

MERITOR®
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Technical Bulletin

Installing RideSentry™ Suspension Axle Seats onto RideStar™ RHP Series Single-Axle and Sliding Tandem Trailer Air Suspension Systems

Hazard Alert Messages

Read and observe all Warning and Caution hazard alert messages in this publication. They provide information that can help prevent serious personal injury, damage to components, or both.

How to Obtain Additional Maintenance and Service Information

Refer to the following manuals. Visit Literature on Demand at arvinmeritor.com to access these publications.

- Maintenance Manual 14, Trailer Axles
- Maintenance Manual 14L, RideStar™ RHP Series Single-Axle Trailer Air Suspension System
- Maintenance Manual 14S, RideStar™ RHP Series Sliding Tandem Trailer Air Suspension System
- Maintenance Manual 8, Drive Axle Housings

How to Obtain Tools and Supplies Specified in This Technical Bulletin

Call ArvinMeritor's Commercial Vehicle Aftermarket at 888-725-9355 to obtain Meritor tools and supplies.

Before You Remove the Axle Seats from the Trailer Axle

ArvinMeritor recommends that you apply reference marks to indicate the positions of the axle seats you will remove from the trailer axle assembly to help ensure correct reinstallation.

Remove the Trailer Axle Assembly

WARNING

To prevent serious eye injury, always wear safe eye protection when you perform vehicle maintenance or service procedures.

Park the vehicle on a level surface. Block the wheels to prevent the vehicle from moving. Support the vehicle with safety stands. Do not work under a trailer supported only by jacks. Jacks can slip and fall over. Serious personal injury and damage to components can result.

1. Wear safe eye protection.
2. Park the vehicle on a level surface. Set the parking brake. Block the wheels to prevent the vehicle from moving.

WARNING

To avoid serious personal injury and damage to components, take care when using lifting devices during service and maintenance procedures. Inspect a lifting strap to ensure that it is not damaged. Do not subject the lifting straps to shocks or drop-loading.

3. Lower the landing gear. Use an appropriate lifting device to raise the trailer frame, so that the tires are just off the ground. Support the trailer with safety stands.

WARNING

Verify that all people are clear of the trailer before you inflate or deflate the air springs. The air suspension system has various pinch-points that can cause serious personal injury.

4. Verify that all people are clear of the trailer. Exhaust the air pressure from the suspension air springs.

⚠ ASBESTOS AND NON-ASBESTOS FIBERS WARNING

Some brake linings contain asbestos fibers, a cancer and lung disease hazard. Some brake linings contain non-asbestos fibers, whose long-term effects to health are unknown. You must use caution when you handle both asbestos and non-asbestos materials.

5. Remove the tires, drums, brake shoes and brake hardware from the axle being serviced. Do not remove the hubs.
6. Disconnect the brake chamber clevis from the slack adjusters. Remove the brake chamber attaching hardware and retain it for reassembly. Let the chamber hang on the brake hoses.
7. Remove the lower retaining nut and push the air spring up off the seat. Retain the nut for reassembly.
 - **If you are removing the rear axle:** Disconnect the leveling valve rod.
8. Use a jack to raise the axle approximately four inches (107 mm). Disconnect the lower shock absorber bolt. Retain the bolt for reassembly. Rotate the shock absorber UP and out of the way. Figure 1.

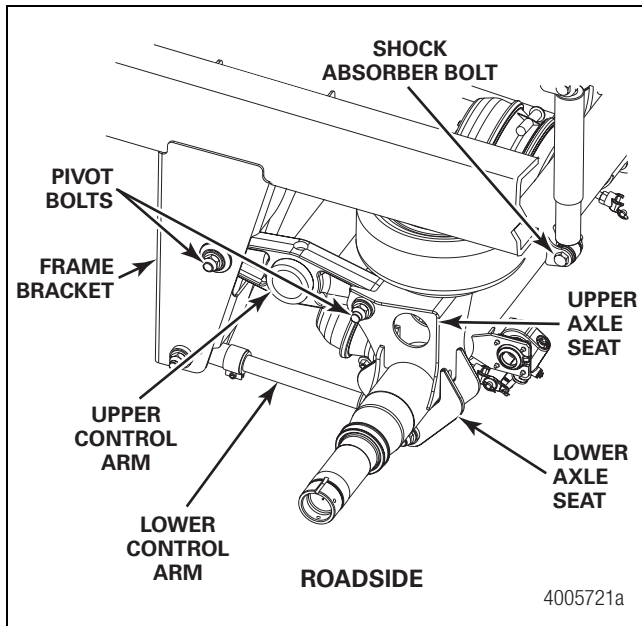


Figure 1

9. Verify that the pivot bolts on the upper control arm spin freely.
 - **If you find corrosion between the pivot bolts and the inner sleeves:** Use an impact wrench on the pivot bolt heads to spin and disengage the bolts.

10. Remove the nuts that secure the upper control arm to the frame brackets and axle seats. Note the orientation of the bolts used at each pivot bolt location. Use the same orientation at reassembly. Discard the nuts. All upper control arm pivot connection hardware must be replaced with new during reassembly.
 - **If equipped with shear or tamper-proof nuts:** Use a disc grinder to grind off the tack weld between the shear nut and pivot bolt thread. Hold the nut with a pipe wrench. Use an impact wrench on the pivot bolt head. Discard the nut. Do not use it for reassembly.
 - **If equipped with standard Nylok® nuts:** Hold the pivot bolt with a wrench. Use an impact wrench to remove the nut. Discard the nut. Do not use it for reassembly.
11. Verify that the axle is supported correctly. Remove the lower control arm bolts at the axle seat. Retain the bolts for reassembly. Push the lower control arms down and out of the way.
12. Place a block of wood under the upper control arm where it attaches to the center hanger, which will keep the upper control arm from falling when the axle seat pivot bolts are removed.

⚠ WARNING

After you've removed the pivot bolts, keep clear of the upper control arm. Do not stand under the upper control arm when you pull the axle away from the suspension. Serious personal injury and damage to components can result.

13. Remove the pivot bolts from the axle seats at the upper control arms and pull the axle away from the suspension. Discard the bolts. Do not stand under the upper control arm when pulling the axle away. Pull the axle straight off the suspension to prevent the axle seats from binding onto the bushings.
14. Use a marking device such as chalk to apply reference marks on the axle. It is important to add these marks before turning the axle over to eliminate any confusion and possibility for error. If possible, place the marks toward the center inboard side of the axle, and up and over the top to ensure that the marks remain during the axle seat replacement procedure. Figure 2.

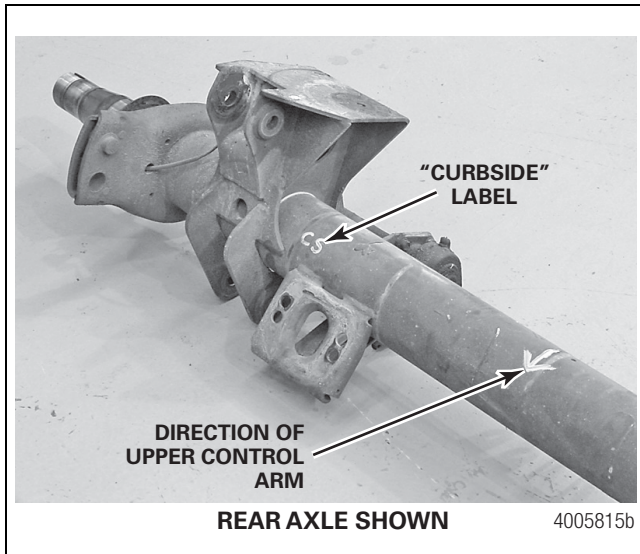


Figure 2

15. Indicate the location and orientation of components as follows.
 - A. Mark the axle top and label the "curbside" and "roadside" ends.
 - B. Mark the position of the upper axle seats. Label their "curbside" and "roadside" position.
 - C. Mark to indicate which side of the axle the upper control arm is located.
16. Turn the axle over. Set it on a flat surface, so that it rests on the air spring seats. Figure 3.

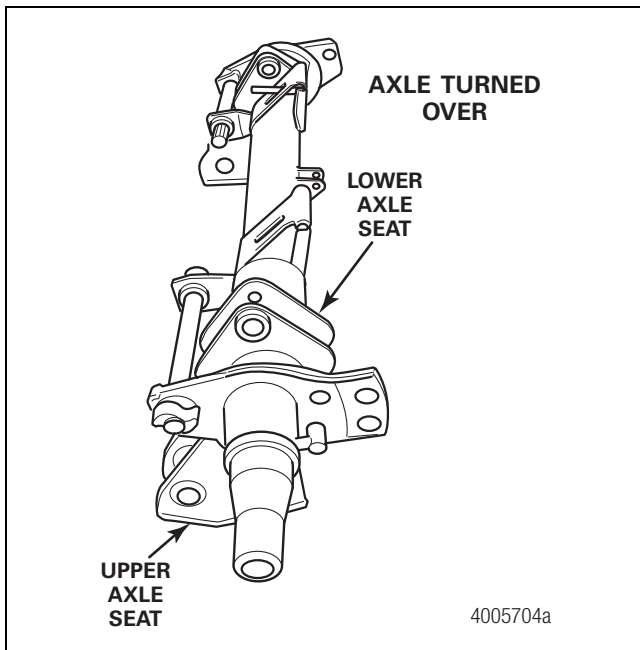


Figure 3

17. Replace the shock absorber mounting tabs, if necessary.
 - A. Apply reference marks to indicate the center position of each mounting tab and which way the longer tab ends face. The axles with a ride height of 16-1/2-inches (419 mm) and 18-1/2-inches (470 mm) have tabs that face UP. The axles with a ride height of 17-1/2-inches (445 mm) have tabs that face DOWN. Figure 4.
 - B. Mark the rotation of each mounting tab with a horizontal line. This is important as it sets the shock stroke.

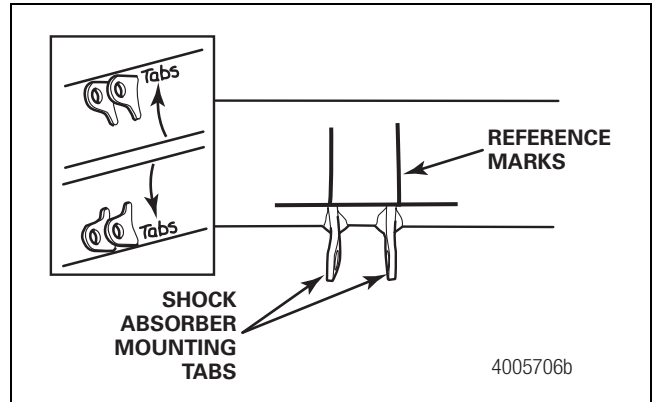


Figure 4

18. Use an air-arc or torch to remove the shock absorber mounting tabs.
 - **If you use an air-arc:** Use care to remove only the welds to prevent gouging the axle tube.
 - **If you use a torch:** Ensure that the cuts are high enough to prevent gouging the axle tube.
19. Grind off the remaining weld. Ensure that you do not grind flush to the axle tube. Figure 5.

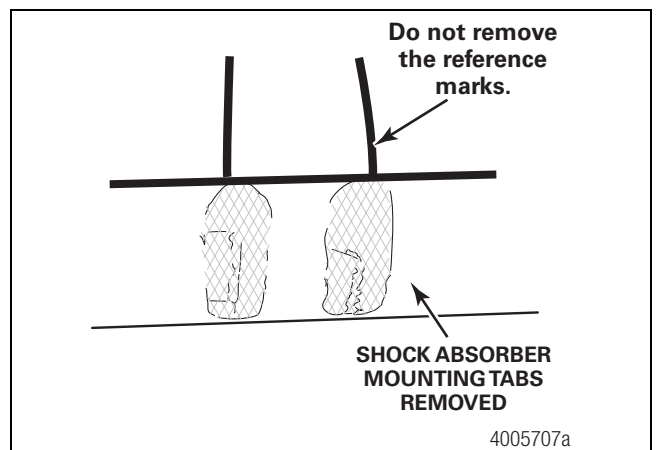


Figure 5

20. Install the mounting tabs onto a shock absorber or spacer to set the correct distance. Figure 6.

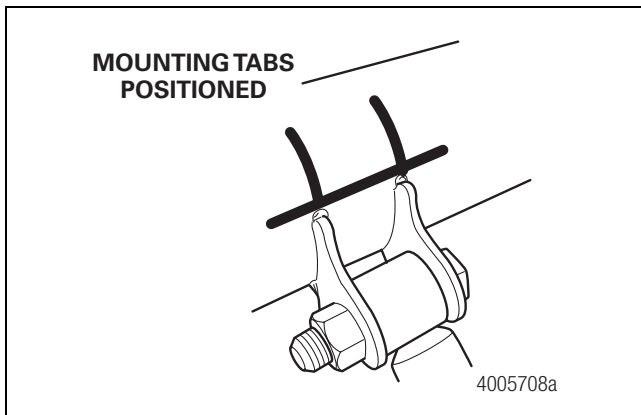


Figure 6

21. Place the mounting tabs in position according to the reference marks and old weld marks on the axle. Verify the tabs are facing the same way as those you removed.
22. Tack weld the tabs in place. Run the outside welds. Remove the shock absorber. Run the inside welds. Make the welds 0.25-inch (6.35 mm) in width. Figure 7.

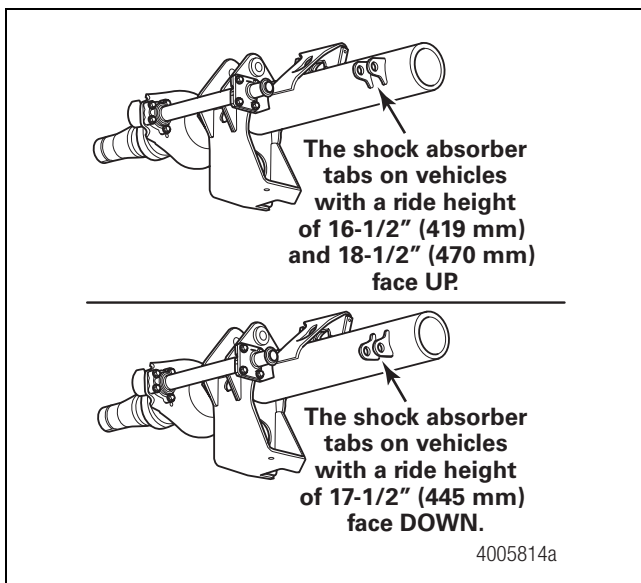


Figure 7

23. After welding the mounting tabs, use a torch to heat the opposite side of the axle for one minute. This will help to reduce the toe effect of the mounting tab welds. Avoid concentrating the heat in one area. Move the torch over an area equal to the area of the shock tabs.

Remove the Axle Seats

You can perform this procedure with or without the hubs. If necessary, place even blocks under the axle seats to raise the hubs off the floor.

1. Use an air-arc or torch to remove the lower axle seats. Note that the lower axle seats will be facing UP and are welded to the upper axle seats. Figure 8 and Figure 9.

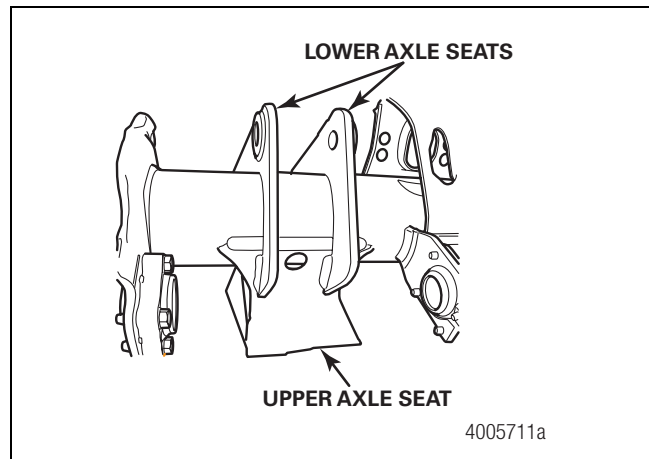


Figure 8

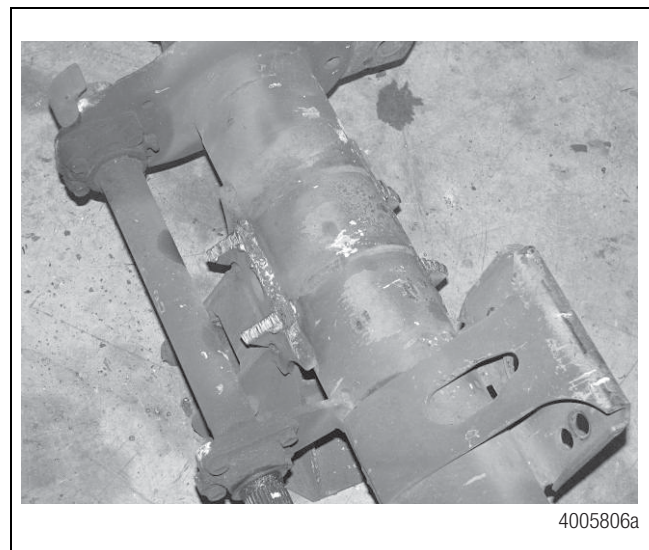


Figure 9

2. Use floor jacks to raise the axle so the upper axle seats are off the floor.
3. Use an air-arc to remove the upper axle seats. An air-arc is the preferred tool for this procedure. However, a cut-off wheel in a grinder may also be used if necessary. The use of a torch or plasma cutter is not recommended as this will overheat the axle.
4. Remove only the welds. Do not gouge the axle tube. Figure 10.

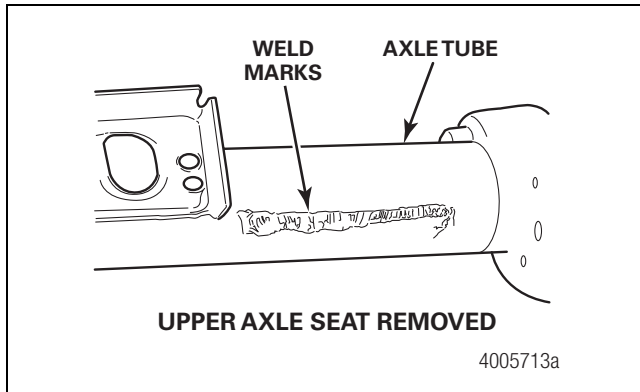


Figure 10

5. Grind the welds until they are flush with the axle. Do not grind into the axle tube.

Install the RideSentry™ Suspension 16.5-Inch Axle Seats

1. After you remove the old axle seats, ensure the areas of the axle where you will install the new RideSentry™ suspension axle seats are clean. Figure 11.

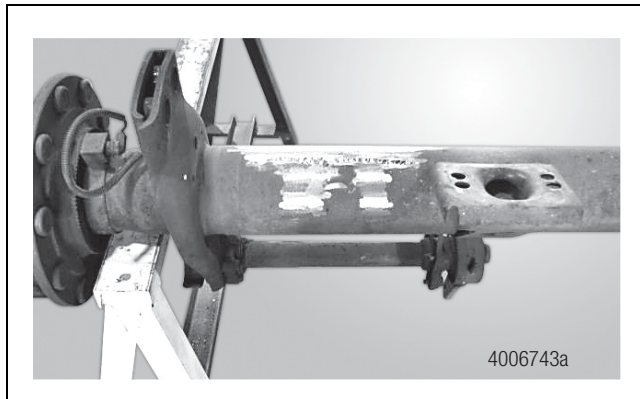


Figure 11

2. Place the new upper axle seats inverted on a flat surface with the air spring mounting holes towards the center and place the axle into the saddles. Position the axle so that the shock absorber mounting tabs are on the opposite side of the axle in relation to the new upper axle seat control arm bolt hole. Figure 12.

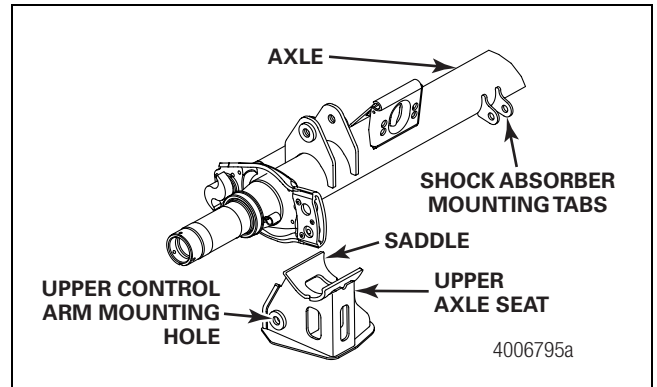


Figure 12

3. Use the square tube supplied with tool A-3256-L-1182 to set the distance from the brake spider to the axle seat. To obtain this tool, call ArvinMeritor's Commercial Vehicle Aftermarket at 888-725-9355. Figure 13.

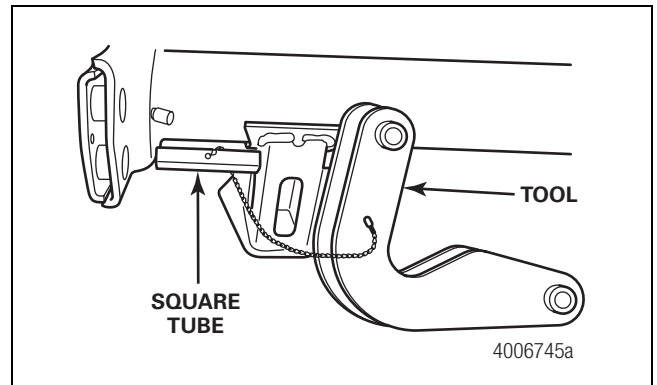


Figure 13

4. Confirm the axle clocking position by measuring from the flat surface that the axle seats are on to the center of the camshaft. This distance must be nine-inches (229 mm). Figure 14.

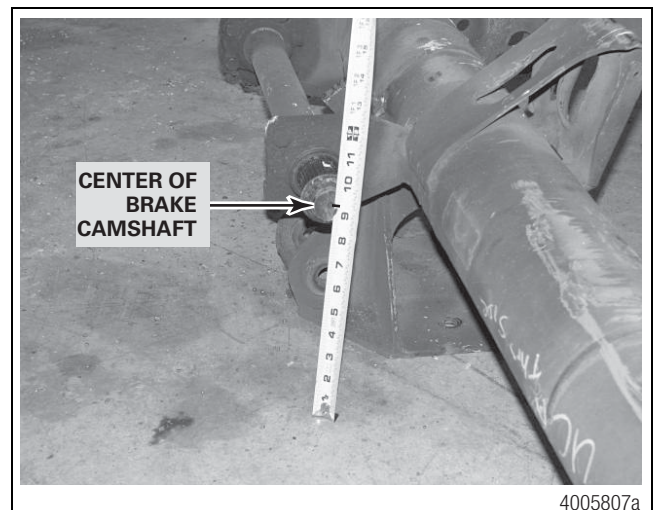


Figure 14

- Place four tack welds on the seat-to-axle connection one inch (25 mm) from any edge. Figure 15.

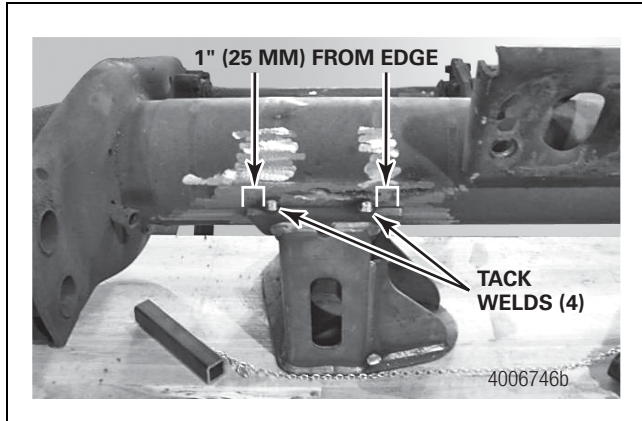


Figure 15

- Use a 3/4-inch wide tape measure to measure through the axle seat upper control arm bolt holes. Set the opposite axle seat at 41-7/8-inches (1064 mm) from the inside of the seat to the inside of the opposite axle seat. Figure 16 and Figure 17.

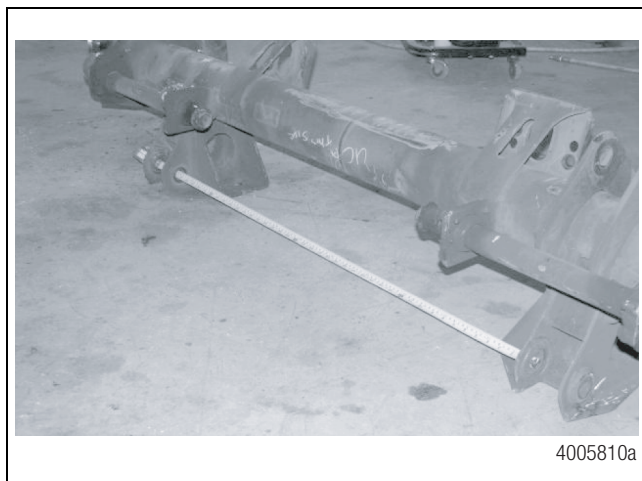


Figure 16

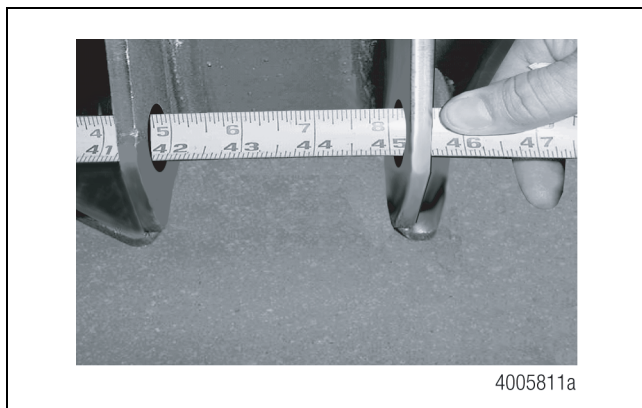


Figure 17

- Verify the opposite axle seat is 41-7/8-inches (1064 mm) from the inside of the seat to the inside of the opposite axle seat. Then repeat Step 5.

Weld the Upper Axle Seats onto the Trailer Axle

⚠ WARNING

You must follow correct welding procedures and weld at locations authorized by Meritor when you weld to suspension components. Welding at locations other than those authorized by Meritor will void the warranty and can reduce trailer axle fatigue life. Serious personal injury and damage to components can result.

Do not weld onto the upper control arm as this can reduce the fatigue life of the control arm. Serious personal injury and damage to components can result.

Wear safe clothing and eye protection when you use welding equipment. Follow instructions provided by welding equipment manufacturers to prevent serious personal injury and damage to components.

- Wear appropriate clothing and eye protection when using welding equipment. Refer to Maintenance Manual 8 for complete welding instructions.
- Use 0.035 E70 wire and 75/25 gas to weld the axle seats.
- Apply the weld in the sequence shown in Figure 18. Do 3/16-inch (4.8 mm) root welds one and two (front and back). Next do 3/8-inch (9.5 mm) fillet welds three and four (front and back). Do not stop the process once it is started. Repeat on the opposite seat.

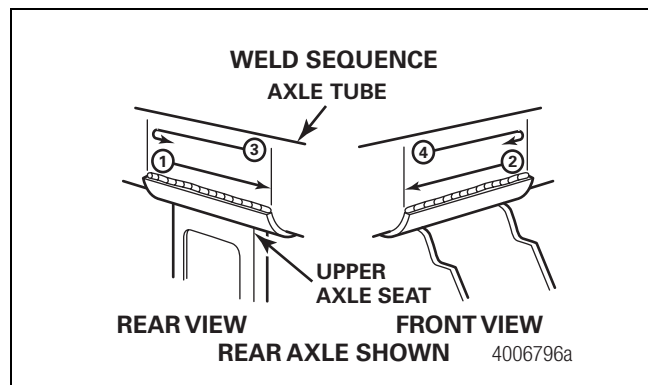


Figure 18

Install the New Lower Axle Seats

- Use tool A-3256-L-1182 to ensure the correct location to install the lower axle seat. Figure 19.

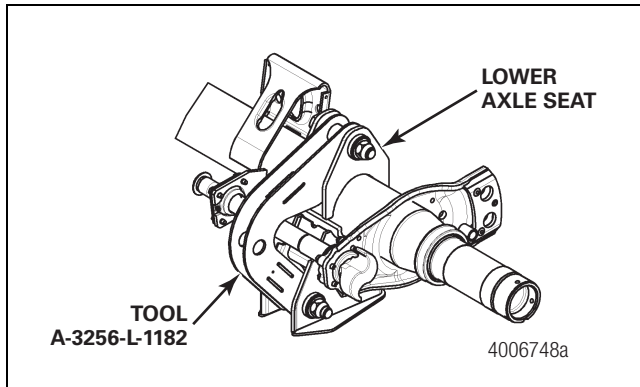


Figure 19

2. Install the tool as shown to align the lower and upper axle seats. Figure 20.

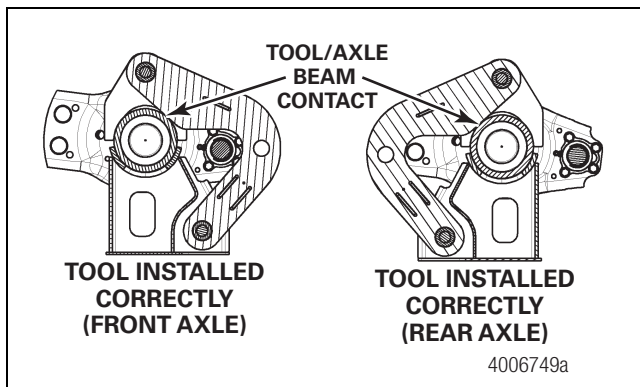


Figure 20

3. Tack weld outside and inside the lower axle seat wherever available. Place tacks only in the areas to be welded.
4. Repeat Step 1 through Step 3 for the lower axle seat installation on the opposite side.
5. Weld 1.2-inches (30 mm) on each side of the lower axle seat onto the axle. The welds must be 0.25-inch (6.35 mm) wide and not more than 1.2-inches (30 mm) long. Do not weld over the end of the lower seats. There will be a total of eight welds (two lower axle seats welded on each side). Figure 21.

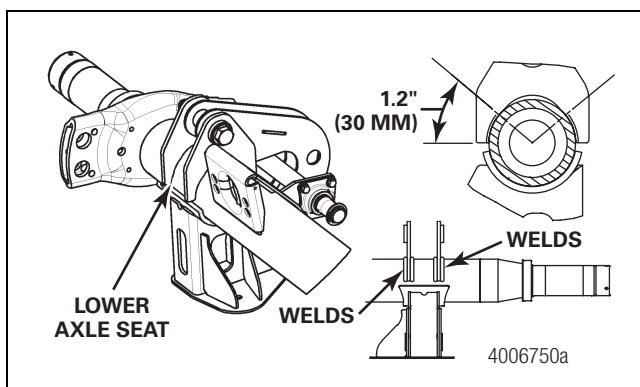


Figure 21

6. After the welding is completed and cooled, apply primer and undercoating to the bare metal. Do not apply paint or undercoating to the bushing contact areas. Reinstall the axle.

Reinstall the Trailer Axle Assembly

1. Turn over the axle and move it into position under the trailer.
2. Install the upper axle seats into the upper control arm. Install the new bolts and nuts, but do not tighten. Verify the bolts are installed in the same orientation as those removed. Bolts installed with an incorrect orientation can cause interference with brake components.
3. Install the lower control arms into the lower axle seats. Install the nuts and bolts, but do not tighten. If using new hardware, verify the bolts are the same type as the original. Ensure the bolts are installed with the same orientation as those removed.
4. Reinstall the air springs, shock absorbers and brake chambers reusing existing hardware.
5. Set the axle to the correct ride height and tighten all of the bolts. Refer to the appropriate maintenance manual or the tag on the trailer for the correct torque specifications.
 - **If you install shear nuts on the non-alignment pivot bolts:** Apply a tack weld on the threads after shearing the nut off to ensure no back-off occurs.
6. Reinstall the wheels.

ArvinMeritor™

Meritor Heavy Vehicle Systems, LLC
2135 West Maple Road
Troy, MI 48084 USA
800-535-5560
arvinmeritor.com

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