

BODY BUILDER INSTRUCTIONS

Mack Trucks



Chassis, Body Installation
PI / CHU, AN / CXU, GR / GU, TD
LR, TE / MRU
Section 7

Introduction

This information provides specifications for chassis body installation for MACK vehicles.

Note: We have attempted to cover as much information as possible. However, this information does not cover all the unique variations that a vehicle chassis may present. Note that illustrations are typical but may not reflect all the variations of assembly.

All data provided is based on information that was current at time of release. However, **this information is subject to change without notice.**

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Chassis

Body Mounting

Body Mounting Considerations



CAUTION

The addition of a body to a vehicle frame must not adversely affect the safe operation and handling characteristics of the vehicle.

When mounting a body to a particular type of chassis, the following design considerations must be considered for each type of chassis:

- Accessibility to the various critical locations, including lubrication (grease) points and fuel tank.
- Ease of removal of the various powertrain and suspension components.
- Allow for rear wheel maximum spring movement.
- Ensure proper ventilation and subsequent cooling of brake drums, and the battery within the battery box.
- Do not block, or partially cover the engine air intake or the frontal area of the cab/hood in a way that would block the flow of air through the radiator grille opening. Maintain clear access and free flow of air to these areas (while the vehicle is moving).
- Free movement and safe operation throughout the range of movement for all moving parts of the frame (i.e., springs, drivshafts, etc.) must be maintained.
- Maintain proper load distribution between the right- and left-hand sides of the vehicle.
- The body installation must not cause excessive frame rail deflection. Contact MACK Trucks, Inc. Customer Service for assistance in obtaining approval for an installation on a specific chassis. Be prepared to supply detailed information concerning intended weight distribution of the completed vehicle.
- Body attachment fasteners must be tightened gradually in progressive steps, using an alternating pattern.
- To avoid any sudden change of inertia, sectioning of subframes or underframes must decrease progressively toward the chassis front.
- Tank bodies must be mounted on a full-length sub-frame.
- Any body that is mounted to the chassis by U-bolts must have stops at the rear of each frame side member to restrain the body installation and prevent it from exerting undue stress on the U-bolts during a panic stop. These stops will also help to restrain the body if the U-bolts break or loosen.

There should be two stops per frame rail, one mounted at each end of the body.

- If wheel removal is necessary, take the following precautions.
 - 1 Do not paint the wheel bearing surfaces of the hubs. Particularly in the case of hub-piloted wheels, the faces of the hub, flange mounting surfaces of the wheels, and mounting surfaces of the flange nuts must be clean and free of any foreign material or excess paint.
 - 2 Do not paint the wheel nut bearing surfaces, or the surfaces of the wheel nuts themselves.
 - 3 When remounting hub-piloted wheels, anti-seize compound may be applied to the hub pilot pads to prevent corrosion. Apply two drops of oil to the joint between the nut and flange of each flange nut and a small amount of oil to the lead threads of the stud. On stud piloted ball seat disc wheels, the wheel nuts are installed dry.
 - 4 Tighten the wheel nuts, using proper wheel nut tightening procedures.
 - 5 After any operation that requires removal and reinstallation of the wheel assemblies, the wheel nuts must be retightened with an accurately calibrated torque wrench during the first 80161 Km (50,100 miles) of use.

Body-to-Chassis Matching

Properly matching a truck body and/or accessory equipment to a chassis is important to ensure that the completed vehicle will perform as intended without adversely affecting handling characteristics or weight distribution. Typically, 60 – 70% of the body weight should be forward of the centerline of the rear axle(s). This percentage can be adjusted by either moving the center of gravity forward, which places more weight on the front axle, or moving the center of gravity rearward, which places more weight on the rear axle(s). The addition of a body, associated equipment and the payload should never result in the GAWRs and/or GVWR being exceeded.

When choosing a chassis for a body, the following must be considered:

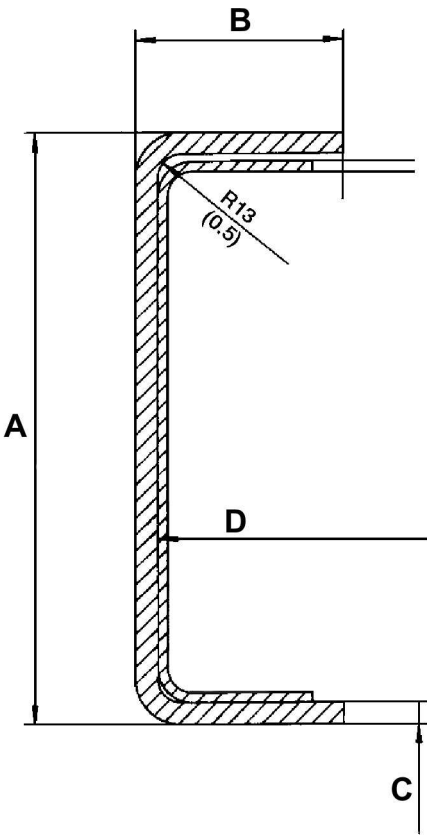
- How much weight can be placed on the front and rear axles (GAWR).
- How much the vehicle can weigh, including the vehicle with full capacities of fuel, oil, coolant, etc., the driver and passenger if applicable, all associated equipment and the body's payload (GVWR).
- Curb or tare weight, or how much the chassis weighs before the body and/or equipment are installed. Tare weight includes the weight of all options, fuel, lubricants and coolants.
- Cab-to-axle (CA). This is the dimension from the back of the cab to the centerline of the rear axle, or the centerline of the rear tandem axle assembly.
- Wheelbase (WB). This is the dimension between the centerline of the front axle and the centerline of the rear axle (or the centerline of the tandem axle assembly). This dimension is important because it affects body installation, vehicle performance and whether a particular axle is overloaded.
- Back-of-cab (BOC). The distance between the back of the cab and the body.
- Body length (BL). This is the dimension from the front to the rear of the body.
- Overall vehicle length state regulated for straight trucks. If in doubt, contact the appropriate State Department of Transportation.

Specifications

Frame Rails

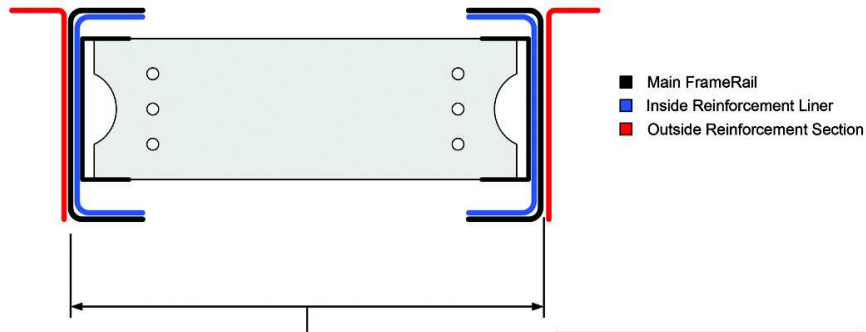
Material	.827.3 MPa (120,000 psi) yield heat treated steel
Distance between rails	
Front	1080 ± 2 mm (outside)
Rear	836, 826 or 816 +2.7/-4.6 mm
Frame rail end taper	27°

Frame Options



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Frame Rail Web	A	266 mm (10.47 in), 300 mm (11.81 in), 337 mm (13.25 in), and 340 mm (13.37 in)
Frame Rail Flange	B	83 mm (3.25 in), 90 mm (3.54 in), and 105 mm (4.13 in)
Frame Rail Thickness	C	6 mm (0.24 in), 7 mm (0.28 in), 8 mm (0.312 in), 9.5 mm (0.375 in), and 11.1 mm (0.437 in)
Frame Inside Channel Thickness	D	5 mm (0.20 in) and 6.4 mm (0.25 in)



Conventional - Vocational

RBM, SECTION MODULUS, AREA, & WEIGHT INFORMATION ARE PER RAIL AND INCLUDE THE COMBINATION OF ALL PERTINENT ELEMENTS

Sales Code	Main RailFrame Section (in)	Inside Reinforcement Liner Section (in)	Outside Reinforcement Section (in)	Main Rail	IC	OC	Section Modulus (in ³)	RBM* (lbs - in)	Area (in ²)	Weight (Lb/in of length)	Outside Frame Width at Rear Axle (in)	Inside Frame Width (in)
274-1025	11.81" x 3.54" x 0.28" †	n/a	n/a	X			15.7	1,880,000	4.94	1.38	33.46	32.91
274-1026	11.81" x 3.54" x 0.32"	w/o	n/a	X			17.7	2,120,000	5.62	1.56	33.54	32.91
		11.10" x 2.93" x 0.20"	n/a	X	X		26.9	3,230,000	8.74	2.45	33.54	32.52
274-1027	11.81" x 3.54" x 0.37"	w/o	w/o	X			20.6	2,470,000	6.62	1.84	33.66	32.91
		10.98" x 2.99" x 0.20"	w/o	X	X		29.8	3,580,000	9.73	2.73	33.66	32.52
		10.98" x 2.99" x 0.20"	12.56" x 3.86" x 0.32"	X	X	X	47.4	5,688,000	15.75	4.41	34.29	32.52
274-1028	11.81" x 3.54" x 0.437"	w/o	n/a	X			23.5	2,820,000	6.62	2.12	33.39	32.52
		10.87" x 3.05" x 0.20"	n/a	X	X		32.7	3,920,000	10.77	3.01	33.39	32.13
274-1029	11.81" x 4.13" x 0.437"	w/o	n/a	X			26.3	3,160,000	8.12	2.27	33.39	32.52
		10.87" x 3.05" x 0.20"	n/a	X	X		35.5	4,260,000	11.28	3.16	33.39	32.13

* RBM based on 120ksi yield strength material

† Available on GU712 and GU812 models only

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Notes

AN / CXU and PI / CHU					
Frame Web/Flange	Frame Rail Thickness				
	6 mm (0.24 in)	7 mm (0.28 in)	8 mm (0.312 in)	9.5 mm (0.375 in)	11.1 mm (0.437 in)
266 mm x 90 mm (10.47 in x 3.54 in)	X	X	X	N/A	N/A
300 mm x 90 mm (11.81 in x 3.54 in)	N/A	N/A	N/A	X	N/A
300 mm x 105 mm (11.81 in x 4.13 in)	N/A	N/A	N/A	N/A	N/A
5 mm (0.20 in) Inside Channel Available	No	No	No	No	No

GR / GU					
Frame Web/Flange	Frame Rail Thickness				
	6 mm (0.24 in)	7 mm (0.28 in)	8 mm (0.312 in)	9.5 mm (0.375 in)	11.1 mm (0.437 in)
300 mm x 90 mm (11.81 in x 3.54 in)	N/A	X	X	X	X
300 mm x 105 mm (11.81 in x 4.13 in)	N/A	N/A	N/A	N/A	X
5 mm (0.20 in) Inside Channel Available	No	No	Yes	Yes	Yes

LR					
Frame Web/Flange	Frame Rail Thickness				
	6 mm (0.24 in)	7 mm (0.28 in)	8 mm (0.312 in)	9.5 mm (0.375 in)	11.1 mm (0.437 in)
340 mm x 83 mm (13.37 in x 3.25 in)	N/A	N/A	N/A	X	N/A
6.4 mm (0.25 in) Inside Channel Available	No	No	No	Yes	No

TE / MRU					
Frame Web/Flange	Frame Rail Thickness				
	6 mm (0.24 in)	7 mm (0.28 in)	8 mm (0.312 in)	9.5 mm (0.375 in)	11.1 mm (0.437 in)
337 mm x 83 mm (13.25 in x 3.25 in)	N/A	N/A	X	N/A	N/A
340 mm x 83 mm (13.37 in x 3.25 in)	N/A	N/A	N/A	X	N/A
6.4 mm (0.25 in) Inside Channel Available	No	No	Yes	Yes	No

Incorrectly sized bolt holes weaken a bolted connection and can lead to a dangerous situation when the bolts are holding heavy weight. The two types of bolt holes are pass-through and tapped. Each has different clearance specifications that determine the strength of the connection. The type of material and connection will determine the type of hole needed to secure the materials with the bolt. Using the wrong type of hole will have an adverse effect on the holding ability of the bolt. The chart below are some examples of the ASME B18.2.8-1999 - "Clearance holes for bolts, screws and studs" standard. Please refer to this standard for additional information.

Fastener Size Standard	Mounting Hole Diameter
3/8 in	13/32 in
7/16 in	15/32 in
1/2 in	9/16 in
5/8 in	11/16 in
3/4 in	13/16 in
7/8 in	15/16 in
1 in	1 3/32 in

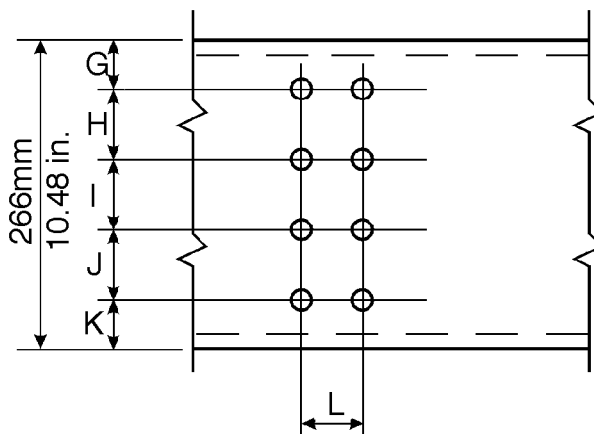
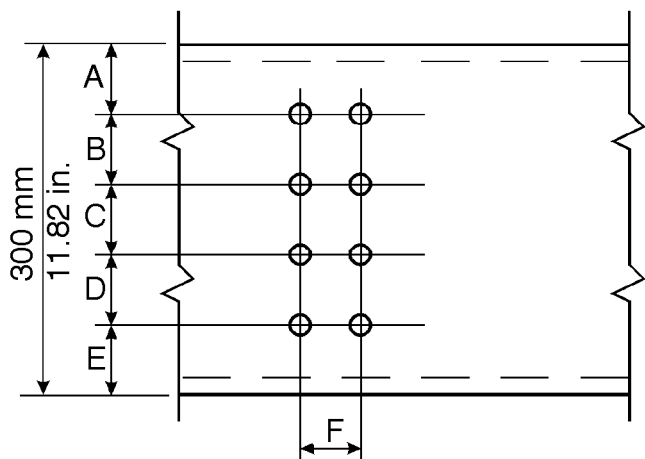
Fastener Size Metric	Mounting Hole Diameter
M14	15.5 mm
M16	17.5 mm
M20	22 mm

Bolt Hole Patterns

Hole spacing rear of the second bend 60 mm (2.26 in.) (vert) x 50 mm (1.97 in.) (horiz)

(applicable only from 1685 mm (65.2 in.) from front edge of the rail and rearward). Some components may occupy non-grid locations.

Note: Hole size for this spacing must be 15.5 mm (0.61 in.) diameter.



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A 60 mm (2.36 in.)
B 60 mm (2.36 in.)
C 60 mm (2.36 in.)
D 60 mm (2.36 in.)
E 60 mm (2.36 in.)
F 50 mm (1.97 in.)

G 43 mm (1.69 in.)
H 60 mm (2.36 in.)
I 60 mm (2.36 in.)
J 60 mm (2.36 in.)
K 43 mm (1.69 in.)
L 50 mm (1.97 in.)

Dimension Calculations Body Length

When selecting a body for an existing chassis, use the following formula to calculate body length:

$$BL = \left[\frac{(GAWR.R - CWR) \cdot WB}{GVWR - CW} - WB + CA - BOC \right] \cdot 2$$

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Formula for Calculating Body Length

Where:

GAWR.R =	Gross axle weight rating of the rear axle
CWR =	Amount of curb weight at the rear of the chassis
WB =	Chassis wheelbase
GVWR =	Gross vehicle weight rating of the chassis
CW =	Curb weight of the chassis
CA =	Dimension between the rear of the cab and the centerline of the rear axle or tandem
BOC =	Distance between the back of the cab and the front of the body

Dimension Calculations Wheelbase

When selecting a chassis for an existing body, use the following formula to calculate the required wheelbase dimension.

$$WB = \left[CA + BOC + \frac{BL}{2} \right] \cdot \left[\frac{GVWR - CW}{GVNR - CWR} \right]$$

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Formula for Calculating Chassis Wheelbase

Where:

WB =	Chassis wheelbase
AB =	Dimension from centerline of front steer axle to back of cab.
BOC =	Back of cab to body clearance
CW =	Chassis curb weight
CWR =	Chassis curb weight at the rear of the chassis
GAWR.R =	Gross axle weight rating of the rear axle

Dimension Calculations Front Axle to Back of Cab

The following formula can be used to calculate the CA (front steer axle centerline to back of cab) dimension for a particular body length.

$$CA = WB + BOC + \frac{BL}{2} - \frac{WB \cdot (GAWR.R - CWR)}{GVWR - CW}$$

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Formula for Calculating CA Dimension

Where:

WB =	Chassis wheelbase
BOC =	Clearance from back of cab to front of body
BL =	Body length
GAWR.R =	Gross axle weight rating of the rear axle
CWR =	Chassis curb weight at the rear of the chassis
GVWR =	Gross vehicle weight rating
CW =	Chassis curb weight
CA =	Dimension between the rear of the cab and the centerline of the rear axle or tandem

Wheelbase Changes



DANGER

Wheelbase changes CANNOT be made to vehicles equipped with the MACK Road Stability Advantage (RSA) system, as doing so will adversely affect performance of the system. Every effort must be made to avoid wheelbase changes on vehicles equipped with the MACK RSA system. If such changes are unavoidable, however, the system must be disabled by having a qualified technician replace the Bendix® Advanced EC-60™ electronic control unit (ECU) (ABS control unit with ESP) with a Bendix® Premium EC-60™ ECU (ABS control unit without ESP®).

Failure to disable the RSA system on a vehicle where a wheelbase change has been made will result in serious vehicle braking and performance issues, including unnecessary system interventions. These interventions could lead to a loss of vehicle control.

In addition to disabling the system, any cab labels, such as WARNING and CAUTION labels relating to the Bendix® ABS-8™ Advanced with ESP® (the basis for the MACK RSA system) located on the sun visor must be removed and notations must be made to the operators manuals so that the vehicle operator has a clear understanding as to which ABS options are installed on the vehicle.

Vehicle wheelbase dimensions may be changed by moving the rear axle and suspension assembly to the new, desired location on the frame. When the axle assembly is moved, the suspension should be remounted to the frame, using as many existing drillings in the frame as possible. The number of new drillings in the frame rails should be limited. All unused drilled holes in the frame must be filled with a proper size bolt, nut and hardened washers. Tighten the hardware to proper specifications.

Wheelbase Changes and Driveshaft Length

Wheelbase changes affect driveshaft length, driveline angularity and size requirements. To avoid potential vibration problems and failures, the driveline for the new wheelbase dimension must maintain the correct driveshaft angle, size and length.

Wheelbase Changes and ABS/ATC Systems

An important factor in maintaining MVSS 121 complying brake timing is keeping the brake valves in the same relative position to the rear axle brake assemblies. Particularly with ABS/ATC chassis, the ABS/ATC components (modulator valve) for the rear axle must be moved to correspond with the increase or decrease in wheelbase length. The relationship between the rear axle and the modulator valve must be kept the same. Additionally, the service brake relay valve must be moved to maintain the same distance between the modulator valve and the relay valve.

Do not cut and splice harnesses for the ABS/ATC speed sensors and modulator valves to compensate for changes in chassis wheelbase. Extension harnesses are available in 2, 4 and 6 foot lengths. Contact a MACK dealer, service dealer or parts dealer for necessary extension harness part numbers.

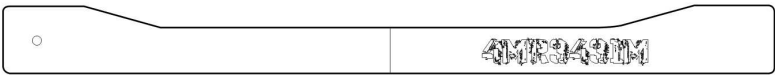
Wheelbase Changes and Steering Geometry

Changes to vehicle wheelbase will affect steering geometry (specifically, Ackerman angle), and may require a different cross-steering lever and cross-steering tube. For additional information, contact MACK Trucks, Inc. Product Support.

Wheelbase Changes on MACK Model Chassis Equipped with 105 mm (4.13 in) Frame Flanges

On models equipped with frame rails having 105 mm (4.13 in) flanges, the lower frame flange may have a relief cutout to provide clearance for the suspension trunnion, or for the transverse torque rod bracket. When changing wheelbase on one of these chassis, it will be necessary to cut a new relief in the frame flange to accommodate a new location of the trunnion and/or transverse torque rod bracket.

To ensure a dimensionally correct relief cutout, templates are available through the MACK Parts System. Three of the templates are unique to the specific rear suspension model, and one template is for the transverse torque rod relief cutout.



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Relief Cutout Template

Part numbers for the different templates are as follows:

Part No	Application
20952447	Transverse torque rod relief cutout template
20952448	MACK SS44/36 trunnion relief cutout template
20952449	Raydan SL460/AL520 relief cutout template
20952450	MACK SS52 trunnion relief cutout template

When cutting the frame flange, a plasma cutter with a tracing tip must be used. The template will be used to guide the tracing tip.

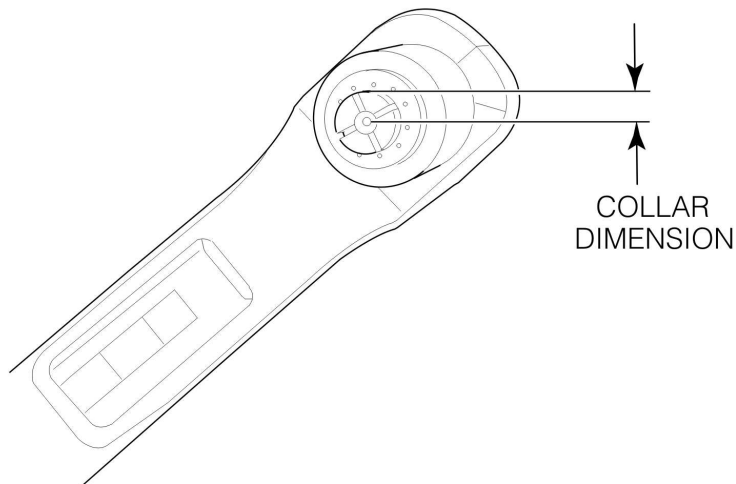


CAUTION

A plasma cutter with a tracing tip is the only approved method for cutting the frame flange. Using a standard acetylene torch or some other means of mechanically cutting the frame (such as a Sawzall) can result in an unfavorable cut edge and may lead to premature frame failure.

Procedures for cutting the frame using the relief cutout template are as follows:

- 1 Mark the location on the lower frame flange which corresponds to the new centerline of the suspension or transverse torque rod mounting bracket location.
- 2 Align the centerline marking on the template with the centerline marked on the frame rail, and position the template with the flat edges at each end of the template flush with the edge of the frame.
- 3 While holding the template in place, scribe a line along the template to mark the location where the cut will be made on the frame flange
- 4 Measure the thickness of the tracing tip collar. This dimension will be used to position the template on the frame rail so that the relief cut will be made at the correct location.

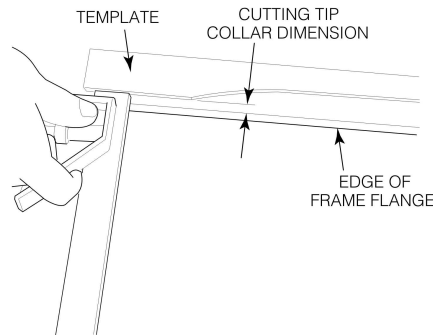


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Measuring Tracing Tip Collar

- 5 Move the template back from the edge of the flange (toward the web) a distance equal to the thickness of the tracing tip collar. This will properly locate the template so that the tracing tip will cut along the line scribed on the flange.

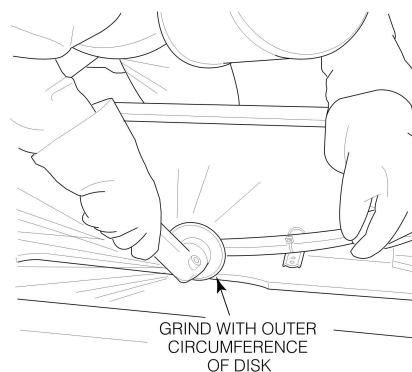


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Locating Template

- 6 Clamp the template in place, and then ensure that the template is properly positioned so that the tracing tip will cut along the line that was previously marked on the flange.
- 7 With the template securely clamped in place, use the plasma cutter to make the cut by carefully moving the tracing tip along the edge of the template.
- 8 After completing the cut, remove the slag from the edge of the flange.
- 9 Using either a belt or disk sander, grind the cut edge smooth. When performing the grinding operation, avoid creating vertical marks in the cut edge. A belt sander is preferred, and it should be held against the frame edge so that the direction of belt travel is on the horizontal plane of the frame. Holding the sander with the direction of belt travel perpendicular to the frame will create vertical marks on the cut edge.
- If a disk sander is used, hold the sander so that only the outer circumference of the disk is in contact with the cut edge as shown below. Vertical marks will be created if the contact area between the sanding disk and the cut edge is too close to the center of the disk.



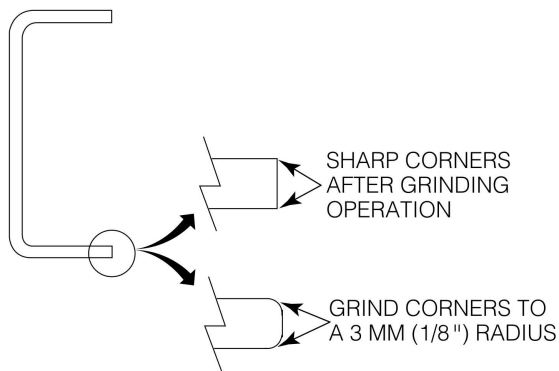
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Grinding Cut Edge with a Disk Sander

Note: DO NOT leave any sharp or jagged edges in the cut area of the frame flange, or in the radius area of the cut where the relief transitions to the original flange width.

- 10 After the cut edge has been ground smooth, dress the cut by grinding the square edges of the cut (both on the top and bottom) to a radius. This eliminates any stress risers that would eventually lead to frame cracks.



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Dress Sharp Corners of Cut Edge

- 11 Paint the exposed bare metal on the cut edge.

Subframes

Subframe Design



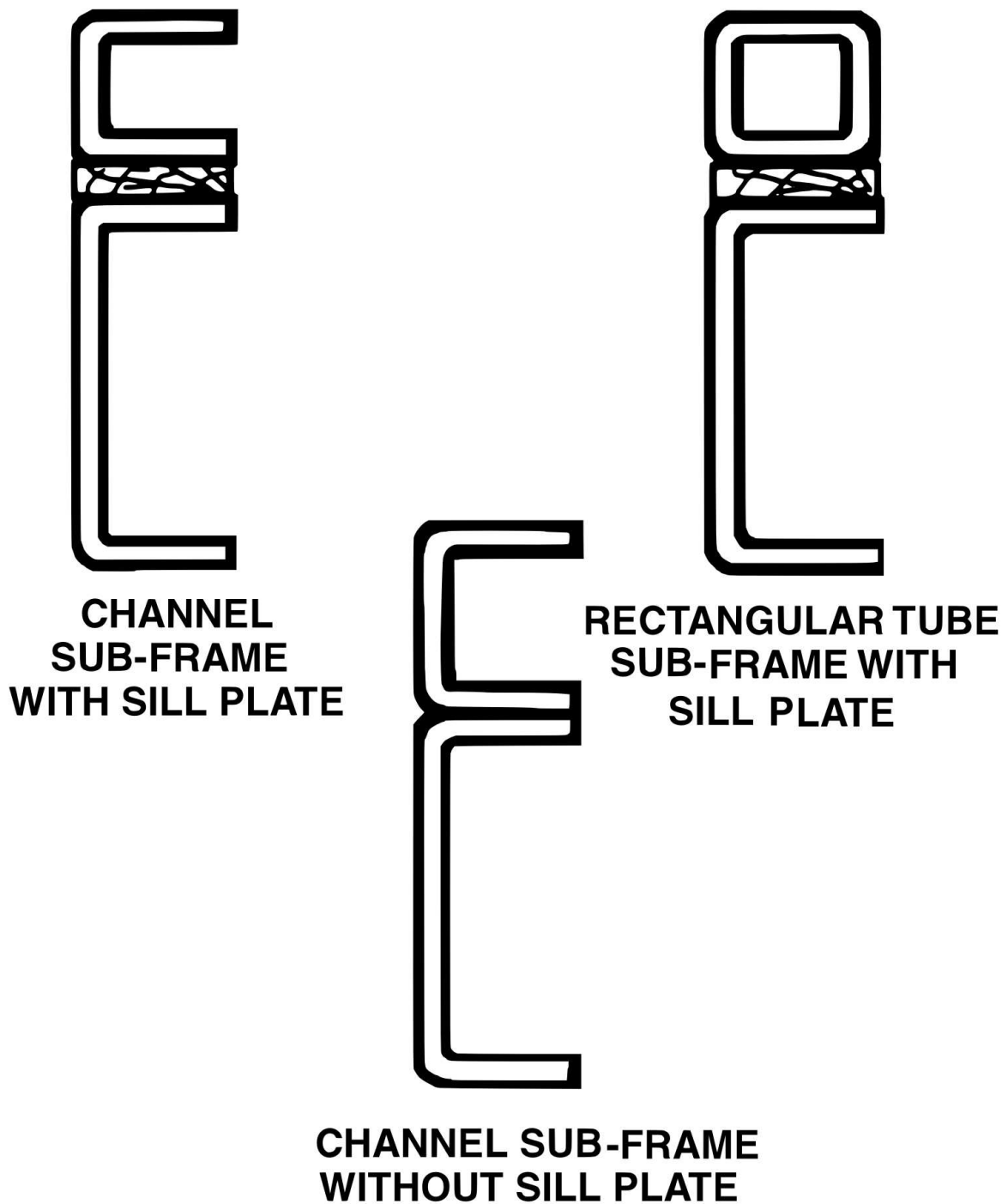
CAUTION

Do NOT mount bodies directly to the chassis side members by drilling the frame flanges because this weakens the frame and may result in frame failure.

The body must be secured to the chassis frame so that both static and dynamic stresses are transmitted without causing excessive localized stress which could result in frame damage, or affect road handling of the vehicle.

The body unit must be mounted to the chassis frame using a subframe assembly. The illustration below shows some typical subframe design cross sections.

The body unit must be mounted to the chassis frame using a subframe assembly. The illustration below shows some typical subframe design cross sections.



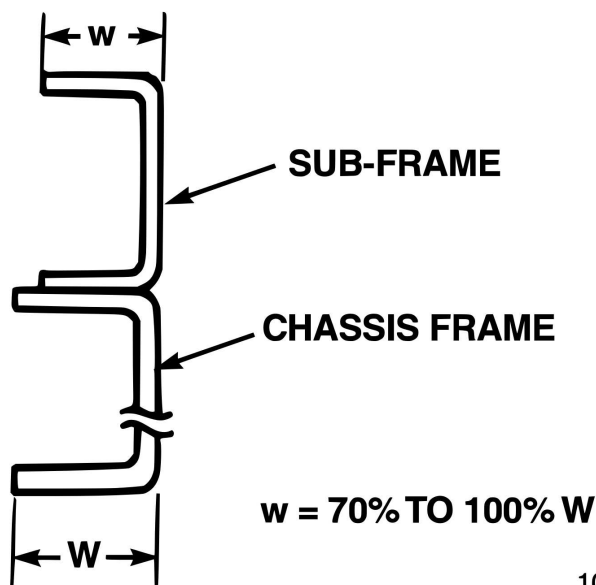
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Typical Subframe Cross Sections

Subframe Construction

The subframe should be fabricated from channel steel to form a continuous longitudinal channel. The width of the subframe flange must be between 70 – 100% of the frame rail flange width.

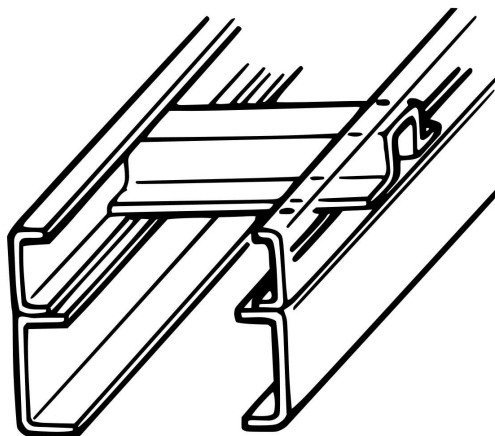


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Subframe Flange Width

The lower subframe flange must be mounted flush with the upper flange of the chassis side member. Do not mount the subframe at an angle to the chassis. Use either crossmembers, or the body unit itself, to connect the subframe sides together. (Refer to the Body Builder; Chassis, Frame bulletin for additional information.)

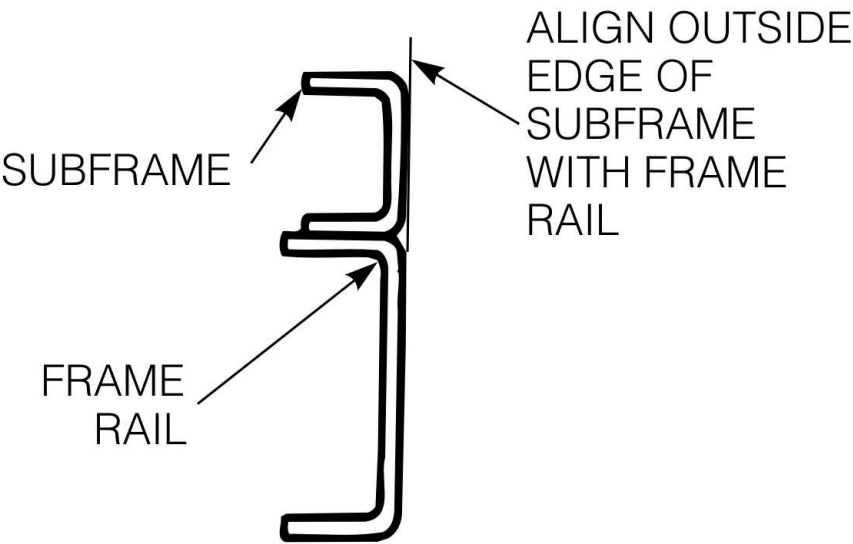


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Subframe Crossmember

The subframe channel opening should face inward toward the longitudinal center line of the chassis. Also, the subframe web surface should align with the frame rail web as shown in the following illustration.



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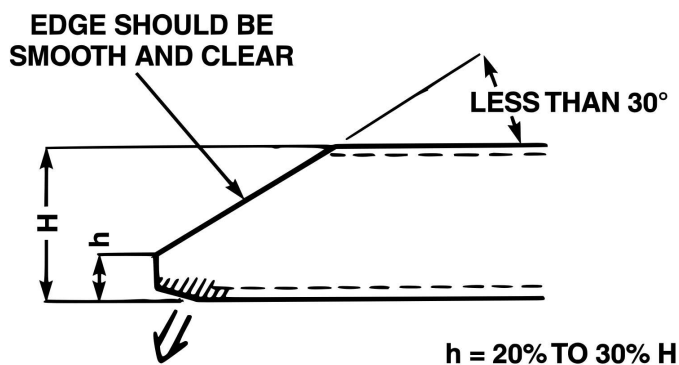
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Fig. 1 Align Subframe to Frame Rail

Notes

Subframe End Shape

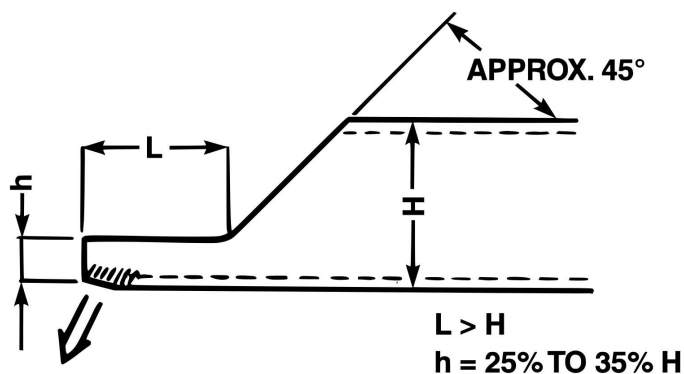
To reduce the possibilities of stress concentration on the chassis frame, the front end of the subframe should be shaped so that rigidity gradually decreases. Additionally, the front end of the subframe should extend as far forward as possible. The following three figures illustrate three different types of subframe end design.



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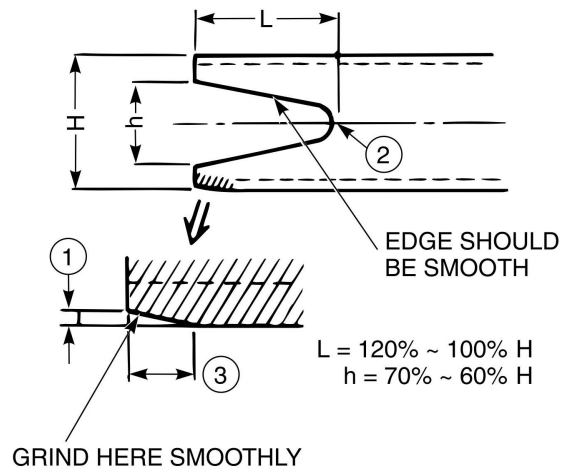
Fig. 2 Preferred Subframe End Design



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Fig. 3 Alternate Subframe Design



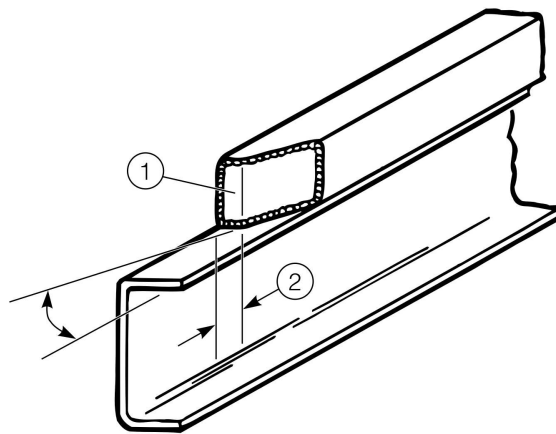
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Fig. 4 Alternate Subframe End Design

1. 1 mm (0.04 in)	3. 15 – 20 mm (0.59 – 0.79 in)
2. R = 20 mm – 30 mm (0.79–1.18)	

If the subframe is fabricated from square or rectangular tubing, the end should be cut as shown.



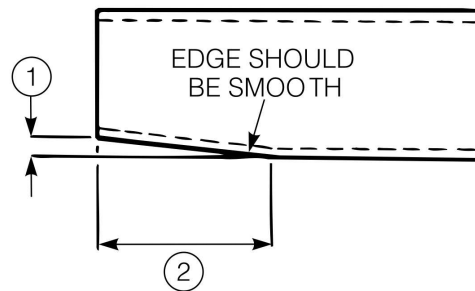
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Fig. 5 End-Cut Design for Square or Rectangular Tube Subframe

1. Blank Off with 1.5 mm (0.06 in) Thick Sheet Metal	2. 15 – 20 mm (0.59 – 0.79 in)
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Subframe designs shown in figures above are recommended. If body design or other factors prevent any of these designs from being used, the subframe shape shown in figure below may be used.



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Fig. 6 Alternate Design

1. 57 mm (0.06 in)	2. Approximately 200 mm (7.9 in)
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If mounting a tank or other rigid type of body, the subframe shapes shown in Figure 2,3 and 4 must be used.

Notes

Subframe Attachment

A variety of methods can be used to secure the subframe assembly to the chassis frame. They include U-bolts, flexible attachments and bolted plates. When the subframe is installed, however, a mounting sill plate made of hardwood or other suitable material may be installed between the subframe and the chassis frame to protect the flange surfaces, and to allow for irregularities in the surfaces of the two frame members.

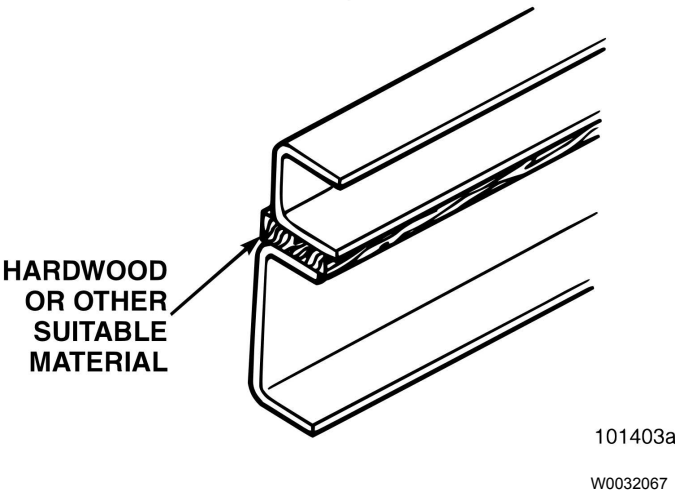


Fig. 7 Subframe Sill Plate

Sills must be chamfered 1/2 in at the front end, and tapered approximately 25.4 mm (1 in) from the front end of the sill.

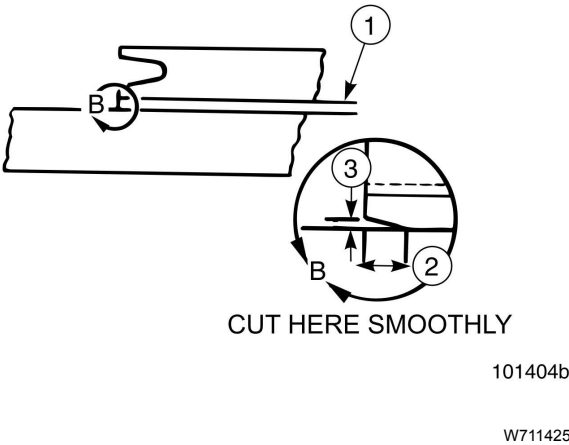


Fig. 8 Sill Plate Chamfer

1. Hardwood Sill Plate Thickness 12.75 mm (0.5 in)	3. 23 mm (0.91 in)
2. Approximately 30.5 mm (1.2 in)	

U-Bolts, Tie Bars and Other Types of Clamping Devices Attachment

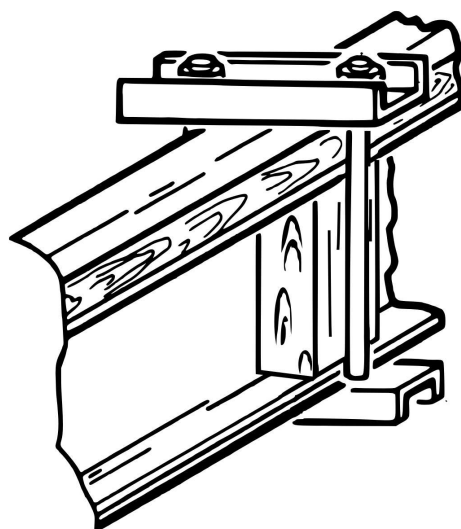
Note: U-bolts, tie bars and other similar types of clamping methods rely on friction and a maintained clamping force for attachment. When using these methods of attachment, the surfaces must be free from oils, grease and other agents that could allow slippage and adversely affect attachment.

When using U-bolts, tie bars or other similar types of clamping methods, install an anti-crush spacer inside the side members to prevent distorting, or crushing the frame when the bolts are tightened. These spacers should be fabricated from seamless angle irons or rectangular/cylindrical tubing, and suitably spot welded into position.



CAUTION

Do not use U-profile (angle iron) spacers having welded construction. Anti-crush spacers must be of one-piece, seamless construction design.



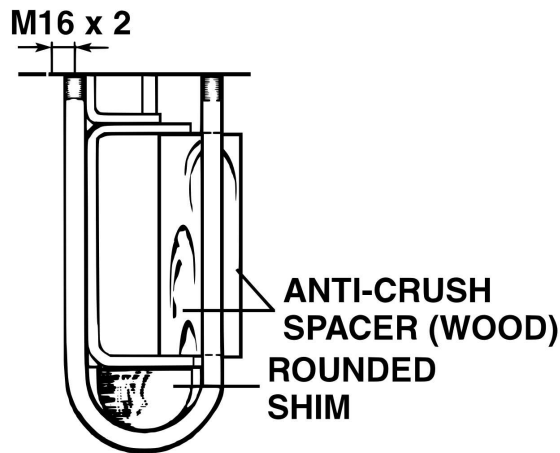
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Fig. 9 Tie Bar Type Attachment with Anti-Crush Spacers

Notes

When round U-bolts are used for body attachment, rounded shims that follow the curvature of the U-bolt must be used.



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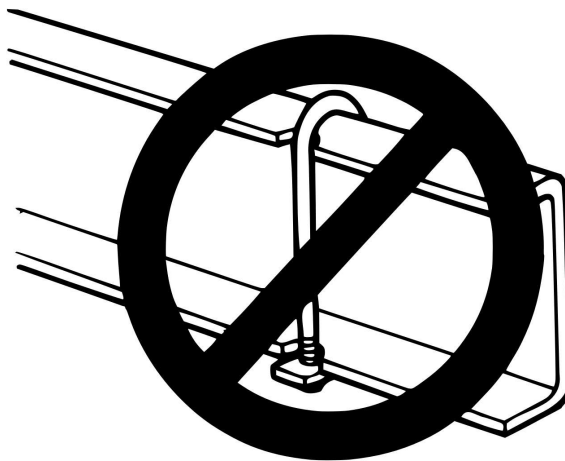
Fig. 10 U-Bolt with Rounded Shim and Anti-Crush Spacer

Body clamps (U-bolts, tie bars, etc.) must not be located in the vicinity of the rear axle or suspension. Additionally, the U-bolts or tie bolts must not contact the frame rail side member.



CAUTION

Do NOT notch the frame rail flanges in order to make a U-bolt or tie bolt fit. If the frame rail flanges are too wide for the U-bolt, select another size U-bolt or another method of attachment.



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Fig. 11 Do Not Notch Frame Rail Flange

Bolted Methods of Attachment

The two bolted methods of attachment are rigid mounting and flexible mounting. Both of these methods include clips, brackets and other types of mountings which are bolted to non-critical areas of the frame rail web. The use of existing holes in the frame is encouraged. But when this is not possible, holes in the frame must be drilled in accordance with the frame drilling methods as outlined earlier in this section.

As a rule, holes in the frame should be located no closer to the top and bottom frame flanges than existing holes that were drilled at the assembly plant.

Rigid Mounting

Rigid types of mounting should be used for mounting vans or other similar types of bodies. A rigid type of mounting arrangement consists of a bolted plate or bracket welded to the subframe assembly and bolted to the chassis frame. Brackets must be bolted, not welded, to the chassis frame.

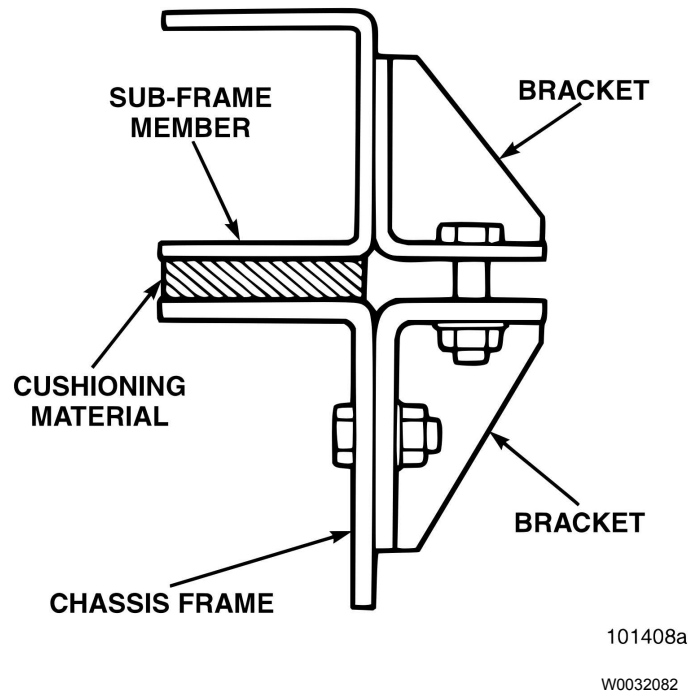
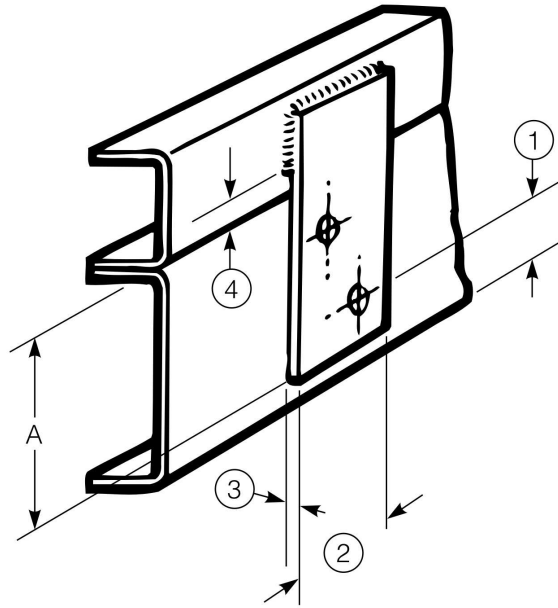


Fig. 12 Bracket-Style Rigid Mount

Notes



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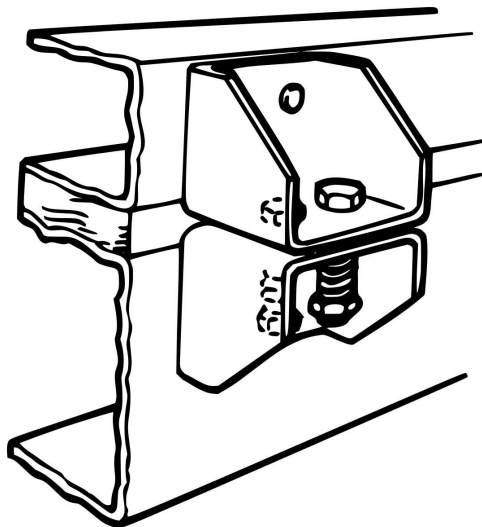
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Fig. 13 Bolted-Plate-Style Rigid Mount

1. 25.4 mm (1.0 in)	3. 3.8 mm (0.31 in)
2. 60 mm (2.36 in)	4. 15 mm (0.59 in)

Flexible Mounting

For torsionally stiff types of bodies, such as tanks or refuse bodies, the mounting must allow some flexing of the frame under normal driving conditions. Flexible mounting should be used. Flexible mounting is accomplished by using rubber mountings or spring-loaded brackets.



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Fig. 14 Flexible Mounting Arrangement

Subframes for Bridge Formula Mixers

Certain mixer applications require an extended tag axle for the chassis to meet the federal bridge formula (Boost-A-Load, Bridge Master, etc.). On these chassis, welding the subframe to the chassis frame rails is acceptable, providing the following installation criteria are met:

- Yield strength of the welding rods must be at least equal to the yield strength of the least strongest component of the assembly (either the chassis frame rail at 110,000 psi or the mixer subframe). Low hydrogen electrodes must be used, and they must comply with the applicable provisions of the American Welding Society (AWS) welding codes.
- Welding procedures must conform to those recommended by AWS to ensure frame material integrity. Design of the subframe must be tailored to the particular chassis frame configuration, and caution must be exercised to prevent weld stress concentrations and excessive heat effects in critical stress areas, especially at the front end of the subframe. For additional information on welding, refer to Frame Welding and Cutting in Frame Section.
- The subframe must be constructed of 9.5 mm (0.375 in) angle iron, with a minimum web dimension of 114.3 mm (4.5 in) and a minimum flange dimension of 101.6 mm (4.0 in).

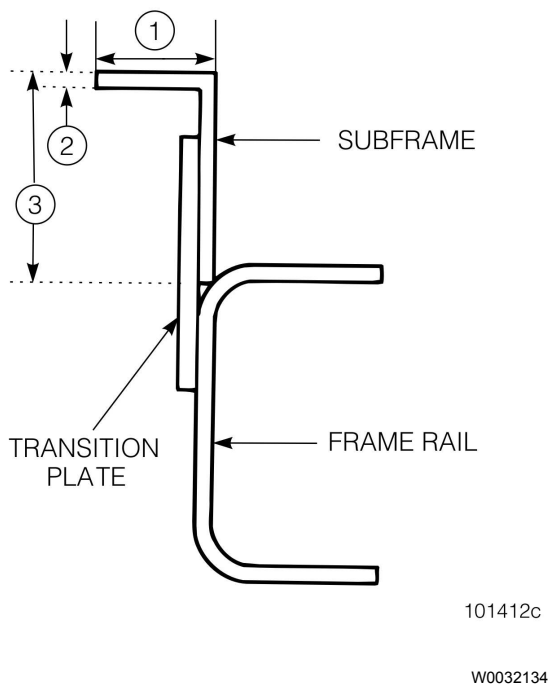
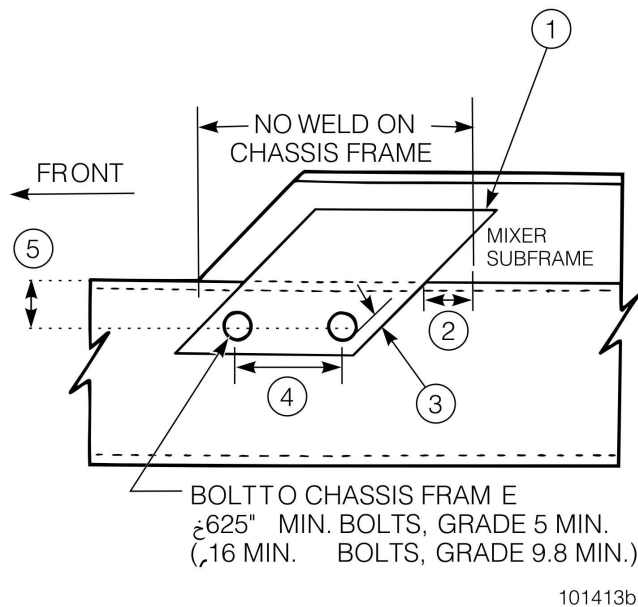


Fig. 15 Welded Subframe Specifications

1. 101.6 mm (4.0 in)	3. 114.3 mm (4.5 in)
2. 9.5 mm (0.375 in)	

- The subframe must extend as far forward as possible, and a transition plate should be welded or bolted to the forward end of the subframe and bolted to the chassis frame rail. The transition plate should be fabricated from 9.5 mm (0.375 in) plate steel.



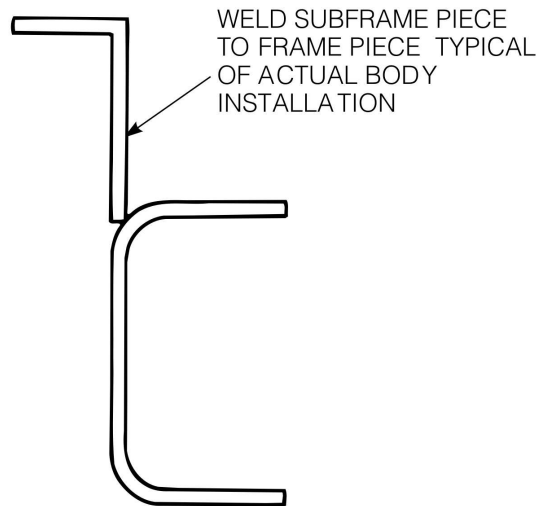
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Fig. 16 Subframe Transition Plate

1. Transition Plate (95.25 mm [3.75 in] Minimum Thickness) Weld or Bolt to Frame	4. 79.38 mm (3.125 in) Minimum
2. 25.4 mm (1.0 in) Chassis Frame	5. 44.45 mm (1.75 in) Minimum
3. 19.05 mm (0.75 in) or Minimum 2X Thickness of Plate	

- The subframe to chassis weld should begin approximately 25.4 mm (1.0 in) behind the transition plate.
- Any new welded subframe designs, first-time installers, or any changes to already approved existing designs, must be approved by MACK Trucks, Inc. Product Development and Quality Assurance departments. Approvals are coordinated through your local MACK Dealer.
- Samples of welding workmanship will be requested. A sample section of the subframe piece typically used for the installation must be welded as an actual piece of frame rail section used by MACK Trucks, Inc. The sample must be long enough to provide a representative sample of the actual weld procedure.



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Fig. 17 End View of Workmanship Sample

Notes

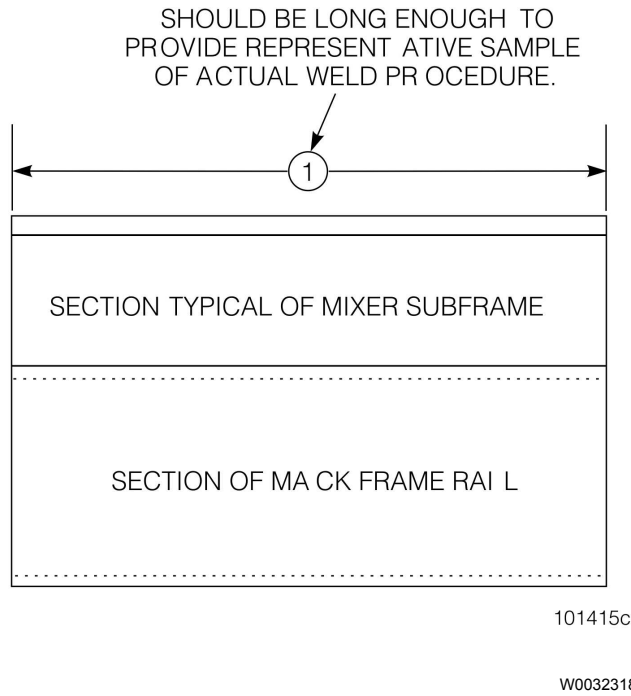


Fig. 18 Side View of Workmanship Sample

1. 609.6 mm (24.0 in)

The workmanship sample must be sent to the following address:

MACK Trucks, Inc.

7825 National Service Rd.

Greensboro, NC 27409

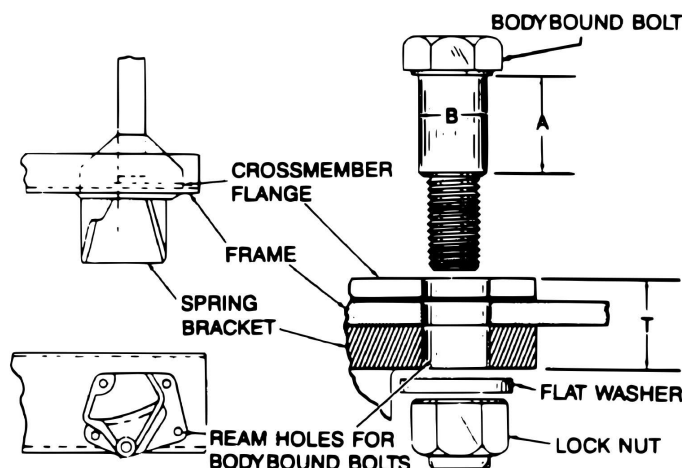
If additional information is required, contact Tech Support at 1-800-888-2039.

Notes

Fasteners

Fasteners Body Bound Bolts

Body bound bolts, both SAE and metric, are manufactured with closely controlled shank diameters to provide an interference fit with the members that they attach. The shank diameter (**B**) is approximately 0.79 mm (0.031 in) larger than the rolled threads. This type of bolt eliminates the undesirable condition of having parts bearing on the threaded portion of the bolt.



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Fig. 19 Determining Body Bound Bolt Size

Before body bound bolts can be used in engine and spring supports, the holes in the supports and frame must be reamed to the proper diameter so that the bolts can be installed with the required interference fit.



CAUTION

Reamers must only be used in a clockwise rotation. Do not reverse rotation to withdraw reamer. Use a drill with a maximum no-load speed of 350 rpm. Always use cutting oil. Failure to follow these instructions will lead to premature reamer damage.

Holes already provided in the frame may be utilized if they are not worn to a degree where reaming them will make them oversized. To ream a hole, select the correct reamer for the size of bolt to be used from the accompanying chart. It is recommended that an inside micrometer or other accurate measuring device be used to determine if the reamed holes are kept within the prescribed tolerances.

Align the existing holes in the frame with those in the brackets or supports by using drift pins, locating pins, or standard bolts and nuts in two diagonally opposed holes. Temporarily bolt the parts together to prevent shifting. Ream the unused holes to the proper diameter, as listed in table below, using a spiral cobalt reamer. Be sure the reamer is kept 90 ° to the frame during the reaming operation. The length of the cutting surface of the reamer must not exceed 152.4 mm (6 in).

After reaming, clean out any metal chips that may remain in the holes. Install body bound bolts with the necessary washers, and torque the nuts to the specified value. Hit the head of the bolt several times with a brass hammer during final torquing to ensure proper seating of the fasteners. Remove drift pins, locating pins, and bolts and nuts used to align and clinch the brackets or supports. Repeat the reaming and mounting procedure for the remaining holes.

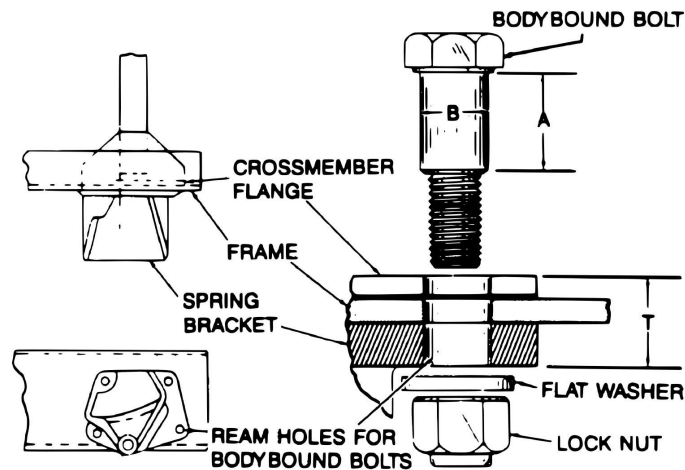
It is good practice to check the bolts for size before being driven into the holes. Removing them, if necessary, will be difficult.



CAUTION

Where Alumilastic sealer is used between aluminum and ferrous surfaces, the threads on the bolts must be wiped clean after insertion and before threading the nut onto the bolt. Alumilastic acts as an extreme lubricant, and incorrect torque values will be obtained, with the possibility of thread stripping if this procedure is not followed.

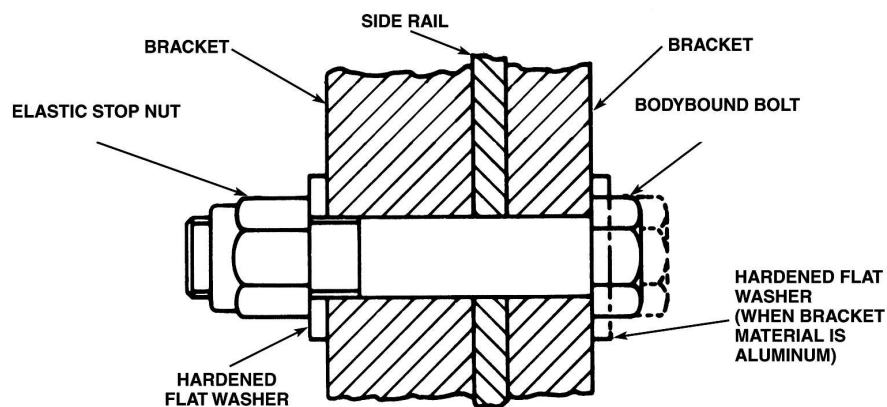
To select the proper SAE body bound bolt, the parts to be assembled must first be measured to determine the accumulated thickness (**T**) so that the proper bolt shank length (**A**) can be selected. A hardened flat washer must be used under each nut for assemblies with both steel and aluminum parts. When the bolt head comes in contact with an aluminum part, a hardened washer must be used under the bolt head to prevent loosening.



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Fig. 20 Determining Body Bound Bolt Size

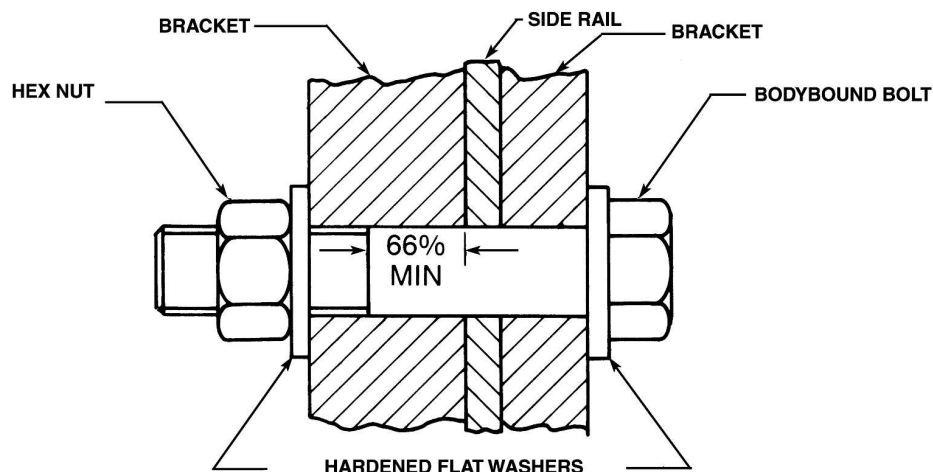


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Fig. 21 Recommended SAE Body Bound Bolt Installation

To select the proper metric body bound bolt length, the parts to be assembled must first be measured to determine the accumulated pack thickness. The shank of the bolt should extend a minimum of 66% into the last part of the body bound pack. A hardened flat washer (271AM) is used under each nut for both steel and aluminum assemblies to compensate for minor variations in pack thickness, to ensure relatively constant torque values, and to properly distribute the clamping load. A hardened flat washer is also used under the bolt head to properly distribute the clamping load.

Be sure that the shank of the bolt does not protrude from the hole, or the nut will bottom against the shank before the proper clamping force is applied. Too short a bolt will not provide an adequate bearing surface, reducing the effectiveness of the body bound bolt. Use the correct length bolt and washer thickness, as required, to obtain ideal conditions. Do not use more than one washer.



W7115148

Recommended Metric Body Bound Bolt Installation

METRIC BODY BOUND BOLT CHART				
Bolt Size	Shank Diameter mm (in)	Reamer No.	Recommended Drill Size mm	Torque Nm (ft-lb)
12 mm	12.70 (0.500) 12.60 (0.496)	J 34922 (12.6 mm)	11	78 (58)
16 mm	16.69 (0.657) 16.59 (0.653)	J 26461 (0.652 in.)	15	225 (166)
20 mm	20.70 (0.815) 20.60 (0.811)	J 34679 (20.5 mm)	19	365 (270)

GRADE 5 BODY BOUND BOLT CHART				
Bolt Size	Shank Diameter mm (in)	Reamer No.	Recommended Drill Size (in)	Torque Nm (ft-lb)
5/8-18 UNF-2A	0.657 (16.69) 0.653 (16.59)	J 26461 (0.652 in.)	19/32	210 – 237 (155 – 175)
3/4-16 UNF-2A	0.782 (19.86) 0.778 (19.76)	J 26462 (0.776 in.)	11/16	325 – 366 (240 – 270)
1-14 NS-2A	1.034 (26.26) 1.028 (26.11)	J 26463 (1.027 in.)	31/32	800 – 868 (590 – 640)

GRADE 8 BODY BOUND BOLT CHART				
Bolt Size	Shank Diameter mm (in)	Reamer No.	Recommended Drill Size (in)	Torque Nm (ft-lb)
5/8-18 UNF-2A	0.657 (16.69) 0.653 (16.59)	J 26461 (0.652 in)	19/32	363 – 401 (268 – 296)
3/4-16 UNF-2A	0.782 (19.96) 0.778 (19.76)	J 26462 (0.776 in)	11/16	645 – 716 (476 – 528)

- Flanged head body bound bolt do not use hardened washers with flanged head bolts except to position bolt penetration correctly.
 - Standard head body bound bolt use hardened washers on steel or aluminum and to position bolt penetration correctly.
- Reamers listed above may be ordered directly from:

KENT-MOORE

O. E. TOOL EQUIPMENT GROUP

SPX CORPORATION

28635 MOUND RD.

WARREN, MICHIGAN 48092-3499

Telephone: 1-866-621-2127

FAX: 1-800-578-7375

IN CANADA:

KM@servicesolutions.spx.com

Notes

Fasteners HUCK Metric

HUCK-SPIN fasteners are used at MACK assembly plants to attach various assemblies to the frame. The major advantages of HUCK fasteners are consistent clamp value and high resistance to vibration-induced loosening. A special power swaging installation tool delivers uniformly high preloads, independent of the individual operator. MACK specification HUCK fasteners prevent unwanted loss of clamping force, yet permit subsequent removal with power hand tools. A simple visual inspection of installed HUCK fasteners eliminates costly periodic torque checking and retorquing of conventional fasteners.

In the event that HUCK fasteners are removed for wheelbase changes, fifth-wheel mounting, etc., it is strongly recommended that **new** HUCK fasteners be used for attachment/reattachment of components. Superior clamping ability cannot be duplicated with the use of conventional bolts and nuts.

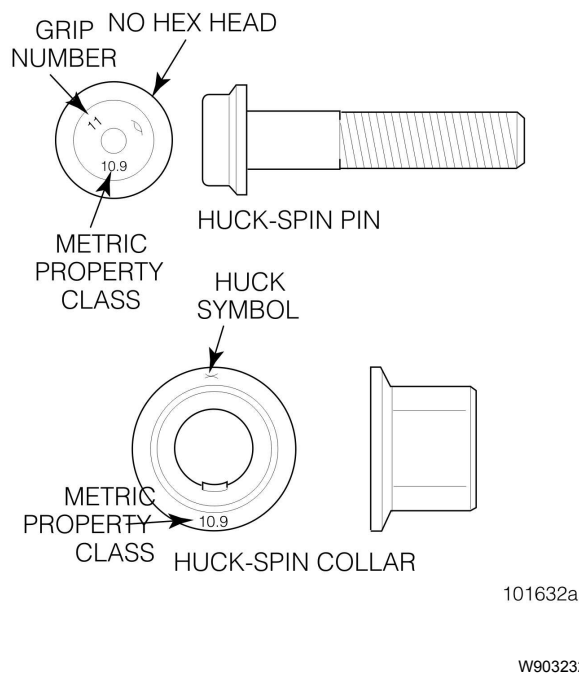


CAUTION

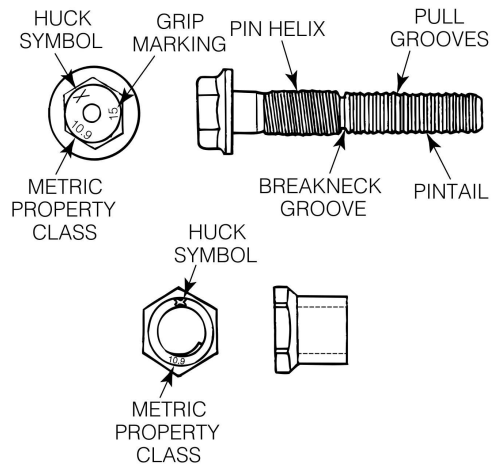
DO NOT reuse HUCK fasteners. If reused, they can loosen and cause frame damage. Use only **new** HUCK fasteners.

HUCK Fasteners Identification and Selection

HUCK-SPIN fasteners are used in production, whereas HUCK-FIT fasteners are currently available through the MACK Parts System for field service repairs. HUCK-FIT fasteners are available in 12 mm, 16 mm, and 20 mm pin and collar diameters, while the 14 mm pins and collars are available only in the HUCK-SPIN configuration. All HUCK fasteners are metric property class 10.9. A fastener is selected based on the thickness of the material to be clamped. This thickness is called the GRIP when working with HUCK fasteners. A grip number is stamped into the head of each HUCK pin, and represents the midpoint of the grip range (expressed in millimeters) for that particular pin.



HUCK-SPIN Fastener Identification



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HUCK-FIT Fastener Identification

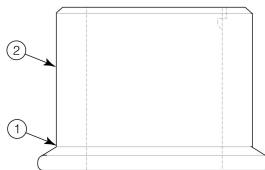
Most HUCK pins have a grip range of approximately 10 mm . A pin with a grip marking of 15, for example, could be used to clamp material from 10 mm to 20 mm thick. One with a grip marking of 40 would be used if the thickness of the parts to be clamped is between 35 mm and 45 mm. The exception to this is a HUCK pin with a grip marking of 17. This pin has a grip range of 10 mm (0.39 in) to 24 mm (0.94 in). Only the 16 mm (0.63 in) diameter pin is available with this extended grip, and it can also be identified by the raised nipple at the center of the pin head.

HUCK Fasteners Removal

HUCK-SPIN pins and collars do not have hex heads and cannot be removed with an air impact wrench. HUCK-FIT pins and collars have hex heads and can be removed with an air impact wrench. When removing a HUCK-FIT fastener, always try to remove the collar with an air impact wrench first. Should difficulty be encountered, increase air pressure to the maximum allowable for the tool to obtain the best results. If the fastener cannot be removed with an air impact wrench, the collar must be cut with a torch.

A hydraulic collar splitter is available from Huck International for removing HUCK-SPIN fasteners. If a collar splitter is available, it should be used. If the splitter is not available or is impractical to use, the collar should be cut with a torch.

Note: Use this method of removal only if the fastener cannot be removed with an air impact wrench or hydraulic splitter.



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HUCK-SPIN Collar (Transverse Cut Location)

1. Cut through collar and pin at this location with a torch.

2. Swaged Area

If cutting the collar with a torch, make the cut just above the collar flange. When cutting, use extreme care to avoid damage to, or excessive heating of, chassis components in the area. To help avoid damage to other components, use a metal shield 3.2 mm (1/8 in) thick with a hole in it which will fit around the HUCK collar. When a torch is used to cut the collar, removal is easier if the center shank is driven out while the part is still hot.

In summary, try the impact wrench or hydraulic collar splitter first. If the fastener cannot be removed by using these methods first, the collar can be cut with a torch as described.

HUCK Fasteners Installation



CAUTION

DO NOT reuse HUCK fasteners. If reused, they can loosen and cause frame damage. Use only **new** HUCK fasteners.

To install HUCK fasteners, first select the proper diameter and grip range HUCK pin. To ensure flush pin seating, the hole size must be as follows:

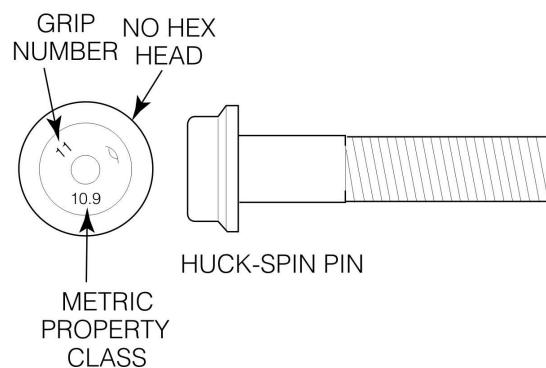
12 mm pin: 12.8 mm hole (use 33/64 or 17/32-inch drill bit)

14 mm pin: 14.3 mm hole (use 9/16-inch drill bit)

16 mm pin: 17.1 mm hole (use 11/16-inch drill bit)

20 mm pin: 21.6 mm hole (use 55/64-inch drill bit)

Holes as small as the nominal diameter of the pin (e.g., 12 mm hole for 12 mm pin) may be used. Chamfer the pin head side to ensure proper seating.



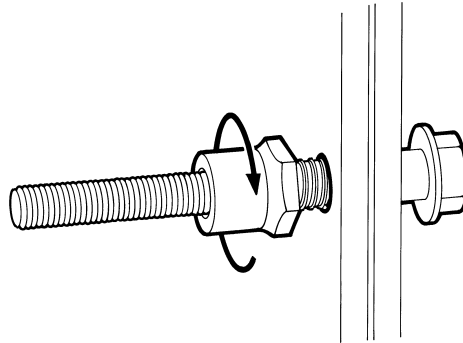
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HUCK-SPIN Pin

To install the fasteners, select the correct grip range pin. To ensure flush pin seating, the hole size for 16 mm pins must be 17.1 mm (0.67 in) in diameter. An 11/16-inch drill bit can be used. Holes can be as small as 16 mm (0.63 in), but must be chamfered on the head side to ensure proper seating.

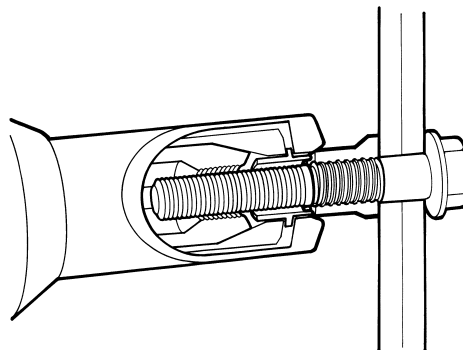
1. Insert the pin through the prepared hole.
2. Slide the collar over the pin and hand tighten.



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Threading Collar onto Pin (HUCK-FIT Fastener Shown)

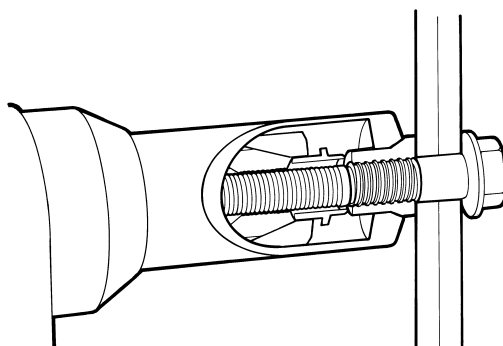
3. Place the nose assembly of the hydraulic installation tool over the pin and squeeze the trigger to activate the tool. When activated, the nose assembly pulls on the pin, drawing the work pieces together. The anvil pushes on the collar.



W7000307

Swaging Collar (HUCK-FIT Fastener Shown)

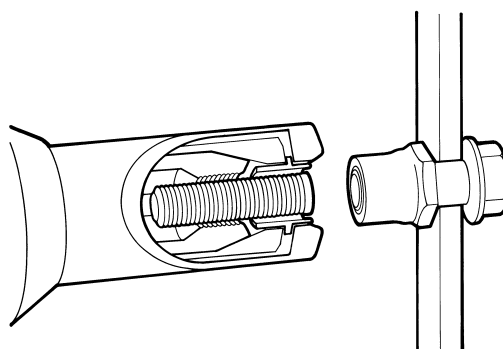
The tool continues pulling on the pin, moving the anvil forward and swaging the collar into the locking grooves of the pin, thereby achieving clamp



W7000308

Swaging Completed (HUCK-FIT Fastener Shown)

With HUCK-FIT fasteners, the pintail breaks off at the breakneck groove when the tool completes the swage.



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Pintail Break Off (HUCK-FIT Fastener Shown)

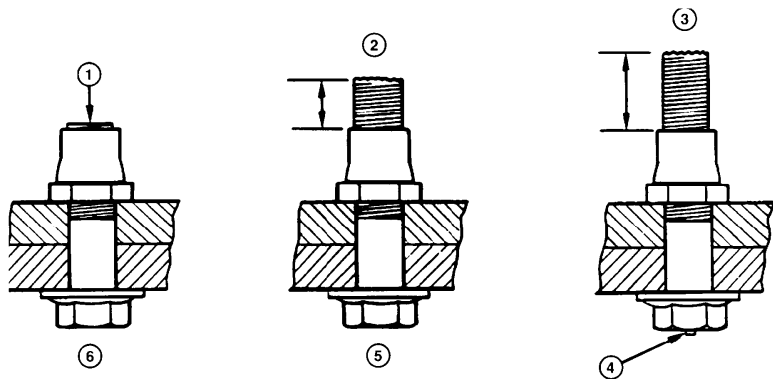
Notes

- 4. Release the trigger and remove the tool. With HUCK-FIT fasteners, remove the pin tail from the tool.
- 5. Visually inspect the installed fastener.

Inspection of Installed HUCK Fasteners

Visual inspection of installed fasteners consists of checking for a complete swage, and checking for proper pin protrusion. Certain types of HUCK fasteners installed at MACK assembly plants may have greater pin protrusion than that shown here. There is nothing wrong with these special factory-installed fasteners. The installation method is different than that used for service fasteners. A properly functioning tool with the correct nose assembly produces installed fasteners as shown as long as the right grip range HUCK pin was selected.

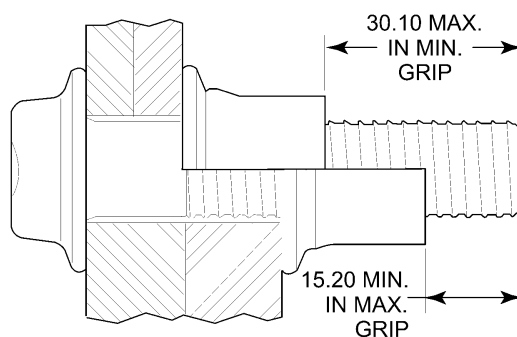
If the HUCK-FIT pin breaks off inside the collar, or pin protrusion exceeds 10.6 mm (0.42 in) 14.6 mm (0.57 in) for 17-grip pin, the fastener is improperly installed. Although visual inspection is generally sufficient, other measurements can be taken to monitor tool performance. The following dimensions apply:



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Fig. 22 Correctly Installed HUCK-FIT Fasteners

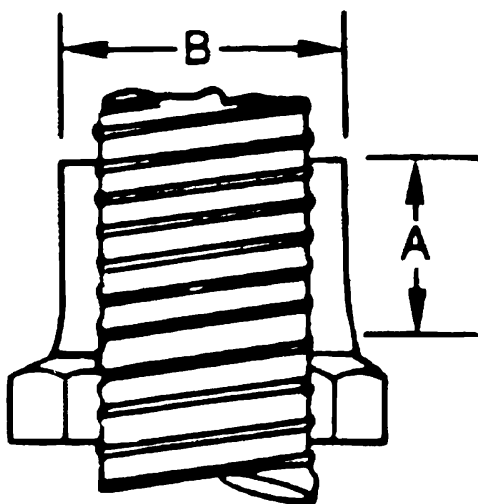
1. Flush	4. OK Only for 17-Grip HUCK Pin
2. 10.6 mm (0.42 in) Maximum Protrusion	5. OK
3. 14.6 mm (0.58 in) Maximum Protrusion (17 Grip Only)	6. OK



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Fig. 23 Correctly Installed HUCK-SPIN Fasteners

The 17-grip HUCK pin has a raised point in the center of the pin head in addition to the normal grip mark.



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Fig. 24 Installed HUCK Fastener Dimensions

Referring to Figure 24, an **A** dimension **less than** the specified value indicates an incomplete swage. A **B** dimension **greater than** the specified value indicates an incorrect or worn anvil on the installation tool. The following table lists the specified dimensions for a properly installed fastener.

Installed HUCK Fastener Dimensions

Fastener Diameter	Installed Dimensions
12 mm	A 13.8 mm (0.54 in) Minimum B 18.3 mm (0.72 in) Maximum
14 mm	A 16.2 mm (0.64 in) Minimum B 21.9 mm (0.86 in) Maximum
16 mm	A 17.7 mm (0.70 in) Minimum B 24.1 mm (0.95 in) Maximum
20 mm	A 21.2 mm (0.84 in) Minimum B 30.3 mm (1.19 in) Maximum

Note: If the installed pin protrusion and collar dimensions noted during inspection are not within the specified limits, the fastener is installed incorrectly and must be replaced.

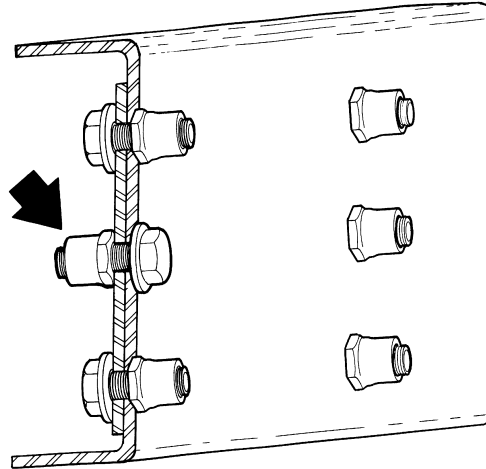
Properly installed HUCK fasteners provide the following minimum values in pounds of force:

HUCK Fastener Strength (Installed)

Fastener Diameter	Pounds of Force (lbf)	
12 mm	Shear: Tensile: Clamp:	15,770 19,845 13,725
14 mm	Shear: Tensile: Clamp:	21,560 26,978 18,660
16 mm	Shear: Tensile: Clamp:	28,350 36,810 25,515
20 mm	Shear: Tensile: Clamp:	44,325 57,465 39,780

Acceptable and Unacceptable Installation

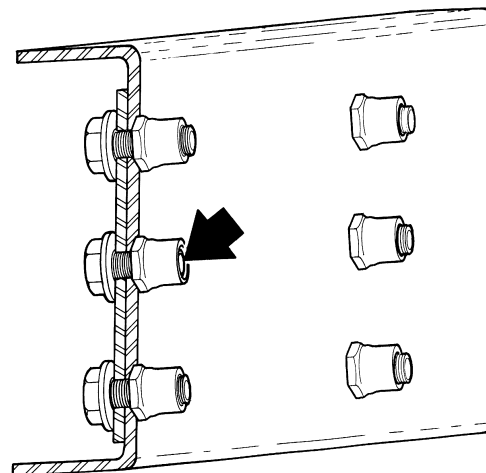
HUCK-SPIN and HUCK-FIT fasteners can be turned inward or outward as tool limitations may require.



W7000301

Fig. 25 Fastener Facing Inboard

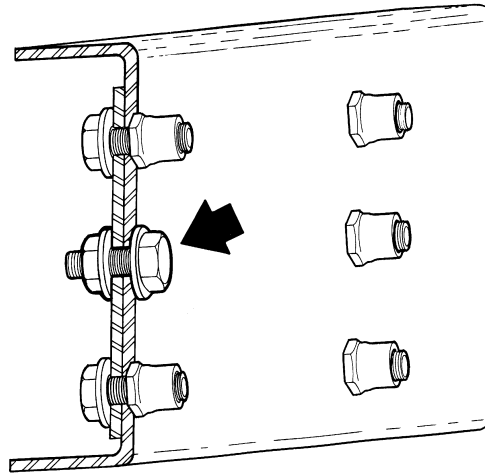
HUCK-FIT fastener pin-break is to be flush with or greater than the collar length. A recessed pin-break less than flush with the collar is **unacceptable**.



W7000302

Fig. 26 Recessed Pin-Break

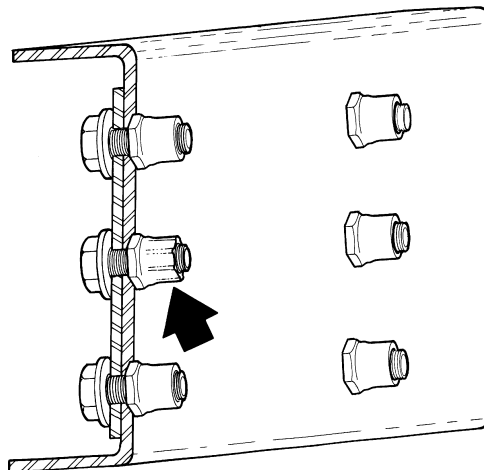
DO NOT mix HUCK fasteners and flange bolts within a hole pattern.



W7000303

Fig. 27 Flange Bolt and HUCK Fasteners

If the collar is scored, the tool anvil is worn and should be replaced.



W7000304

Fig. 28 Scored Collar

Fasteners Flange Head, Metric

All metric flange head cap screws used by MACK Trucks, Inc. are zinc or cadmium plated. All metric nuts are cadmium plated and waxed. Torque should be applied to the nut whenever possible. No lubricant is to be used. Where sealer (Alumilastic or equivalent) is used between aluminum and ferrous surfaces, the threads on the bolt must be wiped clean after insertion, and before threading the nut onto the bolt.

Torque to be applied when the flanged fastener spins on steel plate or ferrous castings:

Screws in Property Class 8

Size	Torque ft-lb (Nm)
M6	10 ± 1.5 Nm (7.4 ± 1.1 ft-lb)
M8	24 ± 4 Nm (18 ± 3 ft-lb)
M10	48 ± 8 Nm (35 ± 6 ft-lb)
M12	85 ± 11 Nm (62.7 ± 8.1 ft-lb)
M14	140 ± 25 Nm (103.2 ± 18.4 ft-lb)
M16	220 ± 35 Nm (162.2 ± 25.8 ft-lb)
M18	290 ± 45 Nm (214 ± 33.1 ft-lb)
M20	430 ± 70 Nm (317. 1 ± 51.6 ft-lb)
M22	580 ± 90 Nm (428 ± 66.3 ft-lb)
M24	740 ± 120 Nm (545.8 ± 88.5 ft-lb)

Screws in Property Class 10.9

Size	Torque ft-lb (Nm)
M6	12 ± 2 Nm (8.9 ± 1.5 ft-lb)
M8	30 ± 5 Nm (22.1 ± 3.7 ft-lb)
M10	60 ± 10 Nm (44.3 ± 7.4 ft-lb)
M12	105 ± 20 Nm (77.4 ± 14.8 ft-lb)
M14	175 ± 30 Nm (129 ± 22.1 ft-lb)
M16	275 ± 45 Nm (203 ± 33.1 ft-lb)
M18	360 ± 55 Nm (265.5 ± 40.6 ft-lb)
M20	540 ± 90 Nm (398 ± 66 ft-lb)

Frame

Frame Welding and Cutting



CAUTION

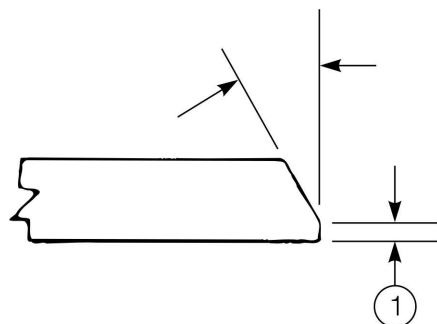
The only acceptable method of lengthening a frame is by adding a section behind the rear axles. Cutting and splicing the frame ahead of the rear axles will severely weaken the frame in the area of the splice and will result in frame failure. DO NOT splice a frame.

Certain frame modifications, such as lengthening and shortening, require welding and cutting the frame. In general, frame welding is not recommended. However, for modifications that do require cutting or welding the frame such as frame lengthening, shortening, etc., the following welding and cutting practices are recommended by MACK Trucks, Inc.

Frame Cutting

Mechanical sawing is the preferred method for cutting the frame. However, the oxygen gas process (either oxygen and acetylene or oxygen and MAPP) is acceptable.

Surface areas of the parts to be joined must be ground smooth to prepare them for welding. Edges must be bevelled to a 30° angle with a 1.588 mm (1/16 in) land.



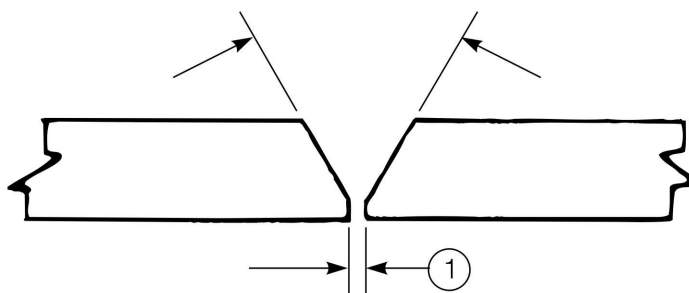
100190b

W0032025

Fig. 29 Joint Preparation

1. 1.588 mm (1/16 in)

When joining frame members, the bevel must be away from the frame. Parts being joined must be brought as close together as possible. A gap of approximately 1/16 in (1.588 mm) should be maintained. Align the sections and clamp them with a piece of scrap channel.



100191b

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Fig. 30 Aligning Joints for Welding

1. 1.588 mm (1/16 in)

When the gap between parts is greater than 1.588 mm (1/16 in), edges may be built up by welding and grinding. DO NOT use fillers.

Notes

Frame Welding



CAUTION

Before welding the frame, disconnect all battery cables, and all harnesses to any electronic controls to avoid serious damage to the electrical system and sensitive electrical components. When disconnecting the batteries, disconnect the negative battery cable first, then the positive cable. Do NOT disconnect the batteries while the engine is running.

Note: On vehicles equipped with V-MAC, it will be necessary to reprogram the date and time, if the vehicle batteries are disconnected. Refer to the appropriate V-MAC User Guide for programming information.

Weld using a 2.3 mm (3/32 in), E11018M welding rod with either direct or alternating current, reverse polarity and a positive electrode. Use the following voltage and current for either process:

- Volts 21 – 24
- Amperes 70 – 120

When assembling or joining parts by welding, the procedure must be completed so as to minimize distortion and shrinkage. For multiple pass welds, slag must be completely removed before proceeding with subsequent weld passes. Slag must be completely removed from finished welds, and the finished weld must be ground completely smooth on both sides of the joint.

Cracks, porosity, overlaps and deep undercuts greater than 1.588 mm (1/16 in), must be ground out and rewelded. Craters, unacceptable undercuts (less than 1.588 mm [1/16 in]) and undersized welds can be corrected by additional welding.

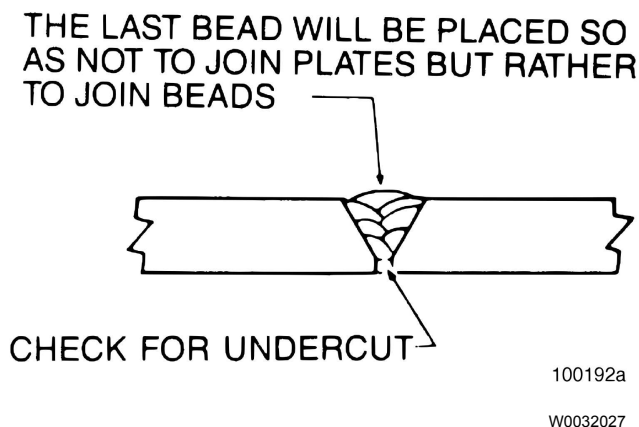
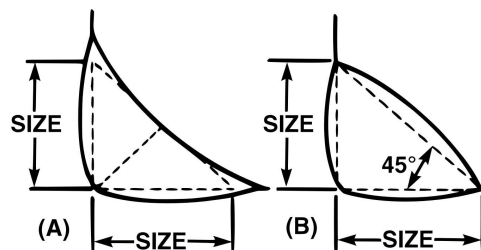


Fig. 31 Proper Weld

Weld Quality

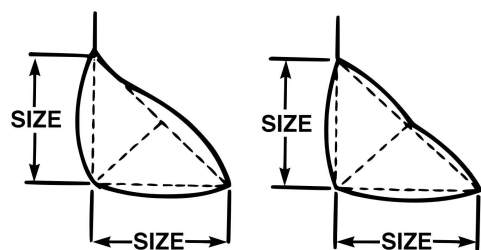
The following figures illustrate acceptable and unacceptable weld profiles for both fillet and butt welds.



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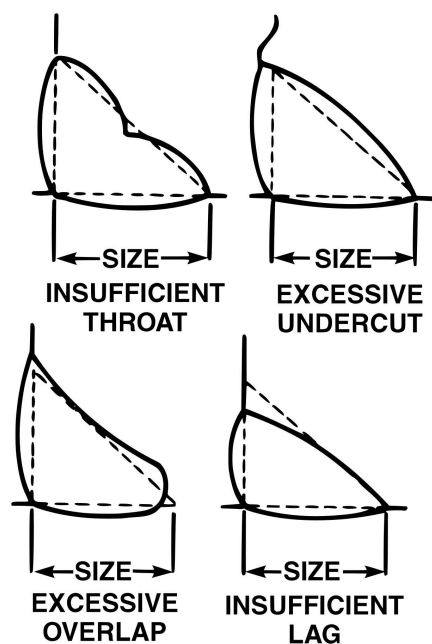
Fig. 32 Desirable Fillet Weld Profile



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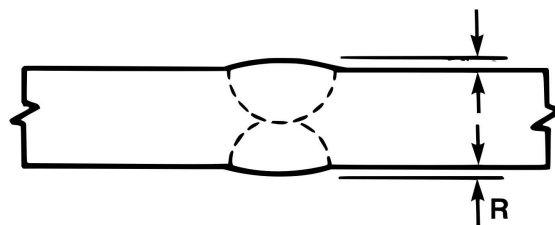
Fig. 33 Acceptable Fillet Weld Profile



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Fig. 34 Unacceptable Fillet Weld Profiles



R – REINFORCEMENT

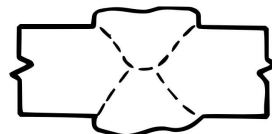
101383a

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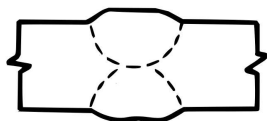
Fig. 35 Acceptable Butt Weld Profile



**EXCESSIVE
UNDERCUT**



**EXCESSIVE
OVERLAP**



**EXCESSIVE
CONVEXITY**



**INSUFFICIENT
THROAT**

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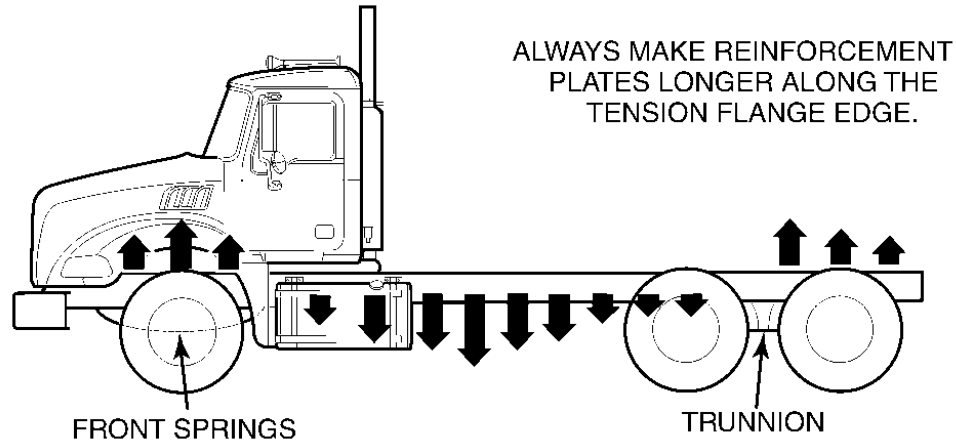
Fig. 36 Unacceptable Butt Weld Profiles

Notes

Frame Reinforcement

Frame Reinforcement Design

For some modifications, it may be necessary to install reinforcement plates. As weight is applied to the chassis, the frame has a tendency to flex. Where the frame is not directly supported by the suspension, it flexes downward. As this occurs, one frame flange stretches (tension flange), while the other flange is compressed (compression flange).



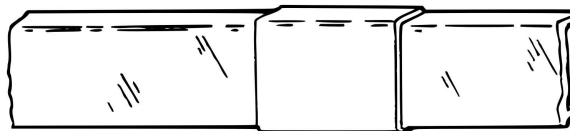
W0032033

Fig. 37 Frame Flexing

Because frame stress is greatest at the tension flange, reinforcement plates must be longer on the tension flange edge to provide additional support to this area.

Frame reinforcement plates must be free of any cracks, nicks and burrs. Prepare the edges of the plate by grinding smooth. Avoid load concentrations on all body mounting brackets and supports.

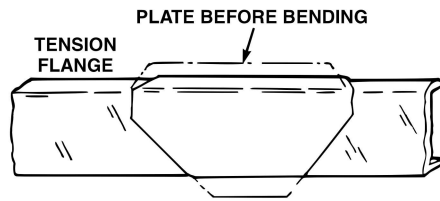
Reinforcement plates must be long enough to extend beyond the critical area so that the ends can be cut on an angle rather than square across the frame section as shown in the illustration below.



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Fig. 38 Unacceptable Reinforcement Plate Design

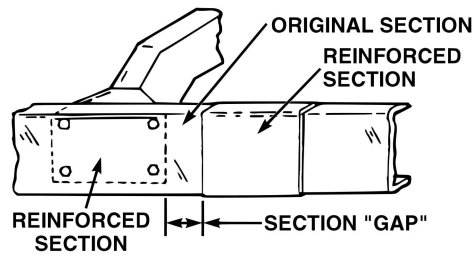


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Fig. 39 Acceptable Reinforcement Plate Design

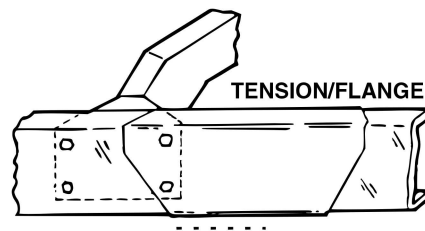
Avoid section gaps between the reinforcement plate and the ends of adjacent brackets or crossmember gussets. Always extend the reinforcement plate as far as necessary to align with the end of an adjacent bracket or crossmember gusset.



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Fig. 40 Unacceptable Reinforcement Plate Location



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Fig. 41 Acceptable Reinforcement Plate Location

Never leave a sharp internal angle when cutting a reinforcement plate, or when modifying structural members. Cutting a radius is acceptable, but cutting the plate at an angle is preferred.

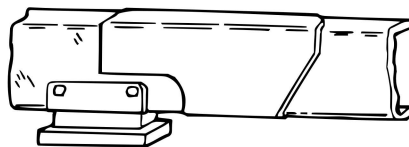


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Fig. 42 Sharp Internal Angle (Unacceptable)

TENSION/FLANGE

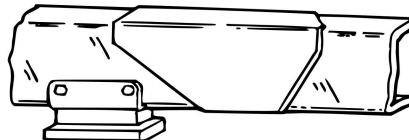


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Fig. 43 Internal Angle Cut on Radius (Acceptable)

TENSION/FLANGE



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Fig. 44 Plate Cut on Angle (Preferred)

Frame Reinforcement Attachment



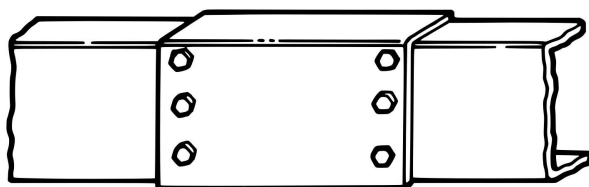
CAUTION

Use bolts to attach reinforcement plates to the frame. Do NOT attach reinforcement plates by welding to the frame, as this creates stress risers in the area of the weld and may result in frame failure.

In critical areas, use body bound bolts with hardened washers to attach the reinforcement plate to the frame. Body bound bolts require reaming the hole to a non-standard size to effect an interference fit for the bolt. HUCK fasteners can also be used in these instances.

Avoid several holes in direct vertical alignment, or holes that are too close together, because this weakens the frame in the area of the drilling. A staggered bolt pattern with good spacing and sufficient edge distance is most desirable.

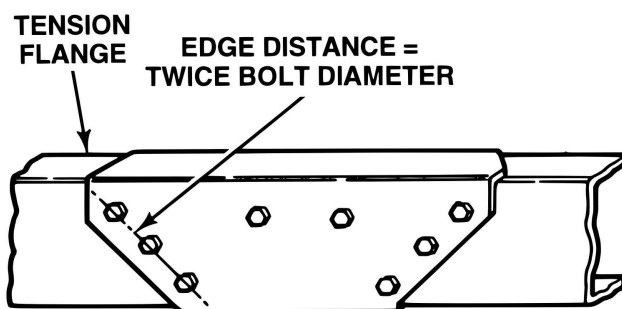
Refer to the "Fifth Wheel Locating", page 63 section for additional information.



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Fig. 45 Bolt Holes in Vertical Alignment (Unacceptable)



101393a

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Fig. 46 Staggered Bolt Pattern (Acceptable)

Frame Length Changes

Note: Lengthening or shortening a frame will require cutting and/or welding. In general, frame welding is not recommended. However, when cutting or welding a frame is required, use the frame cutting and welding practices outlined in “Subframes for Bridge Formula Mixers”, page 27 .

The frame may be shortened by simply cutting the side members to the desired length. The only way a frame can be lengthened is by adding to the afterframe. DO NOT splice a frame by adding a section ahead of the rear suspension because this severely weakens the frame in the area of the splice and may lead to frame failure.

The additional lengths of frame are added to the existing frame by butt welding the two pieces together and grinding the weld inside the frame rail smooth. A length of inside channel is then added to support the new afterframe. The inside channel should extend from the center of the rear suspension bracket/crossmember, picking up at least one set of mounting holes, and extending to the end of the afterframe. The inside liner must be secured in place with either body bound bolts or HUCK fasteners.

If the chassis is already equipped with inside frame liners, they should be replaced with new liners long enough to reach the end of the new afterframe section.

All parts, such as frame rail sections, inside liners and other components, should be properly prepared, primed and painted to eliminate the possibility of corrosion between the inside channel and the frame side member. Cut ends of the frame rail and inside channels must be chamfered as described in the welding section of this guide. The chamfers must face inward on the chassis.

Frame Lengthening Additional Crossmember

Crossmember must be added to a new afterframe section to provide acceptable frame rigidity for the assembly. Due to added equipment, wheelbase changes and other modifications, it may also be necessary to add crossmembers to provide acceptable support and frame rigidity. The distance between crossmembers should not exceed a maximum of 1524 mm (60 in) between crossmember centers. Crossmember should be secured to the frame using either body bound bolts or HUCK fasteners.

Notes

Frame Drilling

CAUTION

Do not drill the frame flanges, as this may result in frame failure.

Body attachment, frame lengthening, shortening or any other type of modification, requires drilling holes in the frame side members. Whenever holes are drilled in the frame, certain precautions must be taken to maintain the strength and integrity of the frame.

When drilling the frame, observe the following guidelines to avoid frame damage:

- The hole centerline must not be closer than 45 mm (1 3/4 in) from the top or bottom frame flange. If inside frame liners are used, hole centerline must be at least 45 mm (1 3/4 in) from the flange of the inside liner.
- Hole centerlines must be at least 75 mm (3 in) apart. Additionally, there should be no more than two holes on the same vertical line. Ideally, holes should be staggered as shown in the illustration below.

Location	Dimension mm (in)
A	45 (1 3/4)
B	75 (3)
C	75 (3)
H	Frame Height

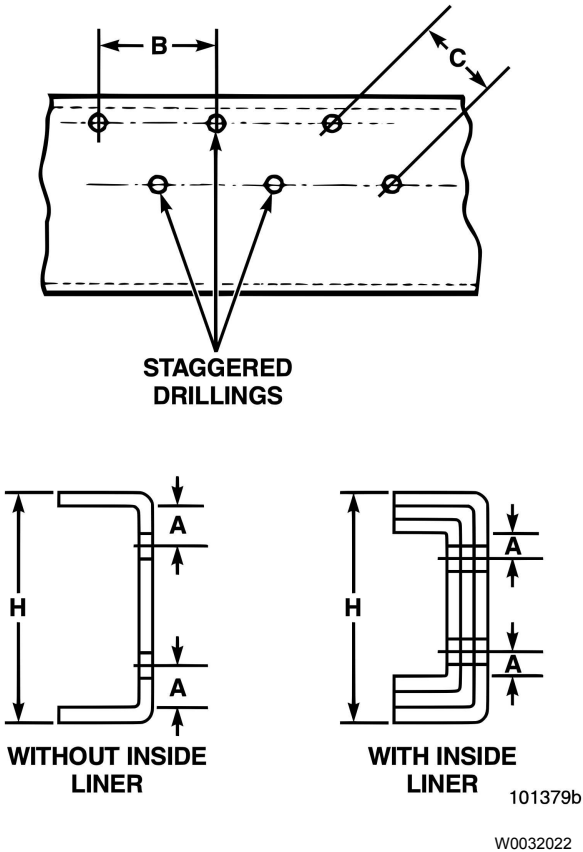
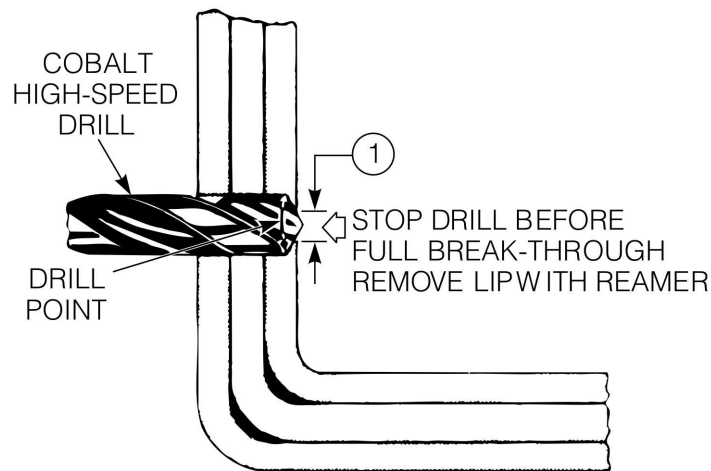


Fig. 47 Drilling Locations in Frame Webs

- Holes must be no larger than existing holes in the frame, such as holes for the spring bracket bolts. As an example, spring bracket bolt sizes for the certain MACK suspensions are as follows:
MACK SS 20 mm (0.79 in)
MACK AL 16 mm (0.63 in)
MaxLite 2040 14 mm (0.55 in)
- Use proper drill bits. Cobalt high-speed drills are superior to conventional high-speed drill bits for frame drilling operations. Drills should be sharpened to give 150 ° included angle with 7 to 15 ° lip clearance. This prevents localized overheating of the frame in the area of the drilling operation. When a pilot hole is drilled, it should not be enlarged in successive stages, as rapid wear of drill bits will occur. Also, stop drilling before fully breaking through. Remove the remaining lip with a reamer.
- Never cut holes into the frame with a torch.
- Do not drill holes near any high-stress points such as locations around the spring brackets.
- Holes must be deburred and reamed to no more than 0.946 mm (1/32 in) larger than the intended fastener.



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Fig. 48 Frame Drilling

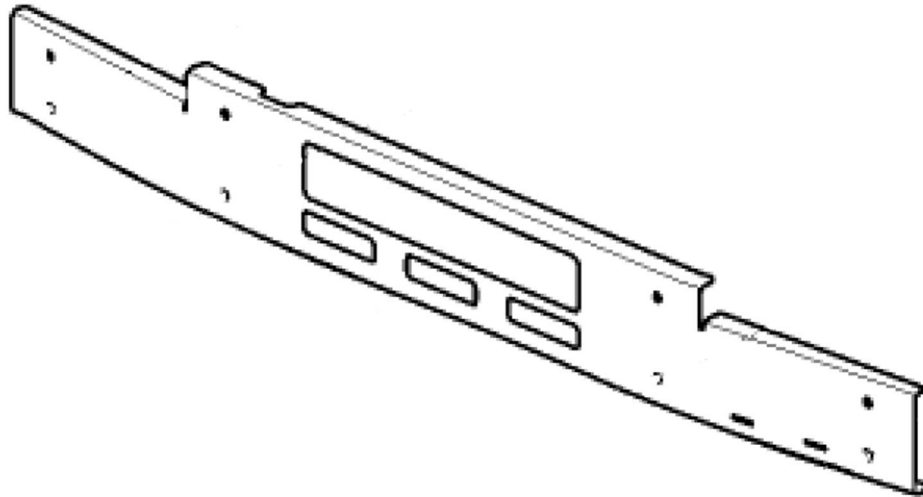
1. 6.35 mm (0.25 in) Maximum

LR Bumper Design and Requirements

The front bumpers for the Mack LR provide a degree of standoff from the front closing cross member. This standoff prevents damage to the cab, grille, and lights. However, certain applications (such as a can lift) require direct attachment to the front closing cross member. The standoff of the bumper will interfere with the attachment.

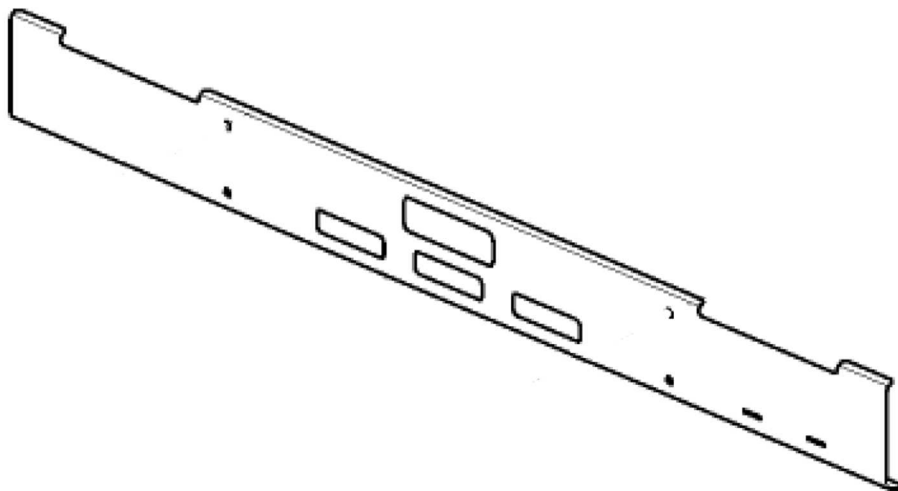
Mack Trucks provides a flush mount bumper to enable body builders to attach a can lift. The flush mount bumper is **required** in order to properly install a can lift.

Note: Consult with your Mack dealership for ordering and parts information.



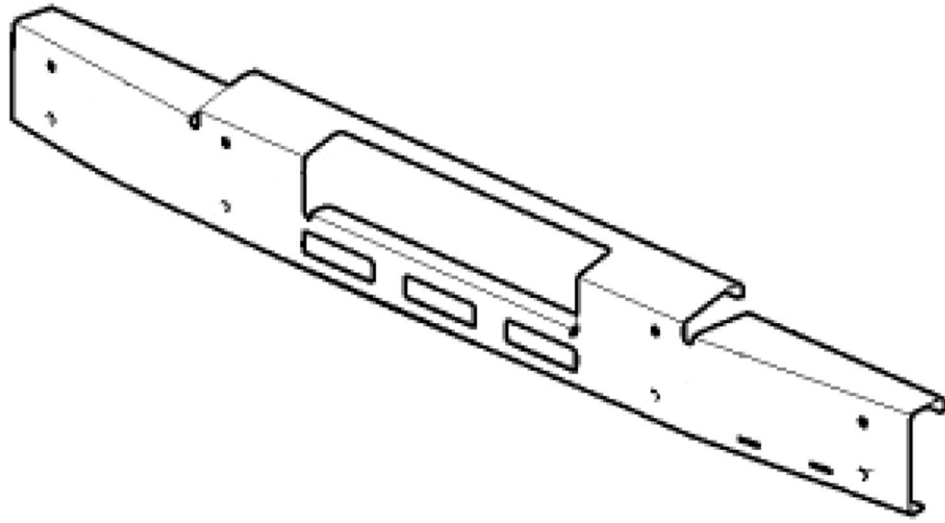
W7116214

Fig. 49 Standard Low Profile Bumper +2-inch OL in Center, +0-inch OL Ends



W7116215

Fig. 50 Optional Flush (Carry Can) Bumper +0-inch OL



W7116216

Fig. 51 Optional Extended Bumper +4-inch Non-FEL Applications

Notes

Fifth Wheel

Fifth Wheel Mounting and Specification

The following is offered as a guide for installing fifth wheels. Because of the many different makes and types of fifth wheels available and the variety of vehicles on which they can be mounted, it is impossible to give specific instructions. Instead, general recommendations are given. Each installation must be made on an individual basis within these recommendations. Also follow the fifth wheel manufacturers installation instructions if available.

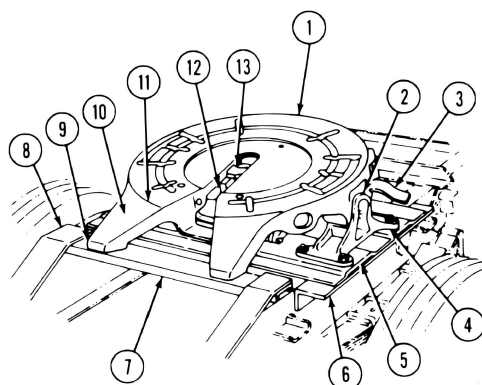
The most important factor to remember about fifth wheels is that the final mounting location determines the semitrailer and payload weight distribution to the tractor axles. Ride quality, vehicle stability, steering control, frame integrity and brake performance are all affected by this critical placement.

It is assumed that many factors have already been considered in the preparation of the specifications for the chassis ordered. These factors would typically include the following:

- 1 Legal restrictions
- 2 Front and rear axle load limits
- 3 Length of semitrailer
- 4 Anticipated payload
- 5 Semitrailer axle location
- 6 Movable or fixed trailer rear axle(s)
- 7 Kingpin offset
- 8 Front and rear semitrailer weights (Front semitrailer weight is the weight imposed on the kingpin.)

These factors are not covered in this section. Instead, this discussion covers the two major considerations in the mounting of the fifth wheel: WHERE to mount it, and HOW to mount it.

The following illustration provides a description of nomenclature that is used to properly identify the fifth wheel parts and mounting components. Also provided is a list of abbreviations established by SAE International when referring to fifth wheels (reference SAE J701 AUG84).



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Fig. 52 Fifth Wheel Nomenclature

1. Skid Plate or Top Plate	8. Pick-Up Ramp
2. Base Plate Pivot	9. Skid Ramp Tips
3. Operating Handle	10. Skid Ramp
4. Base Mounting Bracket	11. End of Skid Ramp
5. Mounting Plate	12. Throat
6. Frame Mounting Supports	13. Coupler Jaws
7. Skid Ramp Stop	

Trailer Abbreviations

TL = Trailer Length

SR = Swing Radius (centerline of kingpin to corner of trailer)

KP = Front of Trailer to Kingpin

LWC = Kingpin to Landing Gear (includes 3 in of clearance)

TH = Trailer Height

R = Trailer Corner Radius

Tractor Abbreviations

CFW = Back of Cab to Centerline of Fifth Wheel

BBC = Bumper to Back of Cab

BFW = Bumper to Centerline of Fifth Wheel

FW = Kingpin to Rear Axle Centerline

CA = Back of Cab to Centerline of Rear Axle or Tandem Axle

BFA = Bumper to Front Axle Centerline

W = Width

OAL = Overall Length

OH = Overall Height

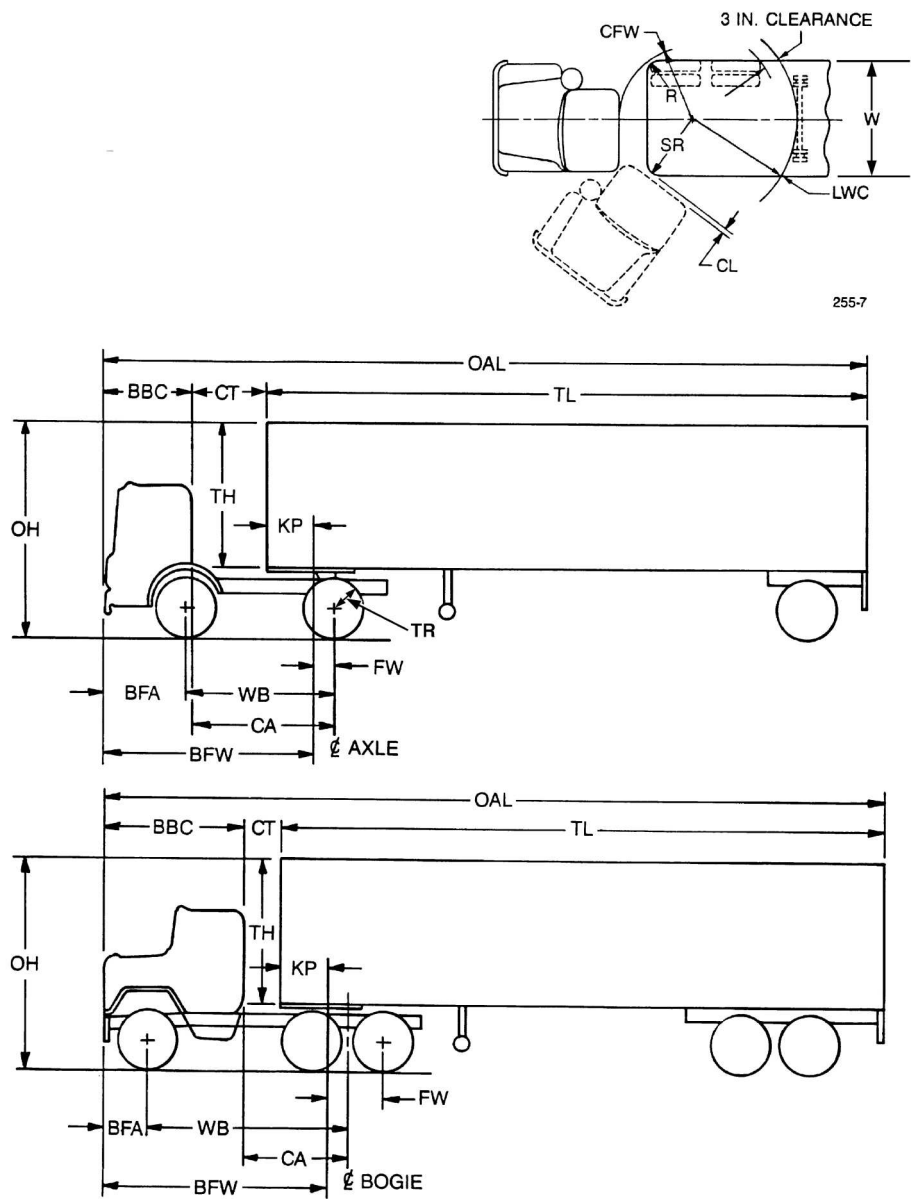
CL = Clearance Between Rear of Cab and Trailer Corner (4 in minimum)

CT = Clearance Between Rear of Cab and Trailer Front in Straight Ahead Position

W/B = Wheelbase

TR = Tire Radius

C and L Superimposed = Centerline of Single Axle or Tandem Axle



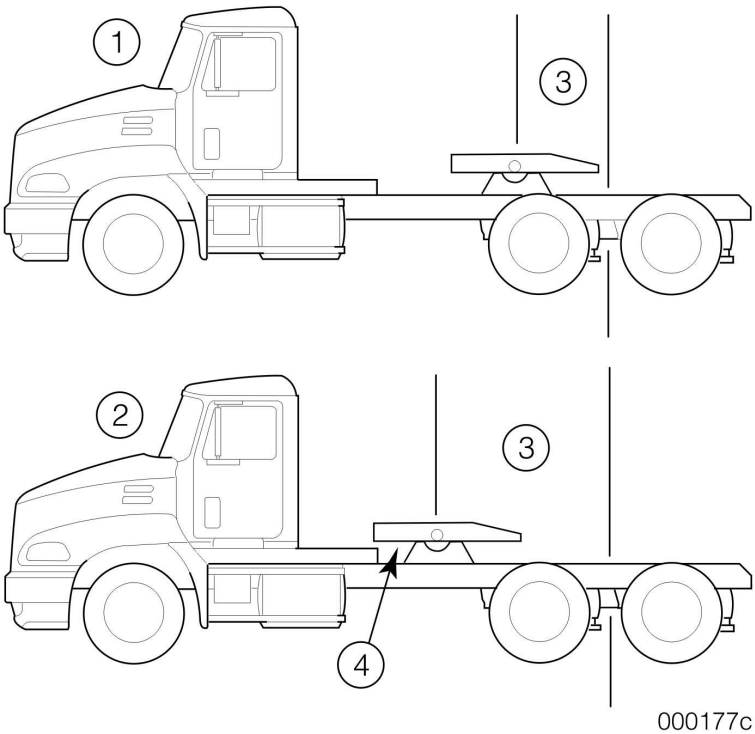
W9032320

Fig. 53 Dimensions Used in Locating Fifth Wheels

Fifth Wheel Locating

Locating the fifth wheel depends on factors such as wheelbase and desired weight distribution, frame section, tractor axle capacity, ride quality, cab clearance, and clearance between the landing gear and the outer tractor tires.

Fifth wheel offset is defined as the maximum distance forward of the single/tandem rear axle centerline that a fixed fifth wheel can be positioned, or where a sliding fifth wheel can be moved. The fifth wheel offset must be adequate to comply with any maximum overall combination vehicle length law within the state(s) in which the combination is intended to be operated.



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Fig. 54 Fixed and Sliding Fifth Wheel Location

1. Fixed	3. Offset
2. Sliding	4. Slider Positioned as Far Forward as Possible

The maximum allowable offset is also determined by the required amount of landing gear clearance and the semitrailer swing clearance. In a sharp turn, as the semitrailer corner approaches the chassis centerline, placement of the fifth wheel determines the clearance between the cab and trailer. The recommended minimum clearances are 4 in between semitrailer and back of cab, and 3 in between landing gear and the rearmost part of the outside dual tire.

Note: When calculating the required clearance between semitrailer and back of cab, always consider any accessories or exhaust components that may extend further back than the cab itself.

These considerations would then dictate that the fifth wheel be mounted to the frame between the required offset, to comply with any applicable overall vehicle length limits, and the maximum allowable offset, to maintain swing clearance.

In addition, engineering experience has determined that frame section, vehicle application and axle ratings further limit the mounting location. The Maximum Fifth Wheel Offset chart lists maximum fifth wheel offset based upon these factors. Based on wheelbase and other chassis specifications, all chassis models may not be able to fully use the maximum available offset.

**CAUTION**

To avoid unloading the front axle and the resultant possible reduced steering control, do not locate the fifth wheel so that the centerline of the fifth wheel coupler jaws (kingpin locks) is behind the centerline of the rear axle, tandem axles or tri-axles, as applicable. Sliding fifth wheels must be blocked so that the centerline of the coupler jaws cannot be located behind the centerline of the axle(s).

The height of the fifth wheel is important to ensure that the tractor couples with the semitrailer and that the overall height limit is not exceeded.

The height must be such to provide adequate clearance between the tires and the semitrailer when the semitrailer is fully loaded. This clearance must allow for tire chains and tractor suspension deflection under bump conditions.

When mounting a sliding or a fixed fifth wheel with a base plate on a chassis with air suspension and MACK axles, a spacer must be included between the fifth wheel mounting plate and the top flange of the frame rail. This is to provide adequate dynamic clearance for the transverse torque rod.

Steel spacers between the base mounting bracket and the mounting plate are also necessary in other applications if additional height is required and cannot be obtained by selecting an optional fifth wheel base mounting bracket.

Note: Truck tractors shipped from the MACK Trucks, Inc. assembly plant without fifth wheels are certified as incomplete vehicles. Any facility that installs a fifth wheel is considered the final stage manufacturer and must certify that the completed vehicle complies with all applicable motor vehicle safety standards.

Notes

Note: Wheelbase and fifth wheel offset combinations must be verified for trailer swing, landing clearance, etc.

Maximum Fifth Wheel Offset Axle Back (AN / CXU) Tractor, 5 443 kg (12,000 lb) Front Axle Rating

AXLE RATING FRONT AND REAR																
W/B mm (in)	Front Axle 5,443 kg (12,000 lb)															
	Rear Axle 10,433 kg (23,000 lb)				Rear Axle 15,422 kg (34,000 lb)				Rear Axle 17239 kg (38,000 lb)				Rear Axle 18,144 kg (40,000 lb)			
	FRAME THICKNESS (mm)															
	6	7	8	9.5	6	7	8	9.5	6	7	8	9.5	6	7	8	9.5
	Maximum 5th Wheel Offset mm (in)				Maximum 5th Wheel Offset mm (in)				Maximum 5th Wheel Off- set mm (in)				Maximum 5th Wheel Off- set mm (in)			
3505 (138)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"
3658 (144)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"
3759 (148)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"
3785 (149)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"
3810 (150)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"
3912 (154)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"
3937 (155)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"
3962 (156)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"
4064 (160)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"
4089 (161)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"
4115 (162)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"
4216 (166)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"
4242 (167)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"
4267 (168)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"
4369 (172)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"
4394 (173)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"

AXLE RATING FRONT AND REAR																
W/B mm (in)	Front Axle 5,443 kg (12,000 lb)															
	Rear Axle 10,433 kg (23,000 lb)				Rear Axle 15,422 kg (34,000 lb)				Rear Axle 17239 kg (38,000 lb)				Rear Axle 18,144 kg (40,000 lb)			
	FRAME THICKNESS (mm)															
	6	7	8	9.5	6	7	8	9.5	6	7	8	9.5	6	7	8	9.5
	Maximum 5th Wheel Offset mm (in)				Maximum 5th Wheel Offset mm (in)				Maximum 5th Wheel Off- set mm (in)				Maximum 5th Wheel Off- set mm (in)			
4420 (174)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"
4521 (178)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"
4547 (179)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"
4572 (180)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"
4648 (183)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"
4674 (184)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"
4699 (185)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"
4801 (189)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"
4826 (190)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"
4851 (191)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"
4953 (195)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"
4978 (196)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"
5004 (197)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"
5105 (201)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"
5131 (202)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"
5156 (203)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"
5258 (207)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"
5283 (208)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"

AXLE RATING FRONT AND REAR																
W/B mm (in)	Front Axle 5,443 kg (12,000 lb)															
	Rear Axle 10,433 kg (23,000 lb)				Rear Axle 15,422 kg (34,000 lb)				Rear Axle 17239 kg (38,000 lb)				Rear Axle 18,144 kg (40,000 lb)			
	FRAME THICKNESS (mm)															
	6	7	8	9.5	6	7	8	9.5	6	7	8	9.5	6	7	8	9.5
	Maximum 5th Wheel Offset mm (in)				Maximum 5th Wheel Offset mm (in)				Maximum 5th Wheel Off- set mm (in)				Maximum 5th Wheel Off- set mm (in)			
5309 (209)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"
5410 (213)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"
5436 (214)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"
5461 (215)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"
5563 (219)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"
5588 (220)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"
5613 (221)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"
5715 (225)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"
5740 (226)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"
5766 (227)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"
5867 (231)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"
5893 (232)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"
5918 (233)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"
6020 (237)	610 24"	610 24"	610 24"	N/A	508 20"	610 24"	610 24"	610 24"	508 20"	610 24"	610 24"	610 24"	508 20"	610 24"	610 24"	610 24"
6045 (238)	610 24"	610 24"	610 24"	N/A	508 20"	610 24"	610 24"	610 24"	508 20"	610 24"	610 24"	610 24"	508 20"	610 24"	610 24"	610 24"
6071 (239)	N/A	N/A	N/A	N/A	508 20"	610 24"	610 24"	610 24"	508 20"	610 24"	610 24"	610 24"	508 20"	610 24"	610 24"	610 24"
6172 (243)	N/A	N/A	N/A	N/A	508 20"	610 24"	610 24"	610 24"	457 18"	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"
6299 (248)	N/A	N/A	N/A	N/A	457 18"	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"

AXLE RATING FRONT AND REAR																
W/B mm (in)	Front Axle 5,443 kg (12,000 lb)															
	Rear Axle 10,433 kg (23,000 lb)				Rear Axle 15,422 kg (34,000 lb)				Rear Axle 17239 kg (38,000 lb)				Rear Axle 18,144 kg (40,000 lb)			
	FRAME THICKNESS (mm)															
	6	7	8	9.5	6	7	8	9.5	6	7	8	9.5	6	7	8	9.5
	Maximum 5th Wheel Offset mm (in)				Maximum 5th Wheel Offset mm (in)				Maximum 5th Wheel Off- set mm (in)				Maximum 5th Wheel Off- set mm (in)			
6325 (249)	N/A	N/A	N/A	N/A	457 18"	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"
6350 (250)	N/A	N/A	N/A	N/A	N/A	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"
6401 (252)	N/A	N/A	N/A	N/A	N/A	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"
6452 (254)	N/A	N/A	N/A	N/A	N/A	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	N/A	559 22"	610 24"	610 24"
6477 (255)	N/A	N/A	N/A	N/A	N/A	610 24"	610 24"	610 24"	N/A	559 22"	610 24"	610 24"	N/A	559 22"	610 24"	610 24"
6502 (256)	N/A	N/A	N/A	N/A	N/A	559 22"	610 24"	610 24"	N/A	559 22"	610 24"	610 24"	N/A	559 22"	610 24"	610 24"
6553 (258)	N/A	N/A	N/A	N/A	N/A	559 22"	610 24"	610 24"	N/A	559 22"	610 24"	610 24"	N/A	508 20"	610 24"	610 24"
6604 (260)	N/A	N/A	N/A	N/A	N/A	559 22"	610 24"	610 24"	N/A	559 22"	610 24"	610 24"	N/A	508 20"	610 24"	610 24"
6629 (261)	N/A	N/A	N/A	N/A	N/A	559 22"	610 24"	610 24"	N/A	559 22"	610 24"	610 24"	N/A	508 20"	610 24"	610 24"

Notes

AXLE RATING FRONT AND REAR								
W/B mm (in)	Front Axle 5,443 kg (12,000 lb)							
	Rear Axle 19,958 kg (44,000 lb)				Rear Axle 20,866 kg (46,000 lb)			
	FRAME THICKNESS (mm)							
	6	7	8	9.5	6	7	8	9.5
	Maximum 5th Wheel Offset mm (in)				Maximum 5th Wheel Offset mm (in)			
3505 (138)	N/A	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"
3658 (144)	N/A	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"
3759 (148)	N/A	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"
3785 (149)	N/A	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"
3810 (150)	N/A	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"
3912 (154)	N/A	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"
3937 (155)	N/A	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"
3962 (156)	N/A	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"
4064 (160)	N/A	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"
4089 (161)	N/A	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"
4115 (162)	N/A	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"
4216 (166)	N/A	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"
4242 (167)	N/A	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"
4267 (168)	N/A	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"
4369 (172)	N/A	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"
4394 (173)	N/A	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"
4420 (174)	N/A	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"
4521 (178)	N/A	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"
4547 (179)	N/A	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"

AXLE RATING FRONT AND REAR								
W/B mm (in)	Front Axle 5,443 kg (12,000 lb)							
	Rear Axle 19,958 kg (44,000 lb)				Rear Axle 20,866 kg (46,000 lb)			
	FRAME THICKNESS (mm)							
	6	7	8	9.5	6	7	8	9.5
	Maximum 5th Wheel Offset mm (in)				Maximum 5th Wheel Offset mm (in)			
4572 (180)	N/A	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"
4648 (183)	N/A	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"
4674 (184)	N/A	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"
4699 (185)	N/A	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"
4801 (189)	N/A	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"
4826 (190)	N/A	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"
4851 (191)	N/A	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"
4953 (195)	N/A	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"
4978 (196)	N/A	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"
5004 (197)	N/A	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"
5105 (201)	N/A	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"
5131 (202)	N/A	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"
5156 (203)	N/A	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"
5258 (207)	N/A	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"
5283 (208)	N/A	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"
5309 (209)	N/A	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"
5410 (213)	N/A	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"
5436 (214)	N/A	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"
5461 (215)	N/A	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"

AXLE RATING FRONT AND REAR								
W/B mm (in)	Front Axle 5,443 kg (12,000 lb)							
	Rear Axle 19,958 kg (44,000 lb)				Rear Axle 20,866 kg (46,000 lb)			
	FRAME THICKNESS (mm)							
	6	7	8	9.5	6	7	8	9.5
	Maximum 5th Wheel Offset mm (in)				Maximum 5th Wheel Offset mm (in)			
5563 (219)	N/A	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"
5588 (220)	N/A	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"
5613 (221)	N/A	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"
5715 (225)	N/A	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"
5740 (226)	N/A	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"
5766 (227)	N/A	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"
5867 (231)	N/A	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"
5893 (232)	N/A	610 24"	610 24"	610 24"	N/A	559 22"	610 24"	610 24"
5918 (233)	N/A	610 24"	610 24"	610 24"	N/A	559 22"	610 24"	610 24"
6020 (237)	N/A	559 22"	610 24"	610 24"	N/A	559 22"	610 24"	610 24"
6045 (238)	N/A	559 22"	610 24"	610 24"	N/A	559 22"	610 24"	610 24"
6071 (239)	N/A	559 22"	610 24"	610 24"	N/A	508 20"	610 24"	610 24"
6172 (243)	N/A	559 22"	610 24"	610 24"	N/A	508 20"	559 22"	610 24"
6299 (248)	N/A	559 22"	610 24"	610 24"	N/A	508 20"	559 22"	610 24"
6325 (249)	N/A	559 22"	610 24"	610 24"	N/A	508 20"	559 22"	610 24"
6350 (250)	N/A	508 20"	610 24"	610 24"	N/A	508 20"	559 22"	610 24"
6401 (252)	N/A	508 20"	610 24"	610 24"	N/A	457 18"	559 22"	610 24"
6452 (254)	N/A	508 20"	610 24"	610 24"	N/A	457 18"	559 22"	610 24"
6477 (255)	N/A	457 18"	610 24"	610 24"	N/A	457 18"	508 20"	610 24"

AXLE RATING FRONT AND REAR								
W/B mm (in)	Front Axle 5,443 kg (12,000 lb)							
	Rear Axle 19,958 kg (44,000 lb)				Rear Axle 20,866 kg (46,000 lb)			
	FRAME THICKNESS (mm)							
	6	7	8	9.5	6	7	8	9.5
	Maximum 5th Wheel Offset mm (in)				Maximum 5th Wheel Offset mm (in)			
6502 (256)	N/A	457 18"	610 24"	610 24"	N/A	N/A	508 20"	610 24"
6553 (258)	N/A	457 18"	610 24"	610 24"	N/A	N/A	508 20"	610 24"
6604 (260)	N/A	457 18"	610 24"	610 24"	N/A	N/A	508 20"	610 24"
6629 (261)	N/A	457 18"	610 24"	610 24"	N/A	N/A	508 20"	610 24"

Notes

Maximum Fifth Wheel Offset Axle Back (AN / CXU) Tractor, 6,623 kg (14,600 lb) Front Axle Rating

AXLE RATING FRONT AND REAR																
W/B mm (in)	Front Axle 6,623 kg (14,600 lb)															
	Rear Axle 10,433 kg (23,000 lb)				Rear Axle 15,422 kg (34,000 lb)				Rear Axle 17,239 kg (38,000 lb)				Rear Axle 18,144 kg (40,000 lb)			
	FRAME THICKNESS (mm)															
	6	7	8	9.5	6	7	8	9.5	6	7	8	9.5	6	7	8	9.5
	Maximum 5th Wheel Offset mm (in)				Maximum 5th Wheel Offset mm (in)				Maximum 5th Wheel Off- set mm (in)				Maximum 5th Wheel Off- set mm (in)			
3505 (138)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"
3658 (144)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"
3759 (148)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	610 24"	610 24"
3785 (149)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	610 24"	610 24"
3810 (150)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	610 24"	610 24"
3912 (154)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	610 24"	610 24"
3937 (155)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	610 24"	610 24"
3962 (156)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	610 24"	610 24"
4064 (160)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	610 24"	610 24"
4089 (161)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	610 24"	610 24"
4115 (162)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	610 24"	610 24"
4216 (166)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	610 24"	610 24"
4242 (167)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	610 24"	610 24"
4267 (168)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	610 24"	610 24"
4369 (172)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	610 24"	610 24"
4394 (173)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	610 24"	610 24"
4420 (174)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	610 24"	610 24"

AXLE RATING FRONT AND REAR																
W/B mm (in)	Front Axle 6,623 kg (14,600 lb)															
	Rear Axle 10,433 kg (23,000 lb)				Rear Axle 15,422 kg (34,000 lb)				Rear Axle 17,239 kg (38,000 lb)				Rear Axle 18,144 kg (40,000 lb)			
	FRAME THICKNESS (mm)															
	6	7	8	9.5	6	7	8	9.5	6	7	8	9.5	6	7	8	9.5
	Maximum 5th Wheel Offset mm (in)				Maximum 5th Wheel Offset mm (in)				Maximum 5th Wheel Off- set mm (in)				Maximum 5th Wheel Off- set mm (in)			
4521 (178)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	610 24"	610 24"
4547 (179)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	610 24"	610 24"
4572 (180)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	610 24"	610 24"
4648 (183)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	610 24"	610 24"
4674 (184)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	610 24"	610 24"
4699 (185)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	610 24"	610 24"
4801 (189)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	610 24"	610 24"
4826 (190)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	610 24"	610 24"
4851 (191)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	610 24"	610 24"
4953 (195)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	610 24"	610 24"
4978 (196)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	610 24"	610 24"
5004 (197)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	610 24"	610 24"
5105 (201)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	610 24"	610 24"
5131 (202)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	610 24"	610 24"
5156 (203)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	610 24"	610 24"
5258 (207)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	610 24"	610 24"
5283 (208)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	610 24"	610 24"
5309 (209)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	610 24"	610 24"

AXLE RATING FRONT AND REAR																
W/B mm (in)	Front Axle 6,623 kg (14,600 lb)															
	Rear Axle 10,433 kg (23,000 lb)				Rear Axle 15,422 kg (34,000 lb)				Rear Axle 17,239 kg (38,000 lb)				Rear Axle 18,144 kg (40,000 lb)			
	FRAME THICKNESS (mm)															
	6	7	8	9.5	6	7	8	9.5	6	7	8	9.5	6	7	8	9.5
	Maximum 5th Wheel Offset mm (in)				Maximum 5th Wheel Offset mm (in)				Maximum 5th Wheel Off- set mm (in)				Maximum 5th Wheel Off- set mm (in)			
5410 (213)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	610 24"	610 24"	559 22"	610 24"	610 24"	610 24"
5436 (214)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	610 24"	610 24"	559 22"	610 24"	610 24"	610 24"
5461 (215)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	610 24"	610 24"	559 22"	610 24"	610 24"	610 24"
5563 (219)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	610 24"	610 24"	508 20"	610 24"	610 24"	610 24"
5588 (220)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	610 24"	610 24"	508 20"	610 24"	610 24"	610 24"
5613 (221)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	610 24"	610 24"	508 20"	610 24"	610 24"	610 24"
5715 (225)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	610 24"	610 24"	406 16"	610 24"	610 24"	610 24"
5740 (226)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	610 24"	610 24"	406 16"	610 24"	610 24"	610 24"
5766 (227)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	610 24"	610 24"	406 16"	610 24"	610 24"	610 24"
5867 (231)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	610 24"	610 24"	406 16"	559 22"	610 24"	610 24"
5893 (232)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	610 24"	610 24"	406 16"	559 22"	610 24"	610 24"
5918 (233)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	610 24"	610 24"	N/A	559 22"	610 24"	610 24"
6020 (237)	610 24"	610 24"	610 24"	N/A	N/A	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	N/A	559 22"	610 24"	610 24"
6045 (238)	610 24"	610 24"	610 24"	N/A	N/A	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	N/A	508 20"	610 24"	610 24"
6071 (239)	N/A	N/A	N/A	N/A	N/A	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	N/A	508 20"	610 24"	610 24"
6172 (243)	N/A	N/A	N/A	N/A	N/A	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	N/A	457 18"	559 22"	610 24"
6299 (248)	N/A	N/A	N/A	N/A	N/A	559 22"	610 24"	610 24"	N/A	559 22"	610 24"	610 24"	N/A	406 16"	559 22"	610 24"
6325 (249)	N/A	N/A	N/A	N/A	N/A	610 24"	610 24"	610 24"	N/A	559 22"	610 24"	610 24"	N/A	406 16"	559 22"	610 24"

AXLE RATING FRONT AND REAR																
W/B mm (in)	Front Axle 6,623 kg (14,600 lb)															
	Rear Axle 10,433 kg (23,000 lb)				Rear Axle 15,422 kg (34,000 lb)				Rear Axle 17,239 kg (38,000 lb)				Rear Axle 18,144 kg (40,000 lb)			
	FRAME THICKNESS (mm)															
	6	7	8	9.5	6	7	8	9.5	6	7	8	9.5	6	7	8	9.5
	Maximum 5th Wheel Offset mm (in)				Maximum 5th Wheel Offset mm (in)				Maximum 5th Wheel Off- set mm (in)				Maximum 5th Wheel Off- set mm (in)			
6350 (250)	N/A	N/A	N/A	N/A	N/A	610 24"	610 24"	610 24"	N/A	559 22"	610 24"	610 24"	N/A	406 16"	559 22"	610 24"
6401 (252)	N/A	N/A	N/A	N/A	N/A	610 24"	610 24"	610 24"	N/A	559 22"	610 24"	610 24"	N/A	406 16"	559 22"	610 24"
6452 (254)	N/A	N/A	N/A	N/A	N/A	N/A	610 24"	610 24"	N/A	508 20"	610 24"	610 24"	N/A	406 16"	559 22"	610 24"
6477 (255)	N/A	N/A	N/A	N/A	N/A	N/A	610 24"	610 24"	N/A	508 20"	610 24"	610 24"	N/A	406 16"	457 18"	610 24"
6502 (256)	N/A	N/A	N/A	N/A	N/A	N/A	610 24"	610 24"	N/A	N/A	610 24"	610 24"	N/A	N/A	457 18"	610 24"
6553 (258)	N/A	N/A	N/A	N/A	N/A	N/A	610 24"	610 24"	N/A	N/A	610 24"	610 24"	N/A	N/A	457 18"	610 24"
6604 (260)	N/A	N/A	N/A	N/A	N/A	N/A	610 24"	610 24"	N/A	N/A	610 24"	610 24"	N/A	N/A	457 18"	610 24"
6629 (261)	N/A	N/A	N/A	N/A	N/A	N/A	610 24"	610 24"	N/A	N/A	610 24"	610 24"	N/A	N/A	457 18"	610 24"

Notes

AXLE RATING FRONT AND REAR								
W/B mm (in)	Front Axle 6,623 kg (14,600 lb)							
	Rear Axle 19,958 kg (44,000 lb)				Rear Axle 20,866 kg (46,000 lb)			
	FRAME THICKNESS (mm)							
	6	7	8	9.5	6	7	8	9.5
	Maximum 5th Wheel Offset mm (in)				Maximum 5th Wheel Offset mm (in)			
3505 (138)	N/A	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"
3658 (144)	N/A	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"
3759 (148)	N/A	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"
3785 (149)	N/A	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"
3810 (150)	N/A	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"
3912 (154)	N/A	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"
3937 (155)	N/A	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"
3962 (156)	N/A	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"
4064 (160)	N/A	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"
4089 (161)	N/A	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"
4115 (162)	N/A	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"
4216 (166)	N/A	610 24"	610 24"	610 24"	N/A	559 22"	610 24"	610 24"
4242 (167)	N/A	610 24"	610 24"	610 24"	N/A	559 22"	610 24"	610 24"
4267 (168)	N/A	610 24"	610 24"	610 24"	N/A	559 22"	610 24"	610 24"
4369 (172)	N/A	559 22"	610 24"	610 24"	N/A	508 20"	610 24"	610 24"
4394 (173)	N/A	559 22"	610 24"	610 24"	N/A	508 20"	610 24"	610 24"
4420 (174)	N/A	559 22"	610 24"	610 24"	N/A	508 20"	610 24"	610 24"
4521 (178)	N/A	559 22"	610 24"	610 24"	N/A	508 20"	610 24"	610 24"
4547 (179)	N/A	559 22"	610 24"	610 24"	N/A	508 20"	610 24"	610 24"

AXLE RATING FRONT AND REAR								
W/B mm (in)	Front Axle 6,623 kg (14,600 lb)							
	Rear Axle 19,958 kg (44,000 lb)				Rear Axle 20,866 kg (46,000 lb)			
	FRAME THICKNESS (mm)							
	6	7	8	9.5	6	7	8	9.5
	Maximum 5th Wheel Offset mm (in)				Maximum 5th Wheel Offset mm (in)			
4572 (180)	N/A	559 22"	610 24"	610 24"	N/A	508 20"	610 24"	610 24"
4648 (183)	N/A	559 22"	610 24"	610 24"	N/A	508 20"	610 24"	610 24"
4674 (184)	N/A	559 22"	610 24"	610 24"	N/A	508 20"	610 24"	610 24"
4699 (185)	N/A	559 22"	610 24"	610 24"	N/A	508 20"	610 24"	610 24"
4801 (189)	N/A	559 22"	610 24"	610 24"	N/A	508 20"	610 24"	610 24"
4826 (190)	N/A	559 22"	610 24"	610 24"	N/A	508 20"	610 24"	610 24"
4851 (191)	N/A	559 22"	610 24"	610 24"	N/A	508 20"	610 24"	610 24"
4953 (195)	N/A	559 22"	610 24"	610 24"	N/A	508 20"	610 24"	610 24"
4978 (196)	N/A	559 22"	610 24"	610 24"	N/A	508 20"	610 24"	610 24"
5004 (197)	N/A	559 22"	610 24"	610 24"	N/A	508 20"	610 24"	610 24"
5105 (201)	N/A	559 22"	610 24"	610 24"	N/A	508 20"	610 24"	610 24"
5131 (202)	N/A	559 22"	610 24"	610 24"	N/A	508 20"	610 24"	610 24"
5156 (203)	N/A	559 22"	610 24"	610 24"	N/A	508 20"	610 24"	610 24"
5258 (207)	N/A	559 22"	610 24"	610 24"	N/A	508 20"	610 24"	610 24"
5283 (208)	N/A	559 22"	610 24"	610 24"	N/A	508 20"	610 24"	610 24"
5309 (209)	N/A	559 22"	610 24"	610 24"	N/A	508 20"	610 24"	610 24"
5410 (213)	N/A	508 20"	610 24"	610 24"	N/A	508 20"	610 24"	610 24"
5436 (214)	N/A	508 20"	610 24"	610 24"	N/A	508 20"	610 24"	610 24"
5461 (215)	N/A	508 20"	610 24"	610 24"	N/A	508 20"	610 24"	610 24"

AXLE RATING FRONT AND REAR								
W/B mm (in)	Front Axle 6,623 kg (14,600 lb)							
	Rear Axle 19,958 kg (44,000 lb)				Rear Axle 20,866 kg (46,000 lb)			
	FRAME THICKNESS (mm)							
	6	7	8	9.5	6	7	8	9.5
	Maximum 5th Wheel Offset mm (in)				Maximum 5th Wheel Offset mm (in)			
5563 (219)	N/A	508 20"	610 24"	610 24"	N/A	457 18"	559 22"	610 24"
5588 (220)	N/A	508 20"	610 24"	610 24"	N/A	457 18"	559 22"	610 24"
5613 (221)	N/A	508 20"	610 24"	610 24"	N/A	457 18"	559 22"	610 24"
5715 (225)	N/A	457 18"	610 24"	610 24"	N/A	457 18"	559 22"	610 24"
5740 (226)	N/A	457 18"	610 24"	610 24"	N/A	457 18"	559 22"	610 24"
5766 (227)	N/A	457 18"	610 24"	610 24"	N/A	457 18"	559 22"	610 24"
5867 (231)	N/A	406 16"	559 22"	610 24"	N/A	406 16"	508 20"	610 24"
5893 (232)	N/A	406 16"	559 22"	610 24"	N/A	406 16"	508 20"	610 24"
5918 (233)	N/A	406 16"	559 22"	610 24"	N/A	406 16"	508 20"	610 24"
6020 (237)	N/A	406 16"	508 20"	610 24"	N/A	406 16"	508 20"	610 24"
6045 (238)	N/A	406 16"	508 20"	610 24"	N/A	406 16"	508 20"	610 24"
6071 (239)	N/A	406 16"	508 20"	610 24"	N/A	406 16"	508 20"	610 24"
6172 (243)	N/A	406 16"	508 20"	610 24"	N/A	356 14"	457 18"	610 24"
6299 (248)	N/A	356 14"	457 18"	610 24"	N/A	N/A	457 18"	610 24"
6325 (249)	N/A	N/A	457 18"	610 24"	N/A	N/A	457 18"	610 24"
6350 (250)	N/A	N/A	457 18"	610 24"	N/A	N/A	457 18"	610 24"
6401 (252)	N/A	N/A	457 18"	610 24"	N/A	N/A	457 18"	610 24"
6452 (254)	N/A	N/A	406 16"	610 24"	N/A	N/A	457 18"	610 24"
6477 (255)	N/A	N/A	406 16"	610 24"	N/A	N/A	457 18"	610 24"

AXLE RATING FRONT AND REAR								
W/B mm (in)	Front Axle 6,623 kg (14,600 lb)							
	Rear Axle 19,958 kg (44,000 lb)				Rear Axle 20,866 kg (46,000 lb)			
	FRAME THICKNESS (mm)							
	6	7	8	9.5	6	7	8	9.5
	Maximum 5th Wheel Offset mm (in)				Maximum 5th Wheel Offset mm (in)			
6502 (256)	N/A	N/A	406 16"	610 24"	N/A	N/A	457 18"	610 24"
6553 (258)	N/A	N/A	406 16"	610 24"	N/A	N/A	457 18"	610 24"
6604 (260)	N/A	N/A	406 16"	610 24"	N/A	N/A	457 18"	610 24"
6629 (261)	N/A	N/A	406 16"	610 24"	N/A	N/A	457 18"	610 24"

Notes

Maximum Fifth Wheel Offset Axle Forward (PI / CHU) Tractor, 5 443 kg (12,000 lb) Front Axle Rating

AXLE RATING FRONT AND REAR																
W/B mm (in)	Front Axle 5,443 kg (12,000 lb)															
	Rear Axle 10,433 kg (23,000 lb)				Rear Axle 15,422 kg (34,000 lb)				Rear Axle 17,239 kg (38,000 lb)				Rear Axle 18,144 kg (40,000 lb)			
	FRAME THICKNESS (mm)															
	6	7	8	9.5	6	7	8	9.5	6	7	8	9.5	6	7	8	9.5
	Maximum 5th Wheel Offset mm (in)				Maximum 5th Wheel Offset mm (in)				Maximum 5th Wheel Off- set mm (in)				Maximum 5th Wheel Off- set mm (in)			
3912 (154)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"
4216 (166)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"
4343 (171)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"
4369 (172)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"
4496 (177)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"
4521 (178)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"
4648 (183)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"
4674 (184)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"
4775 (188)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"
4801 (189)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"
4826 (190)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"
4928 (194)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	508 20"	610 24"	610 24"	610 24"	508 20"	610 24"	610 24"	610 24"
4953 (195)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	508 20"	610 24"	610 24"	610 24"	508 20"	610 24"	610 24"	610 24"
4978 (196)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	508 20"	610 24"	610 24"	610 24"	508 20"	610 24"	610 24"	610 24"
5080 (200)	610 24"	610 24"	610 24"	N/A	559 22"	610 24"	610 24"	610 24"	508 20"	610 24"	610 24"	610 24"	457 18"	610 24"	610 24"	610 24"
5105 (201)	610 24"	610 24"	610 24"	N/A	559 22"	610 24"	610 24"	610 24"	508 20"	610 24"	610 24"	610 24"	457 18"	610 24"	610 24"	610 24"
5131 (202)	610 24"	610 24"	610 24"	N/A	559 22"	610 24"	610 24"	610 24"	508 20"	610 24"	610 24"	610 24"	457 18"	610 24"	610 24"	610 24"

AXLE RATING FRONT AND REAR																
W/B mm (in)	Front Axle 5,443 kg (12,000 lb)															
	Rear Axle 10,433 kg (23,000 lb)				Rear Axle 15,422 kg (34,000 lb)				Rear Axle 17,239 kg (38,000 lb)				Rear Axle 18,144 kg (40,000 lb)			
	FRAME THICKNESS (mm)															
	6	7	8	9.5	6	7	8	9.5	6	7	8	9.5	6	7	8	9.5
	Maximum 5th Wheel Offset mm (in)				Maximum 5th Wheel Offset mm (in)				Maximum 5th Wheel Off- set mm (in)				Maximum 5th Wheel Off- set mm (in)			
5207 (205)	610 24"	610 24"	610 24"	N/A	559 22"	610 24"	610 24"	610 24"	508 20"	610 24"	610 24"	610 24"	457 18"	610 24"	610 24"	610 24"
5232 (206)	610 24"	610 24"	610 24"	N/A	559 22"	610 24"	610 24"	610 24"	508 20"	610 24"	610 24"	610 24"	457 18"	610 24"	610 24"	610 24"
5258 (207)	610 24"	610 24"	610 24"	N/A	559 22"	610 24"	610 24"	610 24"	457 18"	610 24"	610 24"	610 24"	457 18"	610 24"	610 24"	610 24"
5359 (211)	610 24"	610 24"	610 24"	N/A	559 22"	610 24"	610 24"	610 24"	457 18"	559 22"	610 24"	610 24"	457 18"	610 24"	610 24"	610 24"
5385 (212)	610 24"	610 24"	610 24"	N/A	559 22"	610 24"	610 24"	610 24"	457 18"	559 22"	610 24"	610 24"	457 18"	508 20"	610 24"	610 24"
5410 (213)	610 24"	610 24"	610 24"	N/A	559 22"	610 24"	610 24"	610 24"	457 18"	559 22"	610 24"	610 24"	457 18"	508 20"	610 24"	610 24"
5512 (217)	610 24"	610 24"	610 24"	N/A	508 20"	610 24"	610 24"	610 24"	457 18"	559 22"	610 24"	610 24"	457 18"	508 20"	610 24"	610 24"
5537 (218)	610 24"	610 24"	610 24"	N/A	508 20"	610 24"	610 24"	610 24"	457 18"	508 20"	610 24"	610 24"	406 16"	508 20"	610 24"	610 24"
5563 (219)	610 24"	610 24"	610 24"	N/A	508 20"	610 24"	610 24"	610 24"	457 18"	508 20"	610 24"	610 24"	406 16"	508 20"	610 24"	610 24"
5664 (223)	559 22"	610 24"	610 24"	N/A	508 20"	610 24"	610 24"	610 24"	406 16"	508 20"	610 24"	610 24"	406 16"	457 18"	610 24"	610 24"
5690 (224)	559 22"	610 24"	610 24"	N/A	508 20"	610 24"	610 24"	610 24"	406 16"	508 20"	610 24"	610 24"	406 16"	457 18"	610 24"	610 24"
5715 (225)	559 22"	610 24"	610 24"	N/A	457 18"	610 24"	610 24"	610 24"	406 16"	508 20"	610 24"	610 24"	406 16"	457 18"	610 24"	610 24"
5817 (229)	559 22"	610 24"	610 24"	N/A	457 18"	559 22"	610 24"	610 24"	406 16"	508 20"	610 24"	610 24"	406 16"	457 18"	610 24"	610 24"
5969 (235)	559 22"	610 24"	610 24"	N/A	457 18"	559 22"	610 24"	610 24"	406 16"	457 18"	559 22"	610 24"	356 14"	457 18"	559 22"	610 24"
6121 (241)	N/A	N/A	N/A	N/A	406 16"	508 20"	610 24"	610 24"	356 14"	457 18"	559 22"	610 24"	356 14"	406 16"	508 20"	610 24"
6172 (243)	N/A	N/A	N/A	N/A	406 16"	508 20"	610 24"	610 24"	356 14"	457 18"	508 20"	610 24"	356 14"	406 16"	508 20"	610 24"
6198 (244)	N/A	N/A	N/A	N/A	406 16"	508 20"	610 24"	610 24"	356 14"	457 18"	508 20"	610 24"	305 12"	406 16"	508 20"	610 24"
6274 (247)	N/A	N/A	N/A	N/A	406 16"	508 20"	610 24"	610 24"	356 14"	457 18"	508 20"	610 24"	305 12"	406 16"	457 18"	610 24"

AXLE RATING FRONT AND REAR																
W/B mm (in)	Front Axle 5,443 kg (12,000 lb)															
	Rear Axle 10,433 kg (23,000 lb)				Rear Axle 15,422 kg (34,000 lb)				Rear Axle 17,239 kg (38,000 lb)				Rear Axle 18,144 kg (40,000 lb)			
	FRAME THICKNESS (mm)															
	6	7	8	9.5	6	7	8	9.5	6	7	8	9.5	6	7	8	9.5
	Maximum 5th Wheel Offset mm (in)				Maximum 5th Wheel Offset mm (in)				Maximum 5th Wheel Off- set mm (in)				Maximum 5th Wheel Off- set mm (in)			
6299 (248)	N/A	N/A	N/A	N/A	406 16"	508 20"	610 24"	610 24"	356 14"	457 18"	508 20"	610 24"	305 12"	406 16"	457 18"	610 24"
6325 (249)	N/A	N/A	N/A	N/A	406 16"	508 20"	610 24"	610 24"	356 14"	457 18"	508 20"	610 24"	305 12"	406 16"	457 18"	610 24"
6350 (250)	N/A	N/A	N/A	N/A	406 16"	508 20"	559 22"	610 24"	356 14"	406 16"	508 20"	610 24"	305 12"	406 16"	457 18"	610 24"
6426 (253)	N/A	N/A	N/A	N/A	356 14"	457 18"	559 22"	610 24"	356 14"	406 16"	508 20"	610 24"	305 12"	406 16"	457 18"	610 24"
6452 (254)	N/A	N/A	N/A	N/A	356 14"	457 18"	559 22"	610 24"	305 12"	406 16"	508 20"	610 24"	305 12"	406 16"	457 18"	610 24"
6477 (255)	N/A	N/A	N/A	N/A	356 14"	457 18"	559 22"	610 24"	305 12"	406 16"	508 20"	610 24"	305 12"	406 16"	457 18"	610 24"
6502 (256)	N/A	N/A	N/A	N/A	356 14"	457 18"	559 22"	610 24"	305 12"	406 16"	508 20"	610 24"	305 12"	406 16"	457 18"	610 24"
6579 (259)	N/A	N/A	N/A	N/A	356 14"	457 18"	559 22"	610 24"	305 12"	406 16"	457 18"	610 24"	305 12"	356 14"	457 18"	610 24"
6604 (260)	N/A	N/A	N/A	N/A	356 14"	457 18"	559 22"	610 24"	305 12"	406 16"	457 18"	610 24"	305 12"	356 14"	457 18"	610 24"
6629 (261)	N/A	N/A	N/A	N/A	356 14"	457 18"	559 22"	610 24"	305 12"	406 16"	457 18"	610 24"	305 12"	356 14"	457 18"	610 24"

AXLE RATING FRONT AND REAR								
W/B mm (in)	Front Axle 5,443 kg (12,000 lb)							
	Rear Axle 19,958 kg (44,000 lb)				Rear Axle 20,866 kg (46,000 lb)			
	FRAME THICKNESS (mm)							
	6	7	8	9.5	6	7	8	9.5
	Maximum 5th Wheel Offset mm (in)				Maximum 5th Wheel Offset mm (in)			
3912 (154)	N/A	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"
4216 (166)	N/A	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"
4343 (171)	N/A	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"
4369 (172)	N/A	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"
4496 (177)	N/A	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"
4521 (178)	N/A	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"
4648 (183)	N/A	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"
4674 (184)	N/A	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"
4775 (188)	N/A	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"
4801 (189)	N/A	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"
4826 (190)	N/A	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"
4928 (194)	N/A	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"
4953 (195)	N/A	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"
4978 (196)	N/A	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"
5080 (200)	N/A	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"
5105 (201)	N/A	610 24"	610 24"	610 24"	N/A	559 22"	610 24"	610 24"
5131 (202)	N/A	610 24"	610 24"	610 24"	N/A	559 22"	610 24"	610 24"
5207 (205)	N/A	610 24"	610 24"	610 24"	N/A	559 22"	610 24"	610 24"
5232 (206)	N/A	559 22"	610 24"	610 24"	N/A	508 20"	610 24"	610 24"

AXLE RATING FRONT AND REAR								
W/B mm (in)	Front Axle 5,443 kg (12,000 lb)							
	Rear Axle 19,958 kg (44,000 lb)				Rear Axle 20,866 kg (46,000 lb)			
	FRAME THICKNESS (mm)							
	6	7	8	9.5	6	7	8	9.5
	Maximum 5th Wheel Offset mm (in)				Maximum 5th Wheel Offset mm (in)			
5258 (207)	N/A	559 22"	610 24"	610 24"	N/A	508 20"	610 24"	610 24"
5359 (211)	N/A	457 18"	610 24"	610 24"	N/A	457 18"	610 24"	610 24"
5385 (212)	N/A	457 18"	610 24"	610 24"	N/A	406 16"	610 24"	610 24"
5410 (213)	N/A	457 18"	610 24"	610 24"	N/A	406 16"	610 24"	610 24"
5512 (217)	N/A	457 18"	559 22"	610 24"	N/A	406 16"	610 24"	610 24"
5537 (218)	N/A	457 18"	559 22"	610 24"	N/A	406 16"	610 24"	610 24"
5563 (219)	N/A	457 18"	559 22"	610 24"	N/A	406 16"	610 24"	610 24"
5664 (223)	N/A	406 16"	508 20"	610 24"	N/A	406 16"	559 22"	610 24"
5690 (224)	N/A	406 16"	508 20"	610 24"	N/A	406 16"	559 22"	610 24"
5715 (225)	N/A	406 16"	508 20"	610 24"	N/A	406 16"	559 22"	610 24"
5817 (229)	N/A	406 16"	508 20"	610 24"	N/A	357 14"	508 20"	610 24"
5969 (235)	N/A	406 16"	508 20"	610 24"	N/A	357 14"	508 20"	610 24"
6121 (241)	N/A	357 14"	457 18"	610 24"	N/A	357 14"	406 16"	610 24"
6172 (243)	N/A	357 14"	457 18"	610 24"	N/A	357 14"	406 16"	610 24"
6198 (244)	N/A	357 14"	457 18"	610 24"	N/A	357 14"	406 16"	610 24"
6274 (247)	N/A	357 14"	406 16"	610 24"	N/A	357 14"	406 16"	610 24"
6299 (248)	N/A	357 14"	406 16"	610 24"	N/A	357 14"	406 16"	610 24"
6325 (249)	N/A	357 14"	406 16"	610 24"	N/A	357 14"	406 16"	610 24"
6350 (250)	N/A	357 14"	406 16"	610 24"	N/A	357 14"	406 16"	610 24"

AXLE RATING FRONT AND REAR								
W/B mm (in)	Front Axle 5,443 kg (12,000 lb)							
	Rear Axle 19,958 kg (44,000 lb)				Rear Axle 20,866 kg (46,000 lb)			
	FRAME THICKNESS (mm)							
	6	7	8	9.5	6	7	8	9.5
	Maximum 5th Wheel Offset mm (in)				Maximum 5th Wheel Offset mm (in)			
6426 (253)	N/A	357 14"	406 16"	610 24"	N/A	357 14"	406 16"	610 24"
6452 (254)	N/A	357 14"	406 16"	610 24"	N/A	305 12"	406 16"	610 24"
6477 (255)	N/A	357 14"	406 16"	610 24"	N/A	305 12"	406 16"	610 24"
6502 (256)	N/A	357 14"	406 16"	610 24"	N/A	305 12"	406 16"	610 24"
6579 (259)	N/A	357 14"	406 16"	610 24"	N/A	305 12"	357 14"	610 24"
6604 (260)	N/A	357 14"	406 16"	610 24"	N/A	305 12"	357 14"	610 24"
6629 (261)	N/A	357 14"	406 16"	610 24"	N/A	305 12"	357 14"	610 24"

Notes

Maximum Fifth Wheel Offset Axle Forward (PI / CHU) Tractor, 6,623 kg (14,600 lb) Front Axle Rating

W/B mm (in)	Front Axle 6,623 kg (14,600 lb)															
	Rear Axle 10,433 kg (23,000 lb)				Rear Axle 15,422 kg (34,000 lb)				Rear Axle 17,239 kg (38,000 lb)				Rear Axle 18,144 kg (40,000 lb)			
	FRAME THICKNESS (mm)															
	6	7	8	9.5	6	7	8	9.5	6	7	8	9.5	6	7	8	9.5
	Maximum 5th Wheel Offset mm (in)				Maximum 5th Wheel Off- set mm (in)				Maximum 5th Wheel Offset mm (in)				Maximum 5th Wheel Offset mm (in)			
3912 (154)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	610 24"	610 24"
4216 (166)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	610 24"	610 24"
4343 (171)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	610 24"	610 24"
4369 (172)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	610 24"	610 24"
4496 (177)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	610 24"	610 24"
4521 (178)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	610 24"	610 24"
4648 (183)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	610 24"	610 24"
4674 (184)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	610 24"	610 24"
4775 (188)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	610 24"	610 24"	559 22"	610 24"	610 24"	610 24"
4801 (189)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	610 24"	610 24"	559 22"	610 24"	610 24"	610 24"
4826 (190)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	610 24"	610 24"	508 20"	610 24"	610 24"	610 24"
4928 (194)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	508 20"	610 24"	610 24"	610 24"	508 20"	610 24"	610 24"	610 24"
4953 (195)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	508 20"	610 24"	610 24"	610 24"	508 20"	610 24"	610 24"	610 24"
4978 (196)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	508 20"	610 24"	610 24"	610 24"	508 20"	610 24"	610 24"	610 24"
5080 (200)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	457 18"	610 24"	610 24"	610 24"	457 18"	610 24"	610 24"	610 24"
5105 (201)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	457 18"	610 24"	610 24"	610 24"	457 18"	610 24"	610 24"	610 24"
5131 (202)	610 24"	610 24"	610 24"	N/A	610 24"	610 24"	610 24"	610 24"	457 18"	559 22"	610 24"	610 24"	457 18"	559 22"	610 24"	610 24"

Front Axle 6,623 kg (14,600 lb)																
W/B mm (in)	Rear Axle 10,433 kg (23,000 lb)				Rear Axle 15,422 kg (34,000 lb)				Rear Axle 17,239 kg (38,000 lb)				Rear Axle 18,144 kg (40,000 lb)			
	FRAME THICKNESS (mm)															
	6	7	8	9.5	6	7	8	9.5	6	7	8	9.5	6	7	8	9.5
	Maximum 5th Wheel Offset mm (in)				Maximum 5th Wheel Off- set mm (in)				Maximum 5th Wheel Offset mm (in)				Maximum 5th Wheel Offset mm (in)			
5207 (205)	610 24"	610 24"	610 24"	N/A	559 22"	610 24"	610 24"	610 24"	457 18"	559 22"	610 24"	610 24"	457 18"	559 22"	610 24"	610 24"
5232 (206)	610 24"	610 24"	610 24"	N/A	559 22"	610 24"	610 24"	610 24"	406 16"	559 22"	610 24"	610 24"	406 16"	559 22"	610 24"	610 24"
5258 (207)	610 24"	610 24"	610 24"	N/A	559 22"	610 24"	610 24"	610 24"	406 16"	508 20"	610 24"	610 24"	406 16"	508 20"	610 24"	610 24"
5359 (211)	610 24"	610 24"	610 24"	N/A	559 22"	610 24"	610 24"	610 24"	406 16"	508 20"	610 24"	610 24"	406 16"	508 20"	610 24"	610 24"
5385 (212)	610 24"	610 24"	610 24"	N/A	559 22"	610 24"	610 24"	610 24"	406 16"	508 20"	610 24"	610 24"	406 16"	508 20"	610 24"	610 24"
5410 (213)	610 24"	610 24"	610 24"	N/A	559 22"	610 24"	610 24"	610 24"	406 16"	508 20"	610 24"	610 24"	406 16"	508 20"	610 24"	610 24"
5512 (217)	610 24"	610 24"	610 24"	N/A	559 22"	610 24"	610 24"	610 24"	357 14"	457 18"	610 24"	610 24"	357 14"	457 18"	610 24"	610 24"
5537 (218)	610 24"	610 24"	610 24"	N/A	559 22"	610 24"	610 24"	610 24"	357 14"	457 18"	610 24"	610 24"	357 14"	457 18"	610 24"	610 24"
5563 (219)	610 24"	610 24"	610 24"	N/A	508 20"	610 24"	610 24"	610 24"	357 14"	457 18"	559 22"	610 24"	357 14"	457 18"	559 22"	610 24"
5664 (223)	559 22"	610 24"	610 24"	N/A	508 20"	610 24"	610 24"	610 24"	357 14"	406 16"	559 22"	610 24"	357 14"	406 16"	508 20"	610 24"
5690 (224)	559 22"	610 24"	610 24"	N/A	508 20"	610 24"	610 24"	610 24"	357 14"	406 16"	508 20"	610 24"	357 14"	406 16"	508 20"	610 24"
5715 (225)	559 22"	610 24"	610 24"	N/A	508 20"	610 24"	610 24"	610 24"	357 14"	406 16"	508 20"	610 24"	357 14"	406 16"	508 20"	610 24"
5817 (229)	559 22"	610 24"	610 24"	N/A	508 20"	610 24"	610 24"	610 24"	305 12"	406 16"	508 20"	610 24"	305 12"	406 16"	508 20"	610 24"
5969 (235)	559 22"	610 24"	610 24"	N/A	457 18"	559 22"	610 24"	610 24"	305 12"	406 16"	508 20"	610 24"	305 12"	406 16"	508 20"	610 24"
6121 (241)	N/A	N/A	N/A	N/A	457 18"	559 22"	610 24"	610 24"	305 12"	356 14"	457 18"	610 24"	305 12"	356 14"	457 18"	610 24"
6172 (243)	N/A	N/A	N/A	N/A	457 18"	559 22"	610 24"	610 24"	305 12"	356 14"	457 18"	610 24"	305 12"	356 14"	457 18"	610 24"
6198 (244)	N/A	N/A	N/A	N/A	457 18"	559 22"	610 24"	610 24"	305 12"	356 14"	457 18"	610 24"	305 12"	356 14"	457 18"	610 24"
6274 (247)	N/A	N/A	N/A	N/A	406 16"	508 20"	610 24"	610 24"	254 10"	356 14"	406 16"	610 24"	254 10"	356 14"	406 16"	610 24"

W/B mm (in)	Front Axle 6,623 kg (14,600 lb)															
	Rear Axle 10,433 kg (23,000 lb)				Rear Axle 15,422 kg (34,000 lb)				Rear Axle 17,239 kg (38,000 lb)				Rear Axle 18,144 kg (40,000 lb)			
	FRAME THICKNESS (mm)															
	6	7	8	9.5	6	7	8	9.5	6	7	8	9.5	6	7	8	9.5
	Maximum 5th Wheel Offset mm (in)				Maximum 5th Wheel Off- set mm (in)				Maximum 5th Wheel Offset mm (in)				Maximum 5th Wheel Offset mm (in)			
6299 (248)	N/A	N/A	N/A	N/A	406 16"	508 20"	610 24"	610 24"	254 10"	356 14"	406 16"	610 24"	254 10"	356 14"	406 16"	610 24"
6325 (249)	N/A	N/A	N/A	N/A	406 16"	508 20"	610 24"	610 24"	254 10"	356 14"	406 16"	610 24"	254 10"	356 14"	406 16"	610 24"
6350 (250)	N/A	N/A	N/A	N/A	406 16"	508 20"	559 22"	610 24"	254 10"	356 14"	406 16"	610 24"	254 10"	356 14"	406 16"	610 24"
6426 (253)	N/A	N/A	N/A	N/A	406 16"	508 20"	610 24"	610 24"	254 10"	305 12"	406 16"	610 24"	254 10"	356 14"	406 16"	610 24"
6452 (254)	N/A	N/A	N/A	N/A	406 16"	508 20"	610 24"	610 24"	254 10"	305 12"	406 16"	610 24"	254 10"	305 12"	406 16"	610 24"
6477 (255)	N/A	N/A	N/A	N/A	406 16"	508 20"	610 24"	610 24"	254 10"	305 12"	356 14"	610 24"	254 10"	305 12"	356 14"	610 24"
6502 (256)	N/A	N/A	N/A	N/A	406 16"	508 20"	610 24"	610 24"	254 10"	305 12"	356 14"	610 24"	254 10"	305 12"	356 14"	610 24"
6579 (259)	N/A	N/A	N/A	N/A	406 16"	457 18"	559 22"	610 24"	254 10"	305 12"	356 14"	610 24"	254 10"	305 12"	356 14"	610 24"
6604 (260)	N/A	N/A	N/A	N/A	406 16"	457 18"	559 22"	610 24"	254 10"	305 12"	356 14"	610 24"	254 10"	305 12"	356 14"	610 24"
6629 (261)	N/A	N/A	N/A	N/A	406 16"	457 18"	559 22"	610 24"	254 10"	305 12"	356 14"	610 24"	254 10"	305 12"	356 14"	610 24"

AXLE RATING FRONT AND REAR								
W/B mm (in)	Front Axle 6,623 kg (14,600 lb)							
	Rear Axle 19,958 kg (44,000 lb)				Rear Axle 20,866 kg (46,000 lb)			
	FRAME THICKNESS (mm)							
	6	7	8	9.5	6	7	8	9.5
	Maximum 5th Wheel Offset mm (in)				Maximum 5th Wheel Offset mm (in)			
3912 (154)	N/A	559 22"	610 24"	610 24"	N/A	508 20"	610 24"	610 24"
4216 (166)	N/A	559 22"	610 24"	610 24"	N/A	508 20"	610 24"	610 24"
4343 (171)	N/A	559 22"	610 24"	610 24"	N/A	508 20"	610 24"	610 24"

AXLE RATING FRONT AND REAR								
W/B mm (in)	Front Axle 6,623 kg (14,600 lb)							
	Rear Axle 19,958 kg (44,000 lb)				Rear Axle 20,866 kg (46,000 lb)			
	FRAME THICKNESS (mm)							
	6	7	8	9.5	6	7	8	9.5
	Maximum 5th Wheel Offset mm (in)				Maximum 5th Wheel Offset mm (in)			
4369 (172)	N/A	559 22"	610 24"	610 24"	N/A	508 20"	610 24"	610 24"
4496 (177)	N/A	559 22"	610 24"	610 24"	N/A	508 20"	610 24"	610 24"
4521 (178)	N/A	559 22"	610 24"	610 24"	N/A	508 20"	610 24"	610 24"
4648 (183)	N/A	559 22"	610 24"	610 24"	N/A	508 20"	610 24"	610 24"
4674 (184)	N/A	559 22"	610 24"	610 24"	N/A	508 20"	610 24"	610 24"
4775 (188)	N/A	559 22"	610 24"	610 24"	N/A	508 20"	610 24"	610 24"
4801 (189)	N/A	559 22"	610 24"	610 24"	N/A	508 20"	610 24"	610 24"
4826 (190)	N/A	559 22"	610 24"	610 24"	N/A	508 20"	610 24"	610 24"
4928 (194)	N/A	559 22"	610 24"	610 24"	N/A	508 20"	610 24"	610 24"
4953 (195)	N/A	559 22"	610 24"	610 24"	N/A	508 20"	610 24"	610 24"
4978 (196)	N/A	559 22"	610 24"	610 24"	N/A	508 20"	610 24"	610 24"
5080 (200)	N/A	559 22"	610 24"	610 24"	N/A	508 20"	610 24"	610 24"
5105 (201)	N/A	559 22"	610 24"	610 24"	N/A	508 20"	610 24"	610 24"
5131 (202)	N/A	559 22"	610 24"	610 24"	N/A	508 20"	610 24"	610 24"
5207 (205)	N/A	559 22"	610 24"	610 24"	N/A	508 20"	610 24"	610 24"
5232 (206)	N/A	559 22"	610 24"	610 24"	N/A	508 20"	610 24"	610 24"
5258 (207)	N/A	508 20"	610 24"	610 24"	N/A	508 20"	559 22"	610 24"
5359 (211)	N/A	508 20"	610 24"	610 24"	N/A	508 20"	559 22"	610 24"
5385 (212)	N/A	508 20"	610 24"	610 24"	N/A	508 20"	559 22"	610 24"

AXLE RATING FRONT AND REAR								
W/B mm (in)	Front Axle 6,623 kg (14,600 lb)							
	Rear Axle 19,958 kg (44,000 lb)				Rear Axle 20,866 kg (46,000 lb)			
	FRAME THICKNESS (mm)							
	6	7	8	9.5	6	7	8	9.5
	Maximum 5th Wheel Offset mm (in)				Maximum 5th Wheel Offset mm (in)			
5410 (213)	N/A	508 20"	610 24"	610 24"	N/A	508 20"	559 22"	610 24"
5512 (217)	N/A	457 18"	559 22"	610 24"	N/A	457 18"	559 22"	610 24"
5537 (218)	N/A	457 18"	559 22"	610 24"	N/A	457 18"	559 22"	610 24"
5563 (219)	N/A	457 18"	559 22"	610 24"	N/A	457 18"	559 22"	610 24"
5664 (223)	N/A	457 18"	508 20"	610 24"	N/A	457 18"	508 20"	610 24"
5690 (224)	N/A	406 16"	508 20"	610 24"	N/A	457 18"	508 20"	610 24"
5715 (225)	N/A	406 16"	508 20"	610 24"	N/A	457 18"	508 20"	610 24"
5817 (229)	N/A	406 16"	508 20"	610 24"	N/A	406 16"	508 20"	610 24"
5969 (235)	N/A	406 16"	508 20"	610 24"	N/A	406 16"	508 20"	610 24"
6121 (241)	N/A	357 14"	457 18"	610 24"	N/A	357 14"	457 18"	610 24"
6172 (243)	N/A	357 14"	457 18"	610 24"	N/A	357 14"	457 18"	610 24"
6198 (244)	N/A	357 14"	457 18"	610 24"	N/A	357 14"	457 18"	610 24"
6274 (247)	N/A	357 14"	406 16"	610 24"	N/A	357 14"	406 16"	610 24"
6299 (248)	N/A	357 14"	406 16"	610 24"	N/A	357 14"	406 16"	610 24"

Maximum Fifth Wheel Offset Axle Back (GR / GU8) Tractor, 5,443 kg (12,000 lb) and 6,623 kg (14,600 lb) Front Axle Ratings

AXLE RATING FRONT AND REAR																
W/B Range mm (in)	Front Axle 5,443 kg (12,000 lb)								Front Axle 6,623 kg (14,600 lb)							
	Rear Axle 17,239 kg (38,000 lb)		Rear Axle 18,144 kg (40,000 lb)		Rear Axle 19,958 kg (44,000 lb)		Rear Axle 20,866 kg (46,000 lb)		Rear Axle 17,239 kg (38,000 lb)		Rear Axle 18,144 kg (40,000 lb)		Rear Axle 19,958 kg (44,000 lb)		Rear Axle 20,866 kg (46,000 lb)	
	FRAME THICKNESS (mm)								FRAME THICKNESS (mm)							
	8	9.5	8	9.5	8	9.5	8	9.5	8	9.5	8	9.5	8	9.5	8	9.5
	Maximum 5th Wheel Offset mm (in)		Maximum 5th Wheel Offset mm (in)		Maximum 5th Wheel Offset mm (in)		Maximum 5th Wheel Offset mm (in)		Maximum 5th Wheel Offset mm (in)		Maximum 5th Wheel Offset mm (in)		Maximum 5th Wheel Offset mm (in)		Maximum 5th Wheel Offset mm (in)	
	3785 to 3850 (149 to 152)	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"
3885 to 3950 (153 to 156)	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"
3985 to 4035 (157 to 159)	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"
4064 to 4135 (160 to 163)	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"
4166 to 4235 (164 to 167)	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	508 20"	610 24"
4267 to 4335 (168 to 171)	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	508 20"	610 24"
4369 to 4435 (172 to 175)	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"
4470 to 4535 (176 to 179)	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"
4572 to 4650 (180 to 183)	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"
4685 to 4750 (184 to 187)	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"
4785 to 4850 (188 to 191)	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"
4855 to 4950 (192 to 195)	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"
4985 to 5050 (196 to 199)	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"
5085 to 5150 (200 to 203)	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"
5185 to 5250 (204 to 207)	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"

AXLE RATING FRONT AND REAR																	
W/B Range mm (in)	Front Axle 5,443 kg (12,000 lb)								Front Axle 6,623 kg (14,600 lb)								
	Rear Axle 17,239 kg (38,000 lb)		Rear Axle 18,144 kg (40,000 lb)		Rear Axle 19,958 kg (44,000 lb)		Rear Axle 20,866 kg (46,000 lb)		Rear Axle 17,239 kg (38,000 lb)		Rear Axle 18,144 kg (40,000 lb)		Rear Axle 19,958 kg (44,000 lb)		Rear Axle 20,866 kg (46,000 lb)		
	FRAME THICKNESS (mm)								FRAME THICKNESS (mm)								
	8	9.5	8	9.5	8	9.5	8	9.5	8	9.5	8	9.5	8	9.5	8	9.5	
	Maximum 5th Wheel Offset mm (in)	Maximum 5th Wheel Offset mm (in)		Maximum 5th Wheel Offset mm (in)		Maximum 5th Wheel Offset mm (in)		Maximum 5th Wheel Offset mm (in)		Maximum 5th Wheel Offset mm (in)		Maximum 5th Wheel Offset mm (in)		Maximum 5th Wheel Offset mm (in)		Maximum 5th Wheel Offset mm (in)	
5285 to 5360 (208 to 211)	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"
5385 to 5485 (212 to 215)	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"
5485 to 5560 (216 to 219)	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"
5585 to 5650 (220 to 223)	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"
5685 to 5760 (224 to 227)	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"
5785 to 5860 (228 to 231)	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"
5885 to 5960 (232 to 235)	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"
5985 to 6060 (236 to 239)	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"
6085 to 6160 (240 to 243)	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"
6185 to 6250 (244 to 246)	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"
6285 to 6350 (247 to 250)	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"
6385 to 6450 (251 to 254)	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"
6485 to 6553 (255 to 258)	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"
6585 to 6660 (259 to 262)	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"

Maximum Fifth Wheel Offset Axle Back (GR / GU8) Tractor, 8,165 kg (18,000 lb) and 9,072 kg (20,000 lb) Front Axle Ratings

AXLE RATING FRONT AND REAR																	
W/B Range mm (in)	Front Axle 8,165 kg (18,000 lb)								Front Axle 9,072 kg (20,000 lb)								
	Rear Axle 17,239 kg (38,000 lb)		Rear Axle 18,144 kg (40,000 lb)		Rear Axle 19,958 kg (44,000 lb)		Rear Axle 20,866 kg (46,000 lb)		Rear Axle 17,239 kg (38,000 lb)		Rear Axle 18,144 kg (40,000 lb)		Rear Axle 19,958 kg (44,000 lb)		Rear Axle 20,866 kg (46,000 lb)		
	FRAME THICKNESS (mm)								FRAME THICKNESS (mm)								
	8	9.5	8	9.5	8	9.5	8	9.5	8	9.5	8	9.5	8	9.5	8	9.5	
	Maximum 5th Wheel Offset mm (in)	Maximum 5th Wheel Offset mm (in)		Maximum 5th Wheel Offset mm (in)		Maximum 5th Wheel Offset mm (in)		Maximum 5th Wheel Offset mm (in)		Maximum 5th Wheel Offset mm (in)		Maximum 5th Wheel Offset mm (in)		Maximum 5th Wheel Offset mm (in)		Maximum 5th Wheel Offset mm (in)	
	3785 to 3850 (149 to 152)	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"
3885 to 3950 (153 to 156)	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"	
3985 to 4035 (157 to 159)	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"	
4064 to 4135 (160 to 163)	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"	
4166 to 4235 (164 to 167)	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"	
4267 to 4335 (168 to 171)	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"	
4369 to 4435 (172 to 175)	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"	
4470 to 4535 (176 to 179)	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"	
4572 to 4650 (180 to 183)	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"	
4685 to 4750 (184 to 187)	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"	
4785 to 4850 (188 to 191)	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"	
4855 to 4950 (192 to 195)	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"	
4985 to 5050 (196 to 199)	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"	
5085 to 5150 (200 to 203)	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"	
5185 to 5250 (204 to 207)	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"	

AXLE RATING FRONT AND REAR																
W/B Range mm (in)	Front Axle 8,165 kg (18,000 lb)								Front Axle 9,072 kg (20,000 lb)							
	Rear Axle 17,239 kg (38,000 lb)		Rear Axle 18,144 kg (40,000 lb)		Rear Axle 19,958 kg (44,000 lb)		Rear Axle 20,866 kg (46,000 lb)		Rear Axle 17,239 kg (38,000 lb)		Rear Axle 18,144 kg (40,000 lb)		Rear Axle 19,958 kg (44,000 lb)		Rear Axle 20,866 kg (46,000 lb)	
	FRAME THICKNESS (mm)								FRAME THICKNESS (mm)							
	8	9.5	8	9.5	8	9.5	8	9.5	8	9.5	8	9.5	8	9.5	8	9.5
	Maximum 5th Wheel Offset mm (in)	Maximum 5th Wheel Offset mm (in)		Maximum 5th Wheel Offset mm (in)		Maximum 5th Wheel Offset mm (in)		Maximum 5th Wheel Offset mm (in)	Maximum 5th Wheel Offset mm (in)	Maximum 5th Wheel Offset mm (in)	Maximum 5th Wheel Offset mm (in)	Maximum 5th Wheel Offset mm (in)	Maximum 5th Wheel Offset mm (in)	Maximum 5th Wheel Offset mm (in)	Maximum 5th Wheel Offset mm (in)	Maximum 5th Wheel Offset mm (in)
	5285 to 5360 (208 to 211)	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"	N/A
5385 to 5485 (212 to 215)	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"
5485 to 5560 (216 to 219)	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"
5585 to 5650 (220 to 223)	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"
5685 to 5760 (224 to 227)	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"
5785 to 5860 (228 to 231)	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"
5885 to 5960 (232 to 235)	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"
5985 to 6060 (236 to 239)	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"
6085 to 6160 (240 to 243)	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"
6185 to 6250 (244 to 246)	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"
6285 to 6350 (247 to 250)	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"
6385 to 6450 (251 to 254)	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"
6485 to 6553 (255 to 258)	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"
6585 to 6660 (259 to 262)	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"

Maximum Fifth Wheel Offset Axle Forward (GR / GU7) Tractor, 5,443 kg (12,000 lb) and 6,623 KG (14,600 lb) Front Axle Ratings

AXLE RATING FRONT AND REAR																	
W/B Range mm (in)	Front Axle 5,443 kg (12,000 lb)								Front Axle 6,623 kg (14,600 lb)								
	Rear Axle 17,239 kg (38,000 lb)		Rear Axle 18,144 kg (40,000 lb)		Rear Axle 19,958 kg (44,000 lb)		Rear Axle 20,866 kg (46,000 lb)		Rear Axle 17,239 kg (38,000 lb)		Rear Axle 18,144 kg (40,000 lb)		Rear Axle 19,958 kg (44,000 lb)		Rear Axle 20,866 kg (46,000 lb)		
	FRAME THICKNESS (mm)								FRAME THICKNESS (mm)								
	8	9.5	8	9.5	8	9.5	8	9.5	8	9.5	8	9.5	8	9.5	8	9.5	
	Maximum 5th Wheel Offset mm (in)		Maximum 5th Wheel Offset mm (in)		Maximum 5th Wheel Offset mm (in)		Maximum 5th Wheel Offset mm (in)		Maximum 5th Wheel Offset mm (in)		Maximum 5th Wheel Offset mm (in)		Maximum 5th Wheel Offset mm (in)		Maximum 5th Wheel Offset mm (in)		
3785 to 3850 (149 to 152)	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"
3885 to 3950 (153 to 156)	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"
3985 to 4035 (157 to 159)	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"
4064 to 4135 (160 to 163)	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"
4166 to 4235 (164 to 167)	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"
4267 to 4335 (168 to 171)	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"
4369 to 4435 (172 to 175)	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"
4470 to 4535 (176 to 179)	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"
4572 to 4650 (180 to 183)	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"
4685 to 4750 (184 to 187)	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"
4785 to 4850 (188 to 191)	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"
4855 to 4950 (192 to 195)	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"
4985 to 5050 (196 to 199)	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"
5085 to 5150 (200 to 203)	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"
5185 to 5250 (204 to 207)	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"

AXLE RATING FRONT AND REAR																	
W/B Range mm (in)	Front Axle 5,443 kg (12,000 lb)								Front Axle 6,623 kg (14,600 lb)								
	Rear Axle 17,239 kg (38,000 lb)		Rear Axle 18,144 kg (40,000 lb)		Rear Axle 19,958 kg (44,000 lb)		Rear Axle 20,866 kg (46,000 lb)		Rear Axle 17,239 kg (38,000 lb)		Rear Axle 18,144 kg (40,000 lb)		Rear Axle 19,958 kg (44,000 lb)		Rear Axle 20,866 kg (46,000 lb)		
	FRAME THICKNESS (mm)								FRAME THICKNESS (mm)								
	8	9.5	8	9.5	8	9.5	8	9.5	8	9.5	8	9.5	8	9.5	8	9.5	
	Maximum 5th Wheel Offset mm (in)		Maximum 5th Wheel Offset mm (in)		Maximum 5th Wheel Offset mm (in)		Maximum 5th Wheel Offset mm (in)		Maximum 5th Wheel Offset mm (in)		Maximum 5th Wheel Offset mm (in)		Maximum 5th Wheel Offset mm (in)		Maximum 5th Wheel Offset mm (in)		
5285 to 5360 (208 to 211)	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"
5385 to 5485 (212 to 215)	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"
5485 to 5560 (216 to 219)	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"
5585 to 5650 (220 to 223)	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"
5685 to 5760 (224 to 227)	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"
5785 to 5860 (228 to 231)	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"
5885 to 5960 (232 to 235)	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"
5985 to 6060 (236 to 239)	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"
6085 to 6160 (240 to 243)	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"
6185 to 6250 (244 to 246)	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"
6285 to 6350 (247 to 250)	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"
6385 to 6450 (251 to 254)	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"
6485 to 6553 (255 to 258)	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"
6585 to 6660 (259 to 262)	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"

Maximum Fifth Wheel Offset Axle Forward (GR / GU7) Tractor, 8,165 kg (18,000 lb) and 9,072 kg (20,000 lb) Front Axle Ratings

AXLE RATING FRONT AND REAR																
W/B Range mm (in)	Front Axle 8,165 kg (18,000 lb)								Front Axle 9,072 kg (20,000 lb)							
	Rear Axle 17,239 kg (38,000 lb)		Rear Axle 18,144 kg (40,000 lb)		Rear Axle 19,958 kg (44,000 lb)		Rear Axle 20,866 kg (46,000 lb)		Rear Axle 17,239 kg (38,000 lb)		Rear Axle 18,144 kg (40,000 lb)		Rear Axle 19,958 kg (44,000 lb)		Rear Axle 20,866 kg (46,000 lb)	
	FRAME THICKNESS (mm)								FRAME THICKNESS (mm)							
	8	9.5	8	9.5	8	9.5	8	9.5	8	9.5	8	9.5	8	9.5	8	9.5
	Maximum 5th Wheel Offset mm (in)	Maximum 5th Wheel Offset mm (in)		Maximum 5th Wheel Offset mm (in)		Maximum 5th Wheel Offset mm (in)		Maximum 5th Wheel Offset mm (in)		Maximum 5th Wheel Offset mm (in)		Maximum 5th Wheel Offset mm (in)		Maximum 5th Wheel Offset mm (in)		Maximum 5th Wheel Offset mm (in)
3785 to 3850 (149 to 152)	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"
3885 to 3950 (153 to 156)	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"
3985 to 4035 (157 to 159)	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"
4064 to 4135 (160 to 163)	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"
4166 to 4235 (164 to 167)	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"
4267 to 4335 (168 to 171)	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"
4369 to 4435 (172 to 175)	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"
3985 to 4035 (157 to 159)	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"
4064 to 4135 (160 to 163)	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"
4166 to 4235 (164 to 167)	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"
4267 to 4335 (168 to 171)	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"
4369 to 4435 (172 to 175)	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"
4470 to 4535 (176 to 179)	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"
4572 to 4650 (180 to 183)	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"
4685 to 4750 (184 to 187)	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"

AXLE RATING FRONT AND REAR																
W/B Range mm (in)	Front Axle 8,165 kg (18,000 lb)								Front Axle 9,072 kg (20,000 lb)							
	Rear Axle 17,239 kg (38,000 lb)		Rear Axle 18,144 kg (40,000 lb)		Rear Axle 19,958 kg (44,000 lb)		Rear Axle 20,866 kg (46,000 lb)		Rear Axle 17,239 kg (38,000 lb)		Rear Axle 18,144 kg (40,000 lb)		Rear Axle 19,958 kg (44,000 lb)		Rear Axle 20,866 kg (46,000 lb)	
	FRAME THICKNESS (mm)								FRAME THICKNESS (mm)							
	8	9.5	8	9.5	8	9.5	8	9.5	8	9.5	8	9.5	8	9.5	8	9.5
	Maximum 5th Wheel Offset mm (in)		Maximum 5th Wheel Offset mm (in)		Maximum 5th Wheel Offset mm (in)		Maximum 5th Wheel Offset mm (in)		Maximum 5th Wheel Offset mm (in)		Maximum 5th Wheel Offset mm (in)		Maximum 5th Wheel Offset mm (in)		Maximum 5th Wheel Offset mm (in)	
4785 to 4850 (188 to 191)	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"
4855 to 4950 (192 to 195)	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"
4985 to 5050 (196 to 199)	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"
5085 to 5150 (200 to 203)	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"
5185 to 5250 (204 to 207)	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"
5285 to 5360 (208 to 211)	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"
5385 to 5485 (212 to 215)	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"
5485 to 5560 (216 to 219)	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"
5585 to 5650 (220 to 223)	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"
5685 to 5760 (224 to 227)	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"
5785 to 5860 (228 to 231)	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"
5885 to 5960 (232 to 235)	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"
5985 to 6060 (236 to 239)	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"
6085 to 6160 (240 to 243)	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"
6185 to 6250 (244 to 246)	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"
6285 to 6350 (247 to 250)	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"

AXLE RATING FRONT AND REAR																	
W/B Range mm (in)	Front Axle 8,165 kg (18,000 lb)								Front Axle 9,072 kg (20,000 lb)								
	Rear Axle 17,239 kg (38,000 lb)		Rear Axle 18,144 kg (40,000 lb)		Rear Axle 19,958 kg (44,000 lb)		Rear Axle 20,866 kg (46,000 lb)		Rear Axle 17,239 kg (38,000 lb)		Rear Axle 18,144 kg (40,000 lb)		Rear Axle 19,958 kg (44,000 lb)		Rear Axle 20,866 kg (46,000 lb)		
	FRAME THICKNESS (mm)								FRAME THICKNESS (mm)								
	8	9.5	8	9.5	8	9.5	8	9.5	8	9.5	8	9.5	8	9.5	8	9.5	
	Maximum 5th Wheel Offset mm (in)	Maximum 5th Wheel Offset mm (in)		Maximum 5th Wheel Offset mm (in)		Maximum 5th Wheel Offset mm (in)		Maximum 5th Wheel Offset mm (in)		Maximum 5th Wheel Offset mm (in)		Maximum 5th Wheel Offset mm (in)		Maximum 5th Wheel Offset mm (in)		Maximum 5th Wheel Offset mm (in)	
	6385 to 6450 (251 to 254)	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"
6485 to 6553 (255 to 258)	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"	
6585 to 6660 (259 to 262)	610 24"	610 24"	610 24"	610 24"	559 22"	610 24"	508 20"	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"	N/A	610 24"	

Notes

Maximum Fifth Wheel Offset Titan Axle Forward (TD713) 6X4 Tractor, 5,443 kg (12,000 lb) and 6,623 kg (14,600 lb) Front Axle Ratings

AXLE RATING FRONT AND REAR										
W/B Range mm (in)	Front Axle 5,443 kg (12,000 lb)					Front Axle 6,623 kg (14,600 lb)				
	Rear Axle 15,422 kg (34,000 lb)	Rear Axle 17,237 kg (38,000 lb)	Rear Axle 18,144 kg (40,000 lb)	Rear Axle 19,958 kg (44,000 lb)	Rear Axle 20,866 kg (46,000 lb)	Rear Axle 15,422 kg (34,000 lb)	Rear Axle 17 237 kg (38,000 lb)	Rear Axle 18,144 kg (40,000 lb)	Rear Axle 19,958 kg (44,000 lb)	Rear Axle 20,866 kg (46,000 lb)
	FRAME THICKNESS (mm)					FRAME THICKNESS (mm)				
	8	8/9.5	8/9.5	9.5	9.5	8	8/9.5	8/9.5	9.5	9.5/11
	Maxi- mum 5th Wheel Offset mm (in)	Maxi- mum 5th Wheel Offset mm (in)	Maxi- mum 5th Wheel Offset mm (in)	Maxi- mum 5th Wheel Offset mm (in)	Maxi- mum 5th Wheel Offset mm (in)	Maxi- mum 5th Wheel Offset mm (in)	Maxi- mum 5th Wheel Offset mm (in)	Maxi- mum 5th Wheel Offset mm (in)	Maxi- mum 5th Wheel Offset mm (in)	Maxi- mum 5th Wheel Offset mm (in)
4166 to 6960 (164 to 274)	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"
6985 to 7366 (275 to 290)	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"
7391 to 7772 (291 to 306)	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"

Notes

Maximum Fifth Wheel Offset Titan Axle Forward (TD713) 6X4 Tractor, 10,433 kg (23,000 lb) Front Axle Ratings

AXLE RATING FRONT AND REAR						
W/B Range mm (in)	Front Axle 10,433 kg (23,000 lb)					
	Rear Axle 18,144 kg (40,000 lb)	Rear Axle 19,958 kg (44,000 lb)	Rear Axle 20,866 kg (46,000 lb)	Rear Axle 23,587 kg (52,000 lb)	Rear Axle 26,309 kg (58,000 lb)	Rear Axle 29,484 kg (65,000 lb)
	FRAME THICKNESS (mm)					
	11	11	11	11/11#	11#/9.5FL	9.5FL/11PL
	Maximum 5th Wheel Offset mm (in)	Maximum 5th Wheel Offset mm (in)	Maximum 5th Wheel Offset mm (in)	Maximum 5th Wheel Offset mm (in)	Maximum 5th Wheel Offset mm (in)	Maximum 5th Wheel Offset mm (in)
4166 to 6960 (164 to 274)	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"
6985 to 7366 (275 to 290)	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"
7391 to 7772 (291 to 306)	610 24"	610 24"	610 24"	610 24"	610 24"	610 24"
PL = Partial Liner, FL = Full Liner, 11# = 11 x 105 mm frame section (length varies)						

Maximum Fifth Wheel Offset Titan Axle Forward (TD714) 8X6 Tractor, 5,443 kg (12,000 lb) and 6,623 kg (14,600 lb) Front Axle Ratings

AXLE RATING FRONT AND REAR				
W/B Range mm (in)	Front Axle 5,443 kg (12,000 lb)		Front Axle 6,623 kg (14,600 lb)	
	Rear Axle 20,412 kg (45,000 lb)	Rear Axle 21,773 kg (48,000 lb)	Rear Axle 20,412 kg (45,000 lb)	Rear Axle 21,773 kg (48,000 lb)
	FRAME THICKNESS (mm)		FRAME THICKNESS (mm)	
	9.5	9.5	9.5	9.5
	Maximum 5th Wheel Offset mm (in)	Maximum 5th Wheel Offset mm (in)	Maximum 5th Wheel Offset mm (in)	Maximum 5th Wheel Offset mm (in)
5842 to 7595 (230 to 299)	610 24"	610 24"	610 24"	610 24"

Maximum Fifth Wheel Offset Titan Axle Forward (TD714) 8X6 Tractor, 5,443 kg (12,000 lb) and 6,623 kg (14,600 lb) Front Axle Ratings

AXLE RATING FRONT AND REAR				
W/B Range mm (in)	Front Axle 5,443 kg (12,000 lb)		Front Axle 6,623 kg (14,600 lb)	
	Rear Axle 20,412 kg (45,000 lb)	Rear Axle 21,773 kg (48,000 lb)	Rear Axle 20,412 kg (45,000 lb)	Rear Axle 21,773 kg (48,000 lb)
	FRAME THICKNESS (mm)		FRAME THICKNESS (mm)	
	9.5	9.5	9.5	9.5
	Maximum 5th Wheel Offset mm (in)	Maximum 5th Wheel Offset mm (in)	Maximum 5th Wheel Offset mm (in)	Maximum 5th Wheel Offset mm (in)
5842 to 7595 (230 to 299)	610 24"	610 24"	610 24"	610 24"

Maximum Fifth Wheel Offset Titan Axle Forward (TD714) 8X6 Tractor, 10,433 kg (23,000 lb) Front Axle Ratings

AXLE RATING FRONT AND REAR				
W/B Range mm (in)	Front Axle 10,433 kg (23,000 lb)			
	Rear Axle 20,412 kg (45,000 lb)	Rear Axle 21,773 kg (48,000 lb)	Rear Axle 22,680 kg (50,000 lb)	Rear Axle 23,587 kg (52,000 lb)
	FRAME THICKNESS (mm)			
	11	11	11#	11#
	Maximum 5th Wheel Offset mm (in)	Maximum 5th Wheel Offset mm (in)	Maximum 5th Wheel Offset mm (in)	Maximum 5th Wheel Offset mm (in)
5842 to 7595 (230 to 299)	610 24"	610 24"	610 24"	610 24"
FL = Full Liner, 11# = 11x105 mm frame section (length varies)				

Maximum Fifth Wheel Offset Titan Axle Forward (TD714) 8X6 Tractor, 10,433 kg (23,000 lb) Front Axle Ratings

AXLE RATING FRONT AND REAR				
W/B Range mm (in)				
	Rear Axle 24,948 kg (55,000 lb)	Rear Axle 27,216 kg (60,000 lb)	Rear Axle 29,938 kg (66,000 lb)	Rear Axle 31,298 kg (69,000 lb)
	11#	11#	9.5 FL	9.5 FL
	Maximum 5th Wheel Offset mm (in)	Maximum 5th Wheel Offset mm (in)	Maximum 5th Wheel Offset mm (in)	Maximum 5th Wheel Offset mm (in)
5842 to 7595 (230 to 299)	610 24"	610 24"	610 24"	610 24"
FL = Full Liner, 11# = 11x105 mm frame section (length varies)				