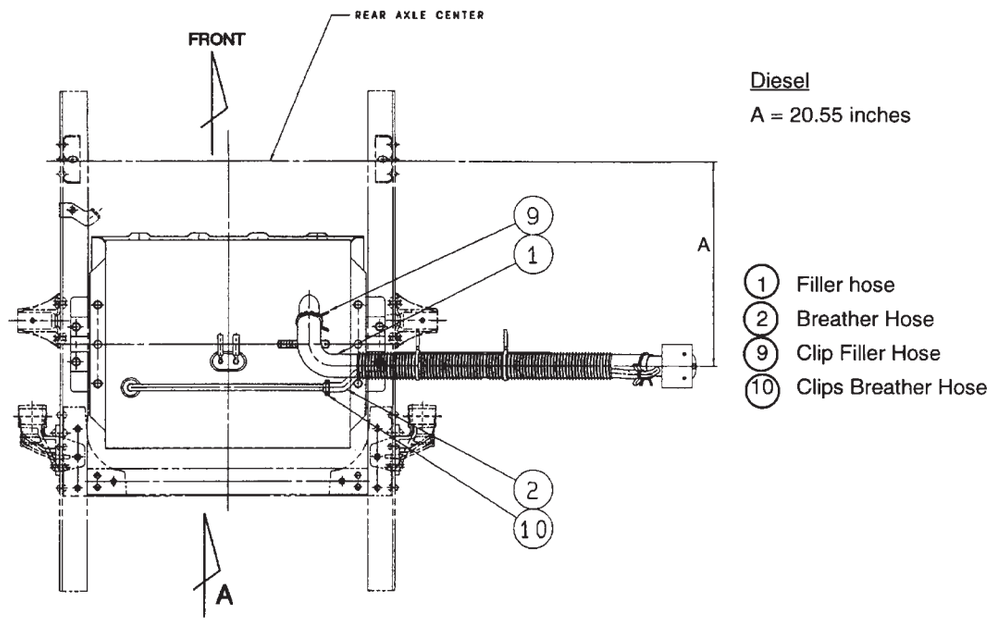
Installation Instructions

1. Disconnect Battery
2. Take out hoses, clips, pipe joint support bracket (3), filler neck, fuel filler cap and protective wrap from storage box. Mount support bracket on rail per drawing #1. Bracket location is at 20.55 inches.
3. Remove the temporary filler cap from the tank.
4. Install 90° hose (1) on the fuel tank neck. Secure with clip (9) hose lengths are set for 96 inch wide body to adjust for narrower body .See drawing #2.
5. Place pipe joint (11) in open end of hose and clamp with clip (9). See drawing #3.
6. Place other piece of filler hose and vent hose tube through the protective wrap and join with 90° hose at the pipe joint use clips to secure hose.
7. Make sure the vent tube hose is placed on top of the filler hose inside the protective wrap. This will allow the fuel tank to vent properly. The hose must be covered with the protective wrap. See drawing #4.
8. Secure the fuel filler hose and fuel vent hose that is surrounded by the protective wrap to the support bracket with two tie wraps. The filler neck must be mounted at 35° from the frame horizontal. See drawing #5.
9. Secure the filler plate to the bottom of the body.
10. Filler instructions for the gasoline fuel tank are the same as above except that the filler neck plate is offset from the frame bracket due to the bend in the outer hose that prevents fuel splash back. The different hose makes the attaching location on the body different between the diesel and the gasoline tank. See drawing #1.
11. Secure cap and cap tether to the filler plate. See drawing #1.
12. Check for leaks.
13. Reconnect battery.

Number	Part Name	Part Number	Quantity
1	Filler Hose	897108 251	001
2	Breather Hose	894462 403	001
3	Bracket: Filler Hose	897127 344	001
4	Protector: Filler Hose	897114 063	002
5	Neck Assembly: Filler Hose	897116 622	001
6	Cap: Filler Neck	897116 431	001
7	Bracket: Filler Neck	897116 621	001
8	Clip: Band/Protector	109707 107	002
9	Clip: Filler Hose	894435 876	004
10	Clip: Breather Hose	894242 034	002
11	Joint Pipe	121431 134	001
12	Bolt	02868 1035	002
13	Screw: Filler Hose	894381 646	003

INSTALLATION DRAWINGS OF FUEL FILLER HOSE

Drawing #1

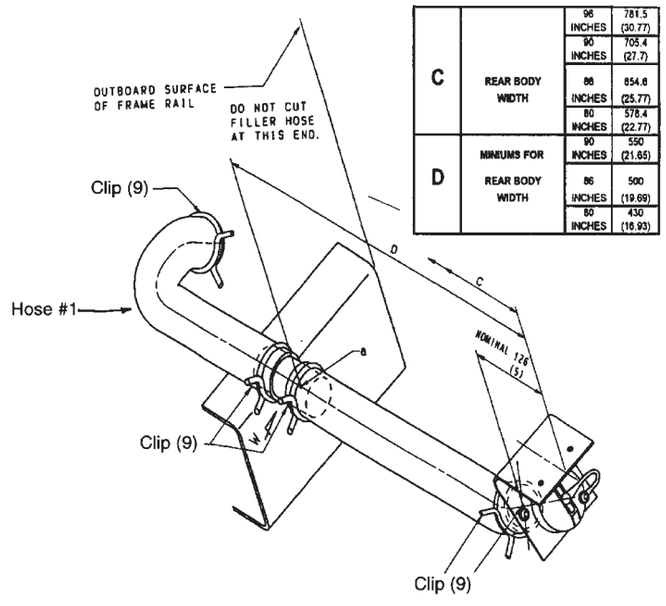


Diesel

A = 20.55 inches

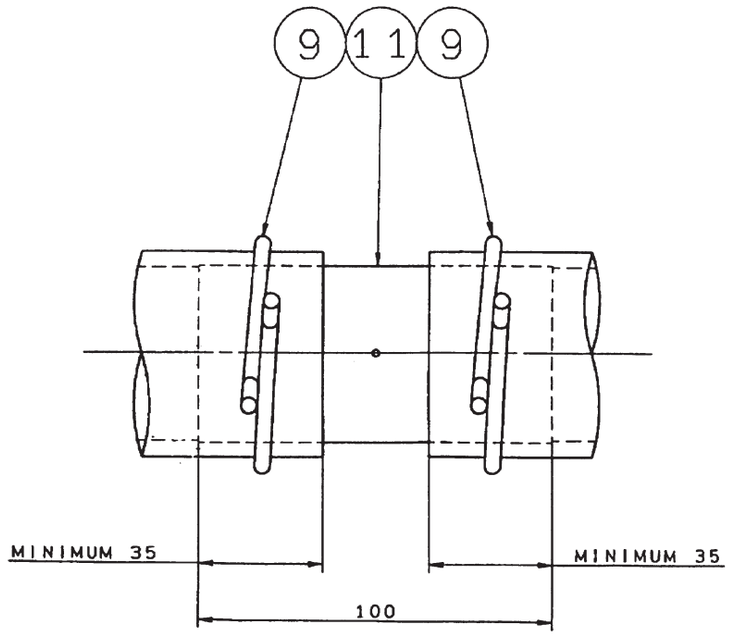
1. Filler hose
2. Breather Hose
9. Clip Filler Hose
10. Clips Breather Hose

Drawing #2



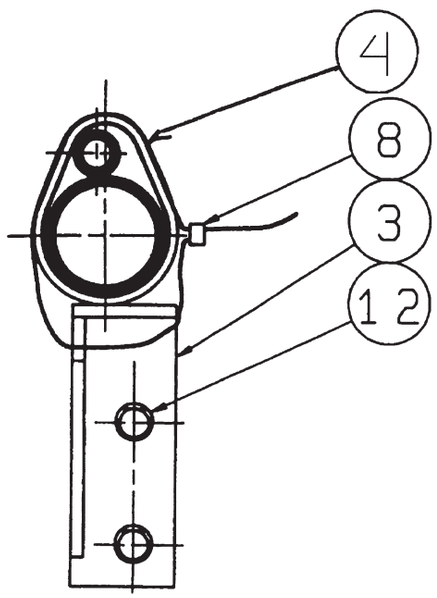
C	REAR BODY WIDTH	96 INCHES	781.5 (30.77)
		90 INCHES	705.4 (27.7)
		86 INCHES	654.6 (25.77)
		80 INCHES	578.4 (22.77)
D	MINIUMS FOR REAR BODY WIDTH	90 INCHES	550 (21.65)
		86 INCHES	500 (19.69)
		80 INCHES	430 (16.93)

Drawing #3



(9) Clip Filler Hose
(11) Clips Breather Hose

Drawing #4

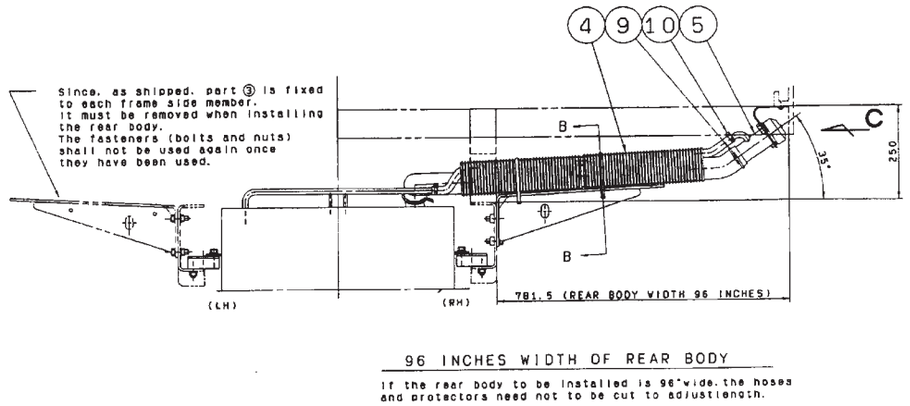


Torque for Bolts
280 ~ 450 in/lbs

- The hose shall be routed as shown.
- The breather hose shall be routed above the filler hose.
- There shall be no slack in breather hose when routed.

(8) Clip Band Protector
(3) Bracket Filler Hose
(12) Bolt
(4) Protector

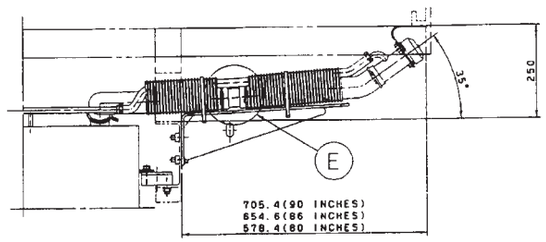
Drawing #5



96 INCHES WIDTH OF REAR BODY

If the rear body to be installed is 96"wide. the hoses and protectors need not to be cut to adjustlength.

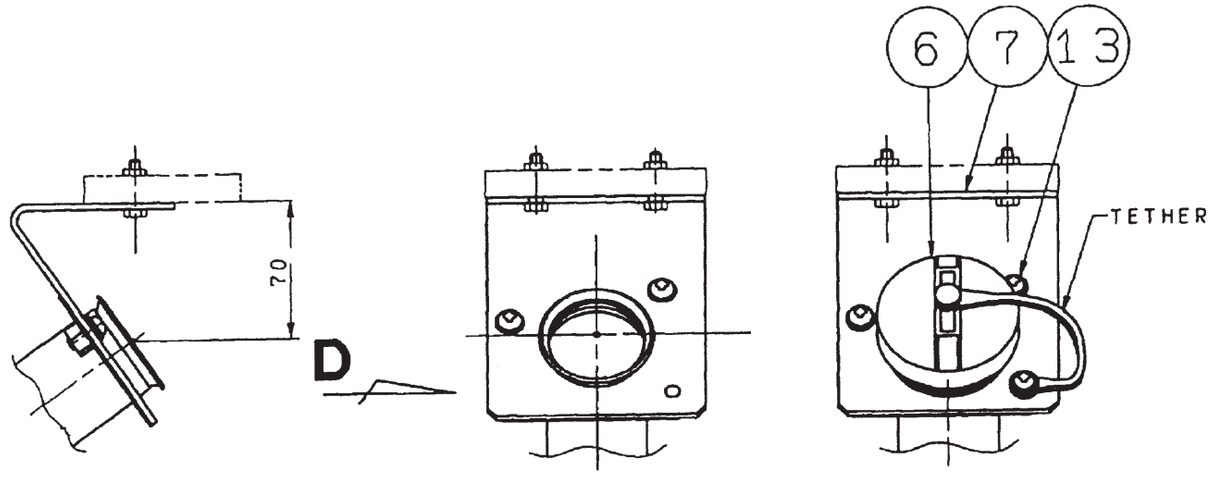
(4) Fill Hose Protector
(9) Fill Hose Clip
(10) Breather Hose Clip
(5) Fill Hose Neck Asm.
(E) See Drawing #3



OTHERS

If the rear body to be installed is less than 96" in width. the hoses and protectors shall be cut off so that their routing as shown.

Drawing #3



(CAP LESS)

(6) Fill Neck Cap
(7) Fill Neck Bracket
(13) Fill Hose Screw

Number	Part Name	Part Number	Quantity
1	Filler Hose	897108 251	001
2	Breather Hose	894462 403	001
3	Bracket, Filler Hose	897127 344	001
4	Protector, Filler Hose	897114 063	002
5	Neck Assembly, Filler Hose	897116 622	001
6	Cap, Filler Neck	897116 431	001
7	Bracket, Filler Neck	897116 621	001
8	Clip, Band/Protector	109707 107	002
9	Clip, Filler Hose	894435 876	004
10	Clip, Breather Hose	894242 034	002
11	Joint Pipe	121431 134	001
12	Bolt	02868 1035	002
13	Screw, Filler Hose	894381 646	003