Kenworth

T170 / T270 / T370 and Hybrid

2011 Body Builders Manual

KENWORTH®

A PACCAR COMPANY

SAFETY SIGNALS

There are a number of alerting messages in this book. Please read and follow them. They are there for your protection and information. These alerting messages can help you avoid injury to yourself or others and help prevent costly damage to the vehicle.

Key symbols and “signal words” are used to indicate what kind of message is going to follow. Pay special attention to comments prefaced by “WARNING”, “CAUTION”, and “NOTE.” Please do not ignore any of these alerts.

Warnings, Cautions, and Notes

When you see this word and symbol, the message that follows is especially vital. It signals a potentially hazardous situation which, if not avoided, could result in death or serious injury. This message will tell you what the hazard is, what can happen if you do not heed the warning, and how to avoid it.

WARNING

Example:
WARNING! Be sure to use a circuit breaker designed to meet liftgate amperage requirements. An incorrectly specified circuit breaker could result in an electrical overload or fire situation. Follow the liftgate installation instructions and use a circuit breaker with the recommended capacity.

CAUTION

Signals a potentially hazardous situation which, if not avoided, could result in minor or moderate injury or damage to the vehicle.

Example:
CAUTION: Never use a torch to make a hole in the rail. Use the appropriate drill bit.

NOTE

Provides general information: for example, the note could warn you about how to avoid damaging your vehicle or how to drive the vehicle more efficiently.

Example:
Note: Be sure to provide maintenance access to the battery box and fuel tank fill neck.

Signals the location of a high voltage electrical components

Example:
HAZARDOUS VOLTAGE: To reduce the risk of possible serious injury (Shock, Burn or Death): Components marked with High Voltage should be avoided. Service must be performed by qualified personnel only.

Please take the time to read these messages when you see them, and remember:

WARNING!
Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION:
Signals a potentially hazardous situation which, if not avoided, could result in minor injury or damage to the vehicle.

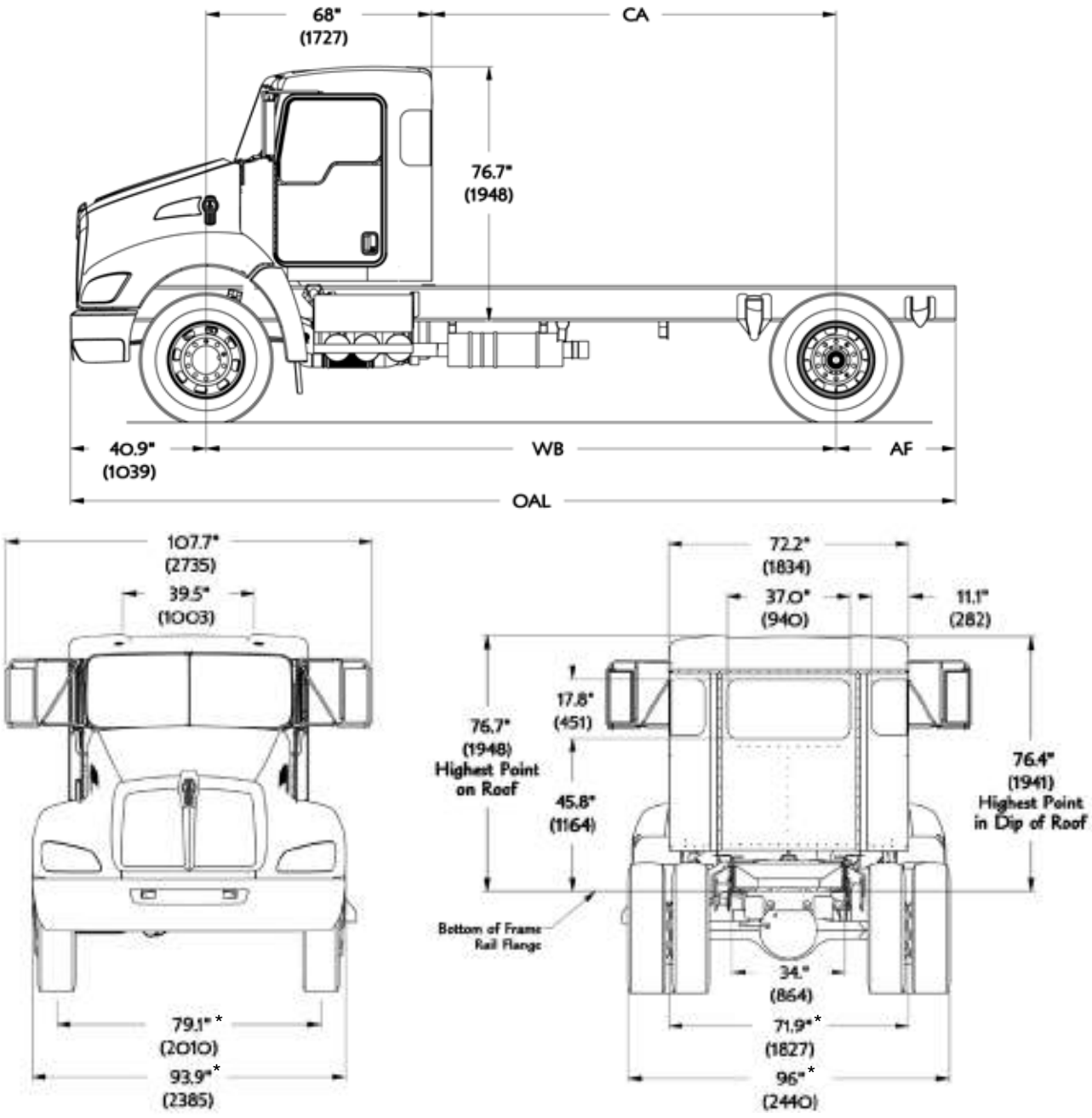
NOTE:
Useful information that is related to the topic being discussed.

OVERALL DIMENSIONS

This section includes drawings and charts of the following medium duty models: T170, T270 and T370.

On the pages that follow, detail drawings show particular views of each vehicle with dimensions being in inches and (mm). They illustrate important measurements critical to designing bodies of all types. See the “Table of Contents” at the beginning of the manual to locate the drawing that you need.

Kenworth also offers .dxf files and frame layouts of ordered chassis four weeks prior to build. Please speak to your sales person to request this feature when specifying your chassis.

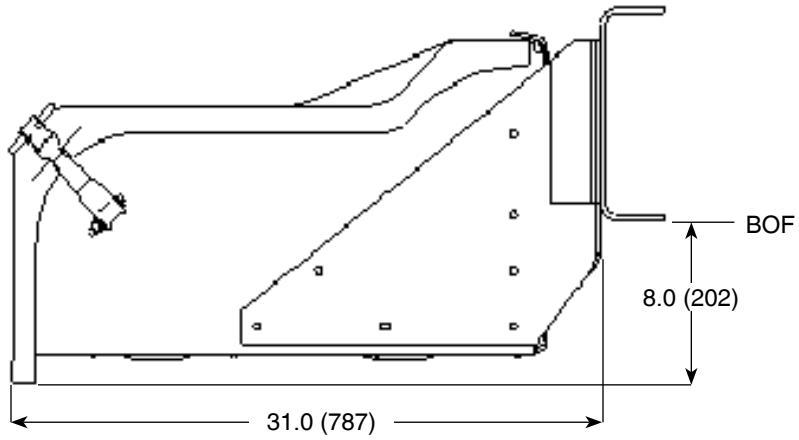


* Dimensions are typical. Measurements will vary with axle, brake drum, tires and wheel selections

FIGURE 3-2. T170/T270/T370 Overall Height, and Length Dimensions [inches (mm)]

Battery Box – T270/370

Cantilever Battery Box Back of Cab.

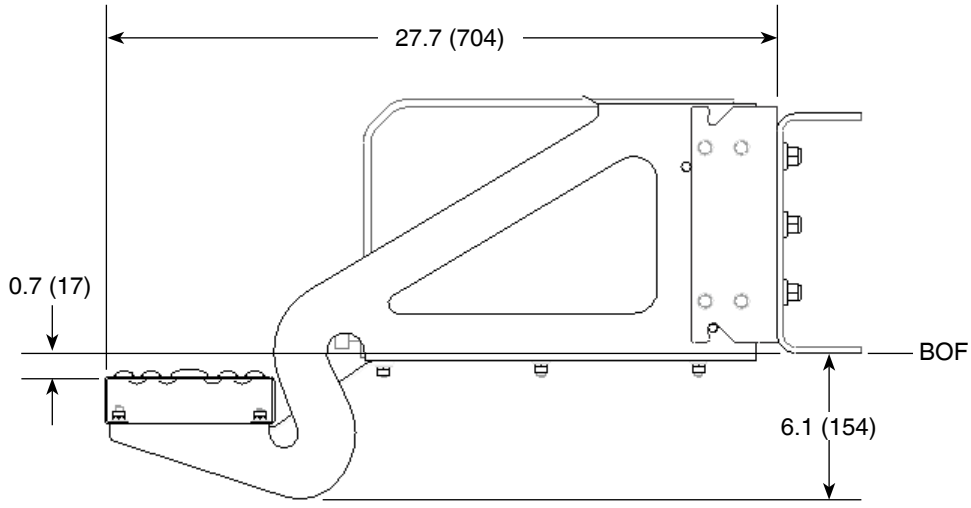


Rear View

FIGURE 3-14. T270/370 Battery Box Measurements [inches (mm)]

Battery/Access Step – T170

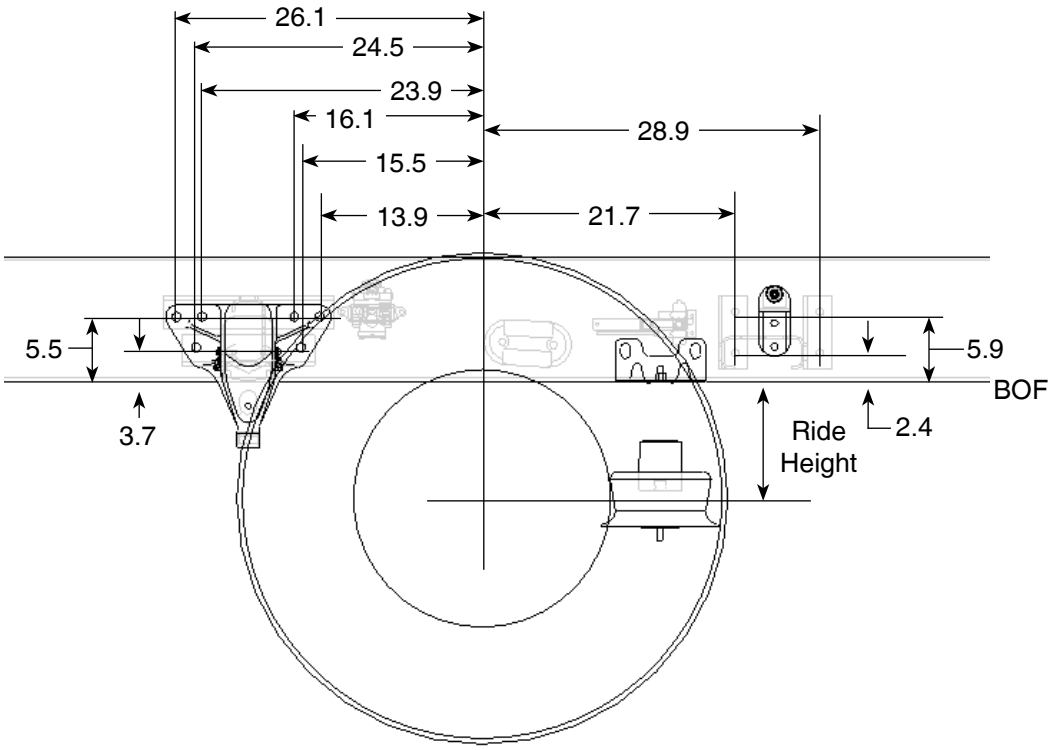
Parallel Battery Box LH Under Cab or Cab Access RH under Cab.



Rear View – Battery Box LH under shown, Cab Access Step RH under is opposite.

FIGURE 3-15. T170 Battery Box/Cab Access Step Measurements [inches (mm)]

HENDRICKSON HAS SINGLE REAR AXLE



Optional Hendrickson HAS Single Suspensions

TABLE 3-18. Rear Suspension Options

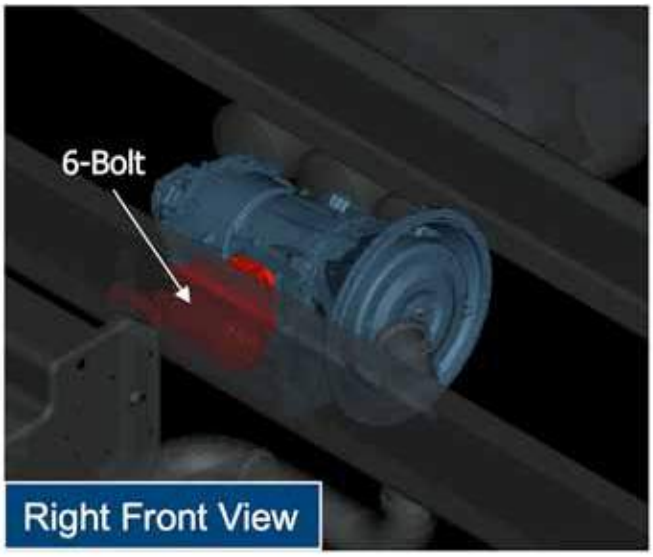
Suspension Type	Rating	Axle Spacing	Laden Ride Height	Unladen Ride Height
Hendrickson HAS 210L	21K	-	7.8”	7.8”
Hendrickson HAL 230L	26K	-	7.8”	7.8”

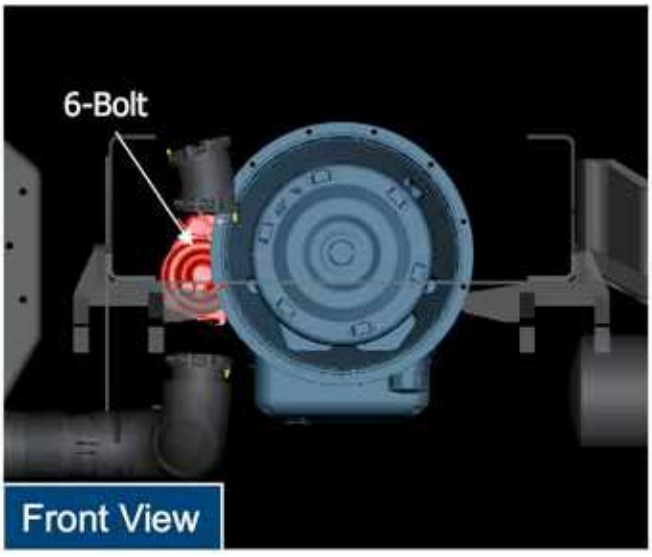
PTO CLEARANCES

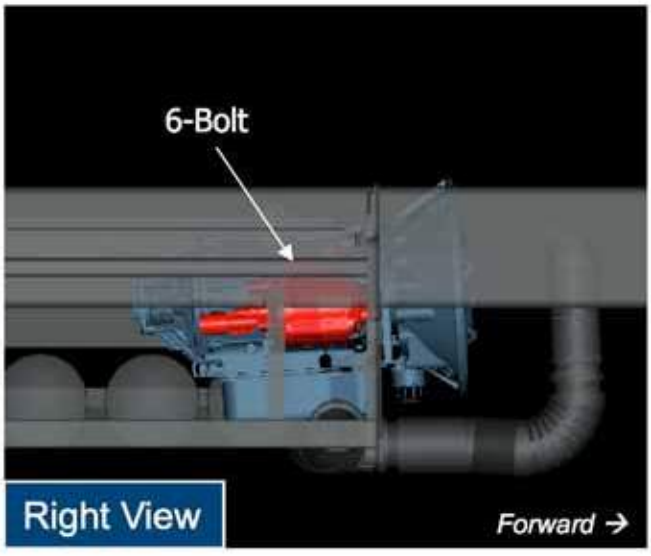
The following visuals are provided to help aid in determining PTO locations and clearances. For specific dimensions please work through your local Kenworth dealer. Multiple PTO's are shown for layout purposes only. Power equipment, i.e., drive shafts & power pumps are not included. Body builders should select the appropriate PTO for their application and customer requirements. NOTE: Installations depict multiple PTOs. PTO locations shown below are for reference only. Some PTOs may interfere with frame rail and/or other components.

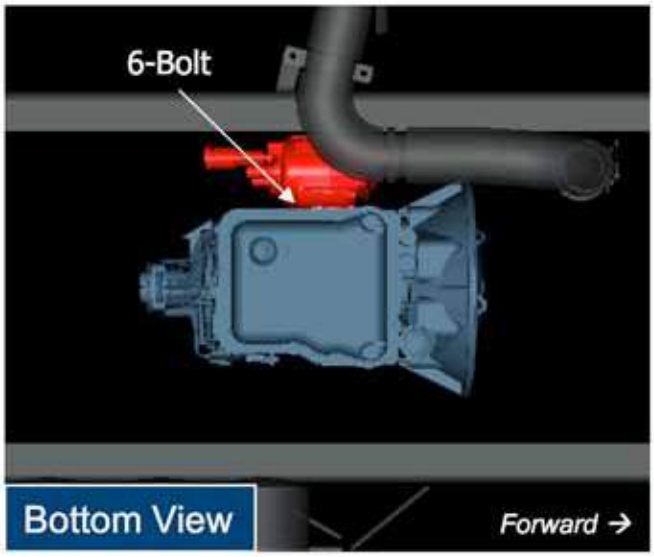
In order to ensure the PTO area remains clear of air equipment, electrical and emissions equipment, Kenworth recommends always ordering PTO controls, even when installing the PTO aftermarket. Kenworth does offer a variety of factory installed PTOs. Contact your local dealer for assistance.

Automatic Transmission – Allison 2000:









Routing to the Dosing Module (Injector)

It is important for the function of the dosing module to ensure that the dosing module is not routed downstream of DEF lines or components. If this is unavoidable (for example on RH under exhaust systems) or Horizontal (Series) Exhaust a routing trap must be installed. A minimum of 12” of line length must be routed below the dosing module, in order to catch any leftover DEF when system is purged.

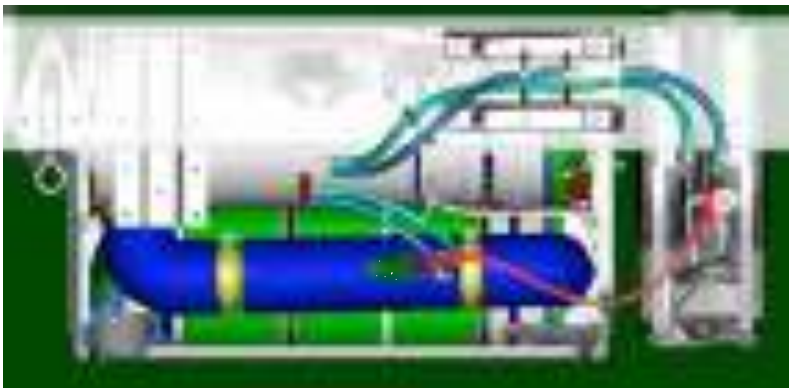


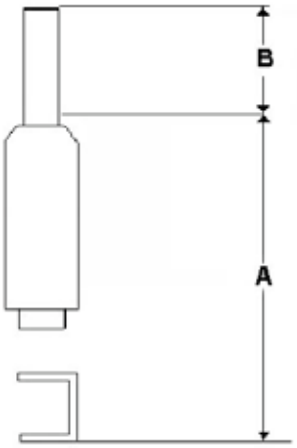
FIGURE 4-8: Routing DEF Lines and DEF Trap

EXHAUST INFORMATION

This section includes information on how to calculate tailpipe heights, and reference information for PTO clearance. Optional equipment is not shown.

Tailpipe Stack Height Calculation

TABLE 4-1. Stack Height



Dimension A	
DPF mounted independent back of cab	76.5”
Tailpipes side of cab mount, DPF RH under Tailpipes back of cab mount, DPF RH under	68.0”
DIMENSION “B” IS THE TAILPIPE LENGTH.	

TABLE 4-2. Unladen Stack Height

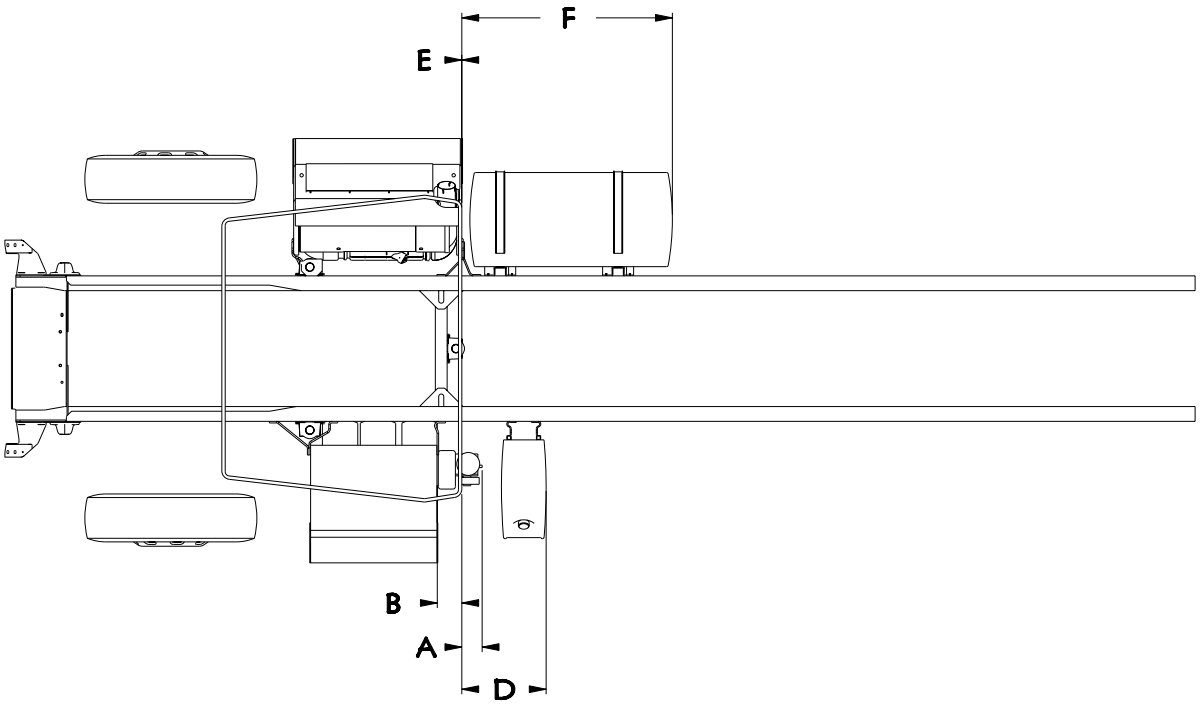
For approximate unladen stack height (12,000 pound springs) use the following frame heights:

Tire Size	Top of Rail	Ft. Suspension
11R24.5	43.5”	12K
11R22.5	42.5”	12K
285/75R24.5	42”	12K
295/75R22.5	41.5”	12K
425/65R22.5	43.2”	20K
385/65R22.5	42.4”	20K

*Use Prospector frame heights for more accurate results.

Sample: Tailpipe height 13’6”	=	Desired overall stack height	=	162.0”
	(–)	Prospector frame height	(–)	43.5”
	(+)	Frame rail depth	(+)	10.6”
	(–)	Dimension ‘A’ from chart	(–)	68.6”
	=	Tail pipe length	=	60.5”

D1



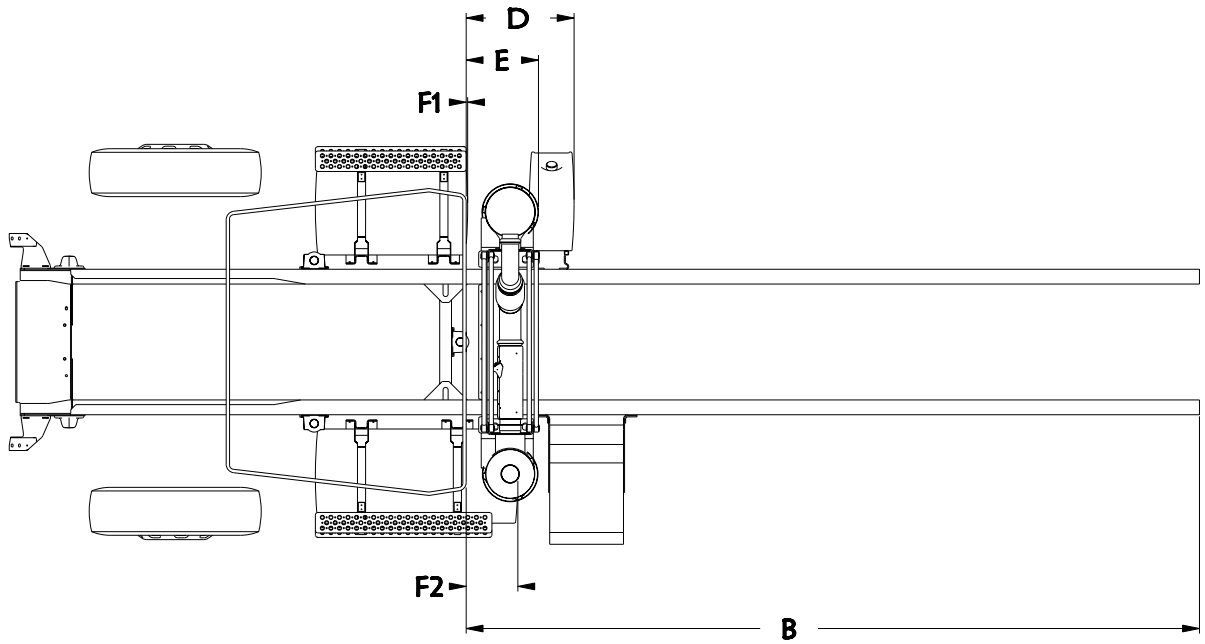
Dimension E (BOC to DPF/SCR) = 0.0in
Dimension A (BOC to Air Dryer) = 7.7in
Dimension B (BOC to Battery Box) = -5.4in

TABLE 5-4.

Fuel Tank Size		Fuel Tank Length (in)	Dimension F BOC to Fuel Tank, (in)	Dimension D BOC to DEF Tank (in)*		
				DEF Tank Size		
Diameter	Gallons			Small	Medium	Rectangular
22” Diameter Tank	56	35.6	37.5	19.7	29.5	N/A
	75	47.3	49.2			
	100	62.2	64.1			
Rectangular Tank	45	28.0	29.9	N/A	N/A	17

*The DEF tank is moved forward approximately 8.3” with a frame rail mounted air dryer.

D11

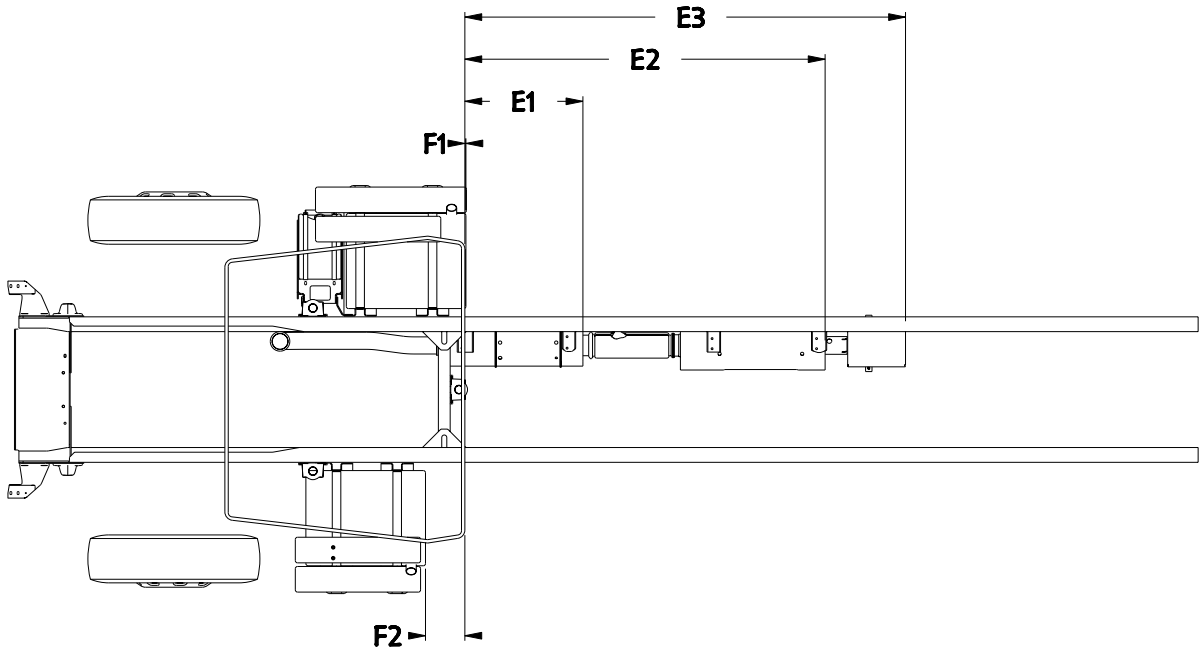


Dimension E (BOC to DPF/SCR) = 16.8in

TABLE 5-9.

Fuel Tank Size		Fuel Tank Length (in)	Dimension F1 BOC to RH Fuel Tank, (in)	Dimension F2 BOC to LH Fuel Tank, (in)	Dimension B BOC to Battery Box, (in)	Dimension D BOC to DEF Tank (in)	
						DEF Tank Size	
Diameter	Gallons					Small	Medium
22" Diameter Tank	56	35.6	0.4	0.4	32.8	30.7	40.5
	75	47.3	N/A	12.1	32.8	N/A	N/A
	100	62.2	N/A	27.0	47.4	N/A	N/A
	120	74.3	N/A	39.1	59.8	N/A	N/A
24.5" Diameter Tank	56	28.1	-11.0	-11.0	32.8	0.4	N/A

D21



Dimension E1 (BOC to DPF) = 27.2in
Dimension E2 (BOC to SCR) = 83.8in
Dimension E3 (BOC to Diffuser) = 103.0in
Dimension F1 (BOC to RH Fuel Tank) = 0.2in
Dimension F2 (BOC to LH Fuel Tank) = -6.4in

This configuration is only available with a Rectangular Fuel Tank and Small DEF Tank.

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FRAME MODIFICATIONS

Introduction

The T170/T270/T370 offers multiple wheelbase configurations from the factory. So, in most cases frame modifications to produce a particular wheelbase should not be necessary.

However, some installations may require slight modifications, while other installations will require extensive modifications. For example an existing dealer stock chassis may need to have the wheelbase changed to better fit a customer's application. The modifications may be as simple as shortening or lengthening the frame cutoff, or they may be as complex as changing the wheelbase.

DRILLING RAILS

Location and Hole Pattern

If holes need to be drilled to attach anything to the rail, see SECTION 6 "BODY MOUNTING" for more information. Follow the general spacing and hole location guidelines on Page 6–4, Figure 6–7.

WARNING: **When mounting a body to the chassis, DO NOT drill holes in the upper or lower flange of the frame rail. If the frame rail flanges are modified or damaged, the rail could fail prematurely and cause an accident. Mount the body using body mounting brackets or U–bolts.**

WARNING: **Do not drill new holes any closer than 2 inches (50 mm) to existing holes. Frame drilling affects the strength of the rails and if not done properly can cause the frame rails to fail and cause an accident.**

CAUTION: **An appropriately sized bolt and nut must be installed and torqued properly in all unused frame holes. Failure to do so could result in frame crack initiation around the hole.**

CAUTION: **Use care when drilling the frame web so the wires and air lines routed inside the rail are not damaged. Failure to do so could lead to equipment damage and cause an inoperable electrical or air system circuit.**

CAUTION: **Never use a torch to make holes in the rail. Use the appropriate diameter drill bit. Heat from a torch will affect the material properties of the frame rail and could result in frame rail cracks.**

CAUTION: **Hole diameter should not exceed the bolt diameter by more than .060 inches (1.5 mm). Oversized holes could result in excessive frame wear around the hole.**

Hole pattern dimensions for crossmember designs are illustrated in Page 6–5, Figure 6–8.

Hole diameter should not exceed the bolt diameter by more than .060 inches (1.5 mm).

Data Bus Communication

The multiplexed instrumentation system uses several different data links to transmit input/output data from other systems to the Cab Electronic Control Unit (CECU), and ultimately to the Central Instrument Cluster and CVSG Gauges. See Figure 8-4, Multiplexed Instrumentation Block Diagram on page 8-3.

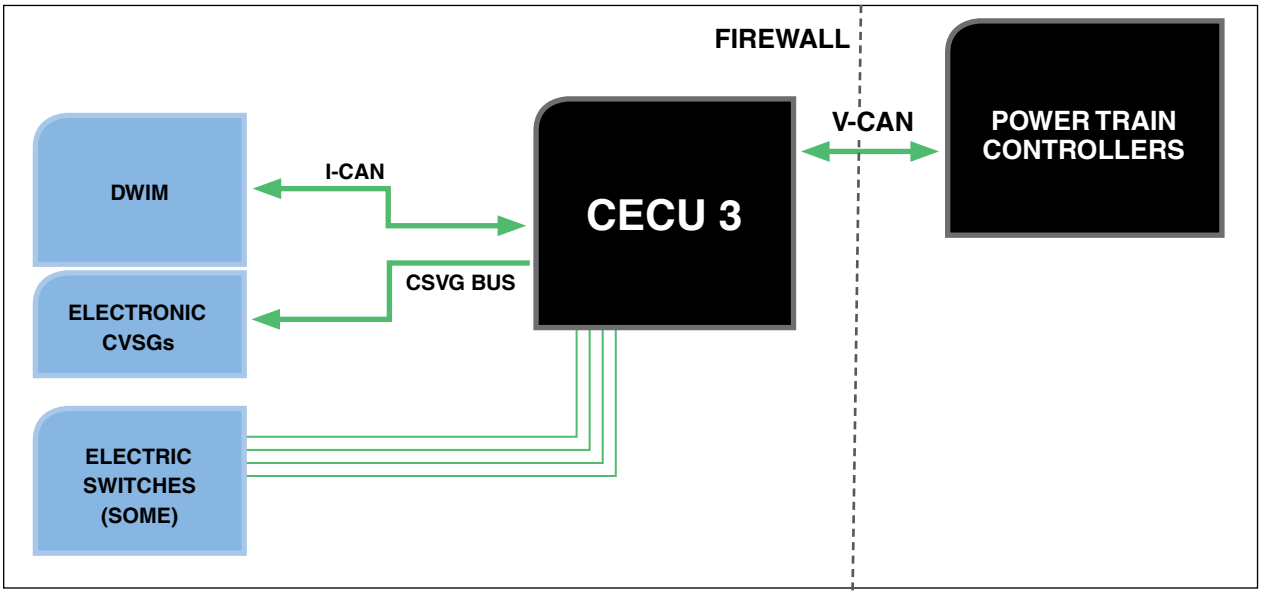
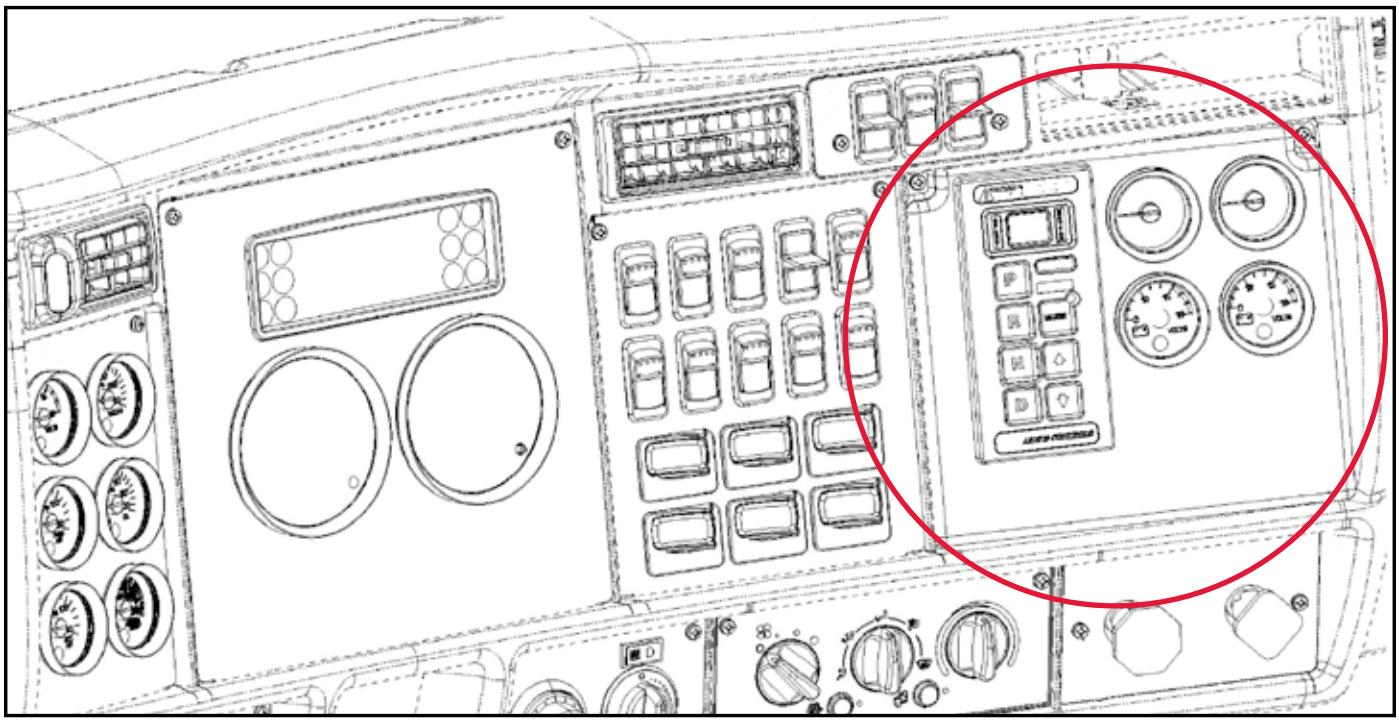


FIGURE 8-4. Multiplexed Instrumentation Block Diagram.

- V-CAN = Vehicle Controller Area Network
  The V-CAN, also referred to as the J1939, is used to transmit data between the transmission, ABS system, engine, etc. to the Cab Electronic Control Unit (CECU).
- I-CAN = Instrumentation Controller Area Network
  The I-CAN provides data link communication from the Cab Electronic Control Unit (CECU) to the Central Instrument Cluster.
- CVSG Bus
  The CVSG bus is a private data bus used to transmit data from the Cab Electronic Control Unit (CECU) to the individual 2-inch gauges. A series of “daisy chained” jumper harnesses link each gauge to another.

6. The fuse box is located behind the far right panel.



7. To access the fuse box remove the face plate as described in the previous steps. Push in the two side tabs and flip the cover open.

ADDITIONAL SPARE CIRCUITS

If you just need spare power, wire into one of the spare circuits we provide.

WARNING!

Do not install an electrical circuit that requires more amperage (electrical capacity) than what is available in the specific chassis circuit. An overloaded circuit could cause a fire.

Compare the amperage requirements of the new circuit to the electrical current capacity of the existing chassis circuit before adding the body or other equipment.

When adding an electrical circuit, you must know the current capacity (amperes) of each circuit.

The capacity of the existing system in the chassis must be enough to power the additional circuit. The new circuit will require a certain amount of power to operate; so, the existing (battery or alternator) power source must have the capacity to provide additional power or the new circuit will not function properly.

Check the current (ampere) demand of the circuit to be added. Compare it to the current capacity of the circuit you are connecting into. The current carrying capacity of the wires, controls, switches, and circuit breakers that provide current to the circuit must be equal to or greater than the demand of the added circuit otherwise these components may not work properly. See Table 8-7 for relevant circuit information.

Additional Spare Circuits for Wiring

Depending on options ordered for the truck, there may be up to five spare circuits with labeled connectors available in the dash harness. See Table 8-7 for circuit information, circuit CAPACITY, connector breakout locations and location to install fuses in fuse panel. For unused spare circuits, since these are separate circuits; you will not affect existing circuits in the chassis by connecting to them.

They include:

- 3 spare battery circuits
- 2 spare ignition circuits

Note:

Some spare circuits may be used with factory installed options. For specific chassis questions please work with your Kenworth Dealer.

TABLE 8-7. Additional Spare Circuits for Wiring.

Spare Circuit Powered Through	Label on Connector	Minimum Wire Gauge	Dash Harness Connector Behind Dash Panel 4			
			Circuit	Wire Color	Capacity (Amperes). Install a fuse of appropriate rating	Numbered Location on fuse panel behind dash
Ignition	Spare IGN 1; 15 amps	14	ORN1221-0	Orange	15	F81
Ignition	Spare IGN 2; 15 amps	14	ORN1222-0	Orange	15	F80
Battery	Spare Batt 1; 15 amps	14	RED1211-0	Red	15	F49
Battery	Spare Batt 2; 15 amps	14	RED1212-0	Red	15	F50
Battery	Spare Batt 3; 20 amps	12	RED1213-0	Red	20	F29

270 AMP ALTERNATOR (RECOMMENDED HOOKUP)

FIGURE 8-27: P27-6180 Fuse Holder.

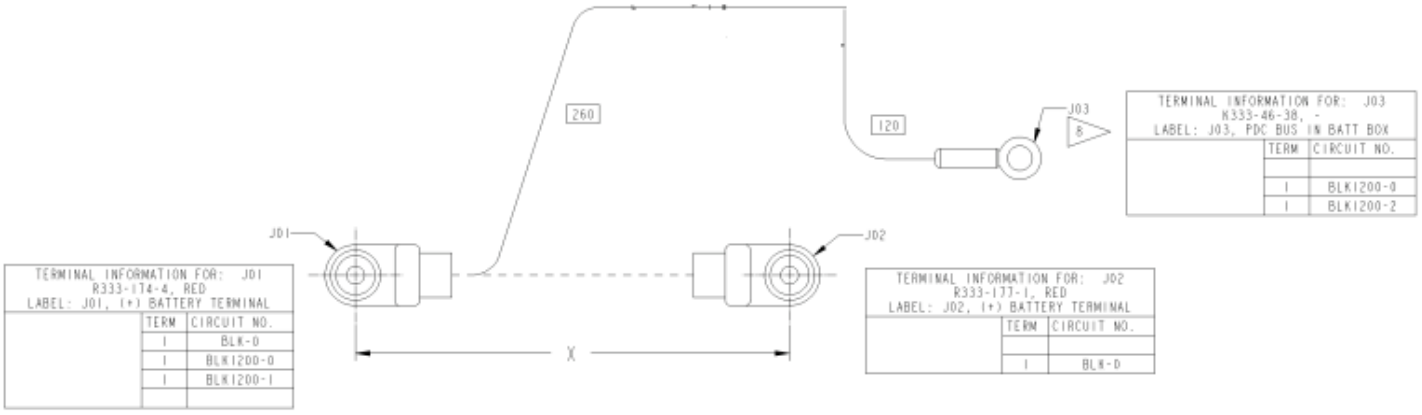


FIGURE 8-28: Battery Harness Jumper, Part No. P92-2683-100000.

- Use three batteries
- Use P27-6180-150 Mega Fuse (Mount in Battery Box to provide Body Power).
- Use P92-2683-10000 to provide power from batteries to Mega Fuse.
- Tie Body Ground circuits to additional ground stud located on the lower outboard (driver side) of firewall at cover plate.

Engine Connections

Electronic engines have the ability to send and receive control and warning signals from the components on the chassis and body. Consult the appropriate body builder manual before making connections to the engine electronic control unit (ECU) or to other electronic engine components.