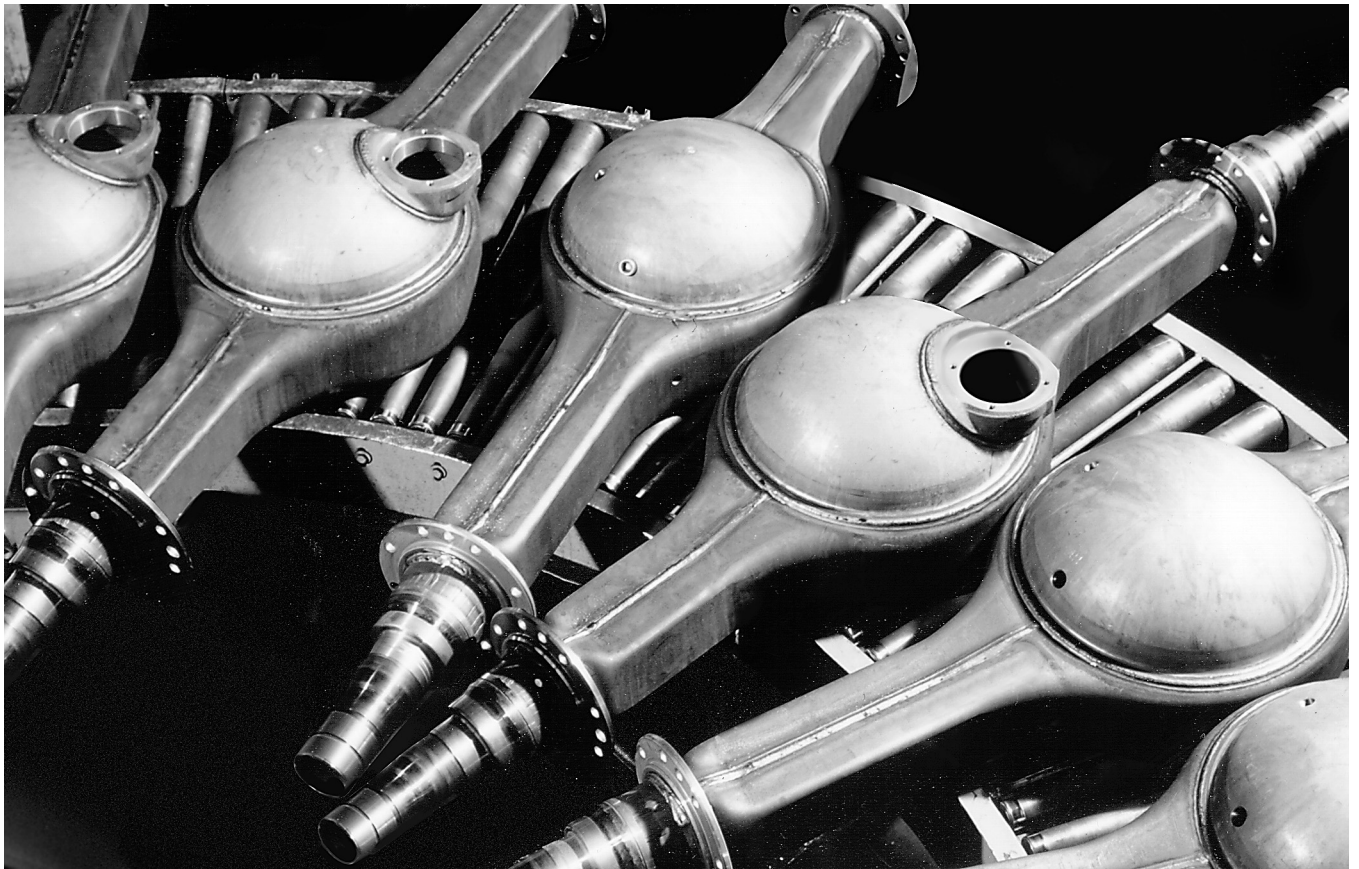


Maintenance Manual 8

Drive Axle Housings

Welding and Repair Procedures

Revised 05-07



About This Manual

This manual provides welding instructions for Meritor single rear, tandem and tridem drive axle housings.

Before You Begin

1. Read and understand all instructions and procedures before you begin to service components.
2. 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.
3. Follow your company's maintenance and service, installation, and diagnostics guidelines.
4. Use special tools when required to help avoid serious personal injury and damage to components.

Hazard Alert Messages and Torque Symbols

WARNING

A Warning alerts you to an instruction or procedure that you must follow exactly to avoid serious personal injury and damage to components.

CAUTION

A Caution alerts you to an instruction or procedure that you must follow exactly to avoid damage to components.

 This symbol alerts you to tighten fasteners to a specified torque value.

How to Obtain Additional Maintenance and Service Information

On the Web

Visit Literature on Demand at meritorhvs.com to access product, service, aftermarket, and warranty literature for ArvinMeritor's truck, trailer and specialty vehicle components.

ArvinMeritor's Customer Service Center

Call ArvinMeritor's Customer Service Center at 800-535-5560.

Technical Electronic Library DVD

The DriveTrain Plus™ by ArvinMeritor Technical Electronic Library DVD contains product and service information for most Meritor and Meritor WABCO products. Specify TP-9853.

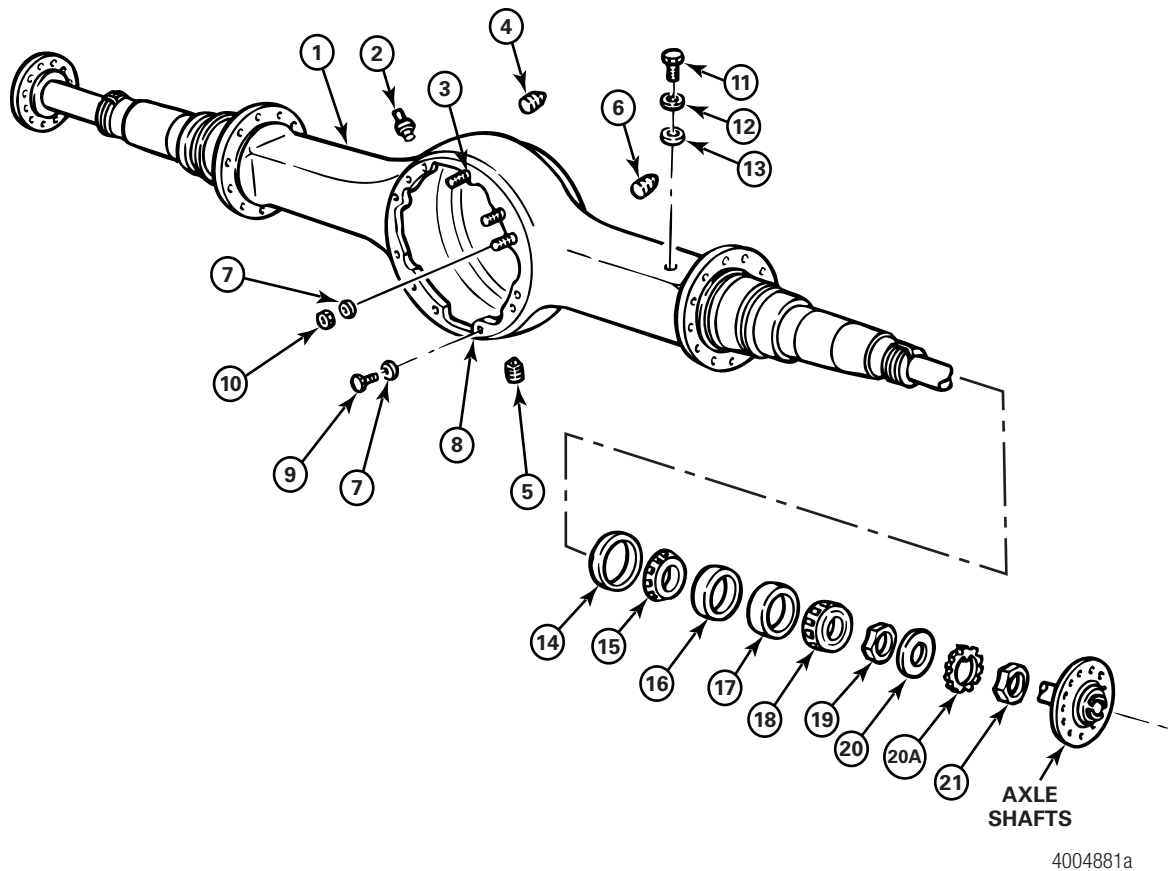
How to Obtain Tools and Supplies Specified in This Manual

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

Information contained in this publication was in effect at the time the publication was approved for printing and is subject to change without notice or liability. Meritor Heavy Vehicle Systems, LLC, reserves the right to revise the information presented or to discontinue the production of parts described at any time.

pg. 1	Section 1: Exploded View Conventional Axle Housing Assembly Components with Bottle Spindle
3	Section 2: Introduction Description
4	Section 3: Welding Repair
9	Welding Outside of the Cover to the Housing Inside of the Cover to the Housing
16	Specifications Fillet Weld Depth of Fusion Root Pass
17	Welding Process Filler Metal Specifications Gas Shielding for Arc Welds Electric Current Position Recommended Parameters Base Metal Preparation
18	Base Weld Appearance Cleaning and Inspection
19	Section 4: Repairs Repair Bending or Straightening Drive Axle Housings Housing Leaks
21	Fasteners The Nord-Lock® Washer System
23	Solid Tapered Dowel Axle Shaft Attachment Removal Axle Shaft
24	Installation Axle Shaft
26	Section 5: Cleaning Clean, Dry and Inspect Parts Clean Ground and Polished Parts Clean Rough Parts Clean Axle Assemblies Dry Parts After Cleaning Prevent Corrosion on Cleaned Parts Magnets and Magnetic Drain Plugs
28	Section 6: Specifications Torque Specifications
29	Drive Pinion Nut Torque Specifications
30	Nord-Lock® Fastener Specifications

Conventional Axle Housing Assembly Components with Bottle Spindle



Item	Description	Axle Models
1	Conventional Axle Housing Assembly with Bottle Spindle	All Models
2	Breather Assembly	All Models
3	Stud — Housing-to-Carrier	All Forward Carriers
4	Plug — Heat Indicator	All Models
5	Plug — Magnetic Oil Drain and Fill	All Models
6	Plug — Non-Magnetic Oil Fill	All Models
7	Washer — Carrier-to-Housing	All Models
8	Silastic Gasket — Housing-to-Carrier	All Models
9	Capscrew — Carrier-to-Housing	All Forward Carriers RR22145 RS21145 All Other Single and Rear Carriers

1 Exploded View

Item	Description	Axle Models
10	Nut — Carrier-to-Housing Stud	All Forward Carriers
11	Capscrew — Brake Line Bracket	All Models
12	Gasket — Brake Line Bracket	RS16140, RS17140, RS19145, RS21145 All Other Models
13	Washer — Brake Line Bracket	RS16140, RS17140, RS19145, RS21145 All Other Models
14	Oil Seal — Wheel End	All Models
15	Cone — Wheel Bearing, Inner	All Models
16	Cup — Wheel Bearing, Inner	All Models
17	Cup — Wheel Bearing, Outer	All Models
18	Cone — Wheel Bearing, Outer	All Models
19	Nut — Wheel Bearing, Inner	All Models
20	Lock Washer and Tanged Lock Washer	All Models
20A	Lock Washer and Tanged Lock Washer	All Models
21	Nut — Wheel Bearing, Outer	All Models

Description

On drive axles with unitized wheel ends, the hub, seal, lubricant and bearings are installed onto the axle spindle as an assembly.

To identify the axle, carrier and housing models, refer to the identification tags located on the main axle housing. Figure 2.1. Specify the information stamped on these tags when you order replacement parts.

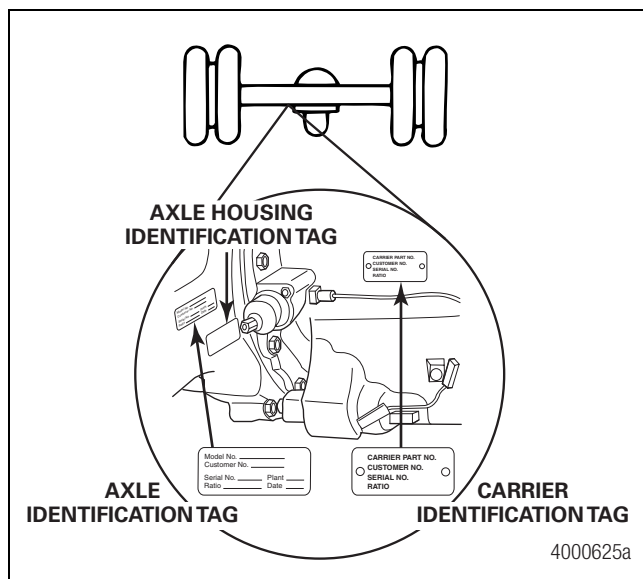


Figure 2.1

3 Welding

Repair

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.

WARNING

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

Wear safe clothing and eye protection when you use welding equipment. Welding equipment can burn you and cause serious personal injury. Follow the operating instructions and safety procedures recommended by the welding equipment manufacturers.

Repair axle housing components covered in this manual only. Do not attempt to repair non-serviceable axle housing components. Serious personal injury and damage to components can result.

Axle weld locations and welding procedures must adhere to Meritor standards. Welding at locations other than those authorized by Meritor will void the warranty and can reduce axle beam fatigue life. Serious personal injury and damage to components can result.

Welding the Axle Housings

Meritor permits drive axle housing assembly repair welding in the following locations only.

- Housing-to-cover weld joints
- Snorkel welds
- Housing seam welds between the suspension attaching brackets
- Bracket welding to the drive axle housing

Prepare the Axle

WARNING

The high temperature caused by the open flame from the cutting torch can ignite the oil in the axle housing and can cause serious personal injury.

1. Remove the oil drain plug from the bottom of the axle housing and drain the lubricant from the assembly.

CAUTION

Remove the differential carrier from the axle housing before you weld onto an axle. Do not weld onto an axle with the differential carrier installed. Electrical arcing and damage to components can result.

2. Remove the differential carrier from the axle housing. Refer to the correct Meritor carrier maintenance manual or the vehicle manufacturer's instructions.

CAUTION

Remove the brake air chambers before you weld onto an axle. Do not expose a brake air chamber to more than 250°F (121°C). Damage to the air chamber can result.

3. Remove the wheel-end components and brake air chambers from the axle. Refer to the correct Meritor brake maintenance manual or the vehicle manufacturer's instructions.

WARNING

Solvent cleaners can be flammable, poisonous and cause burns. Examples of solvent cleaners are carbon tetrachloride, and emulsion-type and petroleum-base cleaners. Read the manufacturer's instructions before using a solvent cleaner, then carefully follow the instructions. Also follow the procedures below.

- Wear safe eye protection.
- Wear clothing that protects your skin.
- Work in a well-ventilated area.
- Do not use gasoline, or solvents that contain gasoline. Gasoline can explode.
- You must use hot solution tanks or alkaline solutions correctly. Read the manufacturer's instructions before using hot solution tanks and alkaline solutions. Then carefully follow the instructions.

4. For housing-to-cover welds, clean the outside housing-to-cover weld area two to three-inches (50.8-76.2 mm) past each end or side of the crack. Clean the inside area where the cover mates with the housing. Clean the area completely around the cover. Use a wire brush and a cleaning solvent that will remove dirt and grease from these areas. Figure 3.1.

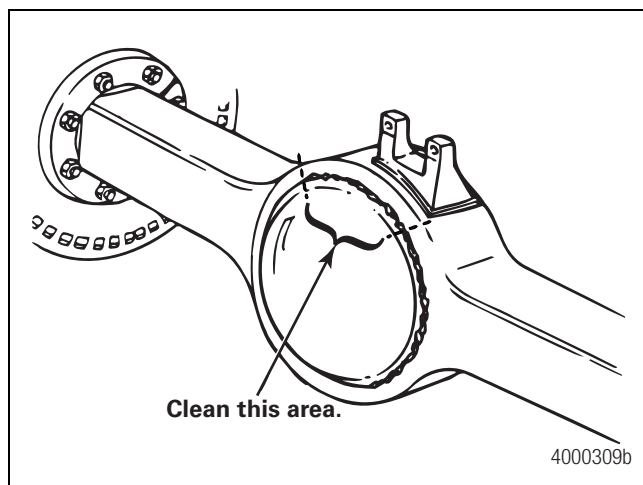


Figure 3.1

5. For suspension bracket welds, clean both lower and upper suspension brackets and the areas of the axle housing around each bracket. Use a wire brush and a cleaning solvent that will remove dirt and grease from these areas. Figure 3.2 and Figure 3.3.

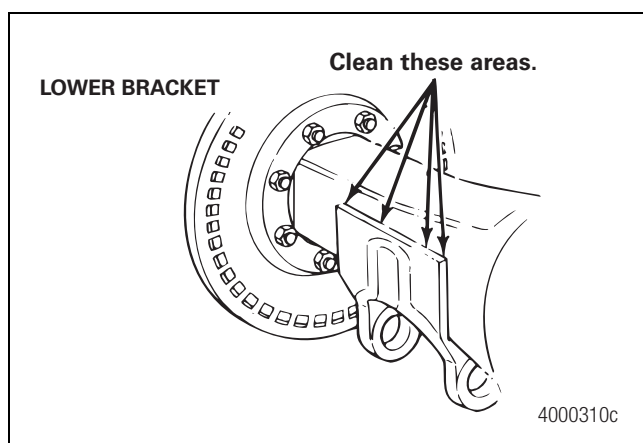


Figure 3.2

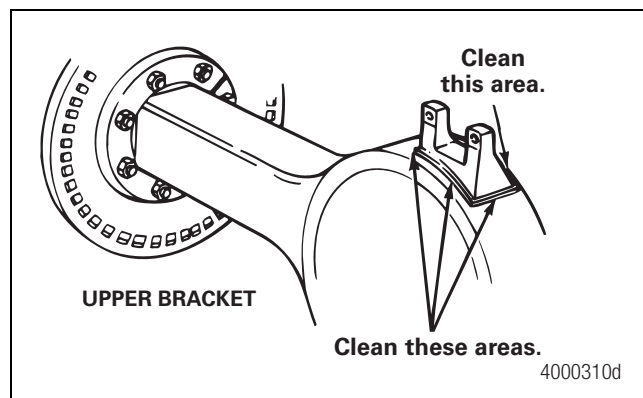


Figure 3.3

⚠ WARNING

The axle housing must be 70°F (21°C) or warmer before you weld onto the axle. Do not weld onto a cold axle or weld cold parts onto an axle. Cracks in the weld area, damage to components and serious personal injury can result.

6. Ensure that the axle housing temperature measures 70°F (21°C) or warmer.
 - If the axle housing temperature measures less than 70°F (21°C): Store the axle in a heated room until the housing reaches the correct temperature.
7. Heat the damaged area to approximately 300°F (149°C) before you begin welding.
8. Use suitable weld wire electrodes when you weld. Suitable weld wire electrodes include either BS EN 499 – E 42 2 B 32 H5 or BS EN 440 – G 42 2 M GSi (American Welding Society equivalents E7018 and ER70S3, respectively).

Remove the Cover Weld From the Axle Housing

1. Apply an anti-spatter compound on the housing areas around the weld that will be cut. If you do not have an anti-spatter compound, cover the axle housing with a nonflammable cloth.
2. Attach the ground cable as near as possible to the cracked weld area and only to components welded on the axle, such as a housing spring pad. Do not attach the ground cable at a suspension spring, U-bolt or at a point that places a wheel bearing between the ground connection and the weld area. Figure 3.4.

3 Welding

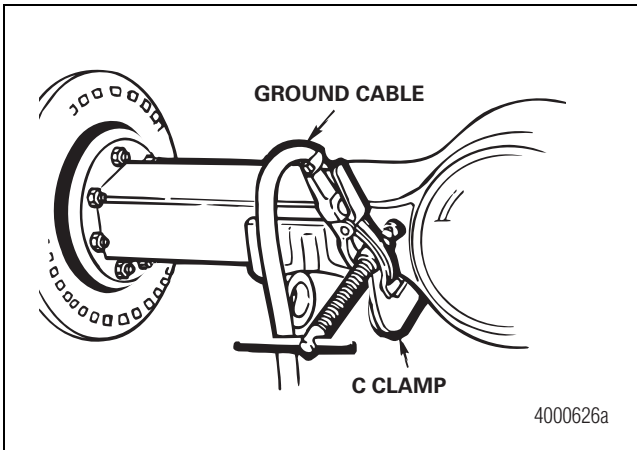


Figure 3.4

⚠ WARNING

To prevent serious personal injury, follow the arc gouging and grinding equipment manufacturers' operating and safety procedures when you perform Steps 3-6.

- Remove the cracked part of the weld from the housing and cover with the plasma arc gouging process or equivalent. Extend removal of the weld one-inch (25.4 mm) past each end or side of the crack. Refer to Table A for plasma arc gouging specifications.

Table A

Input Power	440 Volts, 60 Hz, 3 Ph
Power Supply	AC power supply with a current capacity that is required for the recommended gouging tip size.
Torch	Plasma arc gouging torch of the correct size and current capacity for the gouging tip size used.
Recommended Gouging Tip Size	0.113-inch (2.87 mm)
Recommended Gouging Power	105 amps
Gas	Plasma — air, 40 psi (275 kPa), 22 SCFH Secondary — air, 75 psi (517 kPa), 470 SCFH
Air Pressure	80-100 psi (551-689 kPa) supplied through an air hose with a 0.25-inch (6.4 mm) minimum inside diameter.

- Gouge approximately four grooves into the housing-to-cover weld crack area the full length of the crack plus an additional one-inch (25.4 mm) past each end or side of the crack. The grooves must not be more than 0.25-inch (6.4 mm) deep. Figure 3.5.

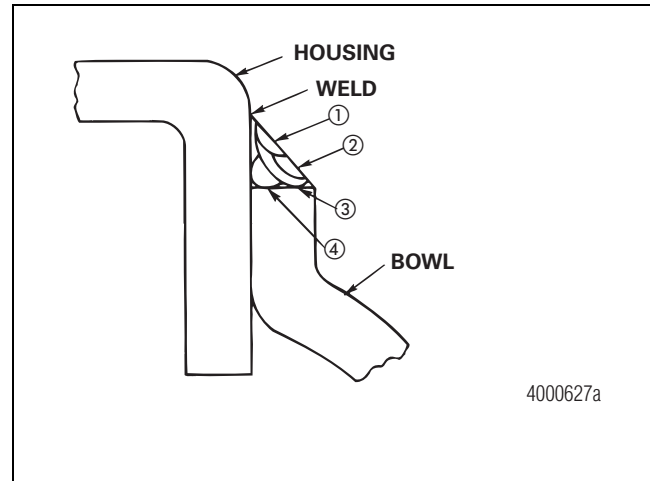


Figure 3.5

⚠ CAUTION

Do not gouge or grind below the surface of the housing wall. Gouges in the wall can weaken the housing. Damage to components can result.

- After gouging is completed, remove any thick amounts of weld material that remain on the housing and cover with rough grinding. Figure 3.6.

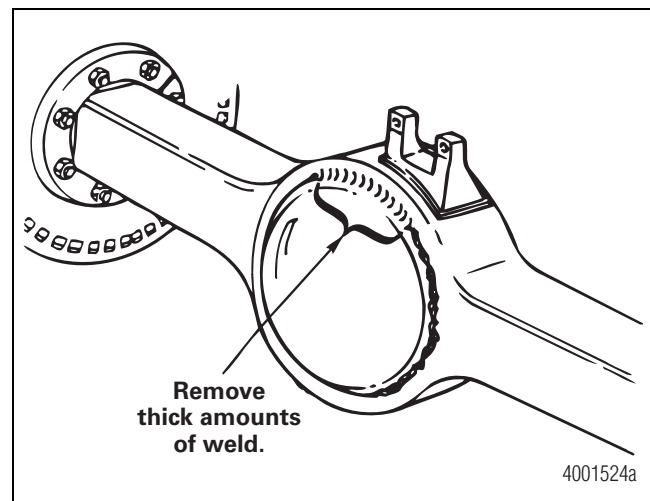


Figure 3.6

6. Use a disc grinder to grind the weld area flat with the housing wall. Lightly grind and remove any weld residue, ridges and ripples from the surface of the housing. Do not grind into the housing wall. All areas that you grind must be flat with the housing wall and cover material. Do not gouge or leave sharp edges on any surface.

⚠ CAUTION

Replace the housing if you find cracks in the housing material or cover material. Do not repair weld cracks in the housing material or cover material. Damage to components can result.

7. Use one of the inspection methods shown in Table B to inspect the following areas for cracks.
 - Open ends of the remaining housing-to-cover weld, created after removing the damaged weld area. Figure 3.7.
 - Housing and cover area next to the section of weld that was removed. Figure 3.7.

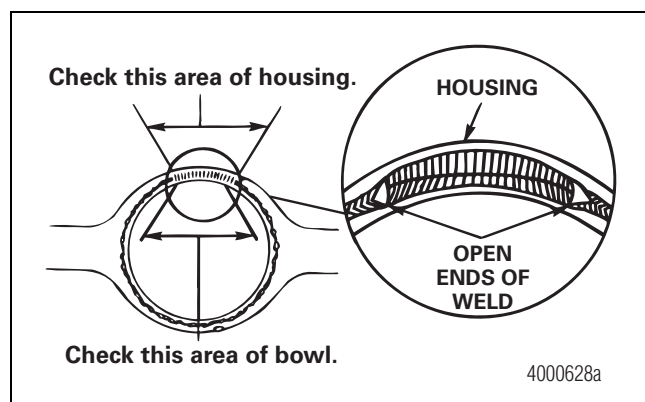


Figure 3.7

Table B: Inspection Methods

Magnetic Particle Inspection	Reference ASTM E709-80, typically dry powder, AC yoke method
Liquid Penetrant Inspection	Reference ASTM E165-80, typically dye-check method

8. If a crack is found in either of the open ends of the remaining housing-to-cover weld, repeat Steps 1-7 as many times as required to remove the crack. Each time the procedure is repeated, remove only one-inch (25.4 mm) more weld material from the end where the crack is located until the crack is removed completely.

- If the crack in the weld extends by more than 1/3 of the circumference of the cover, 20-inches (508 mm): The housing must be replaced.

Remove the Suspension Brackets From the Axle Housing

Spring alignment dowels are used for suspension alignment during initial vehicle assembly. If damaged, they do not need to be serviced or replaced.

1. Apply an anti-spatter compound on the housing areas around the weld that will be cut. If you do not have an anti-spatter compound, cover the axle housing with a nonflammable cloth.
2. Attach the ground cable as near as possible to the cracked weld area and only to components welded on the axle, such as a housing spring pad. Do not attach the ground cable at a suspension spring, U-bolt or at a point that places a wheel bearing between the ground connection and the weld area. Figure 3.4.

⚠ WARNING

To prevent serious personal injury, follow the arc gouging and grinding equipment manufacturers' operating and safety instructions when you perform Steps 3-6.

3. Cut the suspension brackets from the axle housing with the plasma arc gouging process or equivalent. Extend removal of the weld one-inch (25.4 mm) past each end or side of the crack. Refer to Table A for plasma arc gouging specifications.
4. Gouge approximately four grooves into the weld the full length of the bracket. The grooves must not be more than 0.25-inch (6.4 mm) deep. Follow the gouging pattern shown in Figure 3.8 until the bracket separates from the axle housing.

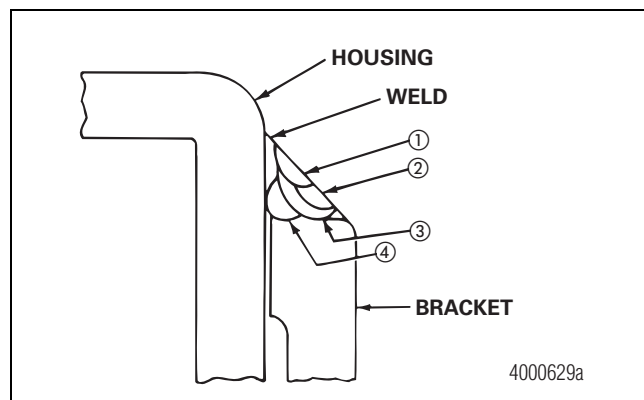


Figure 3.8

3 Welding

⚠ CAUTION

Do not gouge or grind below the surface of the housing wall. Gouges in the wall can weaken the housing. Damage to components can result.

5. Remove any thick amounts of weld material that remain on the housing with arc gouging or rough grinding. Figure 3.9.

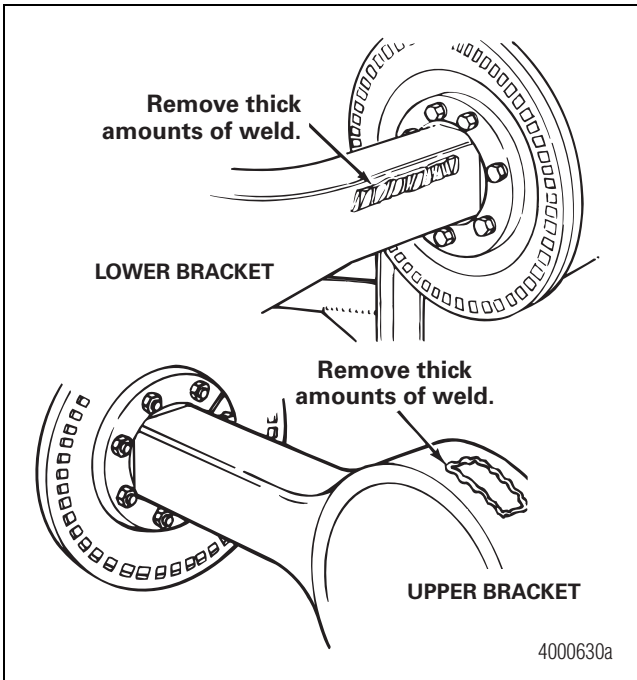


Figure 3.9

6. Use a disc grinder to grind the weld area flat with the housing wall. Lightly grind and remove any weld residue, ridges and ripples from the surface of the housing. Do not grind into the housing wall. All areas that you grind must be flat with the housing wall and cover material. Do not gouge or leave sharp edges on any surface.
7. Use one of the inspection methods shown in Table B to inspect the axle housing for cracks where the bracket was attached.

⚠ CAUTION

Replace housings with gouges or cracks greater than 0.125-inch (3.2 mm) deep. Do not attempt to repair housings with gouges or cracks that exceed 0.125-inch (3.2 mm) in depth. Damage to components can result.

8. Grind and repair all axle housing cracks that are less than 0.125-inch (3.2 mm) deep. Use 0.125-inch (3.2 mm) E-7018 electrodes to repair the cracks.
 - If the depth of any crack exceeds 0.125-inch (3.2 mm): Replace the housing.
9. Repair all 0.063-0.125-inch (1.6-3.2 mm) deep axle housing gouges.
 - If the depth of any gouge exceeds 0.125-inch (3.2 mm): Replace the housing.
10. If you repaired a crack or gouge in Steps 8 or 9, inspect the housing using one of the methods shown in Table B.
11. Grind the repaired area smooth and flat with the housing wall. Check the repaired area for cracks. Figure 3.10.

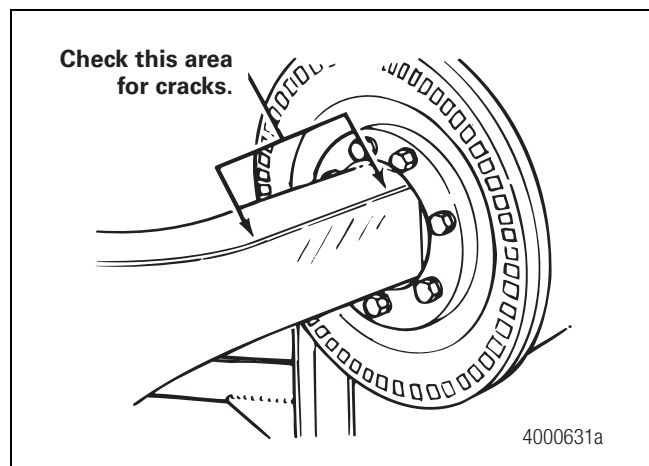


Figure 3.10

Welding

Outside of the Cover to the Housing

1. Position the housing for a flat weld by tilting it 45 degrees forward. Figure 3.11.

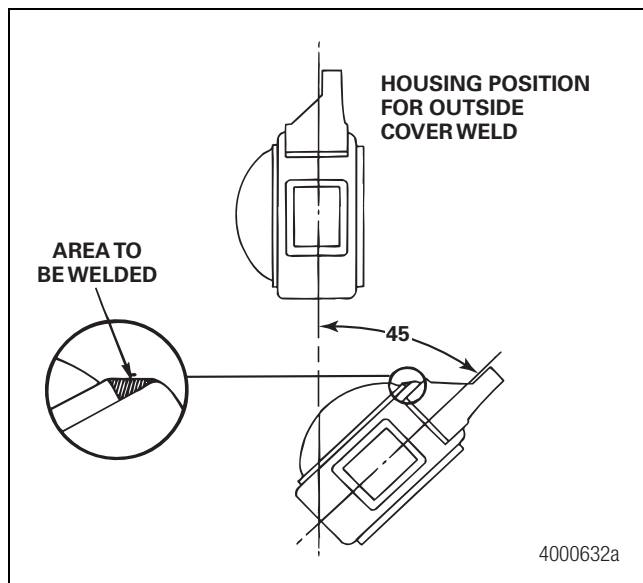


Figure 3.11

2. Beginning at one of the indicated start locations, one-inch (25.4 mm) into the old weld, back step 0.315-0.512-inch (8-13 mm) to prevent a cold start. Figure 3.12.

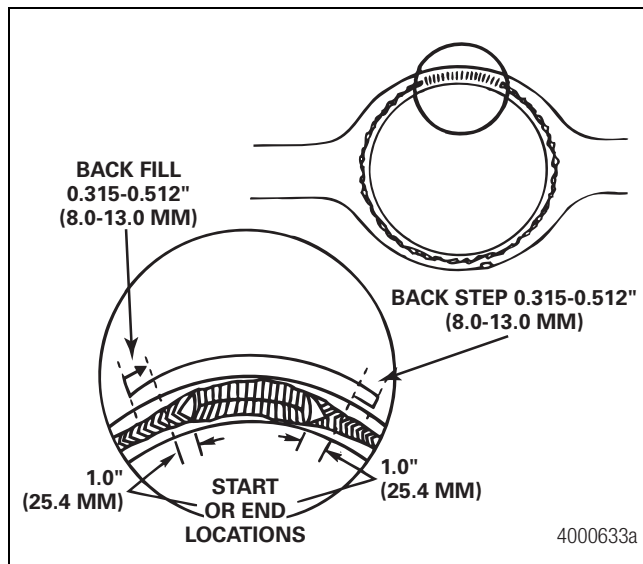


Figure 3.12

3. Lay a full fillet in a single pass, if possible, to the end where the damaged weld was removed plus one-inch (25.4 mm) past the end (into the old weld). Fillet size 0.315-0.500-inch (8.0-12.7 mm).
4. Back fill the end of the weld 0.315-0.512-inch (8-13 mm) to eliminate craters. Figure 3.12.
5. When multiple passes are required to obtain the correct fillet size, remove all slag and flux from the last weld before applying the next weld.
6. Clean and inspect the final weld. Refer to the procedures in this section.

Inside of the Cover to the Housing

1. Position the housing for a flat weld by rotating it 180 degrees from the operating position it would be in under the vehicle. The oil drain hole will be at the top position and the center line of the housing must be vertical. Figure 3.13.

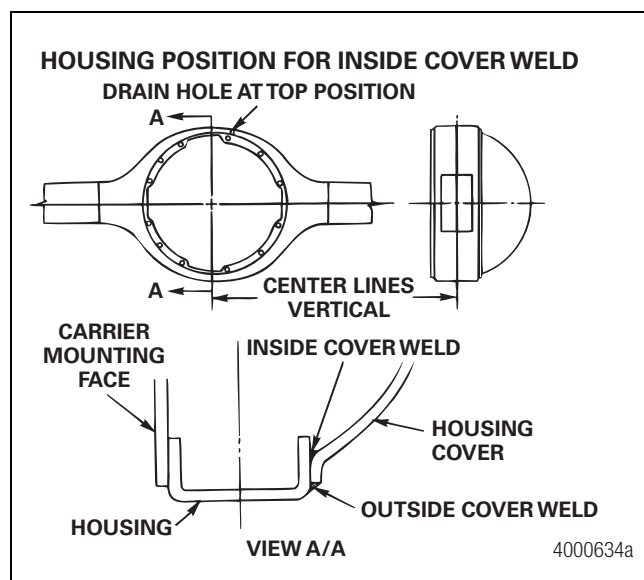


Figure 3.13

2. Beginning at start point 1, 60 degrees away from the vertical center line, back step 0.315-0.512-inch (8-13 mm) to prevent a cold start. Figure 3.14.

3 Welding

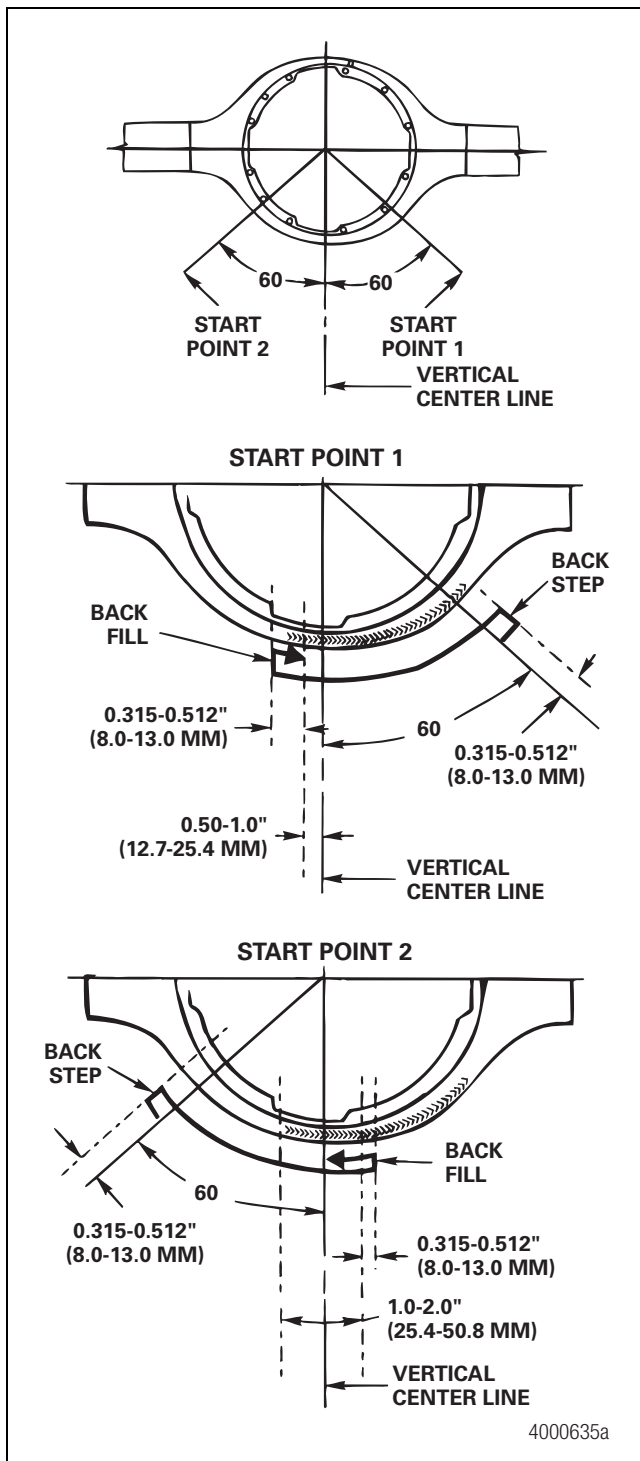


Figure 3.14

3. Lay a full single-flare bevel weld in a single pass, if possible, ending 0.50-1.00-inch (12.7-25.4 mm) past the vertical center line. Figure 3.14. Single flare-bevel weld size is 0.315-0.500-inch (8.0-12.7 mm).
4. Back fill the end of the weld 0.315-0.512-inch (8-13 mm) to eliminate craters. Figure 3.14.
5. When multiple passes are required to obtain the correct single-flare bevel weld size, remove all slag and flux from the last weld before applying the next weld.
6. Beginning at start point 2, opposite side of first weld, 60 degrees away from the vertical center line, repeat Steps 2-5. When you repeat Step 3, overlap the end of the first weld by one to two-inches (25.4-50.8 mm) before back filling the weld. Figure 3.14.
7. Let the axle housing air cool to room temperature. DO NOT use any other method of cooling. Other methods of cooling can cause the housing to crack or become weakened.
8. Clean and inspect the final weld. Refer to the procedures in this section.
9. Install the wheel-end components and brake air chambers on the axle. Refer to the correct Meritor brake maintenance manual or the vehicle manufacturer's instructions.
10. Install the differential carrier into the axle housing and fill the axle with the specified type and amount of lubricant. Refer to the correct Meritor carrier maintenance manual or the vehicle manufacturer's instructions.

Upper Torque Rod Brackets

On brackets that require welding all around (360 degrees), distortion and stress can be controlled by tack welding on opposite sides of the bracket alternately. Cover the tack welds as you deposit the required amount of metal with the final welds. One pass is preferred. Where a second pass is required, thoroughly remove the slag from the first weld between passes.

1. Position the bracket to the housing according to dimensions on the specific housing assembly drawing and associated layouts. Contact your Meritor representative.
2. Tack weld in four places as shown. Figure 3.15.

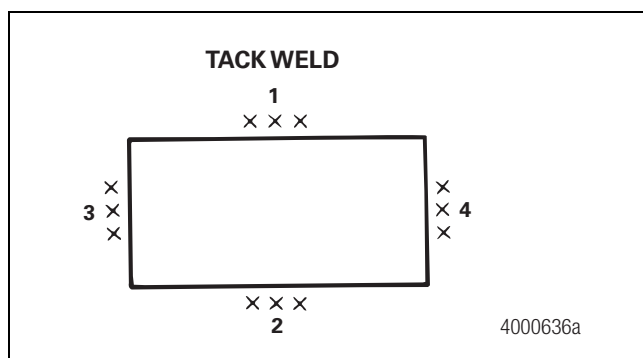


Figure 3.15

3. Position the housing for a flat weld. The housing must be at 45 degrees for front and rear faces. Figure 3.16.

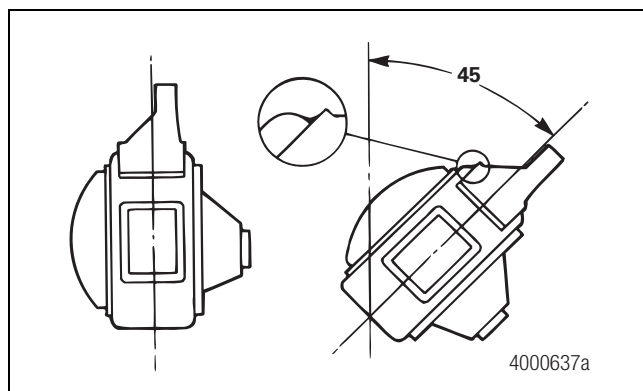


Figure 3.16

4. Beginning at the indicated location, back step the start of the weld from 0.315-0.512-inch (8-13 mm) to prevent a cold start. Figure 3.17.

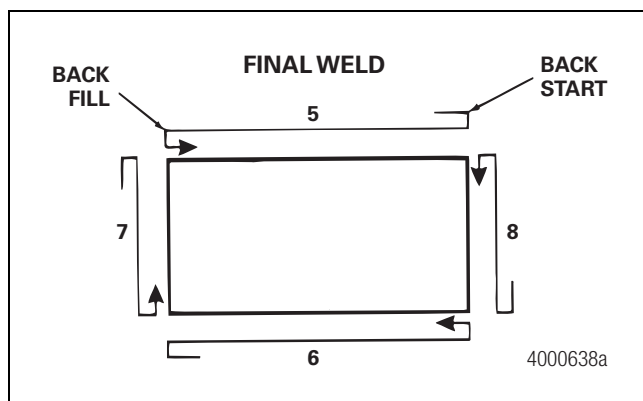


Figure 3.17

5. Lay a full fillet in a single pass: Fillet size 0.375-0.50-inch (9.5-12.7 mm).
6. Back fill the end of the weld 0.315-0.512-inch (8-13 mm) to eliminate craters. Figure 3.17.
7. Complete the welding on all sides of the bracket using Steps 3-6. Figure 3.17.
8. For Chalmers tower and saddle bracket tack and final weld details, refer to Figure 3.18 and Figure 3.19.

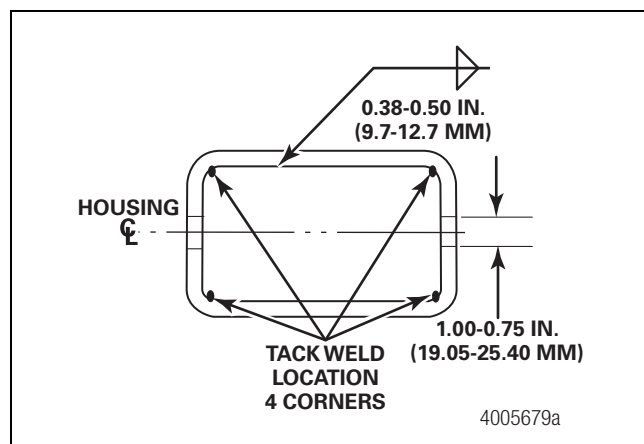


Figure 3.18

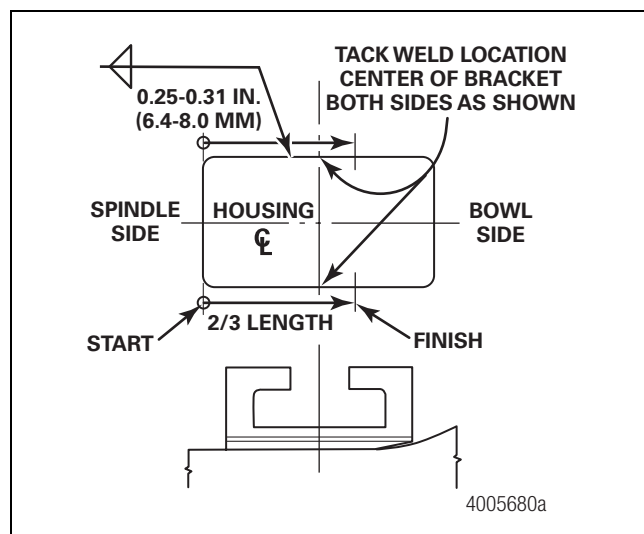


Figure 3.19

9. Let the axle housing air cool to room temperature. DO NOT use any other method of cooling. Other methods of cooling can cause the housing to crack or become weakened.

3 Welding

10. Clean and inspect the final weld. Refer to the procedures in this section.
11. Install the wheel-end components and brake air chambers on the axle. Refer to the correct Meritor brake maintenance manual or the vehicle manufacturer's instructions.
12. Install the differential carrier into the axle housing and fill the axle with the specified type and amount of lubricant. Refer to the correct Meritor carrier maintenance manual or the vehicle manufacturer's instructions.

Walking Beam Suspension Hanger Brackets

Spring alignment dowels are used for suspension alignment during the initial vehicle assembly. If damaged, they need not be serviced or replaced.

The same welding procedures are used for the following brackets. Refer to Table C for the bracket type and axle model. Additional welding procedures are contained in this section.

Table C

Bracket Type	Axle Model
Thru-Pin Set Screw Service Brackets	RT-34-140/145
	RT-40-140/145
	RT-44-145
	RT-46-160
	RT-46-164EH
	RT-48-180
	RT-23-180 Rear Drive Axles
Thru-Pin Brackets without Set Screws	SL-100
	SQ-100
	RT-44-145
	SQHP
	SQR-100, puddle weld also required
	SSHD, puddle weld also required
Bar Pin Brackets with Set Screws	RT-145 and RT-160 only

1. Position the bracket to the housing as shown. Figure 3.20.

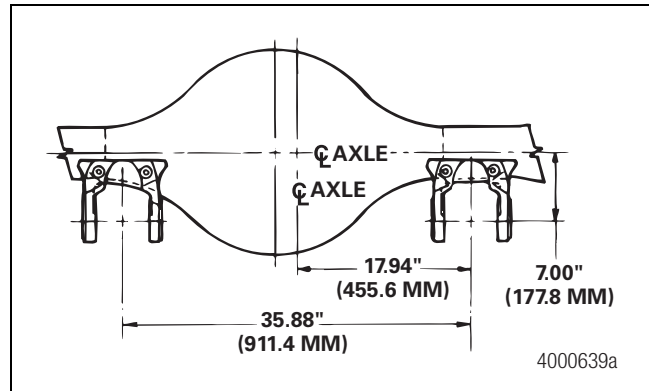


Figure 3.20

2. Verify that there is an equal space between each bracket and housing wall on the front and back of the axle housing. Also verify that the center line of the bracket bore is seven-inches (177 mm) below the center line of the housing. Figure 3.21.

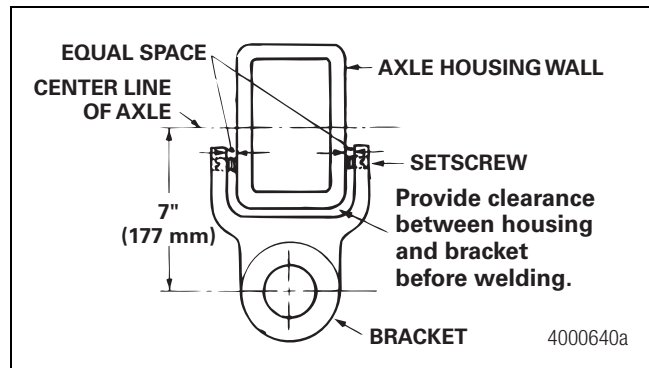


Figure 3.21

3. Tighten the set screws to 8-20 lb-ft (11-27 N·m) preload. ①
4. Tack weld each bracket as shown in Figure 3.22. Make two tack welds on the front of the axle housing and two tack welds on the back of the axle housing.

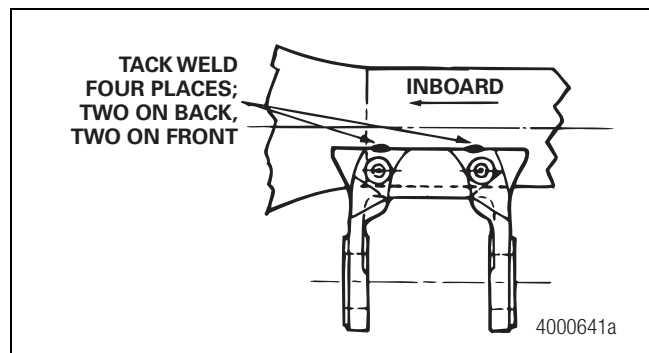


Figure 3.22

5. If the clearance between the bracket and the axle housing is between 0.090-0.125-inch (2.3-3.2 mm), you must make a root pass to close the clearance and provide an adequate throat dimension. Figure 3.23.

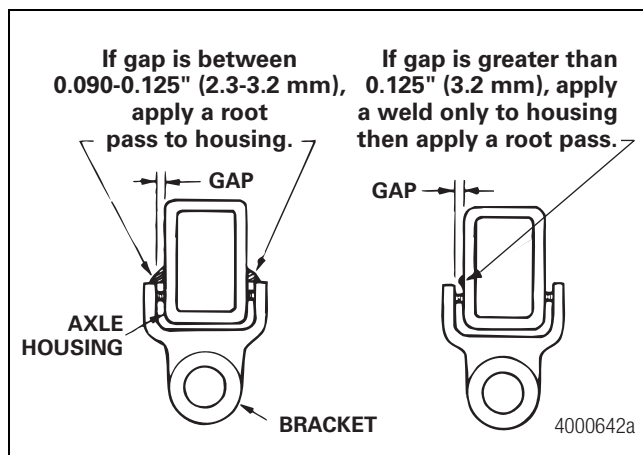


Figure 3.23

6. If the clearance between the bracket and the axle housing is greater than 0.125-inch (3.2 mm), apply a weld to the axle housing. Figure 3.23. Then make a root pass.
7. Verify that each bracket weld has a flat or slightly convex contour. A concave contour is not allowed because it reduces the throat dimension of the weld. Figure 3.24.

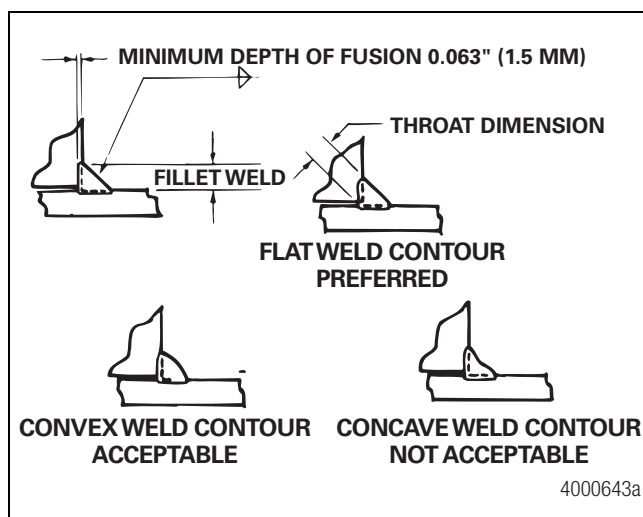


Figure 3.24

8. Position the axle housing so that the front and rear faces are at 45-degree angles. Figure 3.25.

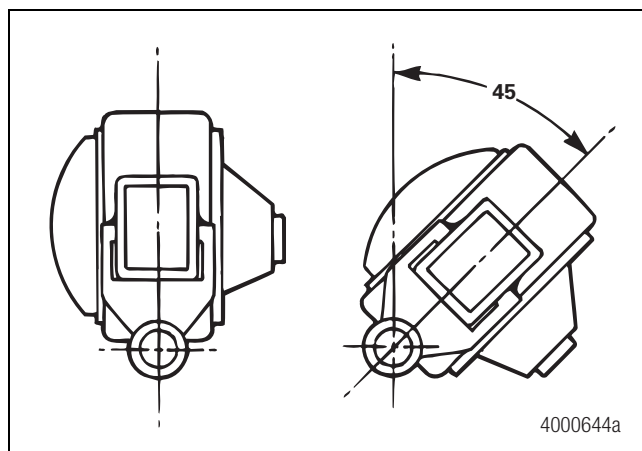


Figure 3.25

9. For RT-34-140/145, RT-40-140/145, RT-44-145 and RT-46-160 rear drive axles, proceed as follows.
 - A. Back step the start of the weld from 0.315-0.50-inch (8-12.7 mm) to prevent a lack of fusion. Figure 3.26.
 - B. Lay the first fillet weld 0.375-inch (9.5 mm) in a single pass. The tolerance of the fillet welds must be +0.050-inch/-0.0-inch (+1.27 mm/-0.0 mm). Work toward the inboard end. If the weld is larger than this dimension, there may not be enough clearance for the slack adjuster. Figure 3.27.
 - C. Back fill the end of the weld 0.315-0.50-inch (8-12.7 mm) to eliminate craters.
 - D. Verify that the tack weld is completely consumed by the final weld. Remove any slag.
 - E. Apply the second fillet weld to increase the fillet size to 0.50-inch (12.7 mm) only at each end of the bracket as shown in Figure 3.28 and Figure 3.29. This will allow clearance for the slack adjuster.
 - F. Back step the start of the weld from 0.315-0.50-inch (8-12.7 mm) to prevent a lack of fusion. The weld must be three-inches $\pm$ 0.125-inch (76 mm $\pm$ 3 mm) long.
 - G. Back fill the end of the weld 0.315-0.50-inch (8-12.7 mm) to eliminate craters.
 - H. Verify that you weld the front and back of the bracket.

3 Welding

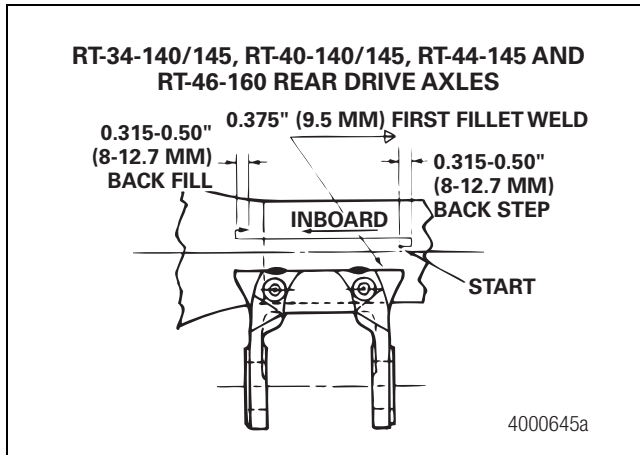


Figure 3.26

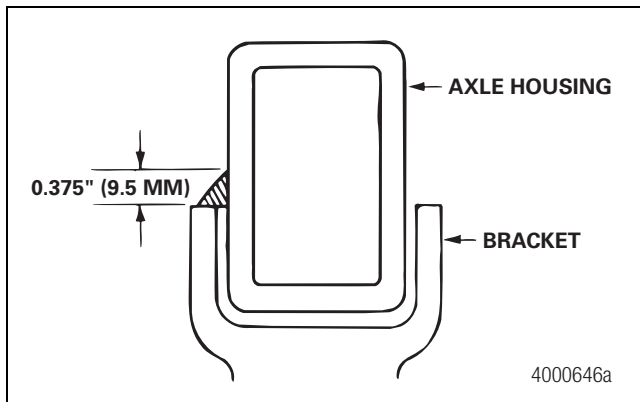


Figure 3.27

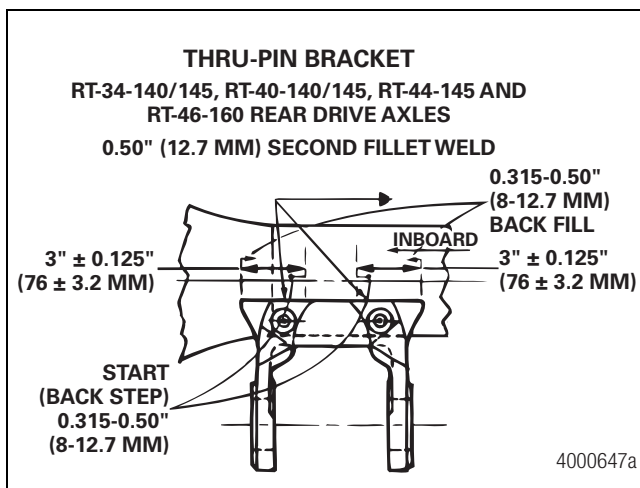


Figure 3.28

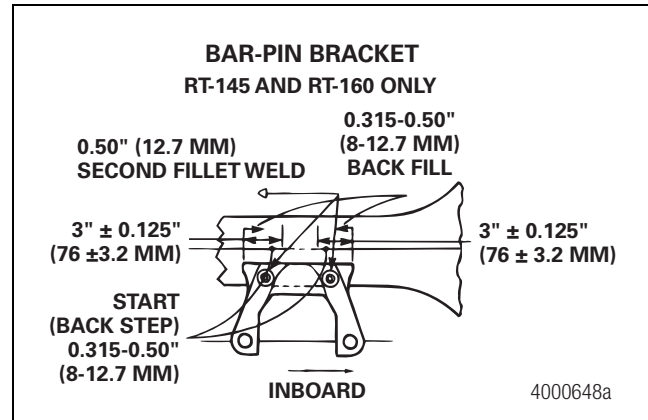


Figure 3.29

10. For RT-48-180 and RS-23-180 rear drive axles, proceed as follows.
 - A. Back step the start of the weld from 0.315-0.50-inch (8-12.7 mm) to prevent a lack of fusion. Figure 3.30.
 - B. Lay the first fillet weld 0.50-inch (12.7 mm) in a single pass. The tolerance of the fillet welds must be +0.050-inch/-0.0-inch (+1.27 mm/-0.0 mm). Work toward the inboard end.
 - C. Back fill the end of the weld 0.315-0.50-inch (8-12.7 mm) to eliminate craters.
 - D. Verify that the tack weld is completely consumed by the final weld. Remove any slag.

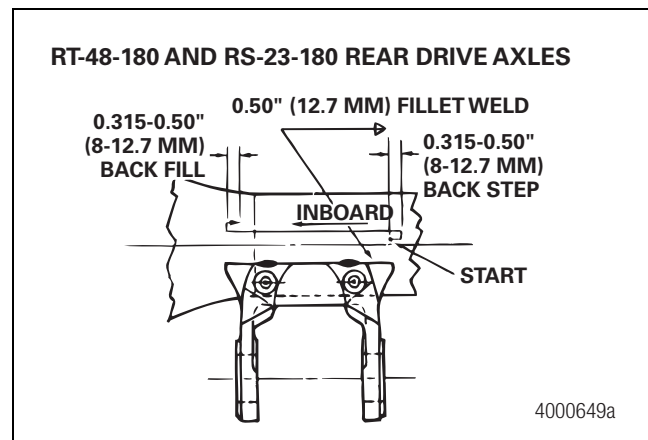


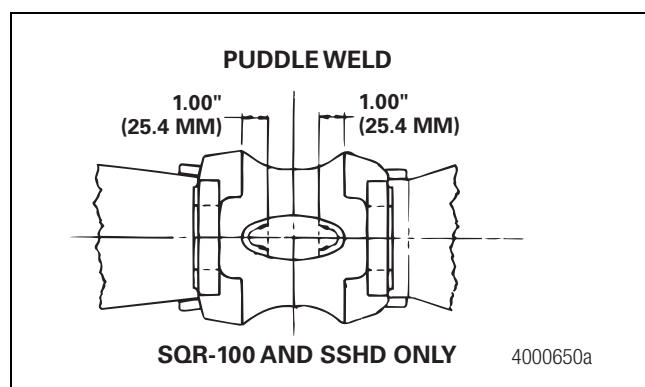
Figure 3.30

11. Tighten each set screw in the bracket to 90-115 lb-ft (122-156 N•m). **1**

⚠ WARNING

Allow the axle housing and brackets to air cool until they reach room temperature. Do not use any other cooling method. Other cooling methods can cause the axle housing, brackets or welds to crack or become weakened.

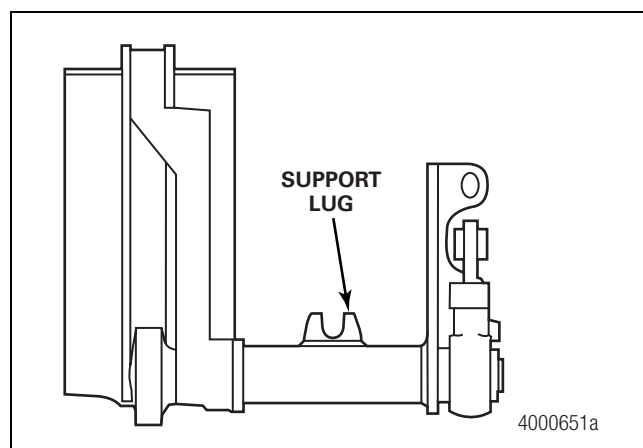
12. Allow the axle housing and brackets to air cool until they reach room temperature.
13. For brackets with set screws, apply a tack weld to each set screw.
14. For brackets without set screws (SQR-100 and SSHD), puddle weld the bracket bottom hole. Do not puddle weld brackets with set screws. Figure 3.31.

**Figure 3.31**

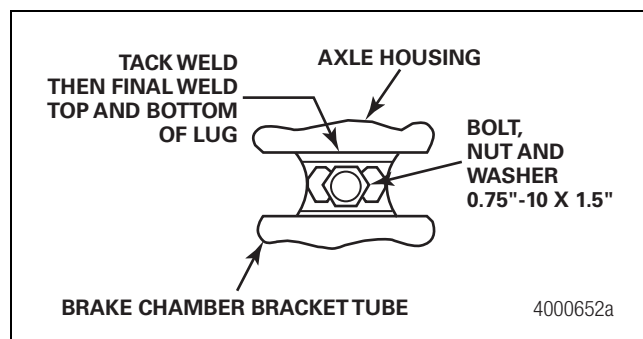
15. Allow the tack welds or puddle welds to air cool to room temperature. Paint the repaired area of the brackets and axle housing with black primer.
16. Install the differential carrier into the axle housing and fill the axle with the specified type and amount of lubricant. Refer to the correct Meritor carrier maintenance manual or the vehicle manufacturer's instructions.
17. Install the wheel-end components and brake air chambers on the axle. Refer to the correct Meritor brake maintenance manual or the vehicle manufacturer's instructions.

Brake Chamber Support Lug

1. When the brake chamber tube length exceeds 10-inches (254 mm), support lugs are needed. Meritor furnishes the support lug already attached to the brake chamber tube. Figure 3.32. The original equipment manufacturer must weld the mating support lug to the axle housing, mating it with the support lug on the brake chamber bracket tube.

**Figure 3.32**

2. Meritor can supply the mating support lug along with the bolt, nut and washer (0.75"-10 x 1.5"). Contact your Meritor representative. Figure 3.33.

**Figure 3.33**

3. Before welding, assemble the housing lug to the chamber tube lug loosely. One washer should be placed between the head of the bolt and the support lug. The other washer should be placed between the nut and the opposite support lug. Slide the housing support lug toward the housing until it touches the housing wall. Figure 3.33.
4. Tack weld the housing lug on top and bottom. Torque the lug bolt and nut provided by Meritor to 180-230 lb-ft (244-311 N•m). **ⓘ**
5. Weld the lug to the housing on top and bottom. Back step the start of the weld approximately 0.125-inch (3.2 mm) to prevent lack of fusion. Lay the fillet weld 0.25-inch (6.4 mm) in a single pass toward the inboard end. Back fill the end of each weld approximately 0.25-inch (6.4 mm) to eliminate craters.

3 Welding

- Verify that the tack weld is completely consumed by the final weld. Remove any slag.

Specifications

Fillet Weld Depth of Fusion

Fillet weld depth of fusion applies to both sides of the fillet. Unless otherwise specified, the depth of fusion on housing-to-cover welds is 0.100-inch (2.54 mm) $+0.05/-0.0$ inch ($+1.27/-0.0$ mm). The tolerance applies to weld size and depth of fusion. Figure 3.34. Unless otherwise specified, the depth of fusion on suspension brackets is 0.063-inch (1.5 mm) $+0.05/-0.0$ inch ($+1.27/-0.0$ mm). The tolerance applies to weld size and depth of fusion. Figure 3.35.

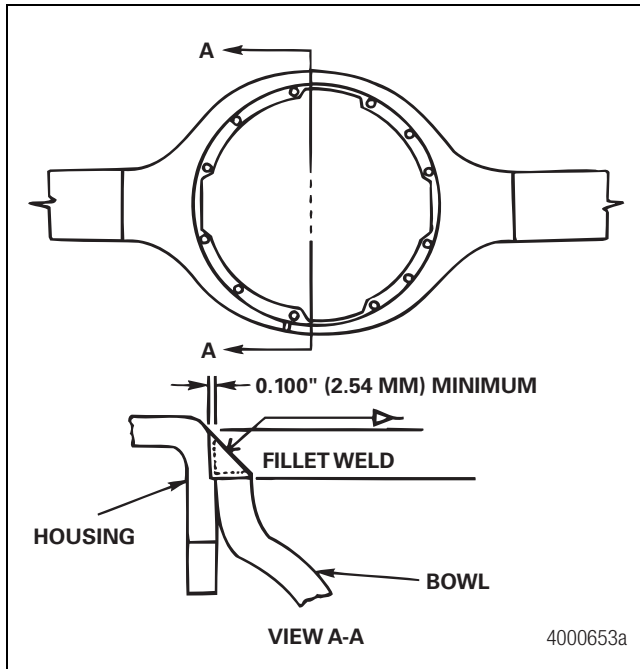


Figure 3.34

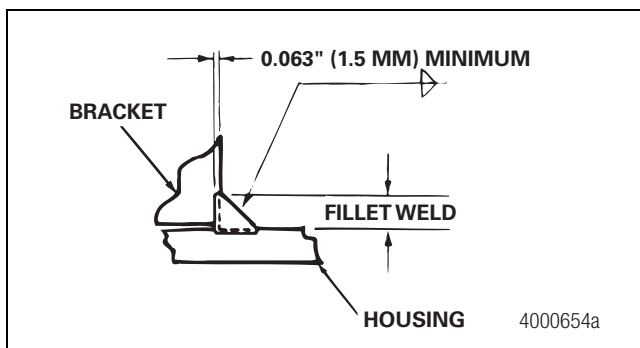


Figure 3.35

Verify that the weld has a flat or slightly convex contour with a sufficient depth of fusion on both side walls. Figure 3.36.

A concave contour is not allowed because it reduces the throat dimension of the weld.

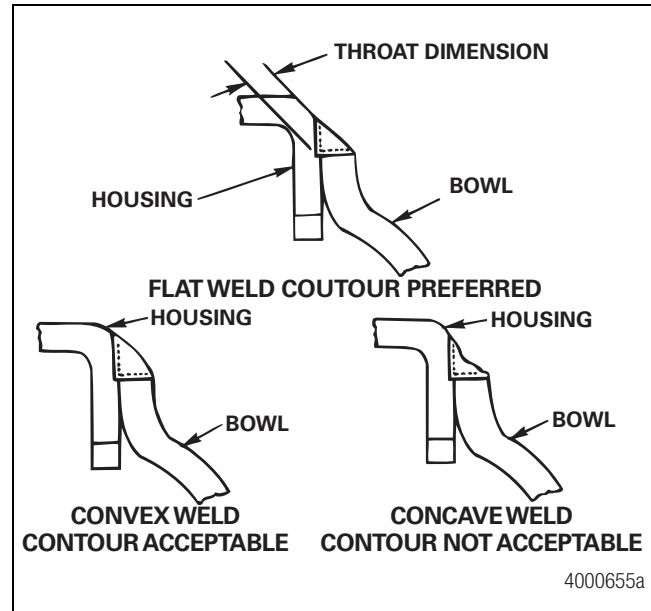


Figure 3.36

Root Pass

If the gap is 0.090-0.125-inch (2.3-3.2 mm), a root pass is required to bridge the gap and provide an adequate throat dimension. Figure 3.37. If the gap is wider than 0.125-inch (3.2 mm), build up the housing with the weld before application of the root pass. Figure 3.37.

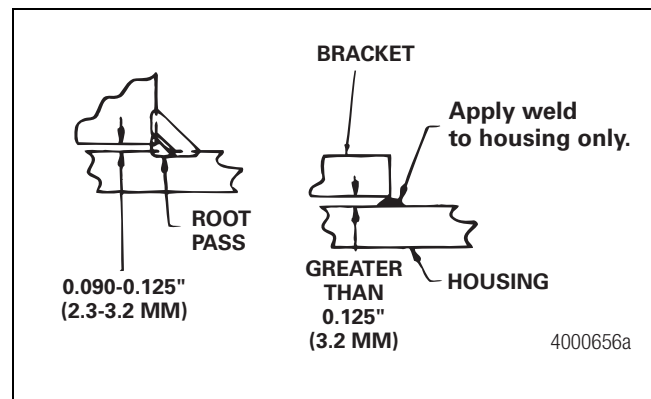


Figure 3.37

Verify that the weld has a flat or slightly convex contour with a sufficient depth of fusion on both side walls. Figure 3.38.

A concave contour is not allowed because it reduces the throat dimension of the weld.

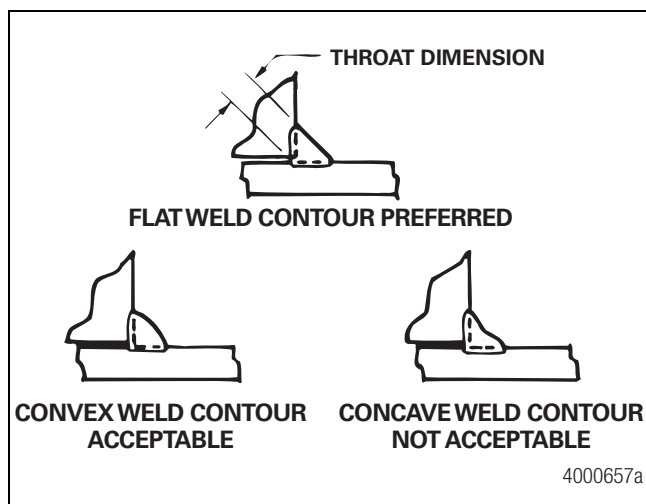


Figure 3.38

Welding Process

Recommended Process

Semi-automatic flux-cored arc welding (FCAW) process using a flux-cored electrode, E70T-1, with CO₂ shielding gas for fillet, final weld.

Acceptable Process

Multi-pass using gas metal arc welding (GMAW) process with an ER70S-6 electrode for tack, filler, if needed, and root pass welds. GMAW may also be used for fillet, final welds.

Filler Metal Specifications

- FCAW Process — AWS class E70T-1
- GMAW Process — AWS class ER70S-6
- SMAW Process — AWS class E7018

Gas Shielding for Arc Welds

- E70T-1 — Welding grade CO₂, dew point -40°F (-40°C)
- ER70S-6 — Welding grade 85% argon, 15% CO₂

Electric Current

Direct current, reverse polarity, electrode positive

Position

- Horizontal fillet (2F) position for tack welding
- Flat fillet (1F) position for filler, if needed, root pass and fillet, final weld

Recommended Parameters

⚠ CAUTION

Low-hydrogen electrodes should be stored at an appropriate temperature in portable field ovens or used from freshly opened, airtight containers. The moisture content of low-hydrogen electrode coatings can be reduced following exposure to the atmosphere by drying them according to the manufacturer's recommendations, usually at temperatures between 500-800°F (260-427°C) and storing at temperatures above 200°F (93°C).

Weld Process	Wire Type	Wire Diameter	Current (amps)	DCRP (volts)	Gas Flow (cfh)
FCAW	E70T-1	0.094" (2.3 mm)*	425-475	26-31	30-35
GMAW	ER70S-6	0.045" (1.1 mm)*	260-280	27-29	30-40
SMAW	E7018*	0.156" (4.0 mm)*	Follow the manufacturer's recommendations.		

*E7018 welding rod must be kept dry. Follow the manufacturer's instructions for moisture content and drying procedures.

Base Metal Preparation

- The housing-to-cover weld area, external and internal, to be repaired must be cleaned before welding begins. Remove all oil, grease, moisture, paint, scale (flakes), rust and other foreign material.
- No preheating is required if the ambient temperature is above 50°F (10°C).
- Preheat to 100°F (37°C) if the ambient temperature is below 50°F (10°C).

3 Welding

Base Weld Appearance

- The weld current and manner of depositing the weld metal must result in practically no undercutting of the base metal, 0.030-inch (0.76 mm) maximum undercut.
- Craters must be back filled before breaking the arc.
- The weld must be essentially flat.
- The weld must be full size as specified or an additional weld layer will be needed.

Cleaning and Inspection

- Remove all slag and flux from the weld before applying the next bead.
- Remove all slag from the completed weld.
- All cracks, notches or holes in the surface of the weld must be removed by grinding before applying the next bead.
- Check the weld for cracks with magnetic particle inspection, reference ASTM E709-80 or liquid penetrant inspection, reference ASTM E165-80.
- When checking welds for damage, refer to ANSI/AWS D1.1-86 Handbook, Section 9.25 — Structural Welding Code for Steel.

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.

WARNING

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

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 vehicle supported only by jacks. Jacks can slip and fall over. Serious personal injury and damage to components can result.

Solvent cleaners can be flammable, poisonous and cause burns. Examples of solvent cleaners are carbon tetrachloride, and emulsion-type and petroleum-base cleaners. Read the manufacturer's instructions before using a solvent cleaner, then carefully follow the instructions. Also follow the procedures below.

- Wear safe eye protection.
- Wear clothing that protects your skin.
- Work in a well-ventilated area.
- Do not use gasoline, or solvents that contain gasoline. Gasoline can explode.
- You must use hot solution tanks or alkaline solutions correctly. Read the manufacturer's instructions before using hot solution tanks and alkaline solutions. Then carefully follow the instructions.

When you apply some silicone gasket materials, a small amount of acid vapor is present. To prevent serious personal injury, ensure that the work area is well-ventilated. Read the manufacturer's instructions before using a silicone gasket material, then carefully follow the instructions. If a silicone gasket material gets into your eyes, follow the manufacturer's emergency procedures. Have your eyes checked by a physician as soon as possible.

Take care when you use Loctite® adhesive to avoid serious personal injury. Read the manufacturer's instructions before using this product. Follow the instructions carefully to prevent irritation to the eyes and skin. If Loctite® adhesive material gets into your eyes, follow the manufacturer's emergency procedures. Have your eyes checked by a physician as soon as possible.

Repair

Bending or Straightening Drive Axle Housings

WARNING

Repair the axle housing components covered in this manual only. Do not attempt to repair non-serviceable axle housing components. Serious personal injury and damage to components can result.

Replace damaged or out-of-specification axle components. Do not bend, repair or recondition axle components by welding or heat-treating. A bent axle beam reduces axle strength, affects vehicle operation and voids the Meritor warranty. Serious personal injury and damage to components can result.

Do not bend or straighten drive axle housings. Modifying axle housings by bending or straightening will void the Meritor axle warranty. Always replace damaged non-serviceable drive axle housings.

Housing Leaks

Breather Inspection

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.
3. Remove the breather from the axle housing.
4. Clean the breather. If the breather remains dirty after cleaning, replace the breather.
5. Apply compressed air to the breather. If compressed air does not pass through the breather, replace the breather.
6. Install the breather in the axle housing.

4 Repairs

Carrier-to-Housing Joint Sealing Procedure

All welding should be completed prior to the application of any sealants.

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.
3. Remove the carrier from the housing. Refer to the correct Meritor carrier maintenance manual or the vehicle manufacturer's instructions.
4. Remove all debris from inside the housing.
5. Use a rotary tool with a scour pad to clean all silicone residue from the housing and carrier faces. Figure 4.1. Surfaces must be clean, dry and free of foreign matter. The surfaces must not be oily to the touch. Figure 4.2.



Figure 4.1

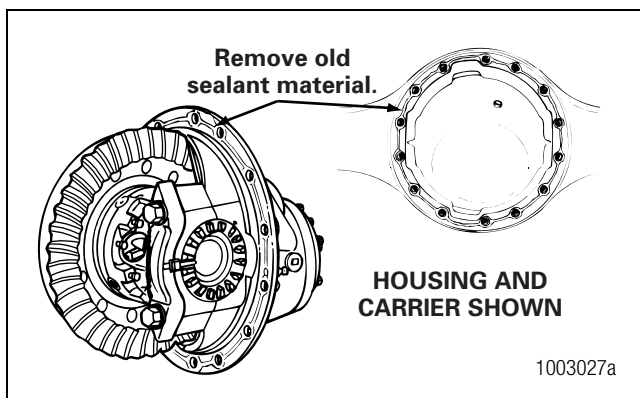


Figure 4.2

6. Remove metal filings from the magnets inside the housing.
7. Use solvent to clean the inside of the housing.
8. Use Loctite® ODC Free cleaner or brake cleaner to clean the housing and carrier faces.
9. Dry the housing and carrier faces.

⚠ CAUTION

New capscrew kits have blue Dri-Loc® STS threadlocker, an equivalent to Loctite® 242 threadlocker, applied to the capscrews. Do not remove the blue Dri-Loc® STS threadlocker from the capscrews. Damage to components can result.

10. If you reuse the carrier-to-housing capscrews, use a rotary wire brush to remove any threadlocker material and clean the capscrew threads. Use a clean cloth to wipe the threads.
11. Use a tap to clean the internal threads in the housing.

⚠ CAUTION

Apply silicone gasket material in a continuous 0.25-inch (6 mm) bead. If you use more than this amount, gasket material can break off and plug lubrication passages. Damage to components can result.

12. Apply a 0.25-inch (6 mm) bead of Loctite® 5699 silicone gasket material to the housing face. Do not use ThreeBond 1216E silicone products. Figure 4.3.

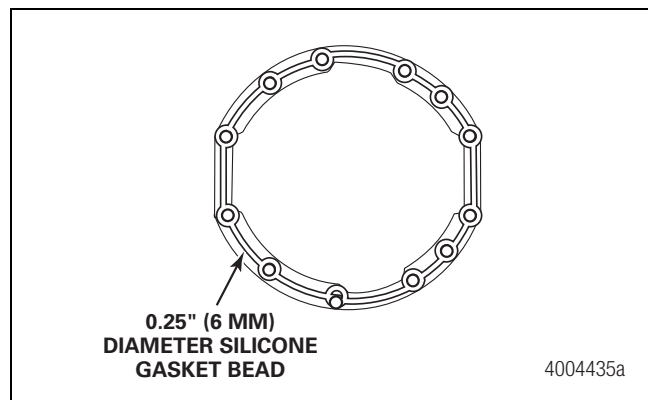


Figure 4.3

13. Install two long studs into the carrier to guide the carrier into the housing.
14. Immediately install the carrier into the housing to permit the silicone gasket material to compress evenly between the faces.

⚠ CAUTION

Apply Loctite® 242 threadlocker to reused capscrew threads only. Do not apply Loctite® 242 threadlocker to new capscrews with the blue pre-applied threadlocker patch. Damage to the component may occur.

15. Apply a 0.125-inch (3mm) bead of Loctite® 242 threadlocker around the capscrew threads approximately 0.25-inch (6 mm) from the end. Apply a 0.125-inch (3 mm) bead of Loctite® 242 threadlocker across the length of the threads. Do not apply Loctite® 242 threadlocker to new capscrews with the blue pre-applied threadlocker patch. Figure 4.4.

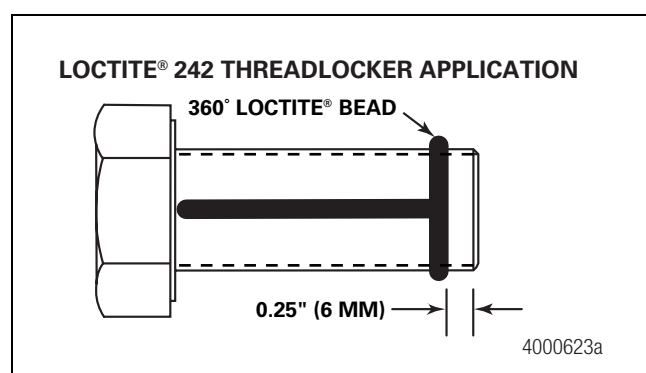


Figure 4.4

16. Install the capscrews. Use a crossing pattern to tighten the capscrews evenly. The capscrews must be tightened within 10 minutes of initial application of Loctite® 242 threadlocker.
 - Tighten 1/2-inch capscrews to 140 lb-ft (190 N•m). **ⓘ**
 - Tighten 5/8-inch capscrews to 225 lb-ft (306 N•m). **ⓘ**
17. Wait a minimum of 60 minutes before filling the assembly with lubricant. Refer to the correct Meritor carrier maintenance manual or the vehicle manufacturer's instructions.

Fasteners

The Nord-Lock® Washer System

The Nord-Lock® washer system requires the assembly of two identical washers, which are pregrooved, per capscrew or nut. Sized to work with the carrier-to-housing joint, the washers have 20 cams, or wedges, on one side and 61 radial teeth on the other. They are installed as a pair, cam face to cam face. Thus, the radial teeth interface with the carrier flange and the capscrew or nut. They replace standard production washers, which should be discarded. Capscrew torque values have been revised to 210 lb-ft (285 N•m) to achieve the appropriate clamp load with Nord-Lock® washers. **ⓘ**

How They Work

The radial teeth and cams both have ramps. The washers are installed in opposing directions so that the ramps of the cams allow motion only when the washers are loosened. Figure 4.5.

During tightening, the radial teeth of the washer, against the relatively soft carrier, embed and seat against the joint, preventing the washer from rotating. The other washer, against the bolt head, is also prevented from rotating because of the vertical steps between the cams on the inside of the washer pair.

In the loosening direction, resistance to rotation is greater at the outer sides of the washers than inside the washer assembly. Before rotation can occur, the inner cams must wedge the washer pair apart. The capscrew, or nut, cannot provide enough force to stretch the fastener and allow this wedging. Thus, the fastener cannot loosen.

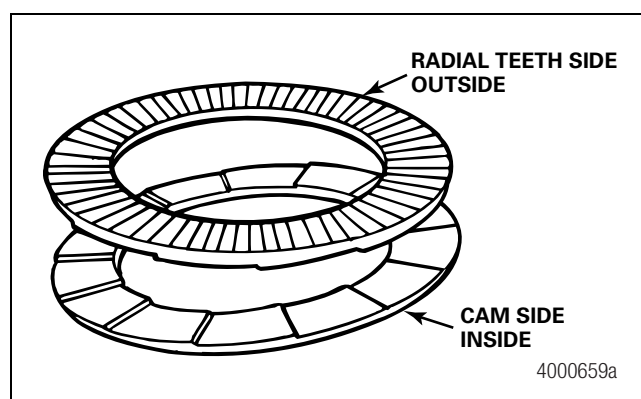


Figure 4.5

Installation Procedure

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.
3. Remove the oil drain plug from the bottom of the axle housing and drain the lubricant from the assembly.
4. After the lubricant has drained, install the plug into the drain hole of the housing. Tighten the plug to specified torque until one thread is visible. Refer to Table D in Section 6. **ⓘ**
5. Remove all carrier-to-housing capscrew and washers, if used, from the assembly. Discard them.
6. Remove all debris from inside the housing.

4 Repairs

7. Use a rotary tool with a scour pad to clean all silicone residue from the housing and carrier faces. Figure 4.6. Surfaces must be clean, dry and free of foreign matter. The surfaces must not be oily to the touch. Figure 4.7.



Figure 4.6

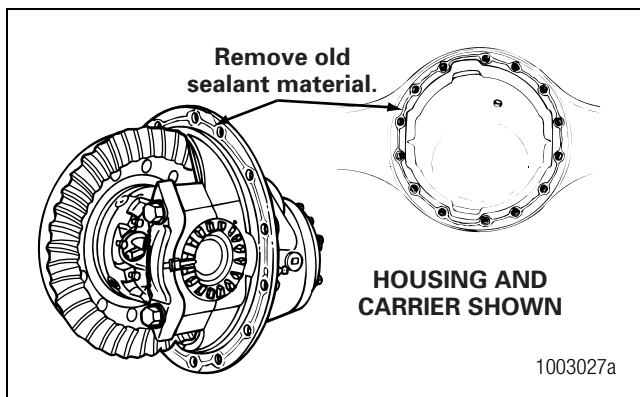


Figure 4.7

8. Remove metal filings from the magnets inside the housing.
9. Use solvent to clean the inside of the housing.
10. Use Loctite® ODC Free cleaner or brake cleaner to clean the housing and carrier faces.
11. Dry the housing and carrier faces.

⚠ CAUTION

Apply silicone gasket material in a continuous 0.25-inch (6 mm) bead. If you use more than this amount, gasket material can break off and plug lubrication passages. Damage to components can result.

12. Apply a 0.25-inch (6 mm) diameter continuous bead of Loctite® 5699 RTV silicone gasket material around one surface. Also apply the gasket material around the edge of all fastener holes on that surface. Figure 4.8 and Figure 4.9.

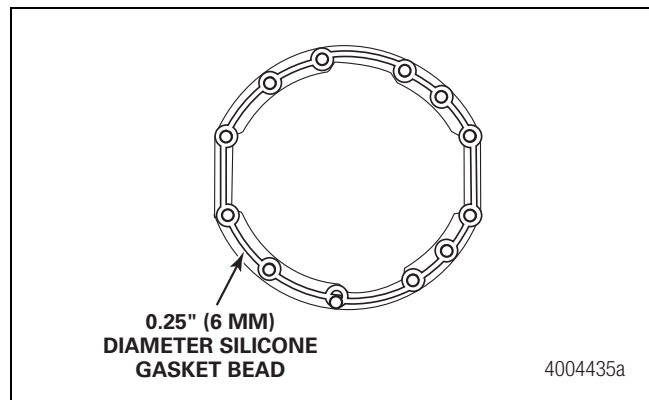


Figure 4.8

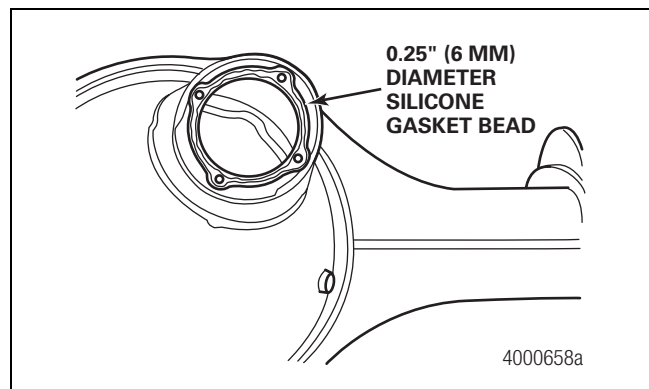


Figure 4.9

13. Assemble the components immediately to permit the silicone gasket material to compress evenly between the parts.

14. Install a new Nord-Lock® washer pair and a new nylon patch capscrew (from the appropriate kit) into the threaded hole. Refer to Table G in Section 6. As the capscrew is installed, you will feel more than the normal amount of resistance because of the locking characteristics. This is normal. Install all capscrews and nuts until the fasteners are snug and the carrier assembly is seated fully against the housing.

Nord-Lock® washers can be reused in future axle maintenance. Replace them if they are leaking.

⚠ CAUTION

Tighten the nuts and bolts to the correct torque specification only. Do not overtighten the nuts and bolts. Overtightening can cause the washer to dish, which can reduce the effectiveness of the Nord-Lock® cam feature.

15. Tighten the Nord-Lock® capscrews to 210 lb-ft (285 N•m) in sequence shown in Figure 4.10. 

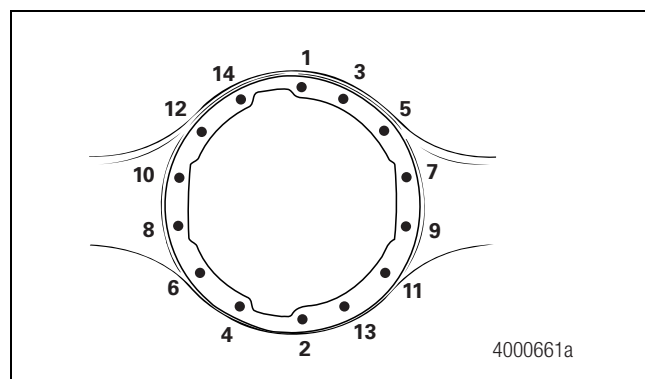


Figure 4.10

16. Wait 20 minutes before filling the assembly with lubricant.
17. Fill the axle with the correct type and amount of lubricant through the fill hole in the housing bowl. Refer to the Lubrication section of the Meritor maintenance manual for the appropriate axle model.

Solid Tapered Dowel Axle Shaft Attachment

The Meritor design using solid tapered dowels and tapered holes provides a more secure fit between the studs and stud holes. The solid tapered dowel design prevents a sliding movement between the axle shaft and the hub in service. This new solid tapered dowel design replaces the original split design and allows for easier removal in service than the original split dowel design. Figure 4.11.

The solid tapered dowel design provides a tighter attachment and minimizes leakage of lubricant between the axle shaft and hub as compared to a straight hole design. Meritor prefers and recommends this attachment system.

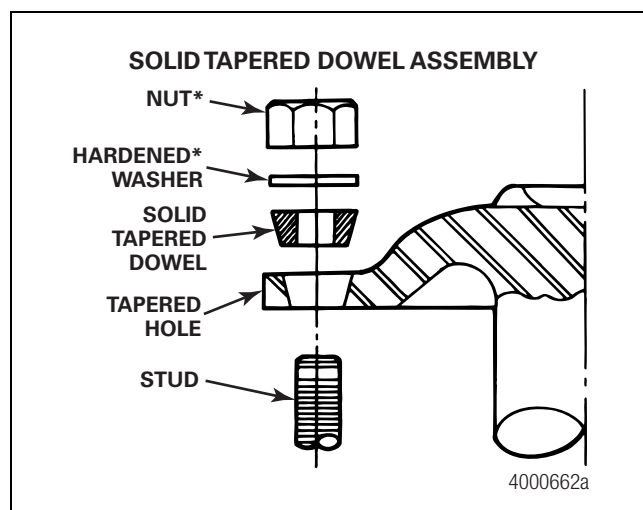


Figure 4.11

* Meritor recommends using Grade 8 nuts and hardened washers. Lock washers are approved as an alternative when using tapered dowels.

Removal

Axle Shaft

⚠ WARNING

Do not strike the round driving lugs on the flange of an axle shaft. Pieces can break off and cause serious personal injury.

⚠ CAUTION

Do not use a chisel or wedge to loosen the axle shafts and dowels. The chisel or wedge can damage the hub, axle shafts and, if used, the oil seals.

Do not use a hammer to loosen or remove the yoke or flange. A hammer can damage the parts and cause alignment problems.

1. Remove the stud nuts or capscrews and the washers from the flanges of both axle shafts.
2. If a hub is stuck to the shaft, loosen the tapered dowels in the flanges of both axle shafts as follows.

4 Repairs

Brass Drift Method

1. Hold a 1.5-inch (38.1 mm) diameter brass drift against the center of the axle shaft, inside the round driving lugs. A 1.5-inch (38.1 mm) diameter brass hammer can be used for a drift. Figure 4.12.

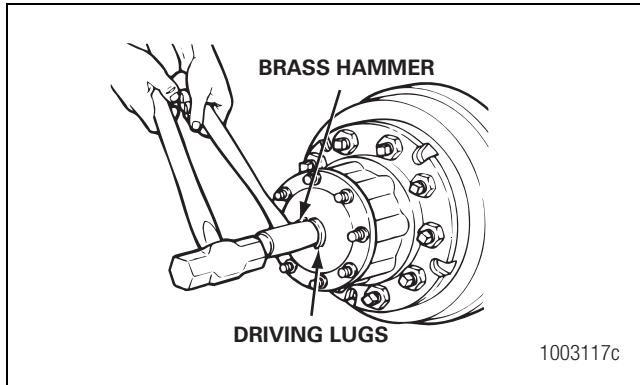


Figure 4.12

2. Hit the end of the drift with a large hammer (five to six lbs [2.26-2.72 kg]) and the axle shaft and the split tapered dowels will loosen.
3. Remove the split tapered dowels and replace with solid tapered dowels.

Air Hammer Method

⚠ WARNING

Wear safe eye protection when using an air hammer. Power tools and components can loosen and break and cause serious personal injury.

1. Use an air hammer with a round hammer bit to loosen the axle shaft.
2. Place the round hammer bit on the axle shaft between the studs. Operate the air hammer while pressing against the hub and loosen the axle shaft and split tapered dowels. Figure 4.13.

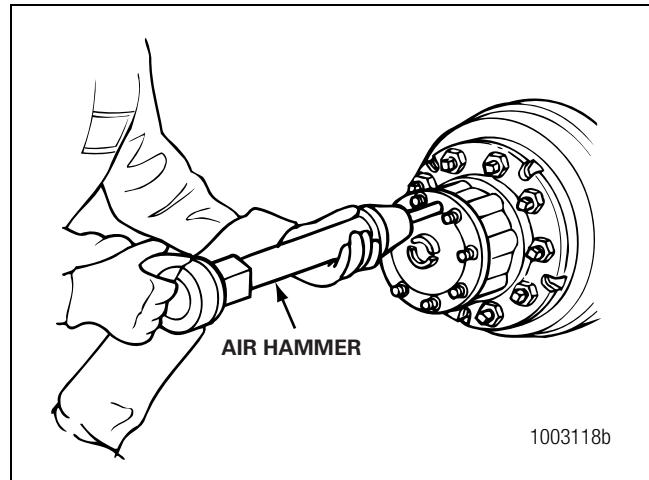


Figure 4.13

3. Remove the split tapered dowels and replace with solid tapered dowels.

Installation

Axle Shaft

⚠ WARNING

Use a brass or synthetic mallet for assembly and disassembly procedures. Do not hit steel parts with a steel hammer. Pieces of a part can break off. Serious personal injury and damage to components can result.

1. Clean the mating surfaces of the axle shaft and the wheel hub.
2. If silicone gasket material is used, apply a 0.125-inch diameter (3 mm) bead of the gasket material around the mating surface of the hub and around the edge of each fastener hole in that surface.

If a gasket is used, install the gasket and the axle shaft into the housing. The gasket and the flange of the axle shaft must fit flat against the wheel hub. Figure 4.14.

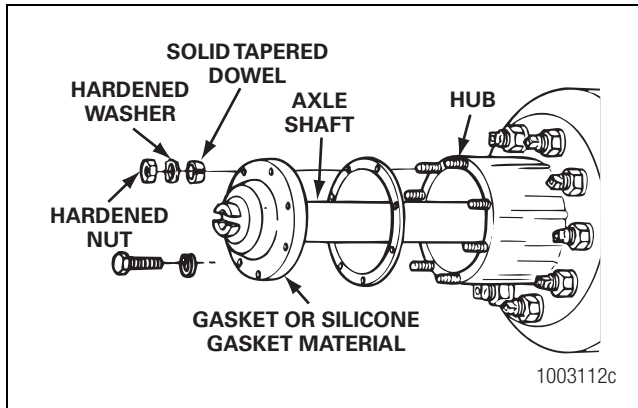


Figure 4.14

3. Install solid tapered dowels over each stud and into the flange of the axle shaft. Use a punch or a drift and hammer, if necessary.
4. Install the Grade 8 nuts and hardened washers on the stud. Lock washers are an acceptable alternative. Tighten the stud nuts in sequence shown in Figure 4.15 to the torque specified in Table D in Section 6. 

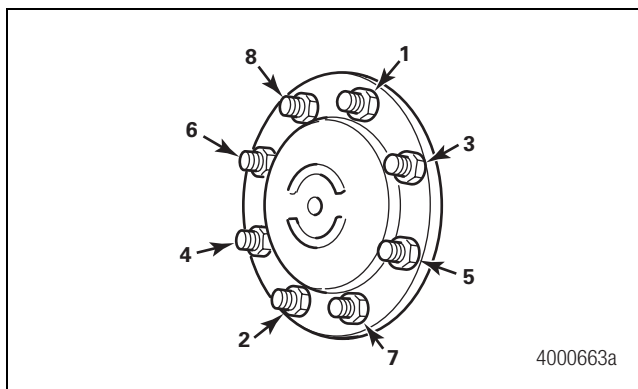


Figure 4.15

5 Cleaning

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.

WARNING

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

Solvent cleaners can be flammable, poisonous and cause burns. Examples of solvent cleaners are carbon tetrachloride, and emulsion-type and petroleum-base cleaners. Read the manufacturer's instructions before using a solvent cleaner, then carefully follow the instructions. Also follow the procedures below.

- Wear safe eye protection.
- Wear clothing that protects your skin.
- Work in a well-ventilated area.
- Do not use gasoline, or solvents that contain gasoline. Gasoline can explode.
- You must use hot solution tanks or alkaline solutions correctly. Read the manufacturer's instructions before using hot solution tanks and alkaline solutions. Then carefully follow the instructions.

Clean, Dry and Inspect Parts

Clean Ground and Polished Parts

1. Use a cleaning solvent to clean ground or polished parts or surfaces. Kerosene or diesel fuel oil can be used for this purpose. Do not use gasoline.
2. Use a tool with a flat blade if required, to remove the sealant material from parts. Be careful not to damage the polished or smooth surfaces.

CAUTION

Do not use hot solution tanks or water and alkaline solutions to clean ground or polished parts. Damage to parts can result.

3. Do not clean ground or polished parts with water or steam. Do not immerse ground or polished parts in a hot solution tank or use strong alkaline solutions for cleaning, or the smooth sealing surface may be damaged.

Clean Rough Parts

1. Clean rough parts with the same method as cleaning ground and polished parts.
2. Rough parts can be cleaned in hot solution tanks with a weak or diluted alkaline solution.
3. Parts must remain in hot solution tanks until heated and completely cleaned.
4. Parts must be washed with water until all traces of the alkaline solution are removed.

Clean Axle Assemblies

1. A complete axle assembly can be steam cleaned on the outside to remove dirt.
2. Before the axle is steam cleaned, close or place a cover over all openings in the axle assembly. Examples of openings are breathers or vents in air chambers.

Dry Parts After Cleaning

1. Dry parts immediately after cleaning using clean paper, rags or compressed air.
2. Do not use compressed air to dry bearings. This can cause small abrasive particles to contaminate the bearings and can result in reduced bearing life.

Prevent Corrosion on Cleaned Parts

1. Apply axle lubricant to cleaned and dried parts that are not damaged and are to be assembled.
2. To store parts, apply a special material that prevents corrosion to all surfaces. Wrap the cleaned parts in a special paper that will protect the parts from moisture and prevent corrosion.

Magnets and Magnetic Drain Plugs

Inspect the magnetic drain plug each time the oil is changed. Use the correct part. Pipe plugs will leak if used as a drain plug.

Although axles are normally equipped with magnetic plugs having a minimum pick-up capacity of 1.5 lbs (0.7 kg) of low carbon steel, Advanced Lube axles have stronger magnetic cleansing features.

These axles are equipped with strong five-lb (2.2 kg) pull magnets, and high-grade magnetic fill and drain plugs that collect damaging particles at the bottom of the axle housing.

Single and tandem axles have four magnets in each housing and high-grade magnetic fill and drain plugs.

Check the drain plug for metal particles every 100,000 miles (160 000 km). A magnetic drain plug can be used if the plug has a minimum pick-up capacity of 1.5 lbs (0.7 kg) of low carbon steel after cleaning.

6 Specifications

Torque Specifications

Table D: Axle Housing Component Torque Specifications

Fastener	Thread Size	Torque Value	
		lb-ft	N•m
Capscrew, Axle Shaft ¹	00.50-13	18-24	24-33
	18.00-24	85-115	115-156
Nut, Axle Shaft ¹	Stud Plain Nut		
	0.44-20	50-75	68-102
	0.50-20	75-115	102-156
	0.56-18	110-165	149-224
	0.62-18	150-230	203-312
	Locknut		
	0.44-20	40-65	54-88
	0.50-20	65-100	88-136
	0.56-18	100-145	136-197
	0.62-18	130-190	176-258
Stud, Axle Shaft	All	Install the coarse thread end of stud into hub and tighten to last thread.	
Breather	0.38-18	20 minimum	27 minimum
Plug, Housing Oil Fill ¹	0.75-14	35 minimum	47.5 minimum
Plug, Heat Indicator ¹	0.50-14	25 minimum	34 minimum
Plug, Oil Drain	0.50-14	25 minimum	34 minimum
Nut, Housing-to-Carrier Stud	0.44-20	50-75	68-102
	0.50-20	75-115	102-156
	0.56-18	110-165	149-224
	0.62-18	150-230	203-312
Capscrew, Carrier-to-Housing ²	0.44-14	50-75	68-102
	0.50-13	75-115	102-156
	0.56-12	110-165	149-224
	0.62-11	190-240	258-325
	0.75-10	270-400	366-542
	M12 x 1.75	74-89	100-120
	M16 x 2	181-221	245-300
Nut, Drive Pinion	Refer to Table E.		
Plug, Carrier Oil Fill	0.75-14	25 minimum	34 minimum
	1.50-11.5	120 minimum	163 minimum
	M24 x 1.5	35 minimum	47 minimum

¹ Some Meritor axles do not have these described parts.

² If Nord-Lock® fasteners are used, refer to Table G for specifications.

Drive Pinion Nut Torque Specifications

Table E: Single Axles

Axle Model						
Pinion Nut Location	RS-120, RS-125, RS-140	RS-145	RS-160, RS-161, RS-185, RS-186	RS-210, RS-220, RS-230	RS-240	RS-380
Carrier Input Yoke	740-920 lb-ft (1000-1245 N•m)	920-1130 lb-ft (1250-1535 N•m)	1000-1230 lb-ft (1350-1670 N•m)	740-920 lb-ft (1000-1245 N•m)	740-920 lb-ft (1000-1245 N•m)	800-1100 lb-ft (1085-1496 N•m)
Fastener Size	M32 X 1.5	M39 X 1.5	M45 X 1.5	M32 X 1.5	M39 X 1.5	1-1/2 - 12 UNF

Table F: Tandem Axles

Axle Model						
Pinion Nut Location	RT-140	RT-145, RT-149	RT-160, RT-164, RT-169	RT-185	RT-380 With IAD	RT-380 Without IAD
First Carrier Input Yoke	600-800 lb-ft (815-1085 N•m)	600-800 lb-ft (815-1085 N•m)	600-800 lb-ft (815-1085 N•m)	600-800 lb-ft (815-1085 N•m)	600-800 lb-ft (815-1085 N•m)	900-1200 lb-ft (1224-1632 N•m)
Fastener Size	M45 X 1.5	M45 X 1.5	M45 X 1.5	1-3/4 - 12 UN	1-3/4 - 12 UN	1-3/4 - 12 UN
First Carrier Output Yoke	450-650 lb-ft (610-880 N•m)	450-650 lb-ft (610-880 N•m)	450-650 lb-ft (610-880 N•m)	450-650 lb-ft (610-880 N•m)	450-650 lb-ft (610-880 N•m)	450-650 lb-ft (610-880 N•m)
Fastener Size	M32 X 1.5	M39 X 1.5	M39 X 1.5	1-1/2 - 12 UNF	1-1/2 - 12 UNF	1-1/2 - 12 UNF
Second Carrier Input Yoke	740-920 lb-ft (1000-1245 N•m)	920-1130 lb-ft (1250-1535 N•m)	1000-1230 lb-ft (1350-1670 N•m)	1000-1230 lb-ft (1350-1670 N•m)	800-1100 lb-ft (1085-1496 N•m)	800-1100 lb-ft (1085-1496 N•m)
Fastener Size	M32 X 1.5	M39 X 1.5	M45 X 1.5	M45 X 1.5	1-1/2 - 12 UNF	1-1/2 - 12 UNF

6 Specifications

Nord-Lock® Fastener Specifications

Table G

Axle Model	Kit Required	Nylon Patch Capscrew Part Number	Capscrew Quantity	Capscrew Size (inch)	Torque Value lb-ft (N•m)	Maintenance Manual
RD-160/164	2670	10X-1594	7	0.625-11 x 1.75	210 (285)	5L
RP-160/164		10X-1599	3	0.625-11 x 3.50		
RS-160	2671	10X-1594	8	0.625-11 x 1.75	210 (285)	5
RR-160/164		10X-1600	4	0.625-11 x 4.00		
RD-180	2672	10X-1595	8	0.625-11 x 2.00	210 (285)	5E
RP-180						
RD-380						
RP-380						
RS-380						
RR-380						
RS-180/185	2673	10X-1596	4	0.625-11 x 2.25	210 (285)	5
RR-180/185		10X-1601	6	0.625-11 x 4.75		

Nord-Lock® is a registered trademark of Nobex, AB.

Meritor Heavy Vehicle Systems, LLC

2135 West Maple Road
Troy, MI 48084 USA
800-535-5560
meritorhvs.com

Printed in USA

Copyright 2007
ArvinMeritor, Inc.

Revised 05-07
Maintenance Manual 8 (16579/22882)

ArvinMeritorTM