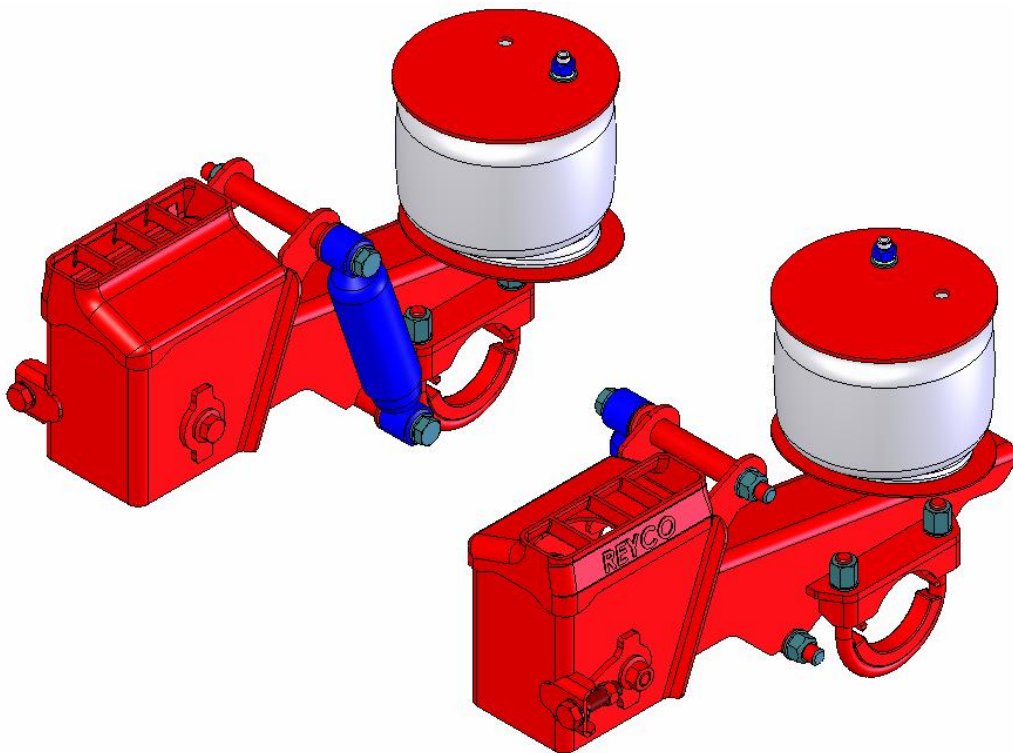




Trailer Air Ride Suspension Systems



Safety, Installation and Maintenance Instructions

Rev B
2007/01

It is the responsibility of the installer that the installation is correct and to verify that this Installation Manual is the current version, prior to the installation of this suspension.

Please contact your Reyco Distributor. If you require further assistance, contact:

Tuthill Suspension Technologies - Beijing

C-2 #2 Area

Xin Ying Industrial Zone

**East Extension Area Beijing Economic and Technological
Development Area (BDA)**

Beijing, PR China 100023

北京经济技术开发区东区新城工业园二区 C-2 号 100023

Phone: 8610-67892036 / 37 / 38

Fax: 8610-87397151

Properly installed and correctly maintained, your suspension will provide optimum service, therefore rewarding your decision to use Reyco™/Granning™ suspensions.

Should you have any further questions regarding your new suspension, please contact us at the above address and numbers.

TRAILER AIR-RIDE SUSPENSION SYSTEMS

INSTALLATION INSTRUCTIONS

IMPORTANT

Please make sure this manual is accompanied by appropriate installation drawing which can be obtained by visiting our website at www.tuthillbeijing.com.

SAFETY PROCEDURES / INFORMATION INDEX

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SAFETY PROCEDURES

SAFETY FIRST

Be sure to read and follow all installation and maintenance procedures.

WARNING

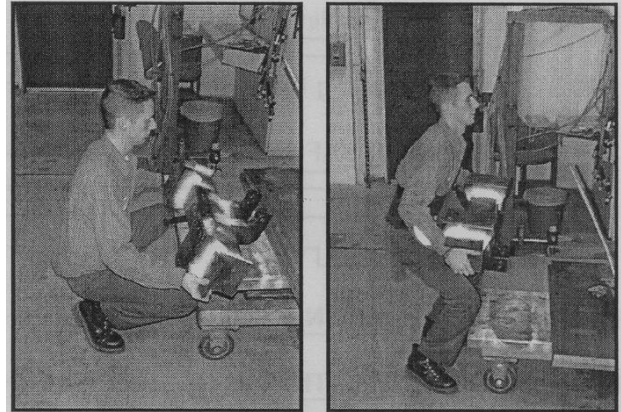
If these procedures and specifications are not followed, damage to the suspension or axle could occur. Failure to follow these procedures could result in an accident with consequent injury.

LIFTING

Practice safe lifting procedures. Consider size, shape and weight of assemblies. Obtain help or the assistance of a crane when lifting heavy assemblies. Make sure the path of travel is clear.

PARTS HANDLING

When handling parts, wear appropriate gloves, eyeglasses and other safety equipment to prevent serious injury.



WELDING

When welding, be sure to wear all personal protective equipment for face and eyes, and have adequate ventilation. When welding, protect air springs from weld spatter and grinder sparks. Do not attach "ground" connection to the air spring support.

Welding Specifications

To perform the welding, the welder must be qualified for 2G position per ANSI / AWS D1.1-94 Section 5 Part C "Welder Qualification" or equivalent. All welds must be performed in a flat and horizontal position. Suspension components and their mating parts must be free of dirt, scale, paint, grease, and moisture.

Any deviation for these welding specifications must be reviewed and approved by TST engineering in writing prior to commencement of any work.

Standard Electrode

AWS E-7018 (oven dried)

.125 diameter 120-140 amps DC electrode positive

.156 diameter 120-140 amps DC electrode positive

Standard Wire

AWS ER-70S-6 .045 diameter

(Optional) AWS ER-70S-3 .045 diameter

Volts

26 – 30 DCRP

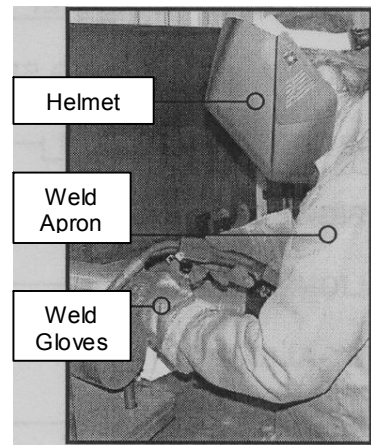
Current

275 - 325 amps

Gas

92% AR 8% CO2 @ 30 to 35 CFH

(Optional) 90% AR 10% CO2 @ 30 to 35 CFH

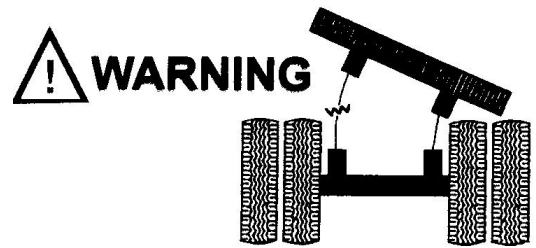


NOTE

Normally, prior to any installations at an OEM, engineering contacts between companies have been made and all necessary information to make an installation has been exchanged. However, the following general steps are listed in the interest of all involved and should be included in an OEM plan to install the suspension.

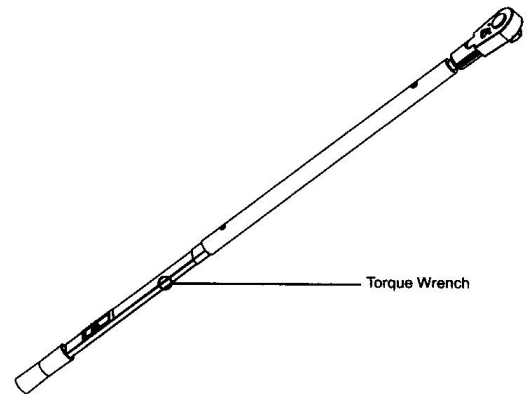
OVERLOADING

Overloading of the suspension or its components is the practice of transporting cargos that surpass the specified vehicle's ratings. Overloading can cause component failure, resulting in accidents and injuries.



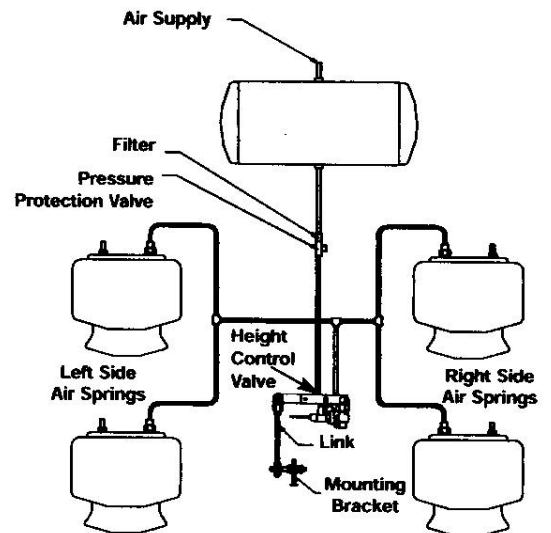
TORQUE

To comply with warranty and safety requirements, check the torque values during pre-delivery inspection, after 1600 km (1,000 miles) and each additional 80,000 km (50,000 miles) or annually whichever is first.



AIR SUPPLY

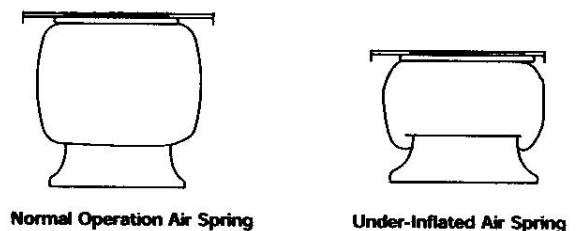
Check that the supply of air pressures and flow are adequate to supply the system. Check height control valve and linkages to ensure unit is operating at the correct ride height.



AIR SPRINGS

The air springs are equipped with internal bump stops for safety. However, do not operate the loaded unit on the bump stops for any extended periods of time, except to move the unit to a repair facility.

Please be sure you are matching the correct air spring to the suspension model.



INSTALLATION INSTRUCTIONS

HANGER INSTALLATION

Mark the frame rails at the centerline locations of the hanger brackets. Crossmembers are required at all hanger and air spring locations. Crossmembers are customer supplied. Refer to applicable drawing for correct crossmember locations.

Locate the hangers in the proper vertical position on the frame rails as shown on the installation drawing. Ensure that they are square to the frame and to each other.

Weld the hangers to the frame, following factory weld specs. These are typical installation procedures and may need to be modified due to varying frame designs. Ensure that all welding stopping points are followed as outlined.

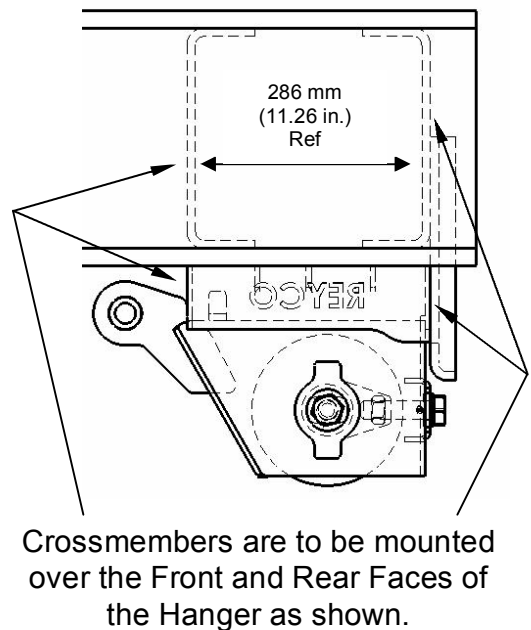
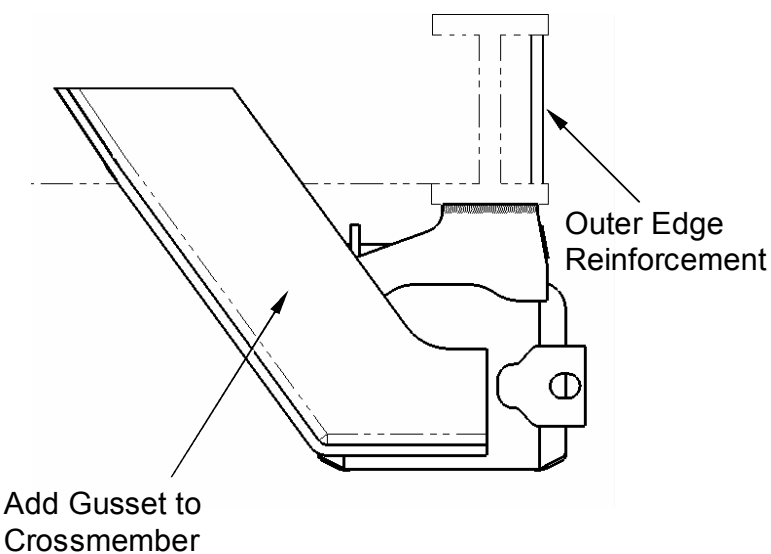
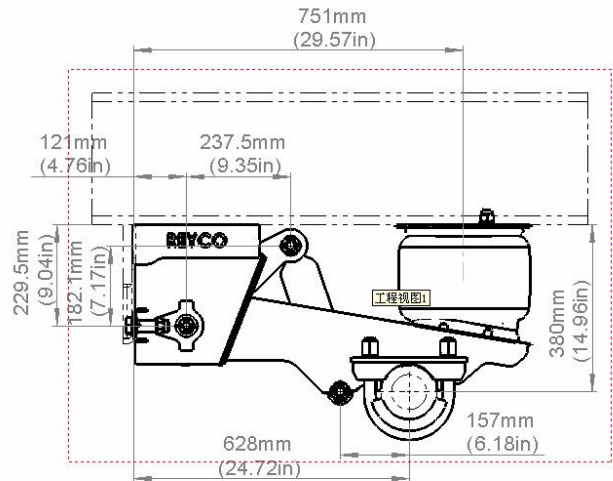
Ensure that the hangers are braced using one of the following methods:

C-Channel crossmember as illustrated

Gussets frame the hanger to the main frame crossmembers as illustrated

If the hanger has a severe offset to the frame (19 mm or 0.75 in) or more, gussets will be required. Gussets are customer supplied and the diagram offers a typical design. The trailer manufacturer may opt for a different gusset type.

KEY POINT: The outer edge must be supported.



AIR SPRING INSTALLATION

Air Spring Mounting Plate (using *Tube Crossmember*)

NOTE: Typical examples shown on right will vary from trailer to trailer.

Illustration showing a typical installation of the air spring mounting plate that does not require a spacer. Additional support and gusseting may be required. Gussets are customer supplied. Approximately 60% of the air spring mounting plate must be properly supported.

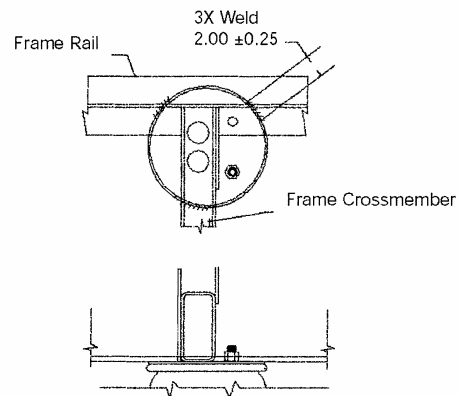


Illustration showing a typical installation of the air spring mounting plate that does require a spacer. Additional support and gusseting may be required. Gussets are customer supplied. Approximately 60% of the air spring mounting plate must be properly supported.

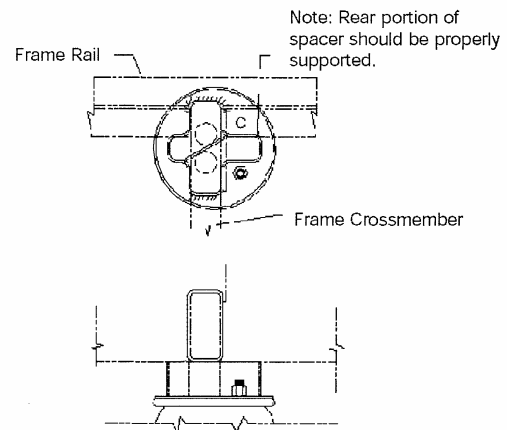
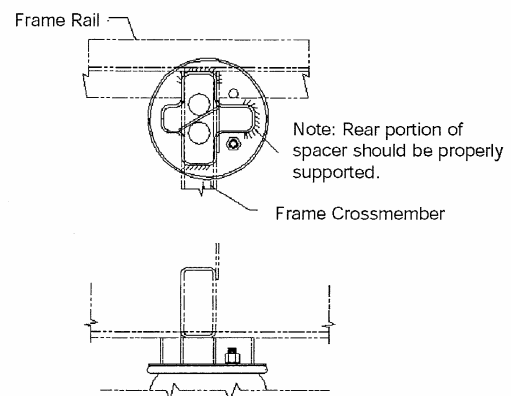
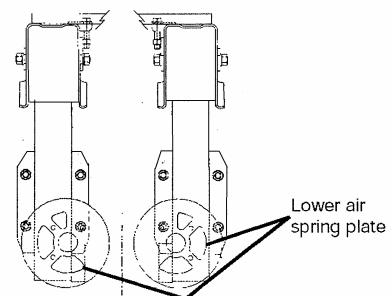


Illustration showing a typical severe offset installation of the air spring mounting plate that does or does not require a spacer. Additional support and gusseting may be required. Gussets are customer supplied. Approximately 60% of the air spring mounting plate must be properly supported.



Lower Air Spring Plate (ARTT only)

Install the plate by fitting between the piston and the trailing beam. Secure the air spring to the trailing beam with fasteners supplied.



Air Spring Mounting Plate (using Channel Crossmember)

NOTE: Typical examples shown on right will vary from trailer to trailer.

Illustration showing a typical installation of the air spring mounting plate that does not require a spacer. Additional support and gusseting may be required. Gussets are customer supplied. Approximately 60% of the air spring mounting plate must be properly supported.

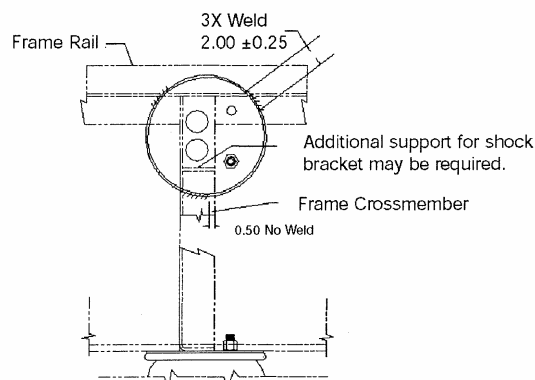


Illustration showing a typical installation of the air spring mounting plate that does require a spacer. Additional support and gusseting may be required. Gussets are customer supplied. Approximately 60% of the air spring mounting plate must be properly supported.

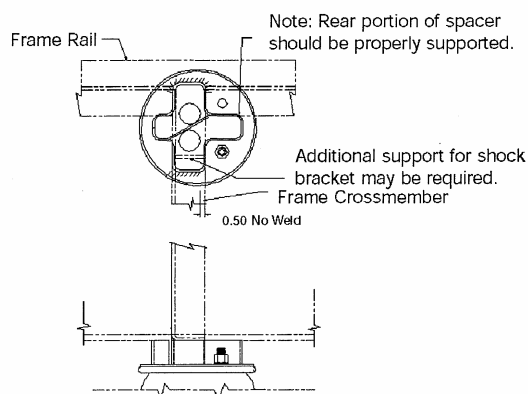
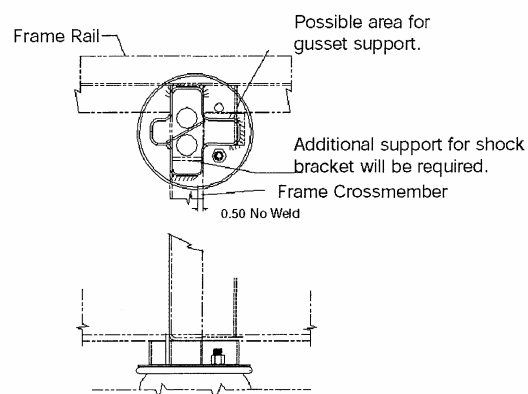
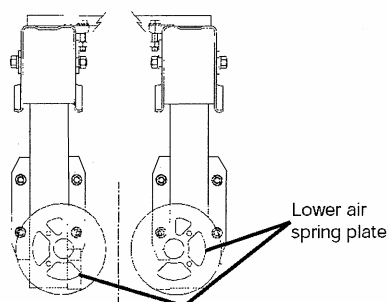


Illustration showing a typical severe offset installation of the air spring mounting plate that does or does not require a spacer. Additional support and gusseting may be required. Gussets are customer supplied. Approximately 60% of the air spring mounting plate must be properly supported.



Lower Air Spring Plate (ARTT only)

Install the plate by fitting between the piston and the trailing beam. Secure the air spring to the trailing beam with fasteners supplied.



BEAM AND AXLE ASSEMBLY

1. Locate and mark the centre line of the axle: Ensure the beams are located at the correct centre line dimension calculated from the axle centre line.

2. Cam shaft length may be a minimum of 524 mm (20-5/8").

NOTE: Ancillary components should clear suspension components by a minimum of 50 mm (2") to allow lateral movement.

Please call factory to verify your application.

3. **Brake camshaft** must be located according to suspension model and axle manufacturer specifications. Be sure that proper brake chamber and brake assembly clearances are maintained. Please refer to installation drawing for correct positioning. Contact axle manufacturer for proper axle weight rating.

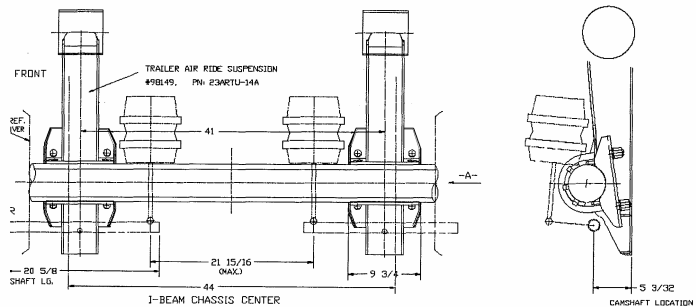
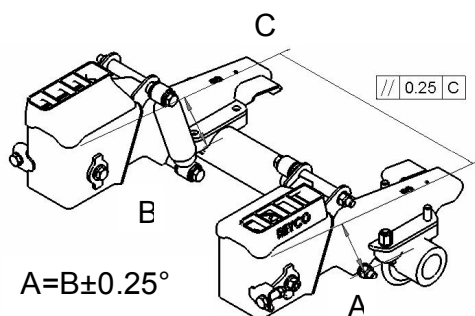
4. Review axle manufacturer's specifications as preheating the axle connection components may be required.

5. If using cambered axle, locate and mark the upper camber line (top dead centre) of the axles.

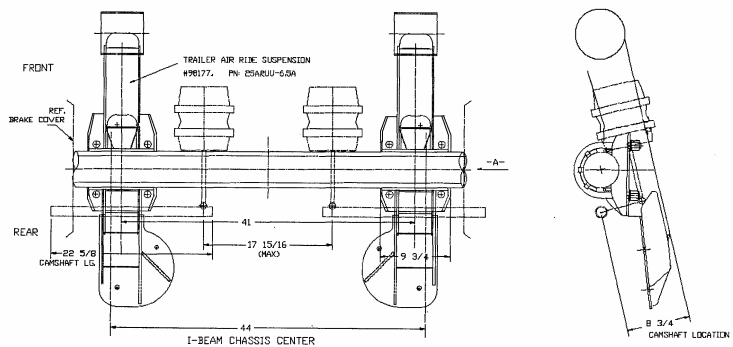
6. Ensure that the axle makes contact with the bottom of the axle seat as shown. Be sure axle surface is clean of debris at connection points.

7. Tack weld the axle in position using four (4) 25mm (1") long, 6 mm (1/4") welds. Start at the front, then go to the rear, following the sequence shown at right.

8. The contact surfaces of the beam to the axle must be parallel to each other within 0.25 degrees.



TOPMOUNT

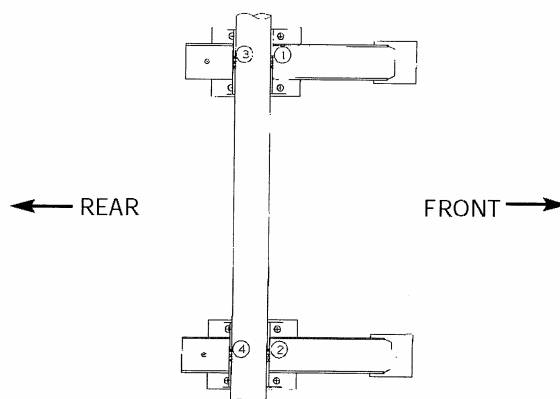
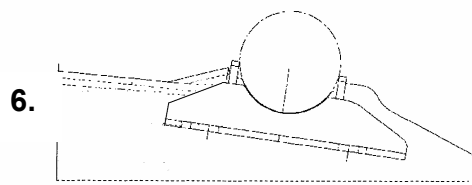


UNDERSLUNG

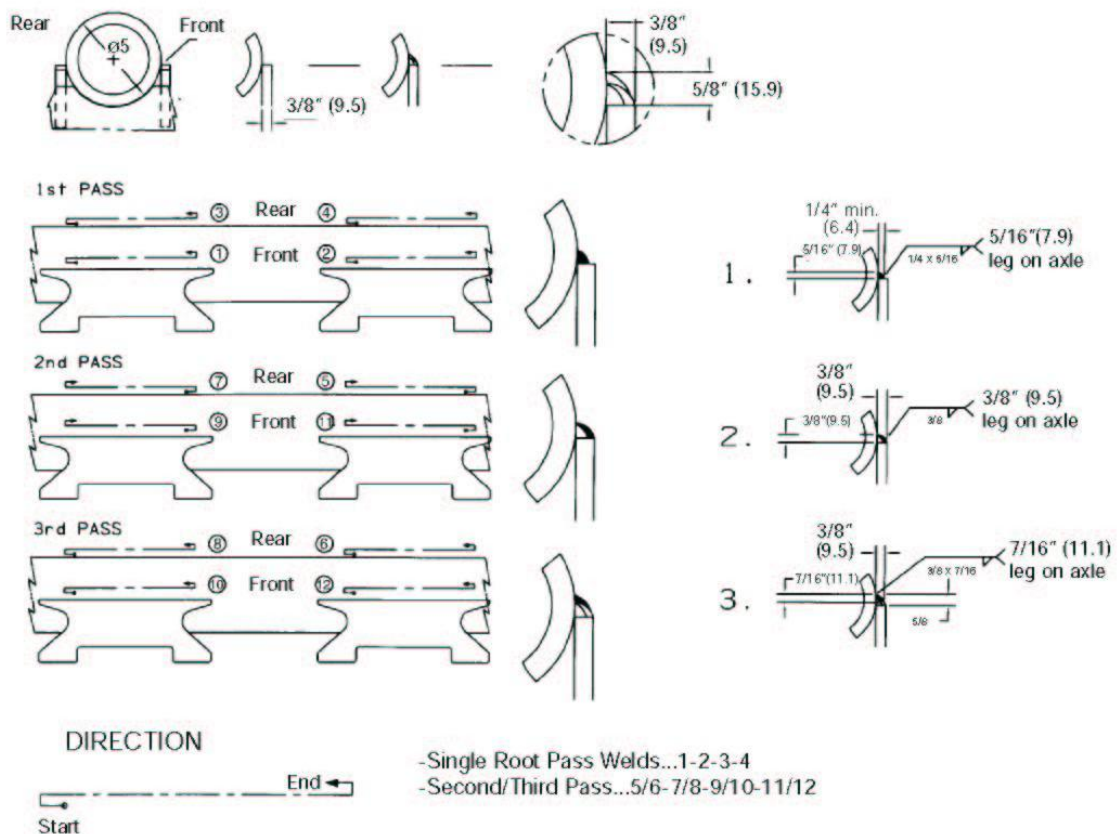
3. CAMSHAFT LOCATION

23ART to the rear
25ART to the front
30ART to the rear

25ARU to the rear
30ARU to the rear

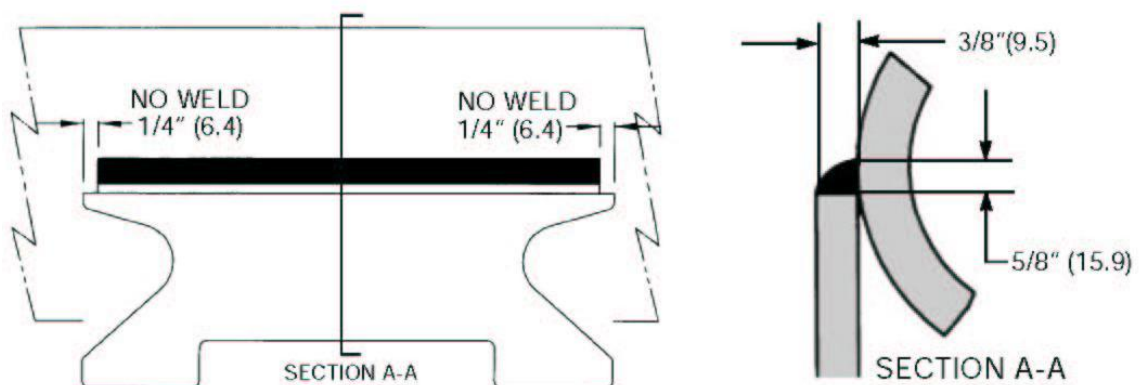


BEAM / AXLE WELDING SEQUENCE



IMPORTANT

Leave 6.4 mm (1/4") unwelded at each end of axle connector



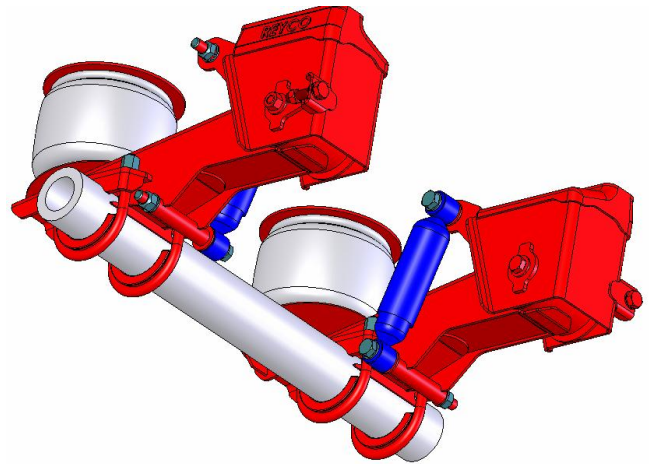
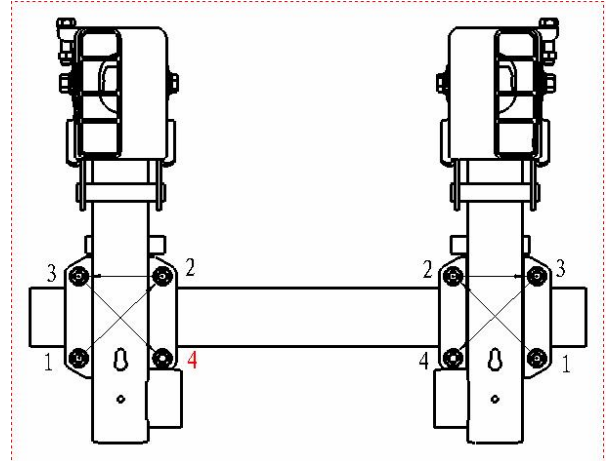
NOTE: Figures in brackets are shown in millimeters.

U-BOLT INSTALLATION

U-BOLT

1. U-BOLT installation and torquing should be done only after completion of axle weld. Be sure to provide sufficient cooling time before applying torque wrench.
2. Do not apply any lubricants to the u-bolts.
3. Be sure that the u-bolt spacer is located centrally under the u-bolt.
4. Snug u-bolts evenly before applying torque.
5. Torque u-bolts by following 3 step sequence shown. Deviation from this sequence could result in an improperly installed clamp assembly which could cause damage to the axle connection.

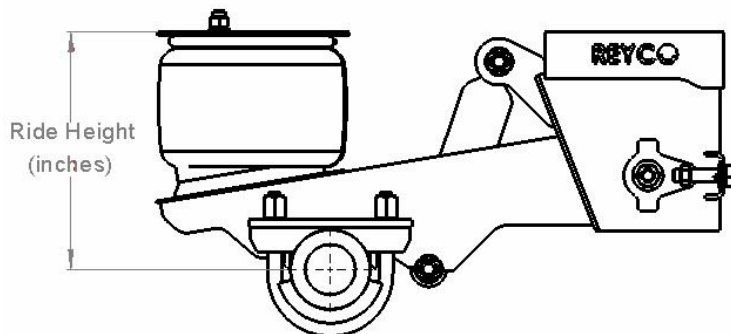
FIRST	205 NM (150 ft lbs)	1*2*3*4
SECOND.....	410 NM (300 ft lbs)	4*3*2*1
THIRD.....	650 NM (480 ft lbs)	4*3*2*1



AIR CONTROL

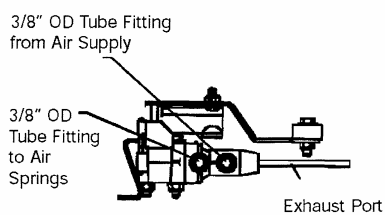
HEIGHT CONTROL VALVE

1. One height control valve (HCV) is used, regardless of the number of axles. The air springs on each side of the trailer are connected by 9.5 mm (3/8") minimum diameter tubing (customer supplied). Care must be taken to ensure the HCV is positioned as shown on the installation drawing for the model being installed. Tridem, HCV should be installed on the center axle.

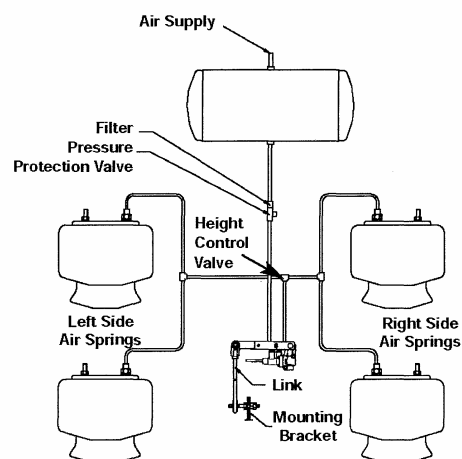
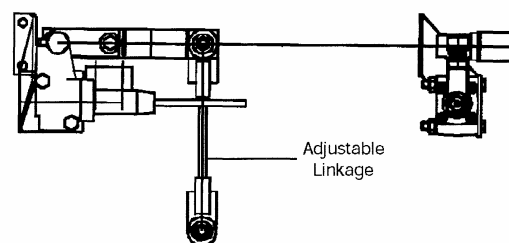


2. Care must be taken when installing HCV to ensure correct ride height is attained.
3. To set/adjust ride height, simply assemble the linkage to the desired length to attain the required ride height.

For maximum strength, it is recommended that the linkage set screws 16 mm (5/8") be placed in the end holes of both links.



4. This suspension uses a height control valve (HCV) which utilizes a short delay.
5. Ensure that the air springs and all valves are plumbed as shown.
6. The pressure protection valve (PPV) and filter are installed between the HCV and the air reservoir.
7. Using customer supplied materials, connect the HCV to all air springs using 9.5 mm (3/8") diameter tubing. As with any pressure system, check for leaks and eliminate leakage, if present.



ALIGNMENT

1. Release the brake system and pull the trailer forwards and backwards several times in a straight line to free the suspension from binding and tension.

NOTE: This procedure must be performed on a smooth level surface.

2. For best results, the use of axle extensions and a "BAZOOKA" type king pin post, or a suitable optical alignment device are recommended.
3. **NOTE:** Prior to commencing alignment, ensure that the trailing beam is installed to centre line of hanger. Align the front axle with the king pin as shown.
4. Align the remaining axles to the front axle as shown.
5. Torque the hanger clamp bolts if REY-ALIGN™ or if huck bolted, weld the alignment washers as shown.
6. (REY-ALIGN™ feature) torque 22 mm (7/8") alignment clamp bolt to 815 Nm (600 ft lbs) **using only a torque wrench.**

NOTE:

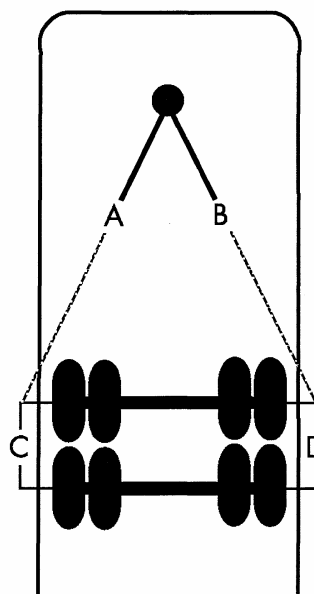
Refer to page 14 for details. Run nut up very slowly.

7. Torque the adjustment shaft (REY-ALIGN™ feature) **clockwise** to 80 Nm (60 ft lbs) or, if Huck® Bolt, weld the alignment washers as shown on the right.
8. Optional: Weld along top of "TAB" to secure alignment in position, if REY-ALIGN™ feature.

NOTE: By removing welds carefully, you should be able to re-align up to 3 or 4 times with minimal or no cleaning.

9. Verify that torque is correct on all fasteners.
10. After initial 1,600 km (1,000 miles), the alignment should be re-checked and corrected if necessary; torque on the clamp nuts should also be checked.

Alignment Procedure

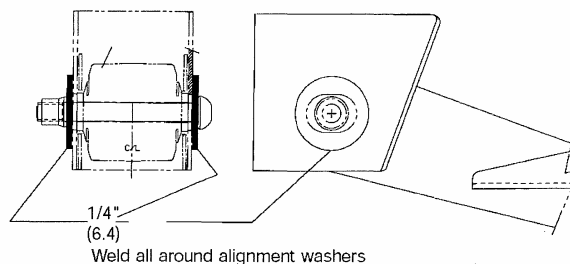


$$A=B \pm 1/8" (3.2)$$

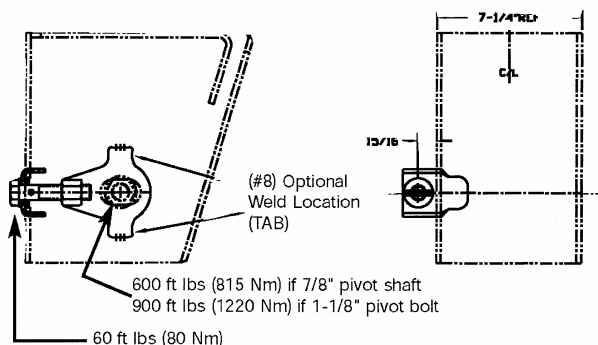
$$C=D \pm 1/16" (1.6)$$

NOTE: Figures in brackets are shown in millimeters.

HUCK® BOLT ASSEMBLY



REY-ALIGN® SYSTEM*



* Follow assembly instructions in Rey-Align® Details section

REY-ALIGN™ DETAILS

Care must be taken to ensure that the REY-ALIGN™ option is installed correctly.

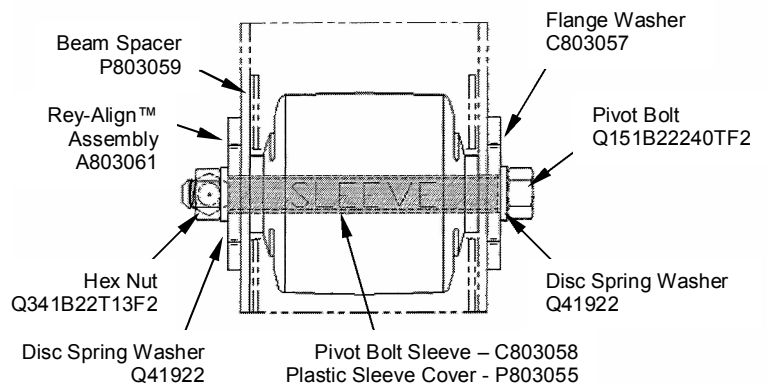
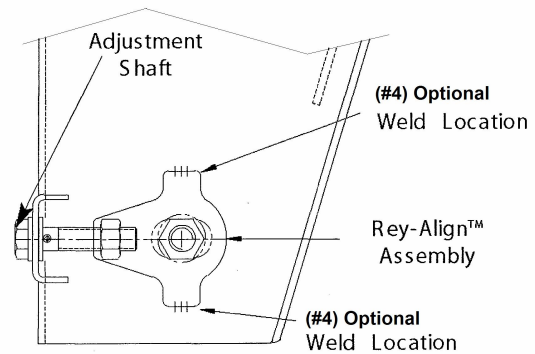
HARDWARE COMPONENT LIST (per beam)

Qty	Description	Part No.
1	Pivot Bolt	Q151B22240TF2
1	Nut	Q341B22T13F2
2	Disc Spring Washers	Q41922
1	Flange Washer	C803057
1	Pivot Bolt Sleeve	C803058
1	Plastic Sleeve Cover	P803055
2	Beam Spacers	P803059
1	Rey-Align™ Asy	A803061

1. Assemble the hardware as shown, ensuring correct installation of disc spring washers and ensuring that the flange washer is installed on the opposite side to the alignment assembly.
2. To align the suspension, turn the 19 mm (3/4 ") adjustment shaft found on the front of the hanger. This will either pull the beam / axle forward or push it rearward, till you find the correct alignment.
3. Tighten and torque the hanger clamp bolt to 815 Nm (600 ft lbs) **using only a torque wrench. Run nut up very slowly.**
4. Optional: Weld along top of "TAB" to secure alignment in position.

NOTE: By cutting welds carefully, you should be able to re-align up to 3 or 4 times with minimal or no cleaning.

5. Lastly, torque the 19 mm (3/4 ") adjustment shaft **by turning clockwise** to 80 Nm (60 ft lbs).
6. Verify that torque is correct on all fasteners.



NOTE: IMPORTANT! When installing the disc spring washers, the "CONCAVE" side MUST FACE the surface of the hanger, and the "CONVEX" side MUST FACE the nut.

