



**The New Ford LCF
LOW CAB FORWARD**

Body Builders Layout Book

June, 2005

IMPORTANT NOTICE

The specifications and designs described herein are believed to be correct as of the time that this book was approved for printing, but accuracy cannot be guaranteed. They are intended only to provide basic data regarding such matters as dimensions and weight ratings of Ford-built chassis. The information contained in this book is general and nothing contained herein is to be regarded as providing specific or comprehensive instructions for the completion of a particular vehicle or as authorization by Ford of the specific modifications, alteration or designs of individual vehicles.

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Many Ford Service Publications pertain to a specific Model Year and vehicle types. The following publications are a few of many manuals which are available from Helm Incorporated; call 1-800-782-4356 or contact Helm, Inc. at their website: www.helminc.com

- Ford Truck Shop Manuals
- Ford Towing Manuals
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- Ford Truck Shop Manuals and Wiring Diagrams on CD-ROM

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The Ford Truck Body Builder Advisory Service assistance may be consulted regarding information contained in this manual. For assistance:

- Call (877) 840-4338
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INDEX

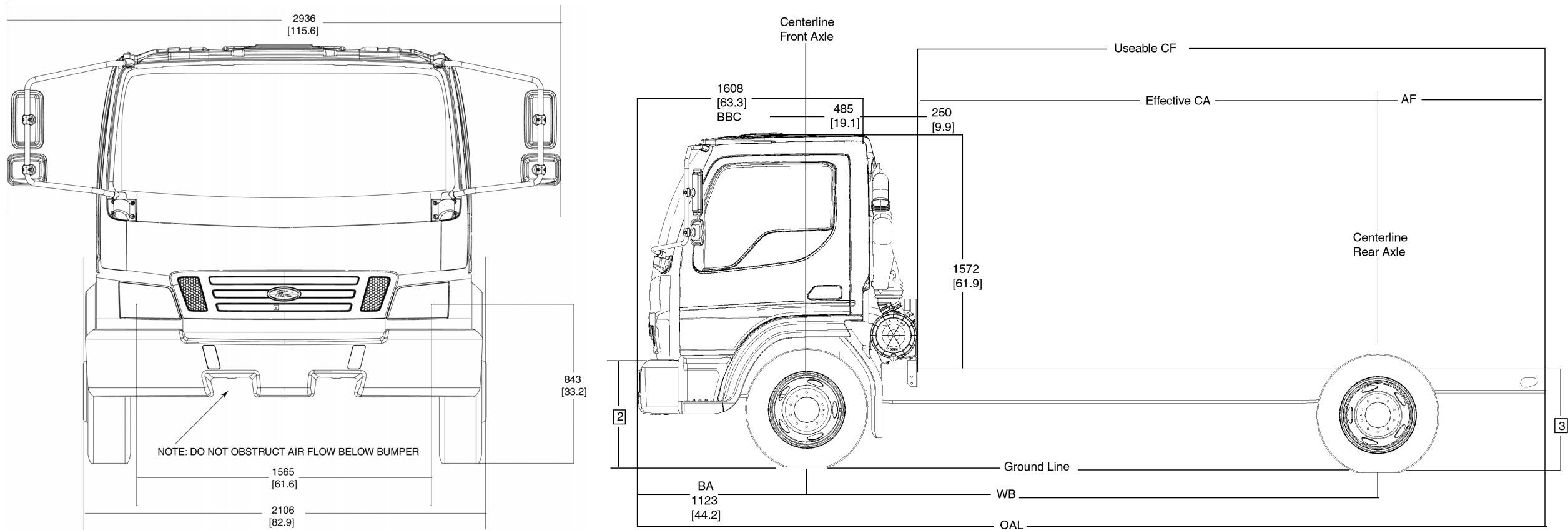
VEHICLE	Page
Engineering Data	1
Top of Cab.....	2
Side View – Cab Tilt.....	3
Rear View of Vehicle	4
Top View of Vehicle	5
ENGINE	
Engine Ports.....	6
Front Engine Accessory Drive.....	7
Engine Location	8
COMPONENTS	
Battery Box.....	9
Exhaust	10
Fuel Tank – Between the Rails (BTR)	11
Fuel Tank – Left Hand Frame-Mounted.....	12
Fuel Tanks – Dual Frame-Mounted	13
Horizontal Fuel Conditioning Module (HFCM).....	14
Hydraulic Control Unit	15
Parking Brake.....	16

FRAME	Page
Frame Rail Specifications.....	17
Frame – Drilling Restrictions	18
Frame Crossmember	19-21
Frame Crossmember Location – Frame Ladder	22
Front Bumper & Tow Hooks	23
Front Suspension	24
Rear Spring Suspension – Installed Position	25
Rear Spring Suspension – Hole Pattern	26
POWER TAKE-OFF	
Power Take Off.....	27
Required PTO Wiring for Automatic Transmission	28
PTO Wiring for Automatic Transmission.....	29
APPLICATION INFORMATION	
Ground Clearance.....	30
Overhang Limits for Pivoting Bodies and Concentrated AF Loadings	31

LCF CHASSIS SPECIFICATIONS

MODEL	LCF-45	LCF-55
COMPONENTS		
GVWR (lbs.) Standard	16,000	19,500
GVWR (lbs.) Optional	15,000	17,950
Max. GCWR (lbs.)	22,500	26,000
Max. Payload (lbs.)	9,720	13,220
WB/AF (in.)	113/47.5, 113/63, 137/47.5, 137/63, 149/47.5, 149/75, 167/75	113/47.5, 113/63, 137/47.5, 137/63, 149/47.5, 149/75, 167/75, 185/96
Front Axle Capacity (lbs.)		
Standard	6,000	7,000
Optional	None	6000
Front Axle Track (in.)	73.4	73.4
Front Spring Capacity (lbs.)		
Standard	6,000 Taper Leaf	7,000 Taper Leaf
Optional	None	6,000 Taper Leaf
Rear Axle Capacity (lbs.)	11,000	13,500
Rear Suspension Capacity (lbs.)	11,000 Single variable-rate with 1,500 lbs. rubber auxiliary	13,500 Single variable-rate with 1,500 lbs. rubber auxiliary
Stabilizer Bar	Front and Rear	Front and Rear
Steering	Ross TAS37	Ross TAS37
Turning Radius (ft.)	16.5	16.5
Engine	4.5L V6 Power Stroke Diesel	4.5L V6 Power Stroke Diesel
Horsepower/Torque	200 hp/ 440 lb-ft	200 hp/ 440 lb-ft
Air Cleaner	Single Element with Filter Minder Indicator	Single Element with Filter Minder Indicator
Transmission, Automatic OD	5-Speed TorqShift™ with Tow/Haul Feature	5-Speed TorqShift™ with Tow/Haul Feature
Standard	Less PTO provision	Less PTO provision
Optional	With PTO provision	With PTO provision
Alternator, Visteon, Pad Mounted	12-volt, 135-amp	12-volt, 135-amp
Battery, Motorcraft, Group 31	Two, 12-volt, 1800 CCA	Two, 12-volt, 1800 CCA
Brakes, Hydraulic	Four Wheel Disc, Front and Rear Split System, 3 Channel ABS	Four Wheel Disc, Front and Rear Split System, 3 Channel ABS
Frame (psi)	50,000	50,000
RBM (in-lb)	461,000	461,000
Fuel Tank		
Standard	Single 40 Gal. Between the Frame Rails Behind the Rear Axle	Single 40 Gal. Between the Frame Rails Behind the Rear Axle
Optional	Single 35 Gal. LH Frame Mounted Dual 35 Gal. LH&RH Frame Mounted 70 Gal. Total Capacity with Duals	Single 35 Gal. LH Frame Mounted Dual 35 Gal. LH&RH Frame Mounted 70 Gal. Total Capacity with Duals
Wheels		
Standard	Six, 19.5 x 6.0 hub piloted, ten lug Steel, Painted White	Six, 19.5 x 6.0 hub piloted, ten lug Steel, Painted White
Optional	Polished Aluminum (Incl. wheel ornamentation)	Polished Aluminum (Incl. wheel ornamentation)
Tires		
Standard	Goodyear 225/70R19.5 G647RSS	Goodyear 225/70R19.5 G647RSS
Optional	Michelin 225/70R19.5 XZE	Michelin 225/70R19.5 XZE
Body Paint Colors	Bright Red (E4), True Blue (L2), Black (UA), Oxford White (YZ), Winter White (W1), Holly Green (GV), Omaha Orange (NJ), Bold Yellow (SY), School Bus Yellow (NY)	Bright Red (E4), True Blue (L2), Black (UA), Oxford White (YZ), Winter White (W1), Holly Green (GV), Omaha Orange (NJ), Bold Yellow (SY), School Bus Yellow (NY)

ENGINEERING DATA



Wheelbase (in.)	Chassis Weight (lbs)**			Dimensions (in.)				Turning Radius	
	Front	Rear	Total	Effective CA	Useable CF	AF	OAL	To Curb	w/Bumper Clearance
*113	3915	2383	6298	84	131.5	47.5	204.7	16 ft. 7in.	18 ft. 4in.
113	3901	2428	6329	84	147.0	63.0	220.2	16 ft. 7in.	18 ft. 4in.
137	3950	2415	6365	108	155.5	47.5	228.7	19 ft. 3in.	21 ft. 0in.
137	3937	2458	6395	108	171.0	63.0	244.2	19 ft. 3in.	21 ft. 0in.
149	3972	2437	6409	120	167.5	47.5	240.7	20 ft. 8in.	22 ft. 5in.
149	3932	2551	6483	120	195.0	75.0	268.2	20 ft. 8in.	22 ft. 5in.
167	3956	2563	6519	138	213.0	75.0	286.2	22 ft. 5in.	24 ft. 2in.
185	3963	2653	6616	156	252.0	96.0	325.2	24 ft. 6in.	26 ft. 3in.

NOTES: Chart data based on vehicle with standard equipment. Artwork may show some optional equipment.

* Dimension data is based on the 113" wheelbase with 47.5" after frame unless otherwise noted.

** Weight includes standard chassis, standard tires, oil and water, but less fuel.

[2] = Frame Height at centerline of front axle with standard tires: unloaded - 28.3"

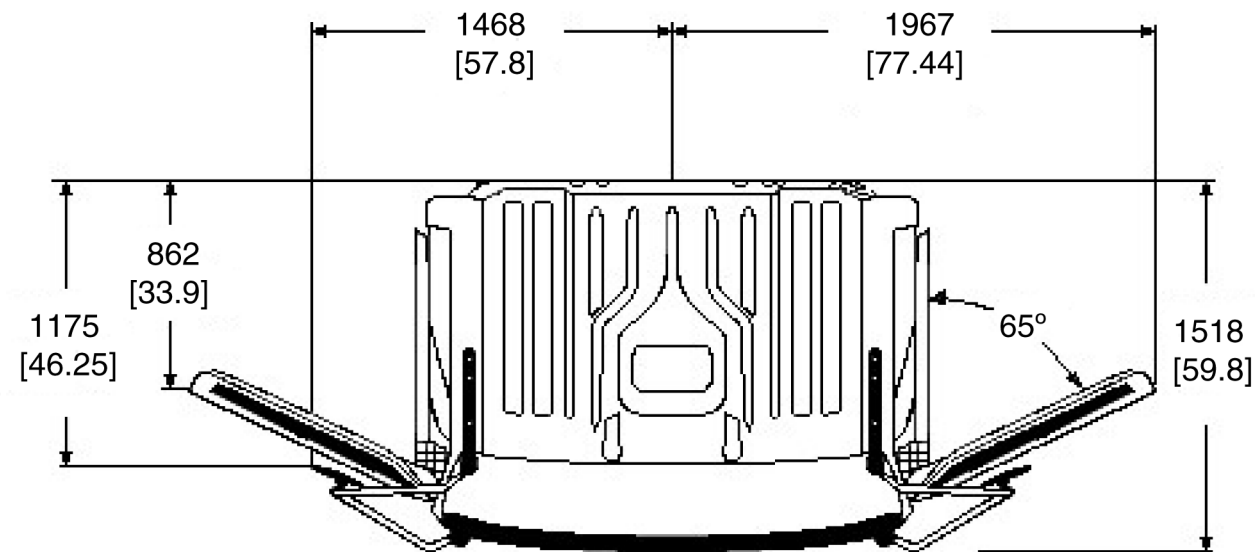
[3] = Frame Height at centerline of rear axle with standard suspension and tires: unloaded - 30.0"

Note: Due to internal spring friction and manufacturing tolerances, these values may vary up to 0.5 inches.

To achieve these normal values directly after loading or unloading a vehicle, it may be necessary to drive the vehicle for a short period.

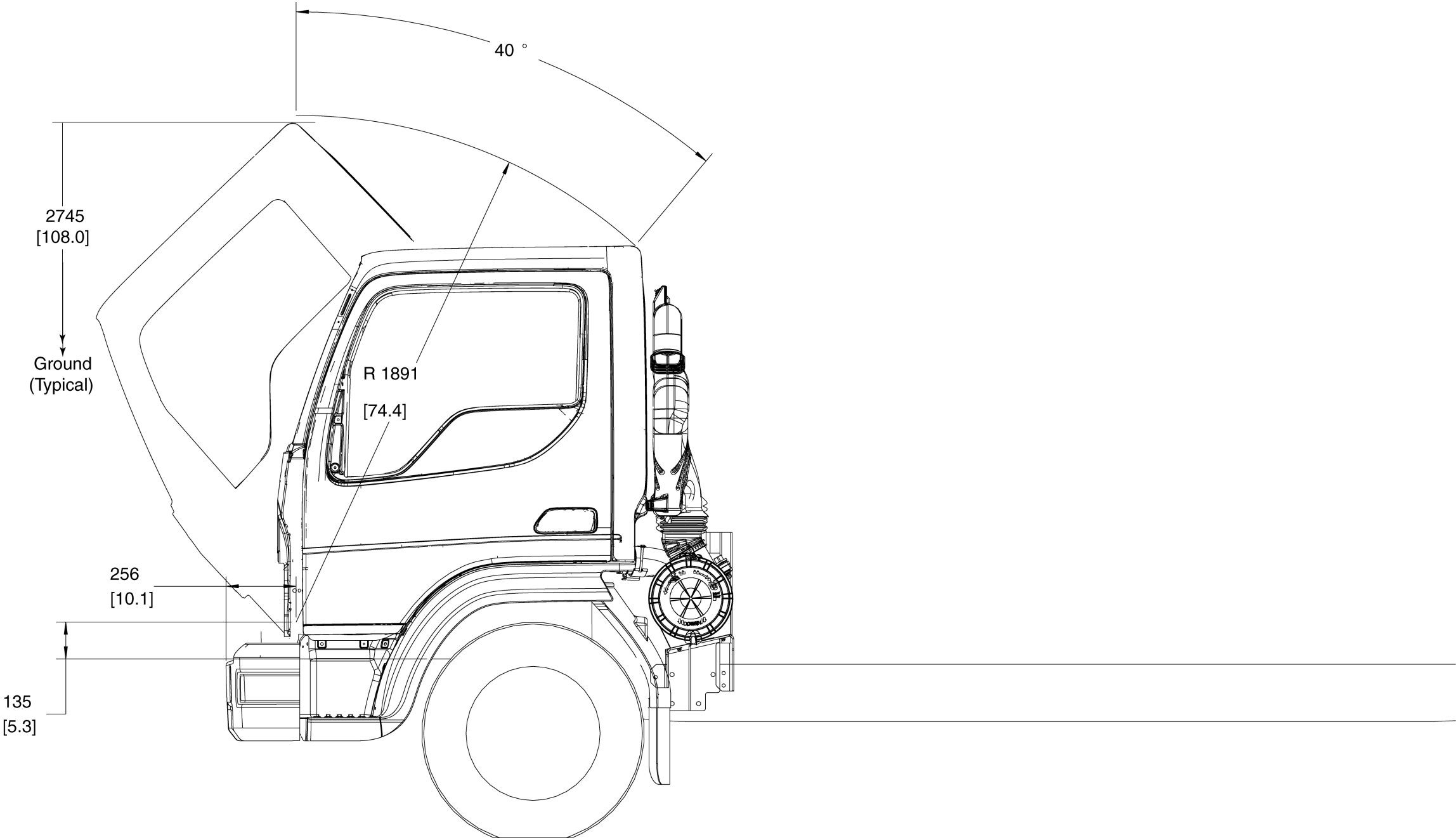
NOTE — [] DIMENSIONS ARE INCHES.

TOP OF CAB



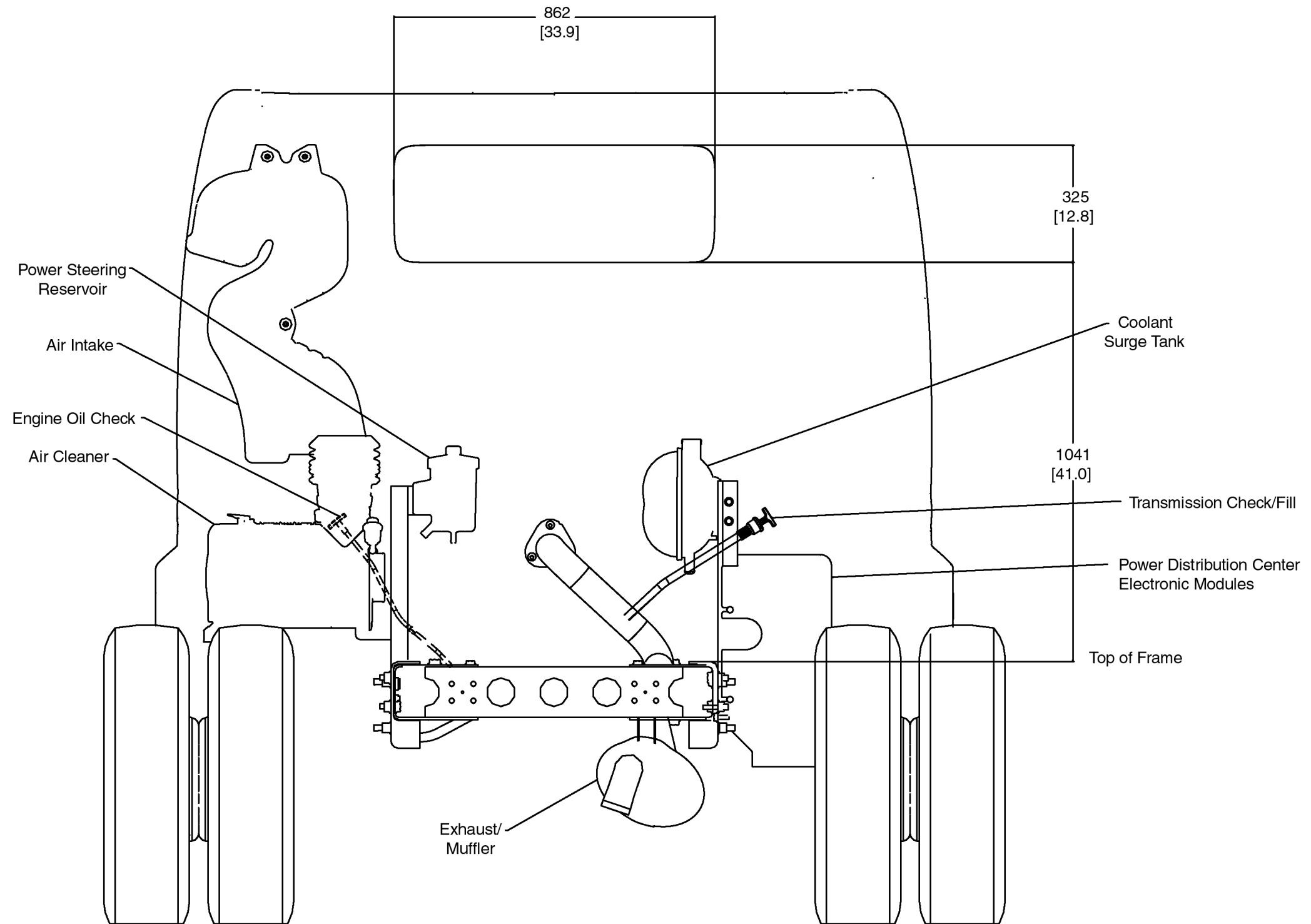
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SIDE VIEW — CAB TILT



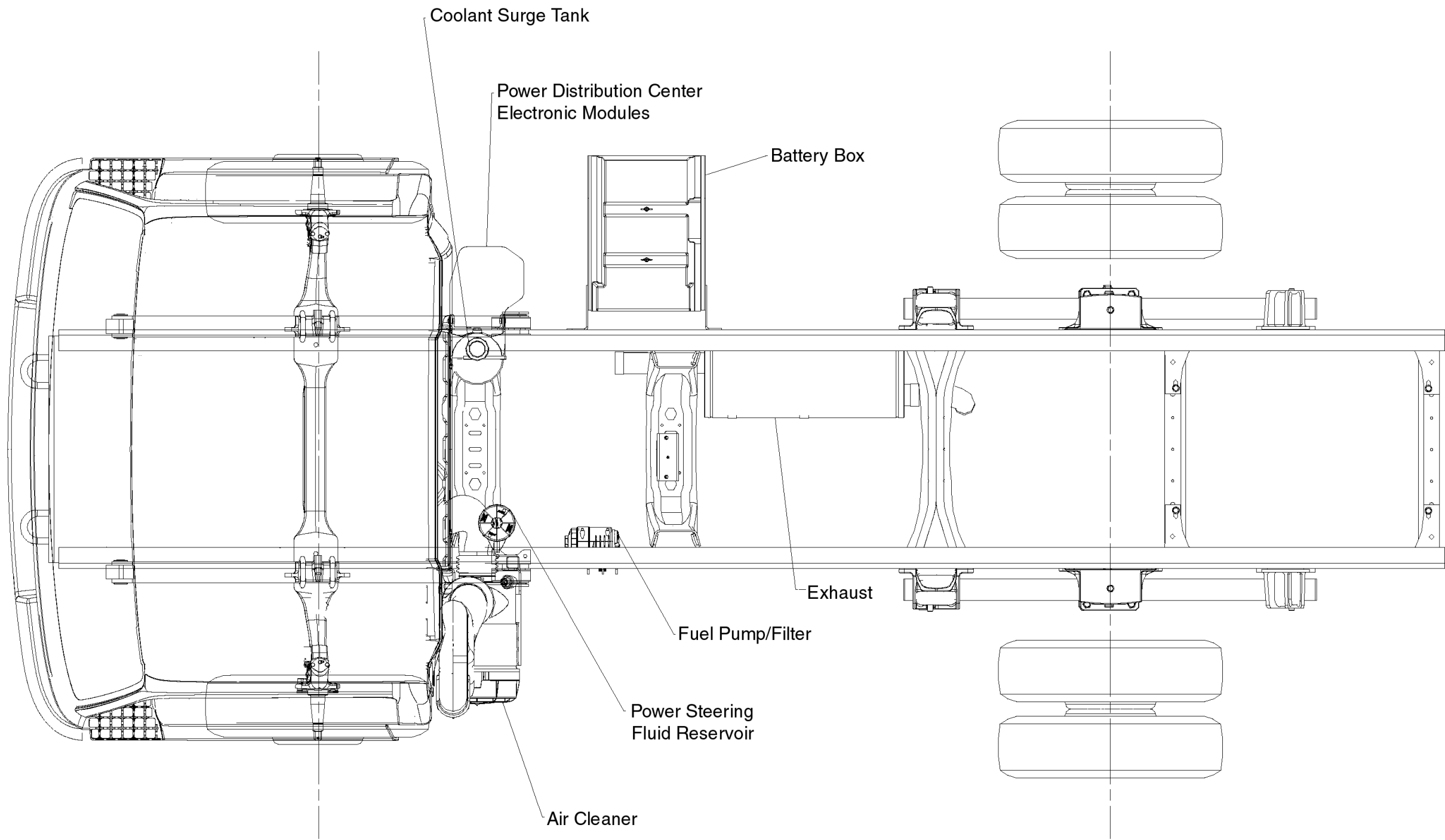
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REAR VIEW OF VEHICLE

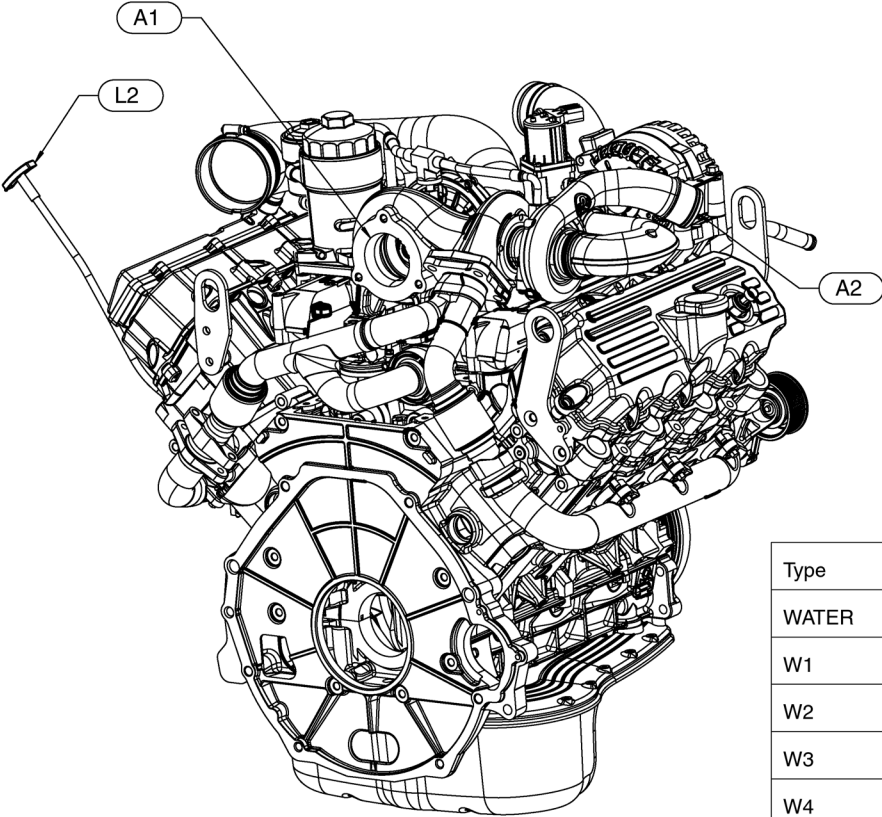


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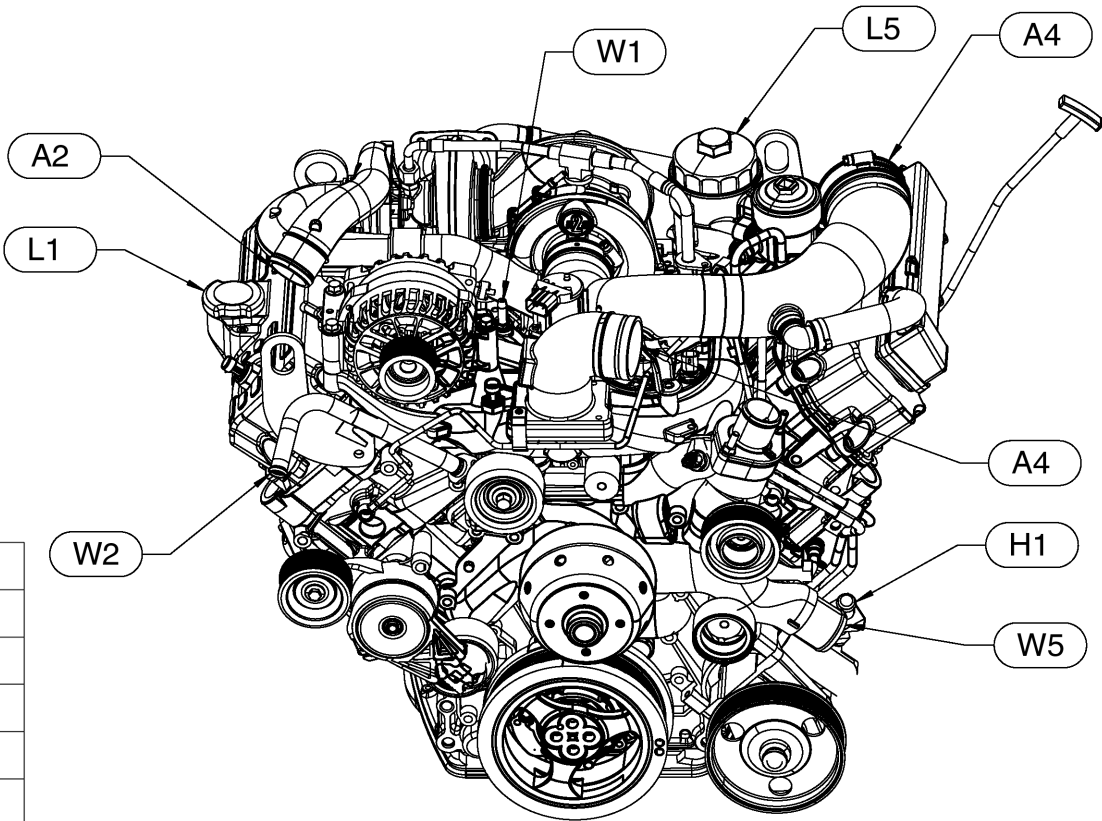
TOP VIEW OF VEHICLE



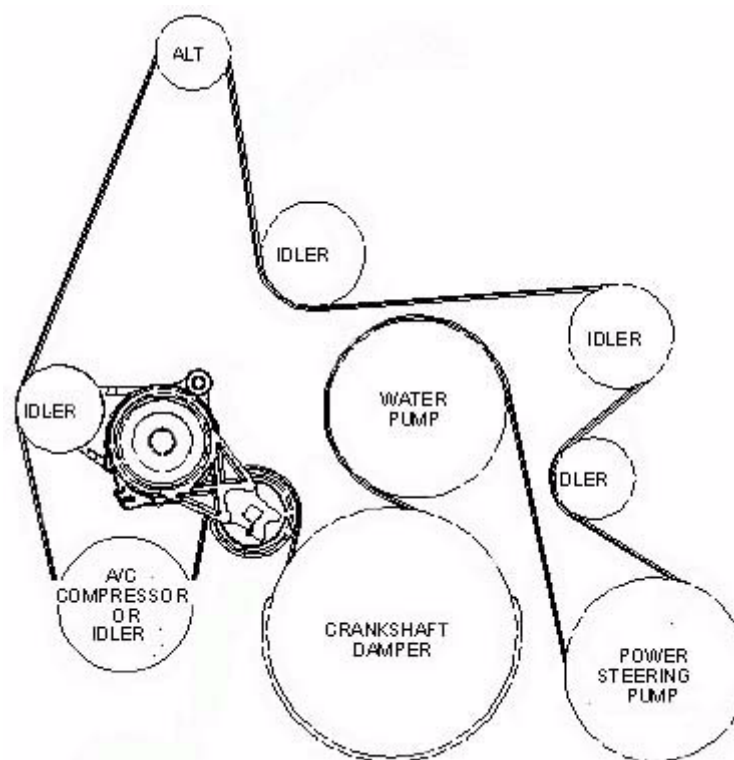
ENGINE PORTS



Type	NPTF	USAGE
WATER		
W1	M14	Deaeration Supply
W2	M18	Heater Supply
W3	-	Block Heater
W4	-	Engine Water Inlet
W5	-	Engine Water Outlet
AIR		
A1	-	Turbo Outlet Exhaust
A2	-	Engine Air Outlet to Inter-cooler
A3	-	Engine Air Inlet From Inter-cooler
A4	-	Engine Air Inlet from Air-Cleaner
OIL		
L1	-	Engine Oil Fill
L2	-	Oil Level Gauge
L3	-	Oil Filter Cap
FUEL		
F1	-	Fuel Supply
F2	-	Fuel Return
HYDRAULIC		
H1	7/8"-14	Power Steering Hydraulic Line

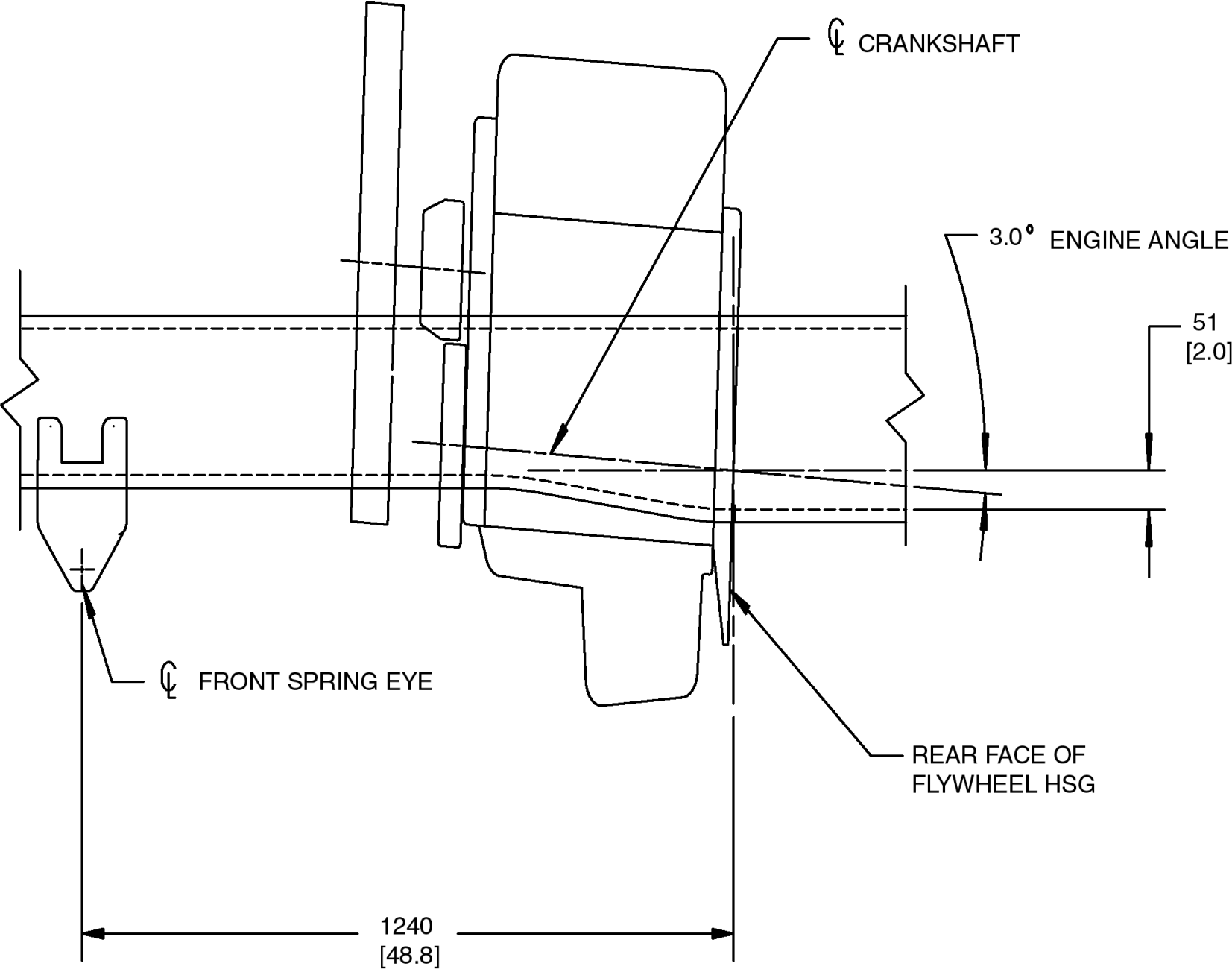
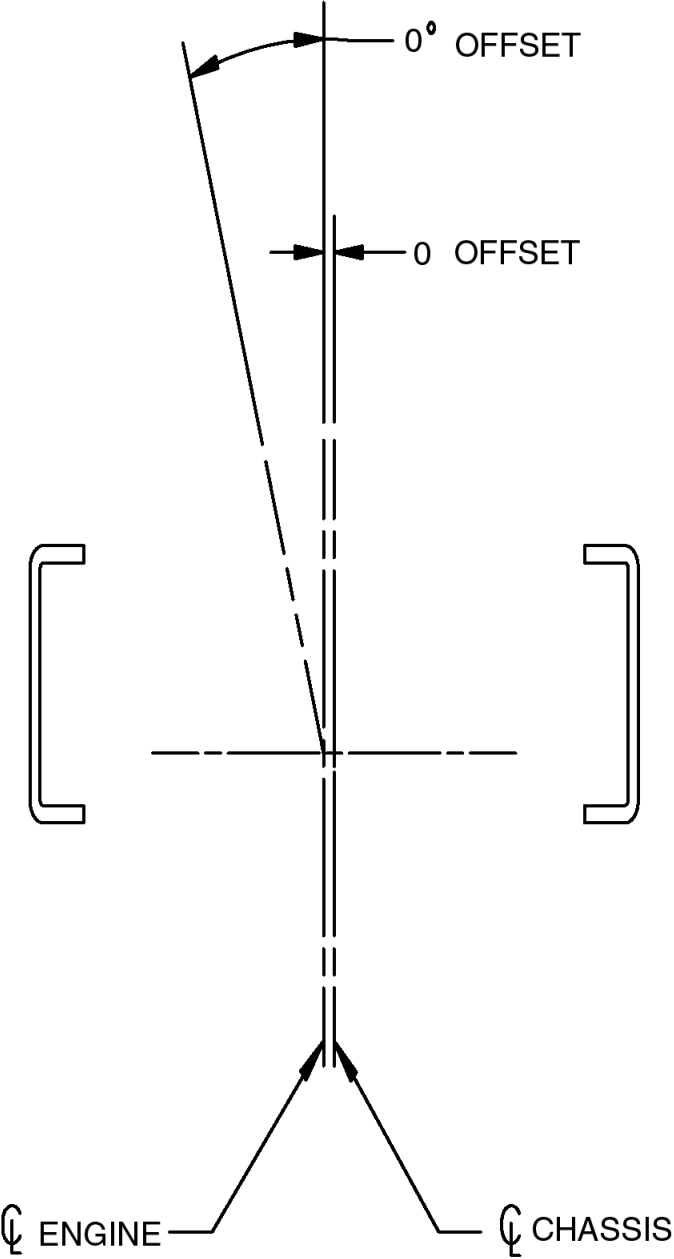


FRONT ENGINE ACCESSORY DRIVE



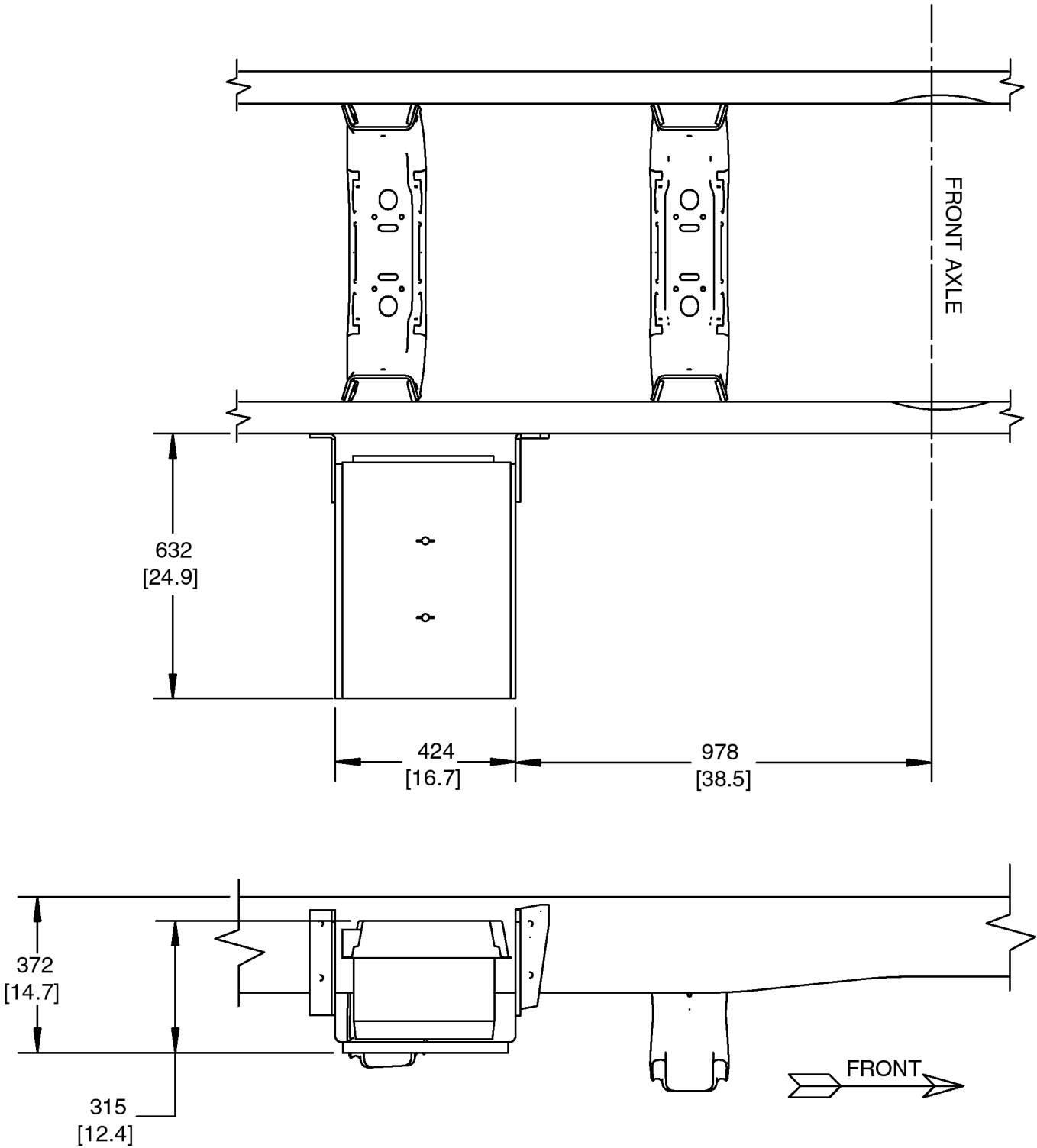
4.5L V6 DIESEL

ENGINE LOCATION



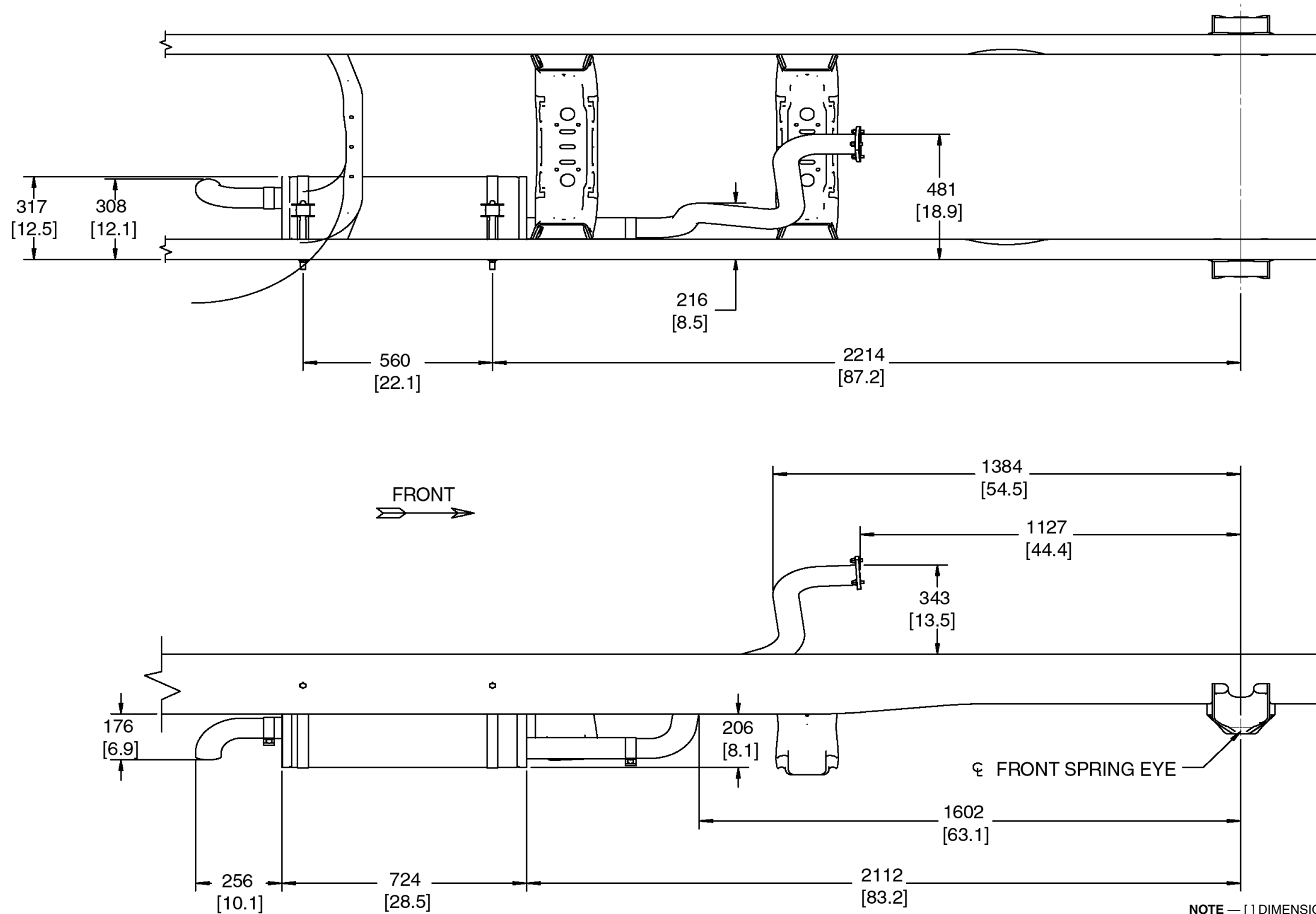
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BATTERY BOX

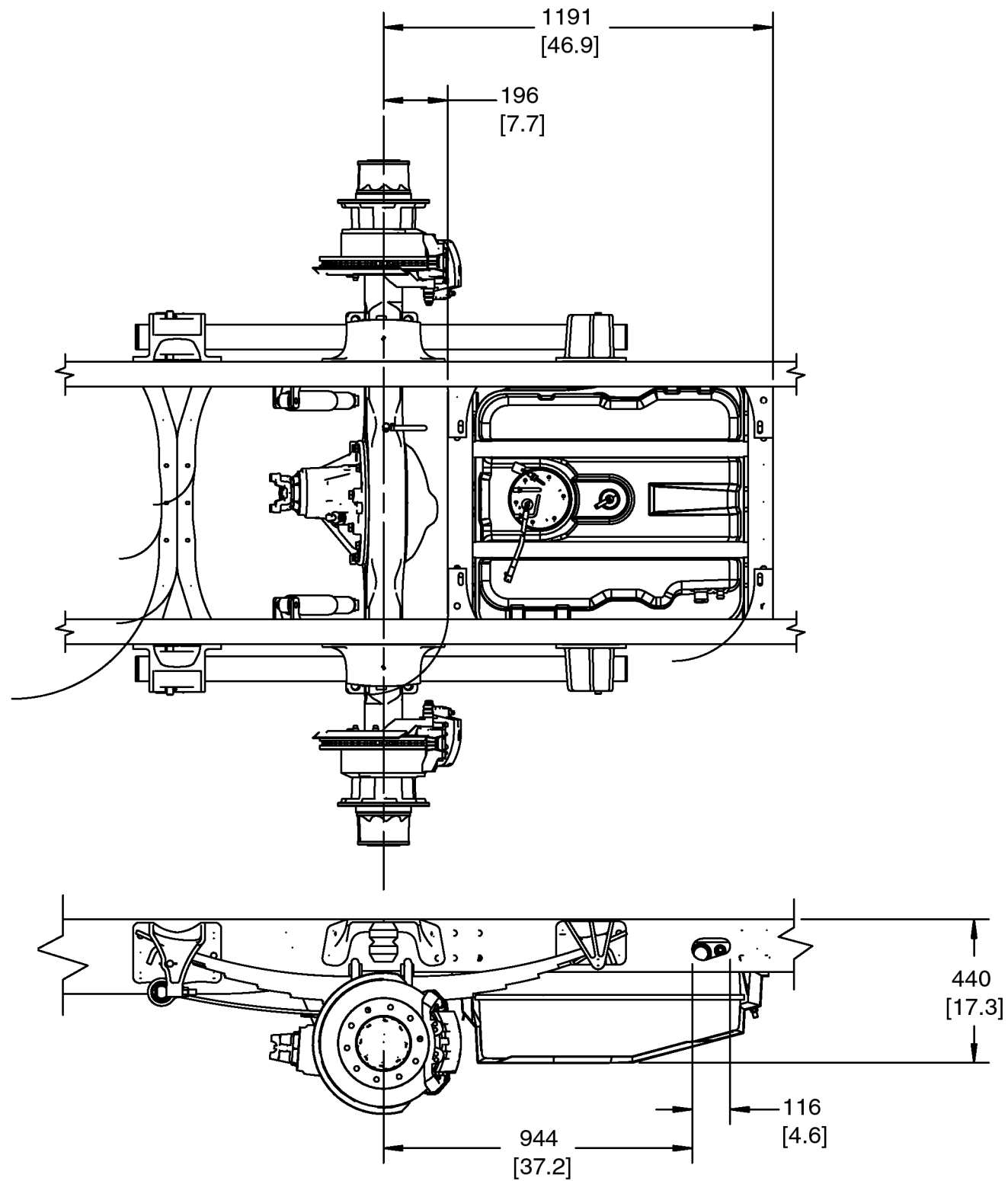


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EXHAUST

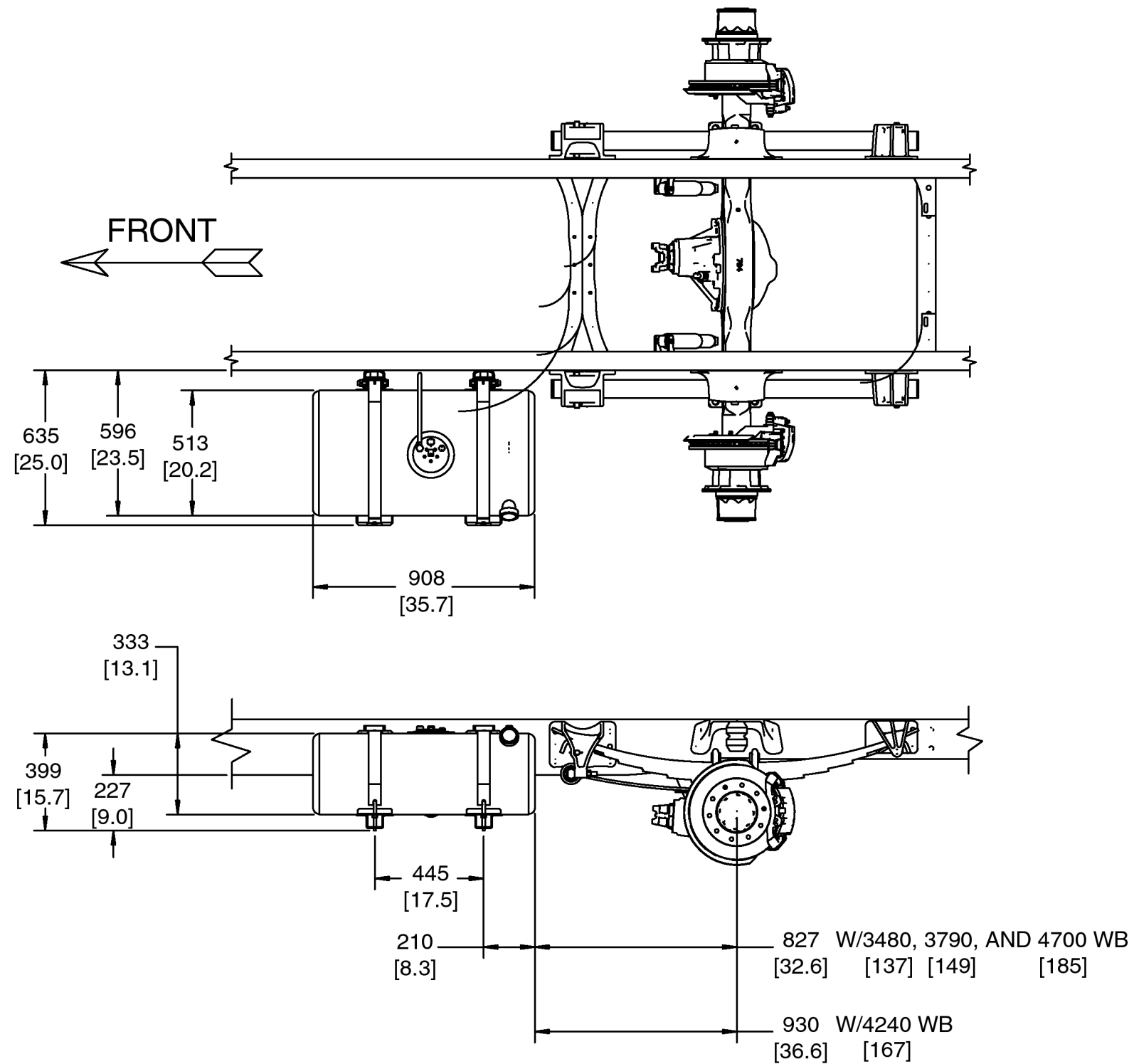


FUEL TANK — BETWEEN THE RAILS (BTR)



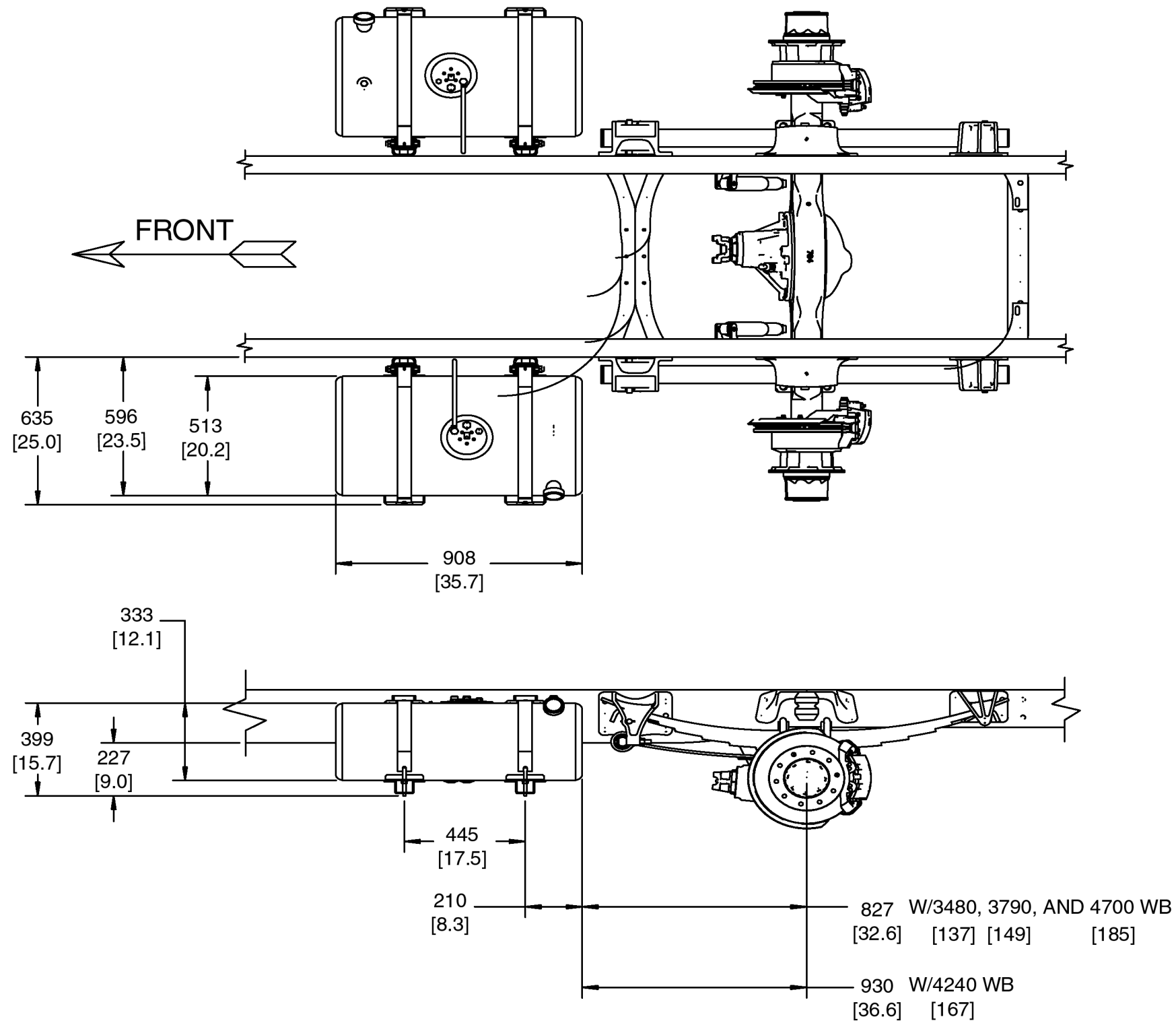
FUEL TANK — LEFT HAND FRAME-MOUNTED

2006
MODEL YEAR



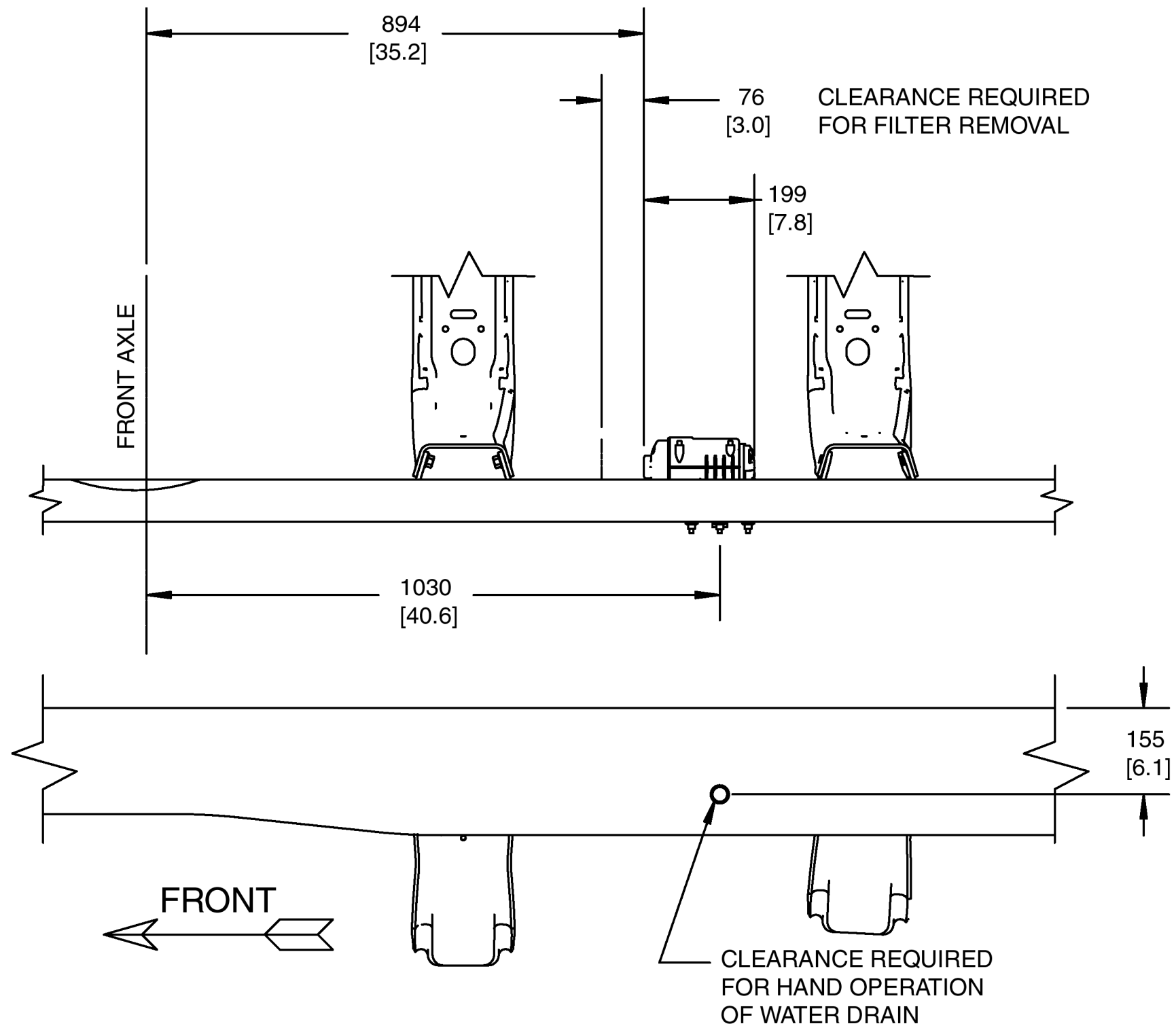
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FUEL TANKS — DUAL FRAME-MOUNTED



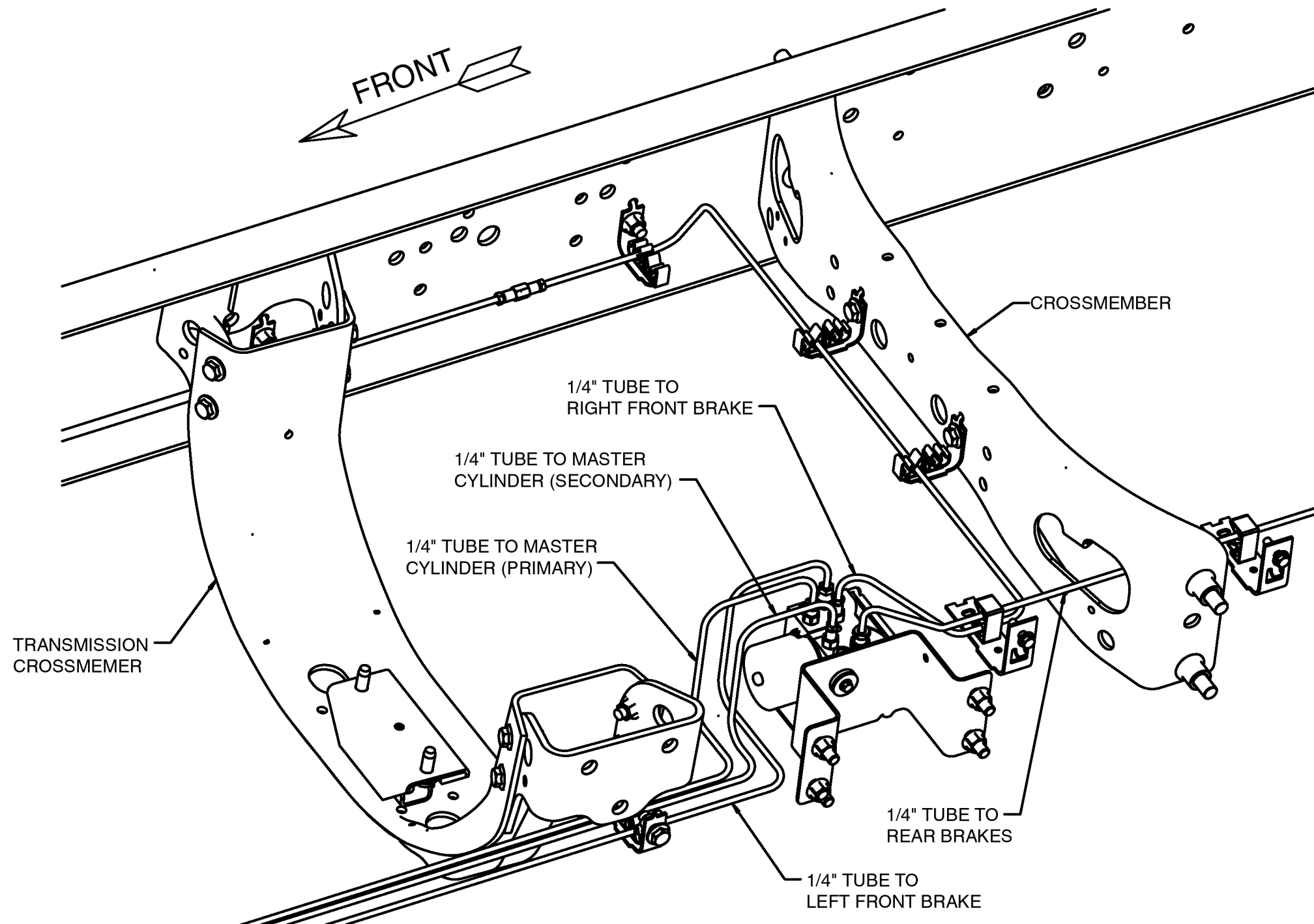
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HORIZONTAL FUEL CONDITIONING MODULE (HFCM)

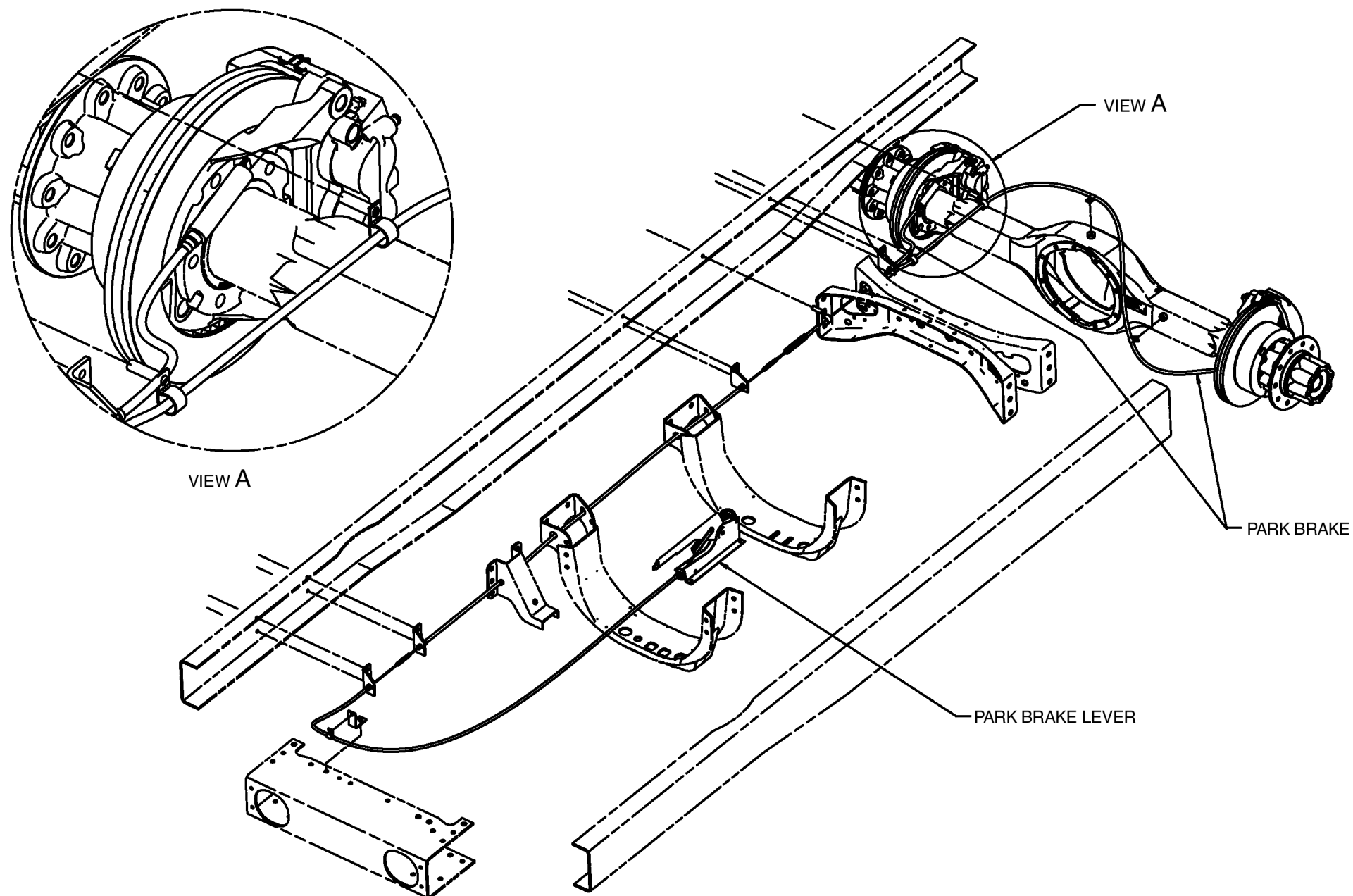


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HYDRAULIC CONTROL UNIT

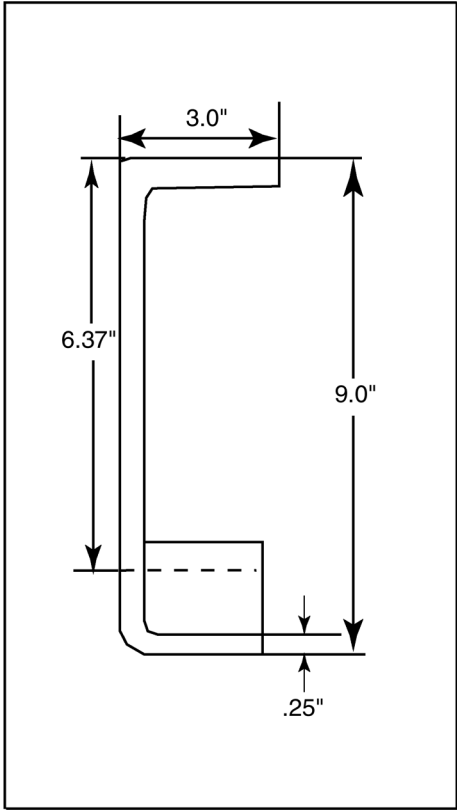


PARKING BRAKE



NOTE — WITH HYDRAULIC BRAKES, THE PARK BRAKE ASSEMBLIES ARE ATTACHED TO THE REAR AXLE INSIDE (BEHIND) THE ROTOR. THEY ARE MECHANICALLY ACTUATED THROUGH THE USE OF A FIVE-SECTION CABLE. DUE TO THE CONSTRUCTION OF THE CABLES, IT IS NOT POSSIBLE TO ALTER THE LENGTH.

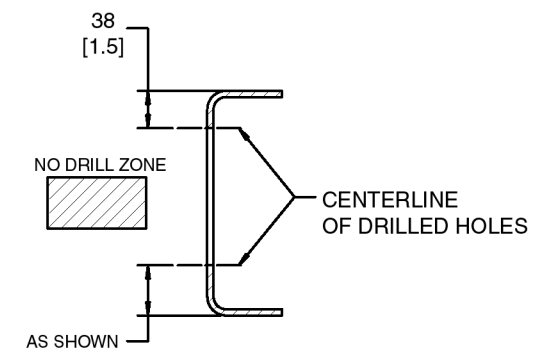
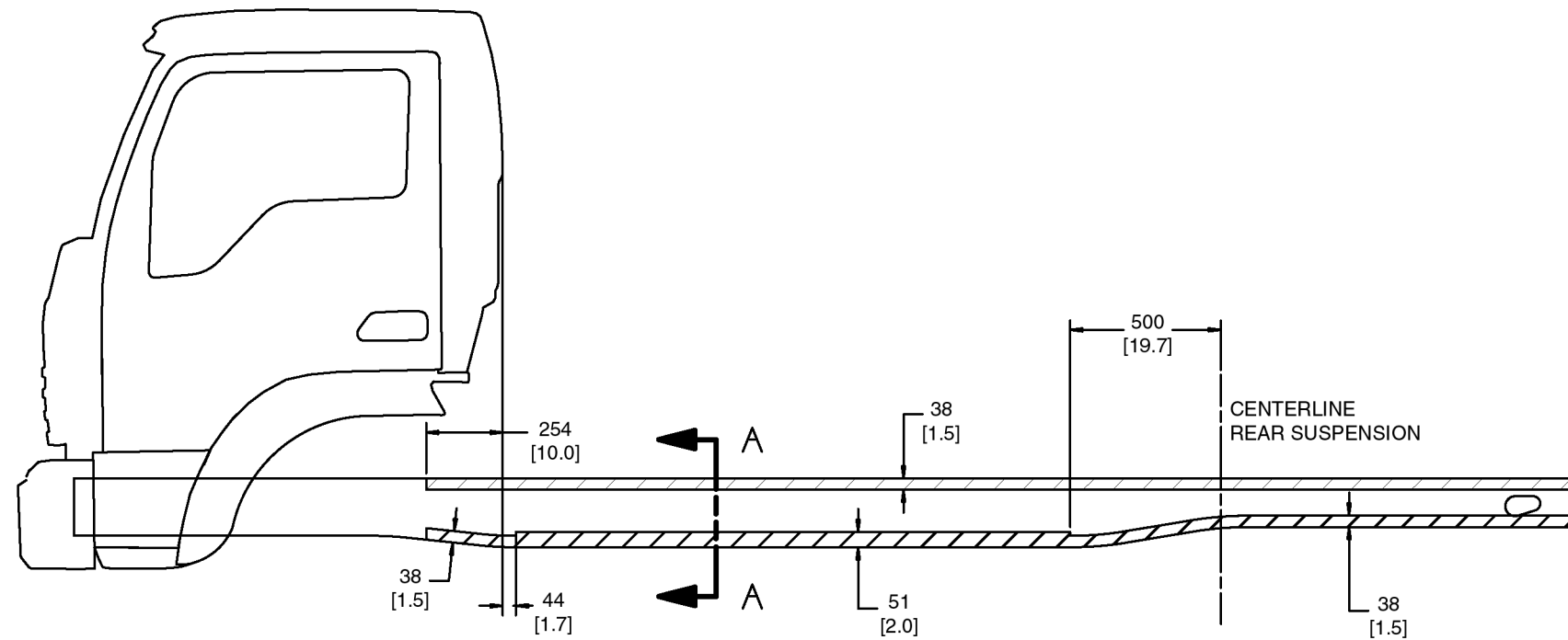
FRAME RAIL SPECIFICATIONS



	Side Rail								
	DIMENSIONS (inches)			YIELD STRENGTH NOMINAL (psi)	MATERIAL #	SECTION MODULUS ¹ (inches ³)		RESISTING BENDING MOMENT (in.-lbs.)	
	Depth	Width	Thickness			Maximun	Nominal	Maximun	Design
All Frame Rail Codes	Straight Channel Side Rail - Kick-up at Rear Suspension Rearward								
	9.0	3.0	0.25	50,000	B	10.67	9.23	533,500	461,500

NOTE:
B = High Strength Low Alloy Steel
¹= **Section Modulus:**
 Maximum Tolerance: All frame dimensions are at maximum tolerance; used by some competitors as advertised values.
 Nominal: Calculated using design dimensions - indicates the design load capacity of the frame.
³= Rail depth given is for base rail . . . kick-up in AF section is 6.37".

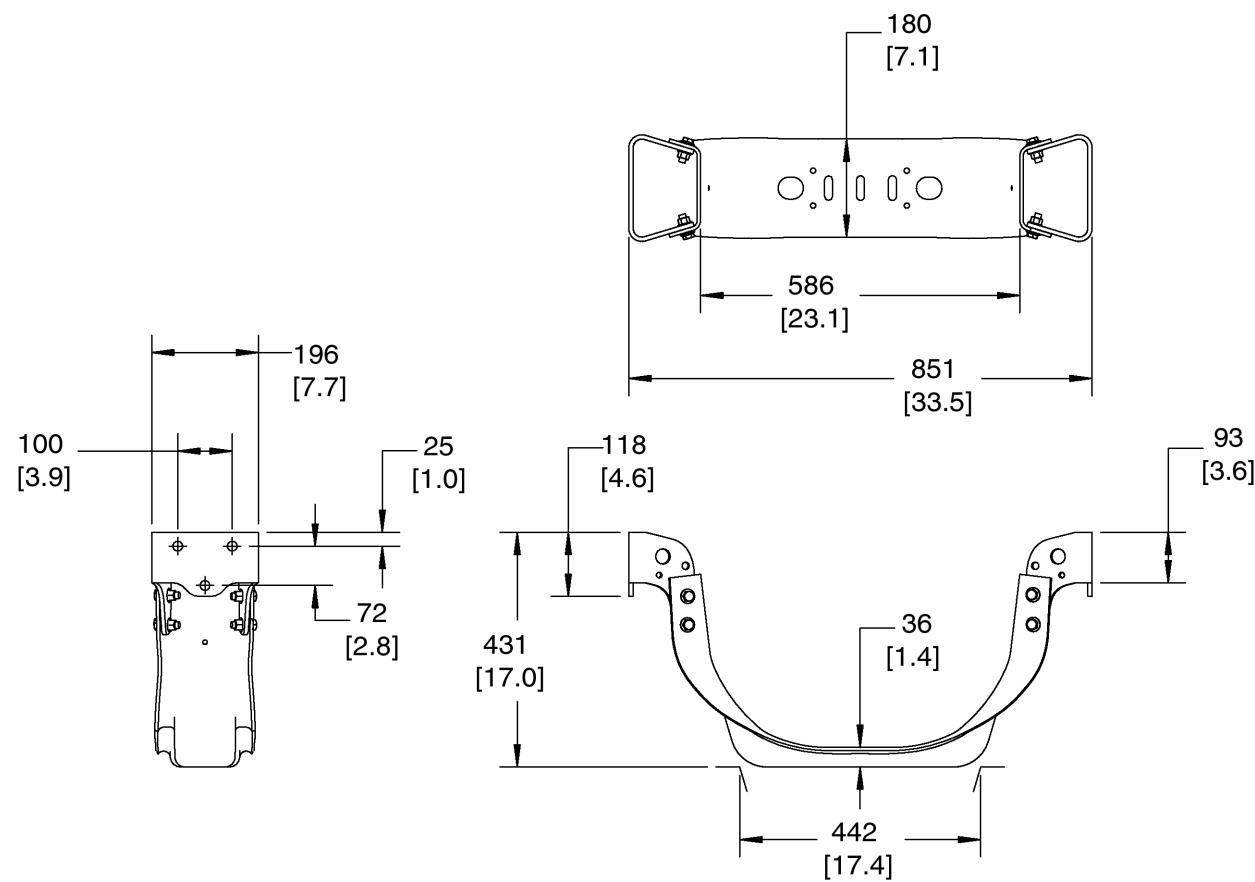
FRAME — DRILLING RESTRICTIONS



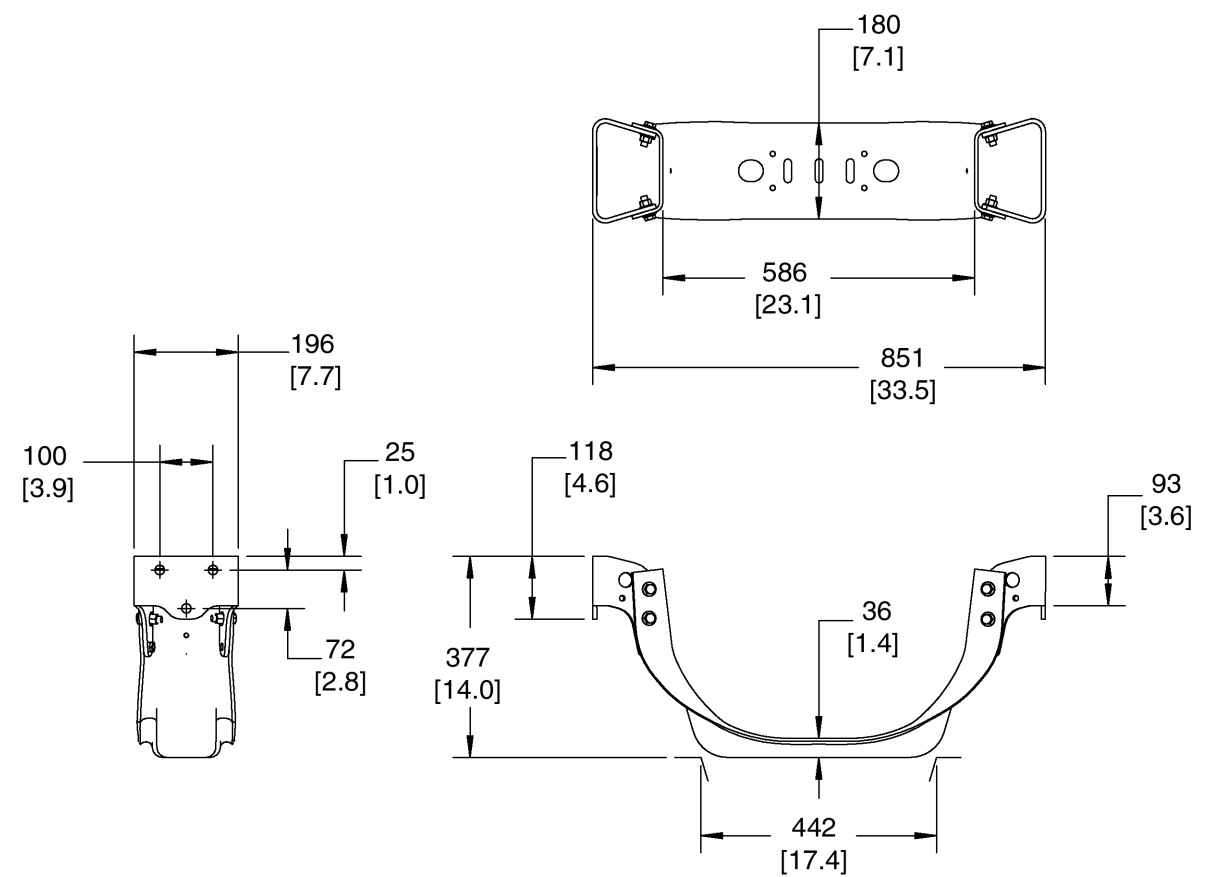
SECTION A

- DO NOT** Leave Less Than .75" [19 mm] of Material Between Holes
- DO NOT** Drill Holes in the Following Areas:
Distance from Top of Top Flange to Centerline of Hole
Distance from Bottom of Bottom Flange to Centerline of Hole

FRAME CROSSMEMBER



REAR OF ENGINE

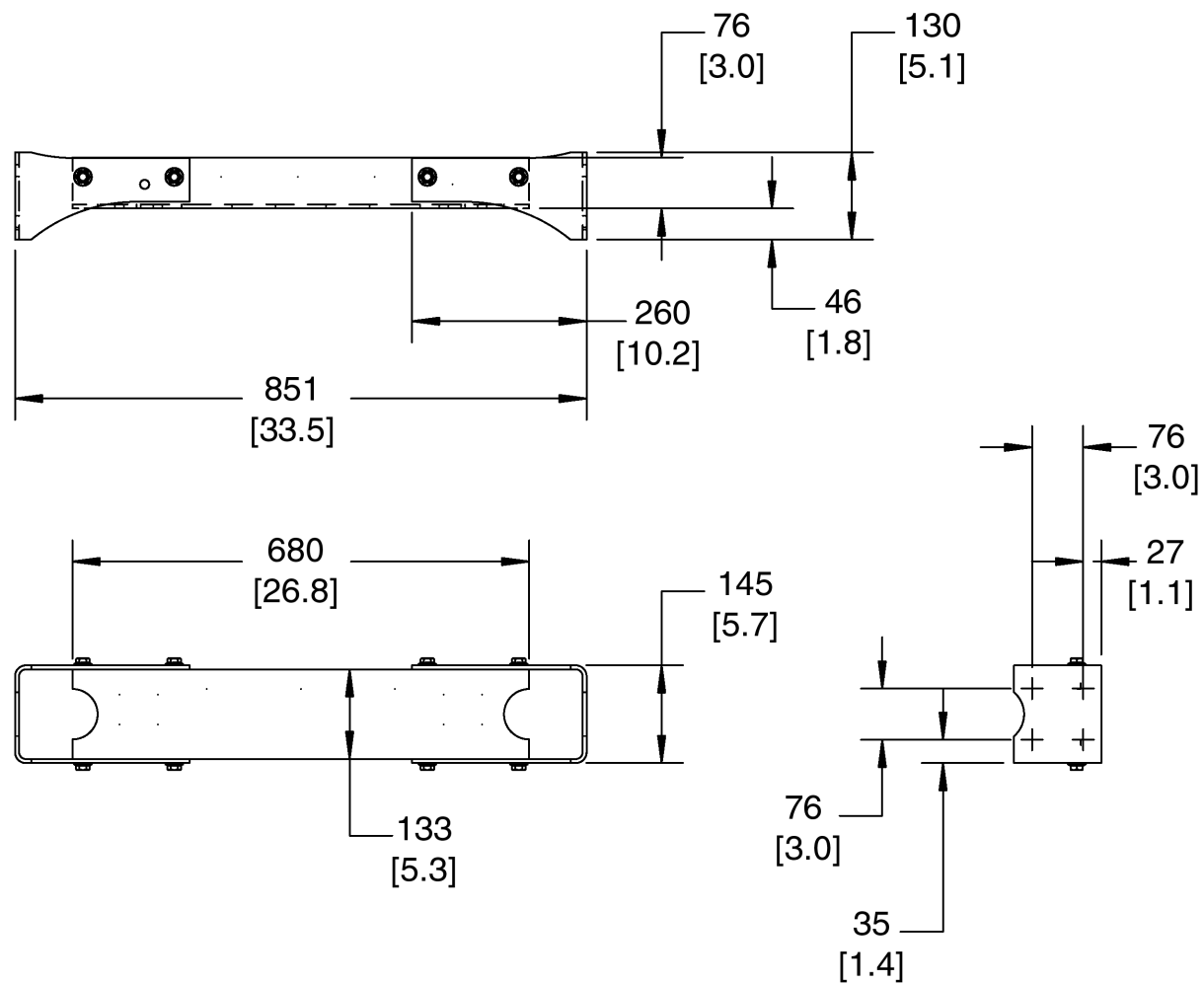


TRANSMISSION SUPPORT

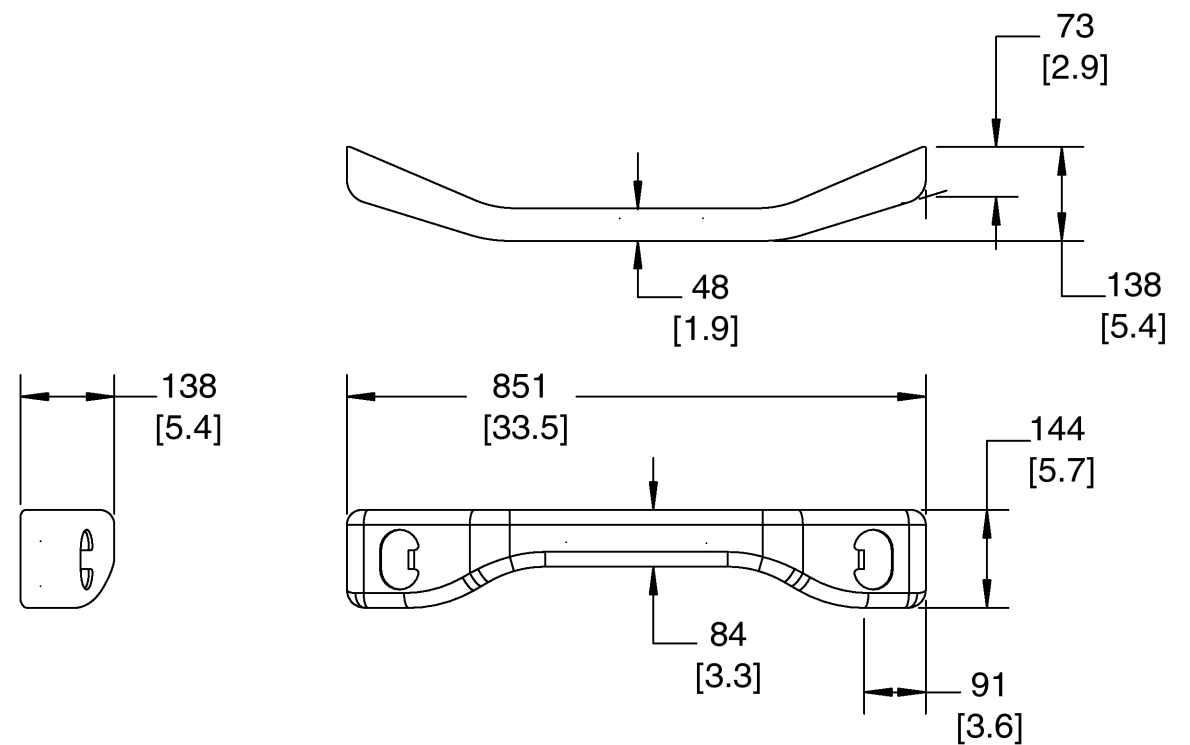
NOTE — [] DIMENSIONS ARE INCHES.

FRAME CROSSMEMBER

2006
MODEL YEAR



REAR SUSPENSION/BETWEEN THE RAILS FUEL TANK

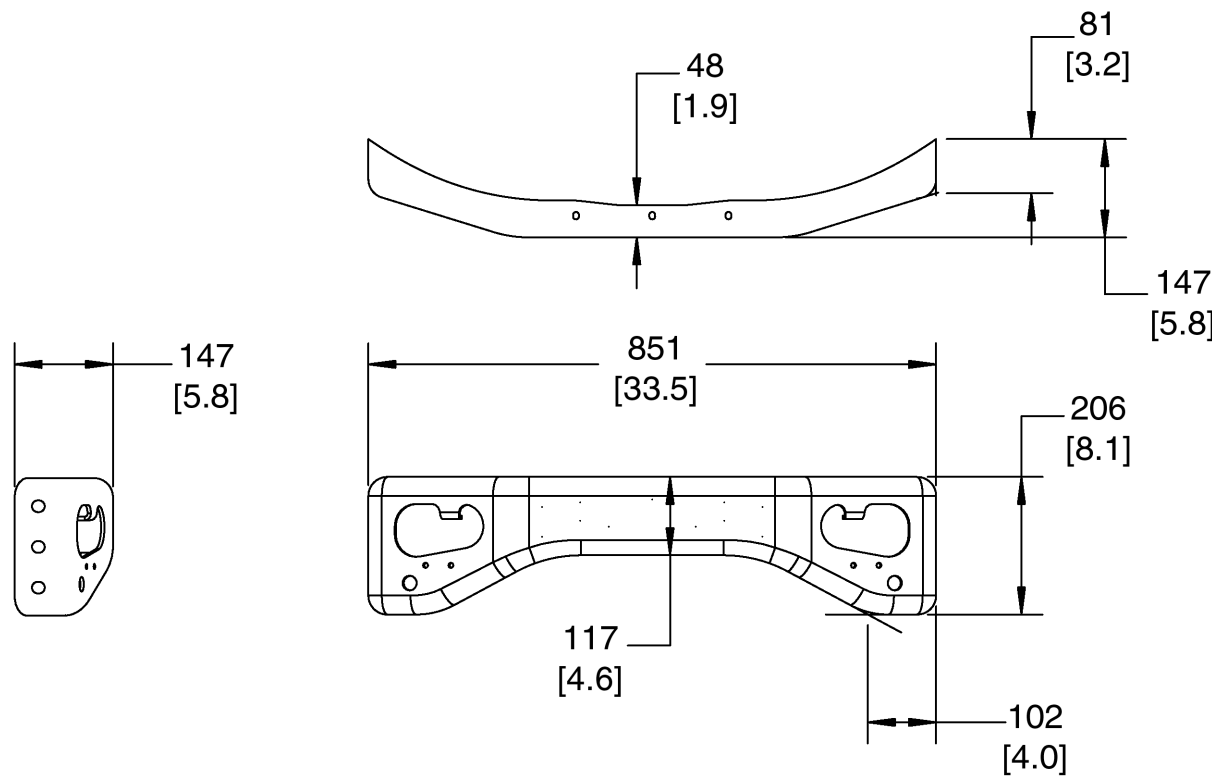


AFT FRAME

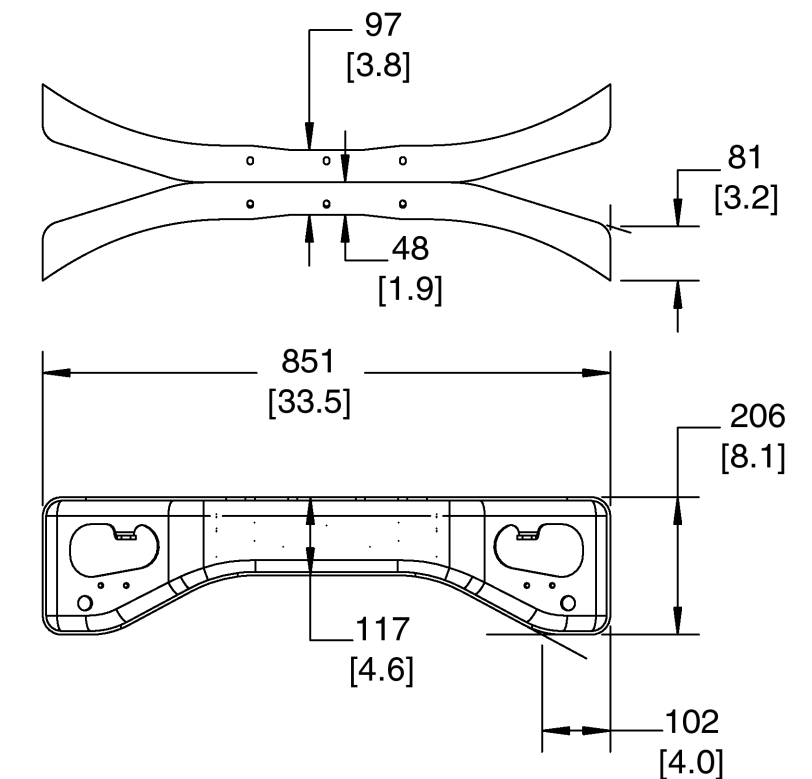
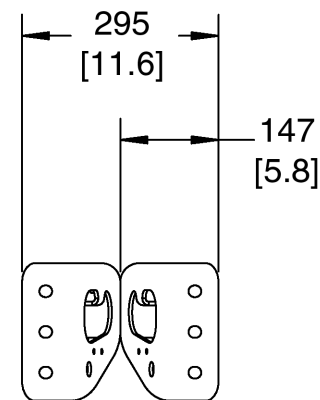
NOTE — [] DIMENSIONS ARE INCHES.

FRAME CROSSMEMBER

2006
MODEL YEAR



INTERMEDIATE



DOUBLE FOR REAR SUSPENSION

NOTE — [] DIMENSIONS ARE INCHES.

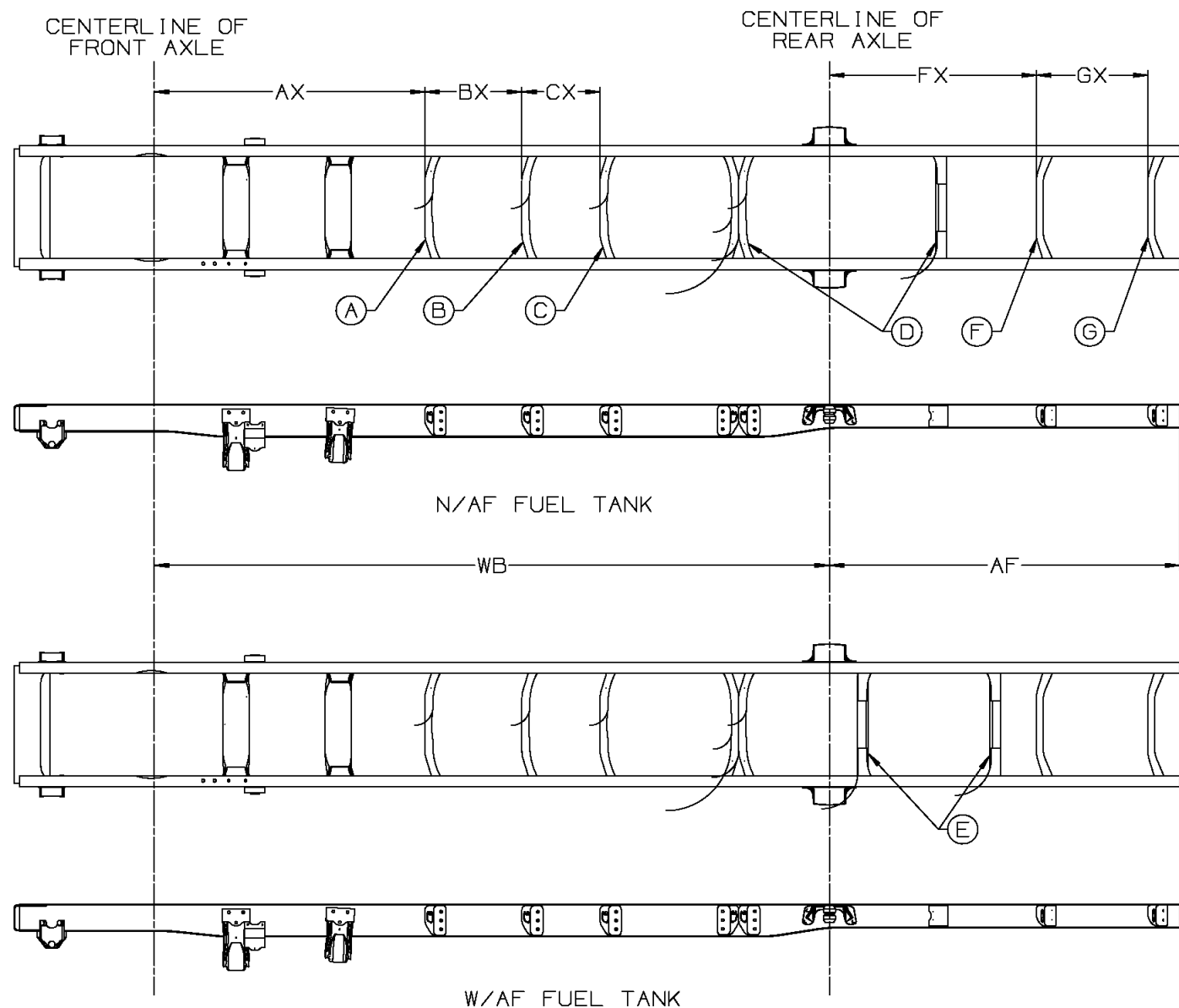
FRAME CROSSMEMBER LOCATION — FRAME LADDER

WB	AX	BX	CX
INCHES			
113	-	-	-
137	74	-	-
149	74	12	-
167	74	26	-
185	74	27	21

WB	AX	BX	CX
MILLIMETERS			
2870	-	-	-
3480	1885	-	-
3790	1885	305	-
4240	1885	657	-
4700	1885	674	545

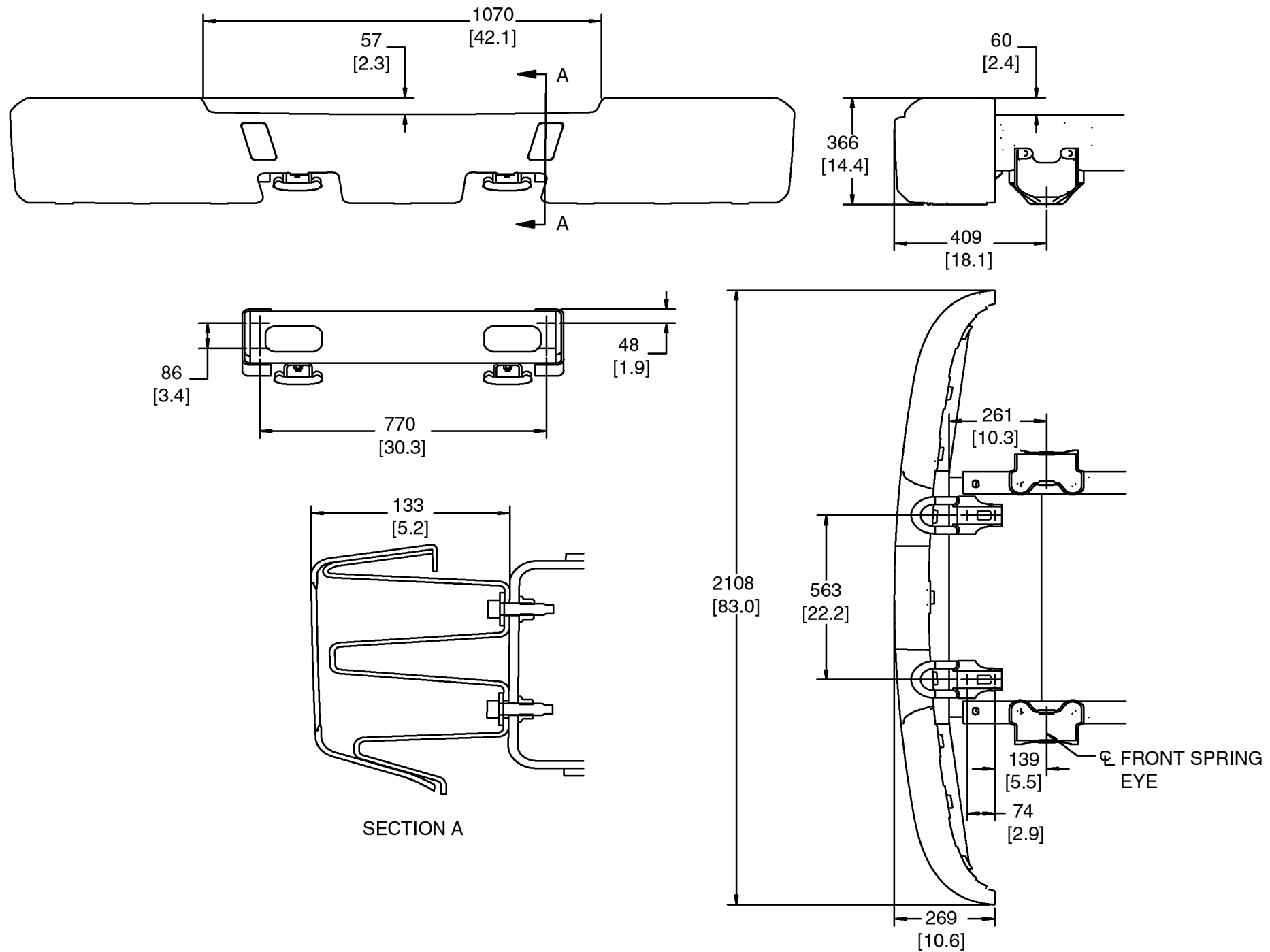
AF	FX	GX
INCHES		
47.5	-	-
63	-	-
75	57	-
96	57	31

AF	FX	GX
MILLIMETERS		
1210	-	-
1600	-	-
1910	1437	-
2440	1437	776



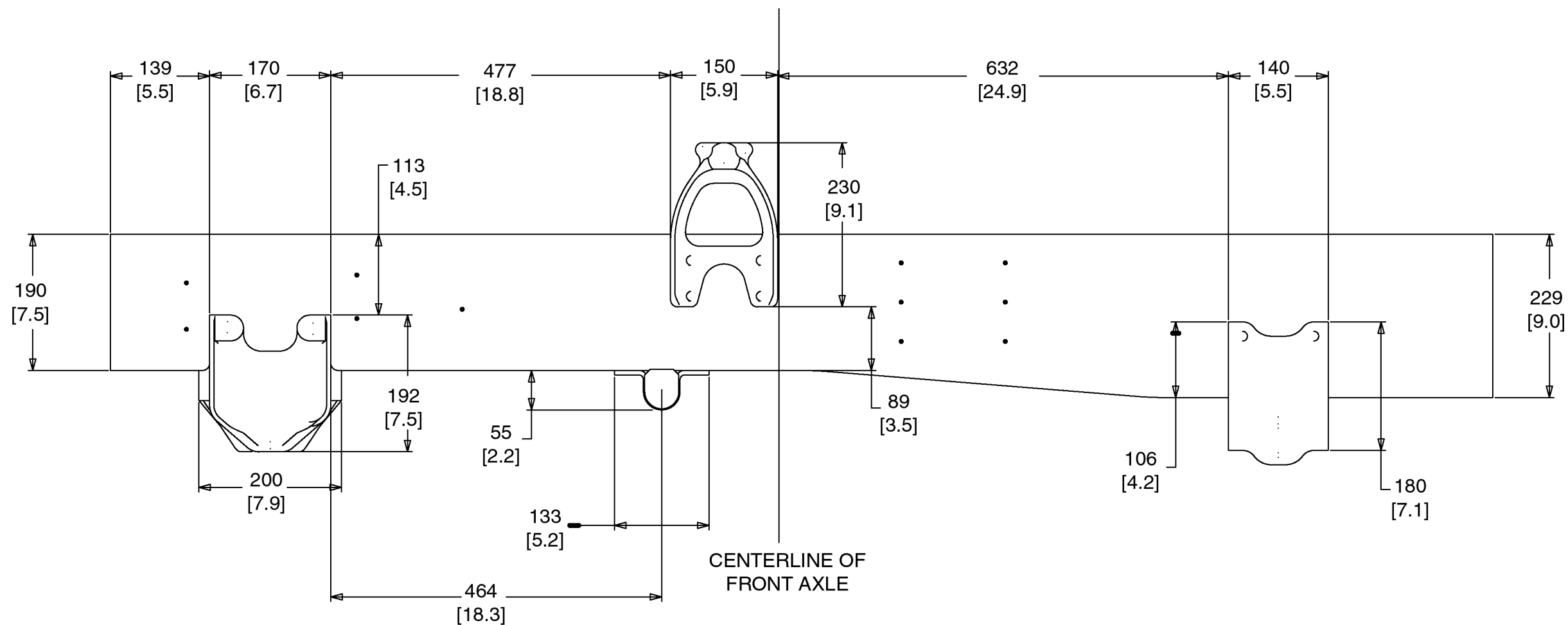
- (A) (B) (C) SINGLE STAMPED CROSSMEMBER MOUNTED WITH FLAT FLANGE UP AND WEB FORWARD
- (D) REAR SUSPENSION CROSSMEMBER
- (E) AF FUEL TANK CROSSMEMBER
- (F) (G) SINGLE STAMPED CROSSMEMBER MOUNTED WITH FLAT FLANGE UP AND WEB FORWARD

FRONT BUMPER & TOW HOOKS



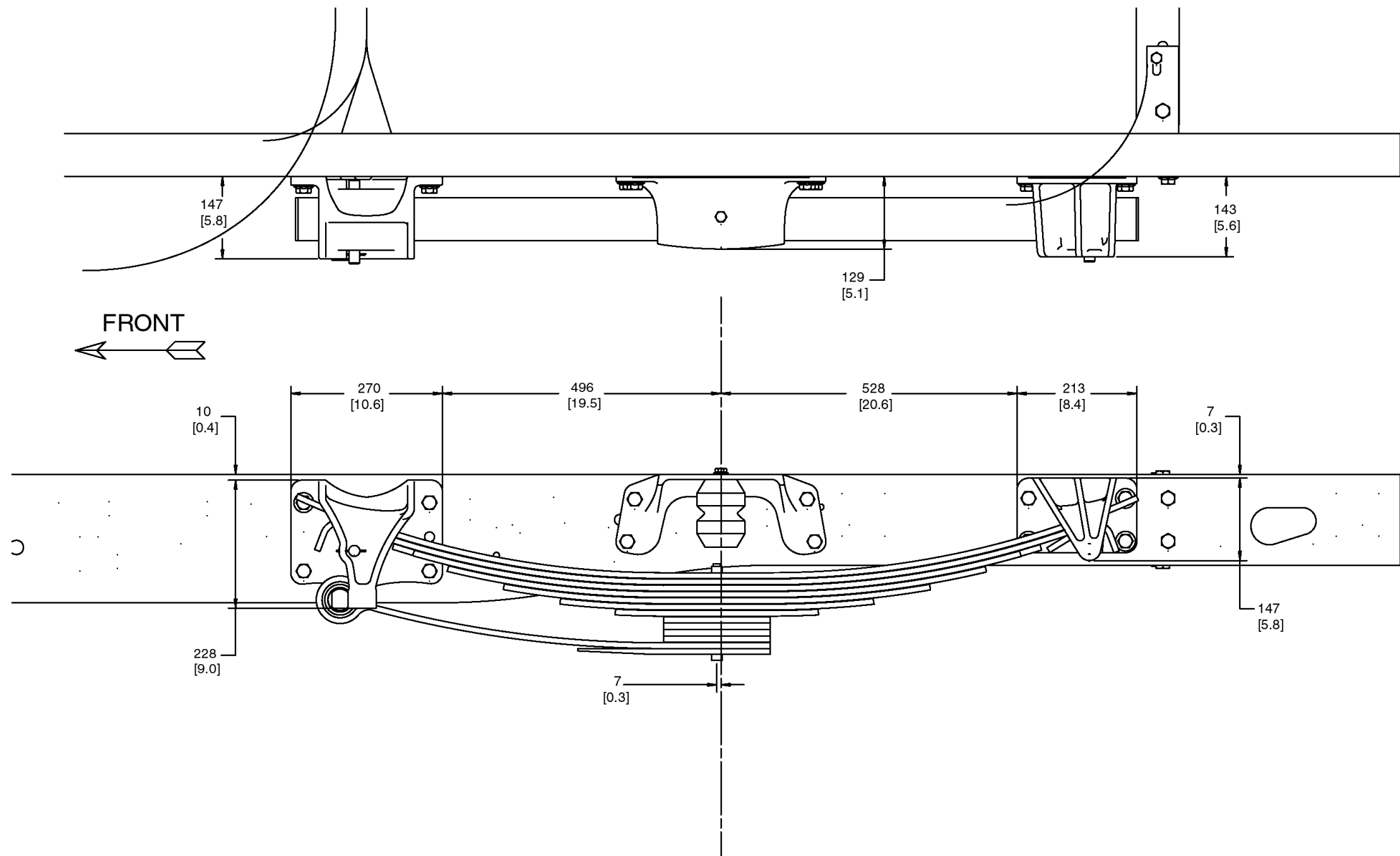
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FRONT SUSPENSION



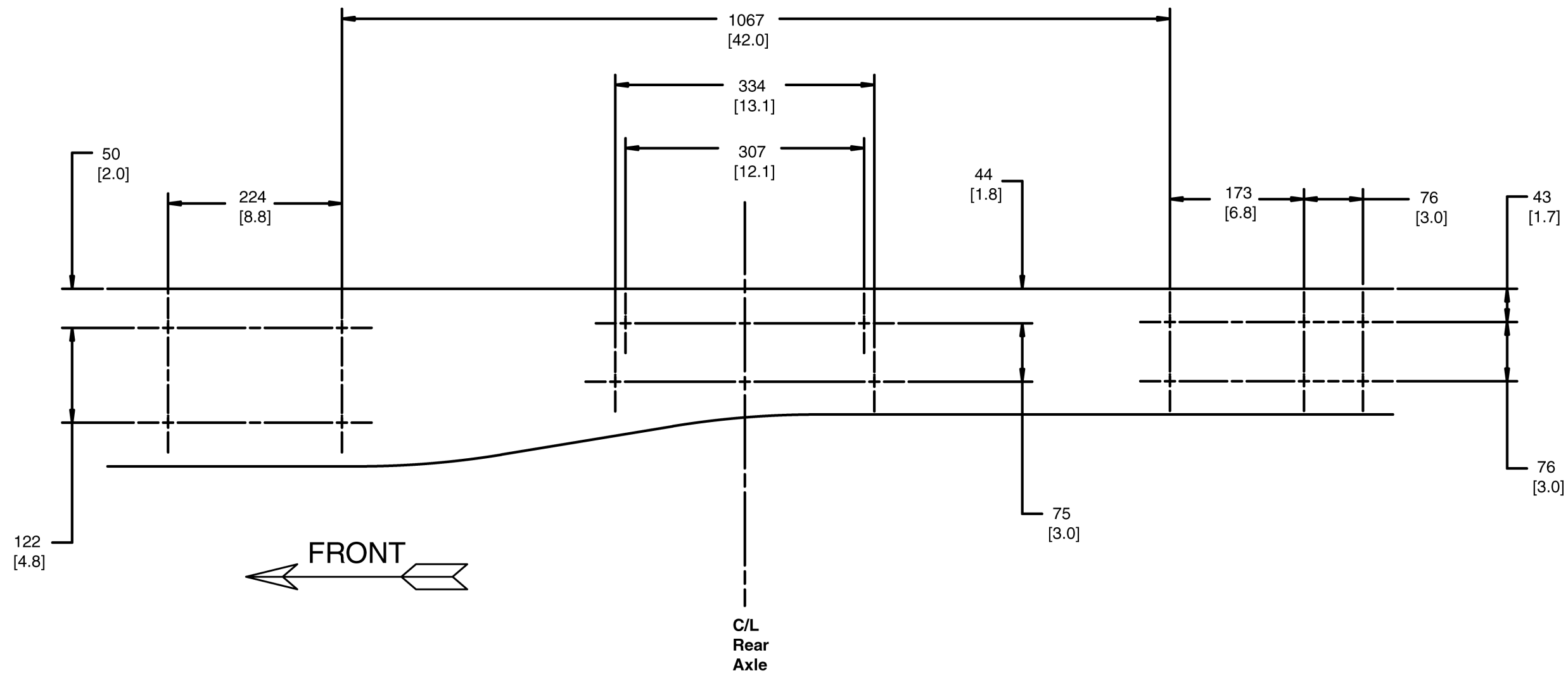
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REAR SPRING SUSPENSION — INSTALLED POSITION



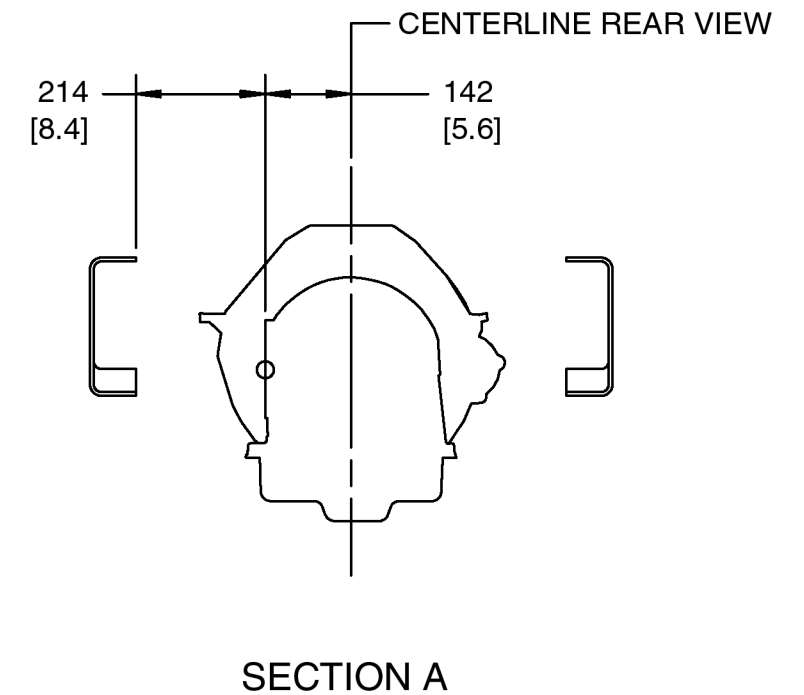
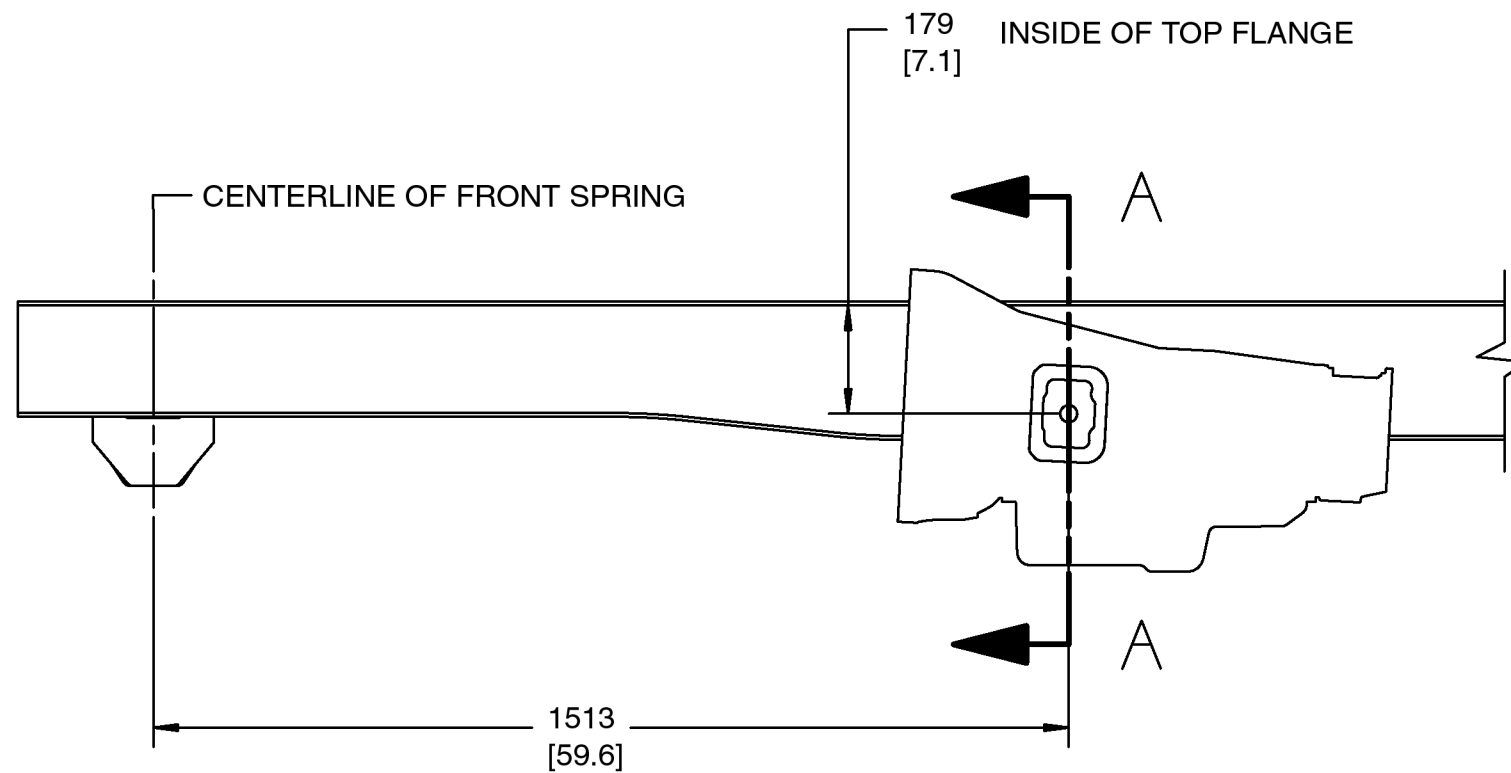
NOTE — [] DIMENSIONS ARE INCHES.

REAR SPRING SUSPENSION — HOLE PATTERN



NOTE — [] DIMENSIONS ARE INCHES.

POWER TAKE OFF



NOTES:

- CLEARANCE PROVIDED FOR SAE ENVELOPE
- DO NOT REUSE PTO COVER PLATE GASKETS

REQUIRED PTO WIRING FOR AUTOMATIC TRANSMISSION

CAUTION: Installing a transmission-mounted PTO without the required PTO wiring may result in transmission failure.

To minimize the risk of transmission damage, PTO controls must be integrated into the vehicle wiring.

PTO Request - Applying vehicle battery voltage to the “PTO Request” wire will (1) place the transmission in PTO mode and (2) elevate idle engine idle speed when certain conditions (described below) are met. This wire **MUST** be part of the PTO control system; failing to do so may result in under capacity PTO clutch wear, resulting in rapid contamination of transmission fluid and internal transmission damage.

Remote PTO Enable - One of the two available remote PTO engine wires **MUST** also be part of the PTO control system. The wire must be connected to the PTO Request circuit.

PTO Enable - An output wire is available that indicates when the elevated idle is active. The “PTO Enable” output may be used at the body builder’s discretion; for example, to restrict PTO operation to stationary only.

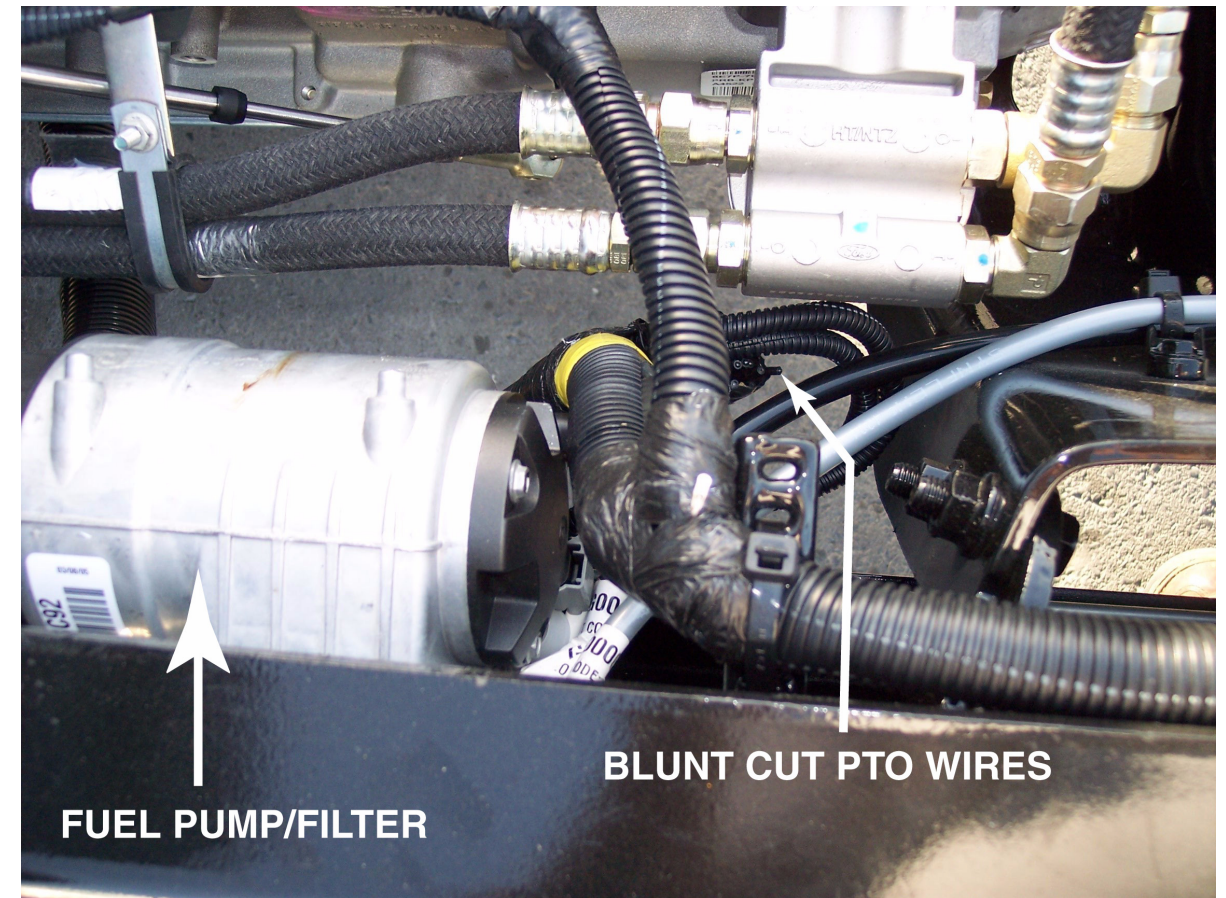
PTO Engaged - An input wire is available to control the PTO lamp in the instrument cluster. Applying vehicle battery voltage to the “PTO Engaged” wire will illuminate the PTO lamp.

“PTO Request”, “PTO Enable”, “PTO Engaged”, and the remote engine PTO signals are blunt cut wires supplied with the vehicle and are located behind the cab on the left frame rail near the transmission. All other PTO components are to be supplied by the body builder.

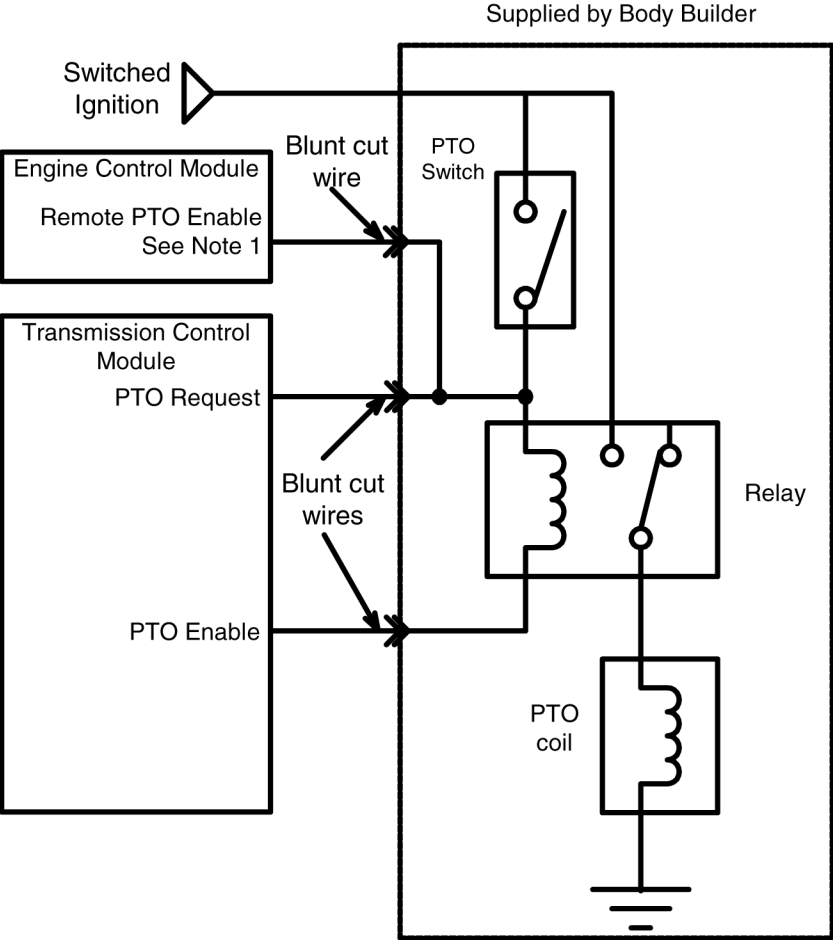
Elevated Idle Operation - When (1) the “PTO Request” input transitions from open circuit to vehicle battery voltage and (2) the conditions in Table 1 are met, the engine will ramp to 1200 RPM and the “PTO Enable” output will be activated. While in this mode, normal engine speed hand controls are available; however, the engine will maintain an engine speed between 1200 and 2400 RPM. The engine will remain in this mode until either (1) the “PTO Request” input is open circuit or (2) one or more of the conditions in Table 1 are no longer met.

NOTE: A “change-of-state” at the “PTO Request” input is required to re-invoke the elevated idle mode. The operator must turn off voltage to the “PTO Request” input, and back on again.

Engine Programming - The engine programmable parameter “PTO-CONTROL” must be set to either “1: REMOTE OPERATION ONLY” or “3: REMOTE AND IN-CAB OPERATION” for PTO installations. This parameter is set to “3: REMOTE AND IN-CAB OPERATION” from the factory.



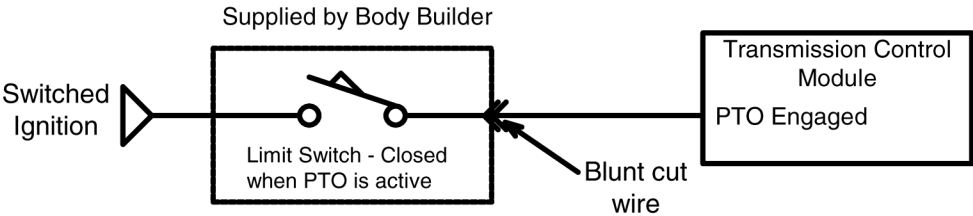
PTO WIRING FOR AUTOMATIC TRANSMISSION



Note 1: One of the two available Remote PTO Enable wires must be connected to PTO Request. The available wires are "ECM Remote Variable PTO Enable" and "ECM Remote Preset PTO Enable"

CF series - PTO Wiring		
Circuit Intent	Wire Name	Description
Input (VPWR)	PTO Request	Blunt cut wire Circuit No. 2335 Wire Color: Purple/Light Green Applying vehicle battery voltage to this wire will request the transmission enter PTO mode and will elevate engine speed if conditions are met.
Output	PTO Enable	Blunt cut wire. Circuit No.2334 Wire Color: Brown/Yellow A low-side driver, changing from "open-circuit" to "ground" indicating elevated idle (PTO) is active. Intended for turning on a relay coil. Maximum current is 1 amp.
Input (VPWR)	PTO Engaged	Blunt cut wire. Circuit No.2336 Wire Color: Red/Orange Applying vehicle battery voltage to this wire will activate the PTO lamp in the instrument cluster, and removing vehicle battery voltage will deactivate the PTO lamp.
Input (VPWR)	ECM Remote Preset PTO Enable	Blunt cut wire. Circuit No.2231 Wire Color: Light Blue/Red Applying vehicle battery voltage to this wire will enable the Remote Preset PTO engine operation. This input, or ECM Remote Variable PTO Enable, is required for PTO.
Input (VPWR)	ECM Remote Variable PTO Enable	Blunt cut wire. Circuit No.2232 Wire Color: Red/Light Blue Applying vehicle battery voltage to this wire will enable the Remote Variable PTO engine operation. This input, or ECM Remote Preset PTO Enable, is required for PTO.

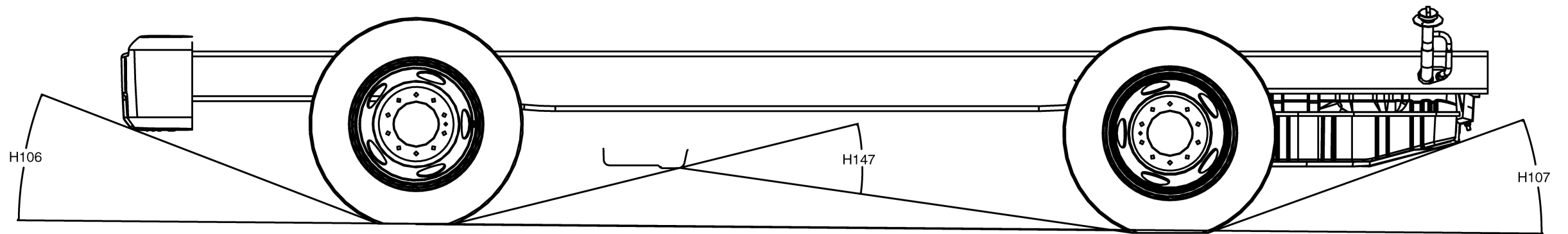
Example Wiring Diagram for stationary PTO operation



Example Wiring Diagram for PTO Lamp

Rear Frame Lighting Circuits			
Circuit	Color	Gauge	Description
5	Orange-Light Blue (OR/LB)	18	RH Turn
9	Light Green-Orange (LG/OR)	18	LH Turn
14	Brown (BR)	16	Market Lights
511	Light Green (LG)	16	Stop Lights

GROUND CLEARANCE



Wheelbase (inches)	AF (inches)	SAE Standard Angles			
		H106	H147	H107	H107
		Bumper	Transmission Oil Pan	Aft Fuel Tank	Frame Rail
113	47.5	20.6°	21.7°	19.9°	—
113	63	20.6°	21.7°	19.9°	20.3°
137	47.5	20.6°	19.7°	19.9°	20.3°
137	63	20.6°	19.7°	19.9°	20.3°
149	47.5	20.6°	19°	19.9°	20.3°
149	75	20.6°	19°	—	16.9°
167	75	20.6°	18.3°	—	16.9°
185	96	20.6°	17.7°	—	13.2°

OVERHANG LIMITS FOR PIVOTING BODIES AND CONCENTRATED AF LOADINGS

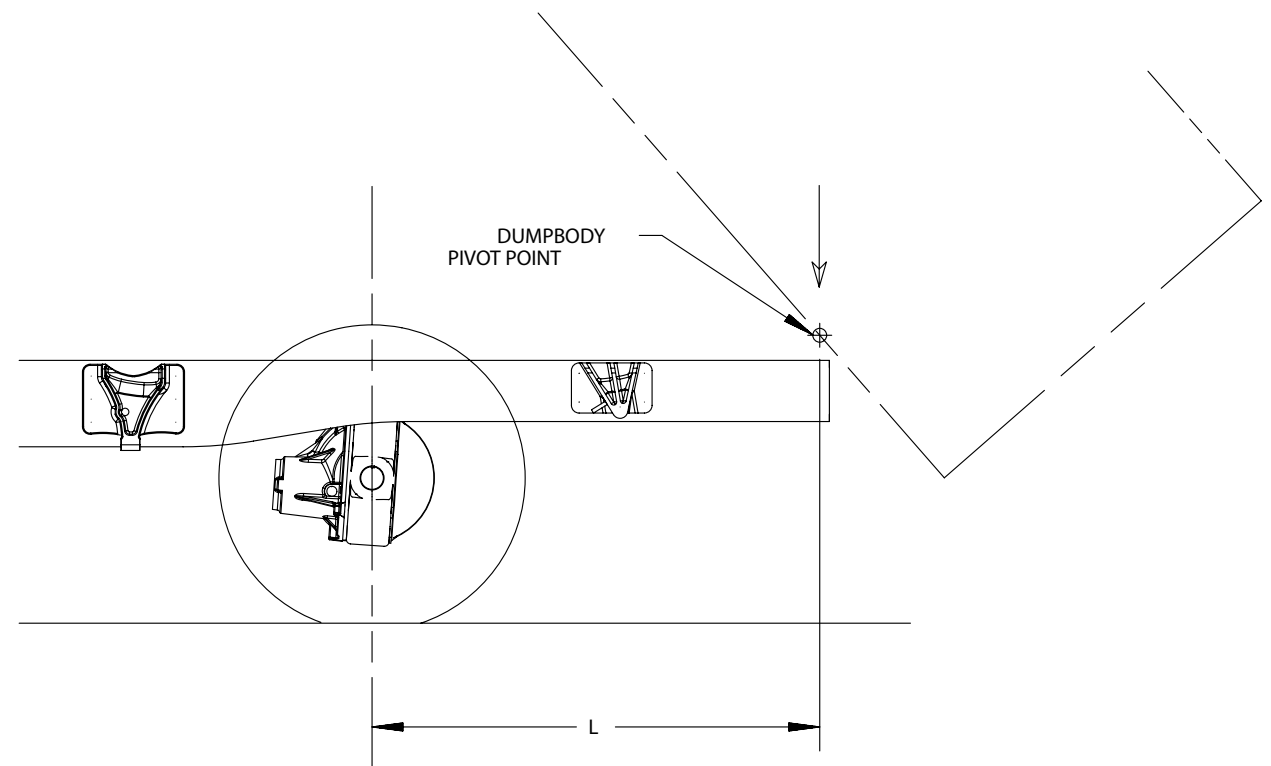
Dump, car carriers, and other pivoting bodies impose a great deal of stress on the frame rails around and aft of the rear suspension area of the frame. In addition, concentrated loads can be applied by the installation and use of equipment such as lift gates, or the placement of heavy objects on a small section of the body. The body installer has the responsibility for determining the magnitude of the pivot pin load or other forces exerted by the body, and for establishing operating guidelines to avoid exceeding the load limits published in the chart.

The limits shown in this chart are for equal loading on both sidemembers, i.e. the center of gravity of the raised body is ideally centered and the chassis is on solid, level ground. If the center of gravity is laterally offset due either to uneven loading, uneven ground, or both, the bending moment on one of the rails could increase substantially. For this reason the body installer should derate the overhang limits to account for the lateral shift if either of these factors apply.

These limits apply specifically to concentrated or pivoting loads supported only by the bare chassis, and do not factor in the load support provided by any part of the installed body structure. Any load exceeding these limits must be wholly supported by the installed body structure.

Static loading refers to the application of loads without shocks to the chassis or significant dynamic accelerations applied to the chassis. Dynamic loading refers to all loading conditions during which the chassis must absorb a shock, stop a load in motion, or support a load during movement of the vehicle. Examples of dynamic loadings would be dumping materials from a dump body, driving the vehicle over uneven surfaces with AF loads, or even operating a loaded liftgate.

Because most operations involve dynamic loadings of some kind, the load limits in column "P" should never be exceeded. The load limits in column "D" should be exceeded only when the excess load is supported by rail reinforcement or by the body structure.



P (LBS.)	D (LBS.)	OVERHANG LIMIT, "L" (IN.)
Max. static vertical load (1) both rails combined	Max. dynamic vertical load (2) both rails combined	Nominal yield strength - 50,000 PSI
3825	850	96
4950	1100	64
6525	1450	48
9225	2050	32
Maximum (3)	3500	16
Maximum (3)	8900	0

- (1) Maximum static vertical load defined as maximum load which can be applied in steady state condition without exceeding yield strength of rails.
- (2) Maximum dynamic vertical load defined as maximum load which can be applied during equipment operation to provide adequate margin for shocks and accelerations
- (3) Maximum load limited by rear GAWR and vehicle GVWR rather than frame stresses