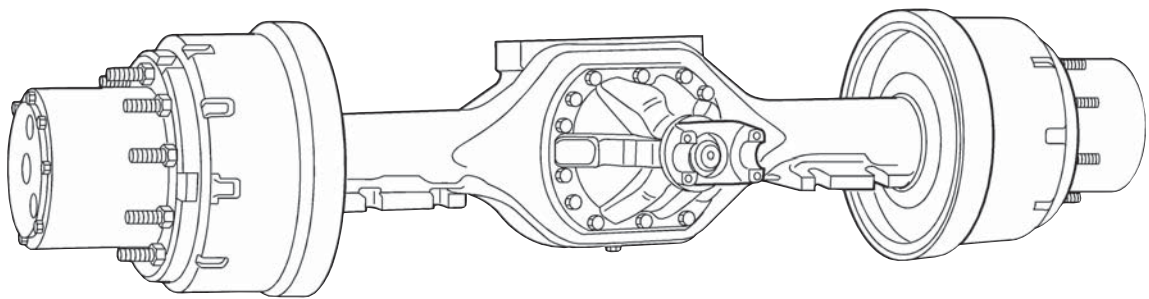


Maintenance Manual 23E

Bus and Coach Planetary Drive Axles

RC-26-633 and RC-23-634 Series

Revised 07-09



Service Notes

About This Manual

This manual provides maintenance and service procedures for Meritor's RC-26-633 and RC-26-634 Series bus and coach planetary drive axles.

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 meritor.com to access and order product, service, aftermarket, and warranty literature for Meritor's truck, trailer and specialty vehicle components.

Literature on Demand DVD (LODonDVD)

The LOnDVD contains product, service and warranty information for Meritor components. To order the DVD, visit Literature on Demand at meritor.com and specify TP-0742.

How to Obtain Tools and Supplies Specified in This Manual

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

For Grainger tools, visit their website at www.grainger.com.

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.

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Asbestos and Non-Asbestos Fibers

ASBESTOS FIBERS WARNING

The following procedures for servicing brakes are recommended to reduce exposure to asbestos fiber dust, a cancer and lung disease hazard. Material Safety Data Sheets are available from Meritor.

Hazard Summary

Because some brake linings contain asbestos, workers who service brakes must understand the potential hazards of asbestos and precautions for reducing risks. Exposure to airborne asbestos dust can cause serious and possibly fatal diseases, including asbestosis (a chronic lung disease) and cancer, principally lung cancer and mesothelioma (a cancer of the lining of the chest or abdominal cavities). Some studies show that the risk of lung cancer among persons who smoke and who are exposed to asbestos is much greater than the risk for non-smokers. Symptoms of these diseases may not become apparent for 15, 20 or more years after the first exposure to asbestos.

Accordingly, workers must use caution to avoid creating and breathing dust when servicing brakes. Specific recommended work practices for reducing exposure to asbestos dust follow. Consult your employer for more details.

Recommended Work Practices

1. Separate Work Areas. Whenever feasible, service brakes in a separate area away from other operations to reduce risks to unprotected persons. OSHA has set a maximum allowable level of exposure for asbestos of 0.1 f/cc as an 8-hour time-weighted average and 1.0 f/cc averaged over a 30-minute period. Scientists disagree, however, to what extent adherence to the maximum allowable exposure levels will eliminate the risk of disease that can result from inhaling asbestos dust. OSHA requires that the following sign be posted at the entrance to areas where exposures exceed either of the maximum allowable levels:

**DANGER: ASBESTOS
CANCER AND LUNG DISEASE HAZARD
AUTHORIZED PERSONNEL ONLY
RESPIRATORS AND PROTECTIVE CLOTHING
ARE REQUIRED IN THIS AREA.**

2. Respiratory Protection. Wear a respirator equipped with a high-efficiency (HEPA) filter approved by NIOSH or MSHA for use with asbestos at all times when servicing brakes, beginning with the removal of the wheels.
3. Procedures for Servicing Brakes.
 - a. Enclose the brake assembly within a negative pressure enclosure. The enclosure should be equipped with a HEPA vacuum and worker arm sleeves. With the enclosure in place, use the HEPA vacuum to loosen and vacuum residue from the brake parts.
 - b. As an alternative procedure, use a catch basin with water and a biodegradable, non-phosphate, water-based detergent to wash the brake drum or rotor and other brake parts. The solution should be applied with low pressure to prevent dust from becoming airborne. Allow the solution to flow between the brake drum and the brake support or the brake rotor and caliper. The wheel hub and brake assembly components should be thoroughly wetted to suppress dust before the brake shoes or brake pads are removed. Wipe the brake parts clean with a cloth.
 - c. If an enclosed vacuum system or brake washing equipment is not available, employers may adopt their own written procedures for servicing brakes, provided that the exposure levels associated with the employer's procedures do not exceed the levels associated with the enclosed vacuum system or brake washing equipment. Consult OSHA regulations for more details.
 - d. Wear a respirator equipped with a HEPA filter approved by NIOSH or MSHA for use with asbestos when grinding or machining brake linings. In addition, do such work in an area with a local exhaust ventilation system equipped with a HEPA filter.
 - e. **NEVER** use compressed air by itself, dry brushing, or a vacuum not equipped with a HEPA filter when cleaning brake parts or assemblies. **NEVER** use carcinogenic solvents, flammable solvents, or solvents that can damage brake components as wetting agents.
4. Cleaning Work Areas. Clean work areas with a vacuum equipped with a HEPA filter or by wet wiping. **NEVER** use compressed air or dry sweeping to clean work areas. When you empty vacuum cleaners and handle used rags, wear a respirator equipped with a HEPA filter approved by NIOSH or MSHA for use with asbestos. When you replace a HEPA filter, wet the filter with a fine mist of water and dispose of the used filter with care.
5. Worker Clean-Up. After servicing brakes, wash your hands before you eat, drink or smoke. Shower after work. Do not wear work clothes home. Use a vacuum equipped with a HEPA filter to vacuum work clothes after they are worn. Launder them separately. Do not shake or use compressed air to remove dust from work clothes.
6. Waste Disposal. Dispose of discarded linings, used rags, cloths and HEPA filters with care, such as in sealed plastic bags. Consult applicable EPA, state and local regulations on waste disposal.

Regulatory Guidance

References to OSHA, NIOSH, MSHA, and EPA, which are regulatory agencies in the United States, are made to provide further guidance to employers and workers employed within the United States. Employers and workers employed outside of the United States should consult the regulations that apply to them for further guidance.

NON-ASBESTOS FIBERS WARNING

The following procedures for servicing brakes are recommended to reduce exposure to non-asbestos fiber dust, a cancer and lung disease hazard. Material Safety Data Sheets are available from Meritor.

Hazard Summary

Most recently manufactured brake linings do not contain asbestos fibers. These brake linings may contain one or more of a variety of ingredients, including glass fibers, mineral wool, aramid fibers, ceramic fibers and silica that can present health risks if inhaled. Scientists disagree on the extent of the risks from exposure to these substances. Nonetheless, exposure to silica dust can cause silicosis, a non-cancerous lung disease. Silicosis gradually reduces lung capacity and efficiency and can result in serious breathing difficulty. Some scientists believe other types of non-asbestos fibers, when inhaled, can cause similar diseases of the lung. In addition, silica dust and ceramic fiber dust are known to the State of California to cause lung cancer. U.S. and international agencies have also determined that dust from mineral wool, ceramic fibers and silica are potential causes of cancer.

Accordingly, workers must use caution to avoid creating and breathing dust when servicing brakes. Specific recommended work practices for reducing exposure to non-asbestos dust follow. Consult your employer for more details.

Recommended Work Practices

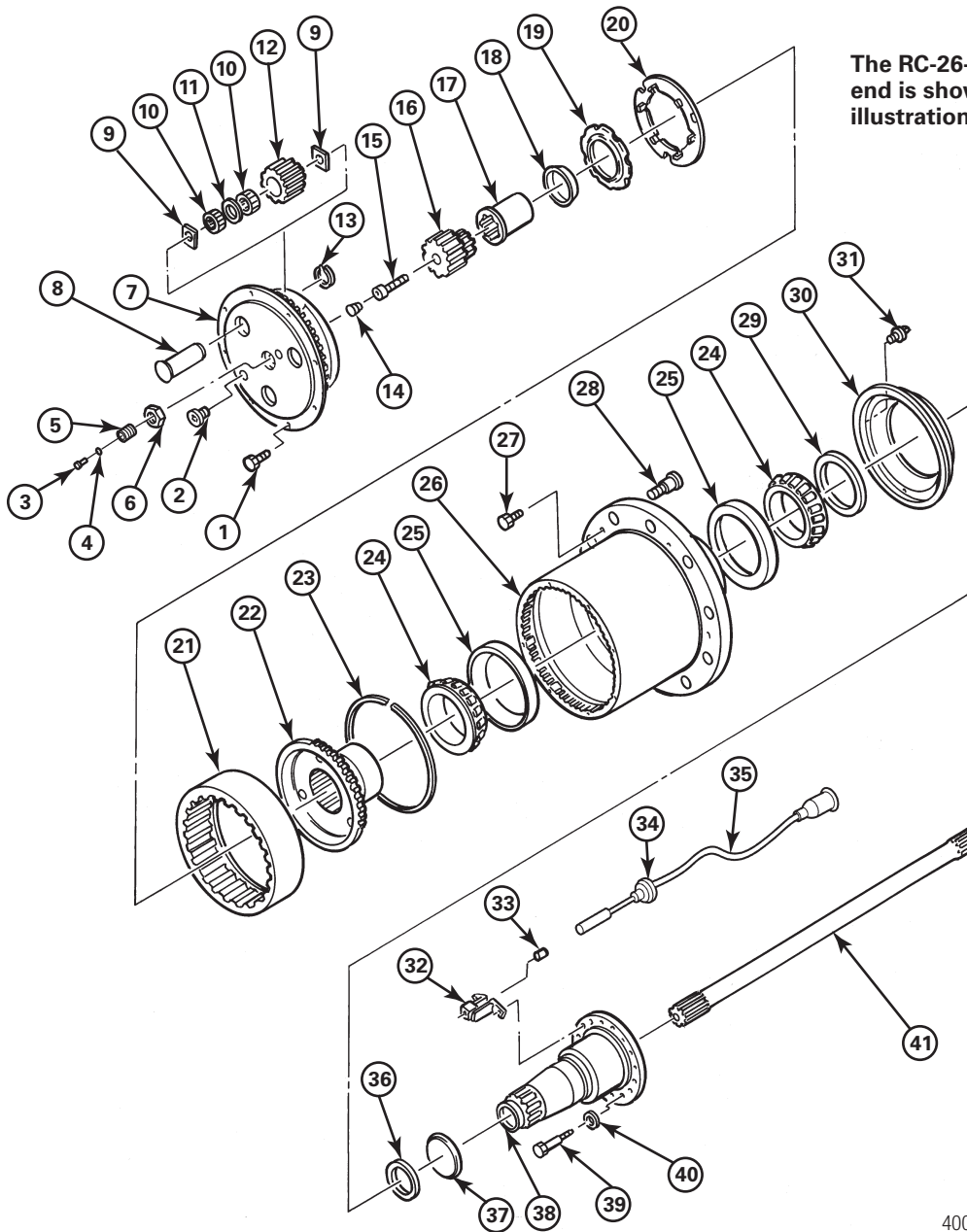
1. Separate Work Areas. Whenever feasible, service brakes in a separate area away from other operations to reduce risks to unprotected persons.
 2. Respiratory Protection. OSHA has set a maximum allowable level of exposure for silica of 0.1 mg/m³ as an 8-hour time-weighted average. Some manufacturers of non-asbestos brake linings recommend that exposures to other ingredients found in non-asbestos brake linings be kept below 1.0 f/cc as an 8-hour time-weighted average. Scientists disagree, however, to what extent adherence to these maximum allowable exposure levels will eliminate the risk of disease that can result from inhaling non-asbestos dust.
- Therefore, wear respiratory protection at all times during brake servicing, beginning with the removal of the wheels. Wear a respirator equipped with a high-efficiency (HEPA) filter approved by NIOSH or MSHA, if the exposure levels may exceed OSHA or manufacturers' recommended maximum levels. Even when exposures are expected to be within the maximum allowable levels, wearing such a respirator at all times during brake servicing will help minimize exposure.
3. Procedures for Servicing Brakes.
 - a. Enclose the brake assembly within a negative pressure enclosure. The enclosure should be equipped with a HEPA vacuum and worker arm sleeves. With the enclosure in place, use the HEPA vacuum to loosen and vacuum residue from the brake parts.
 - b. As an alternative procedure, use a catch basin with water and a biodegradable, non-phosphate, water-based detergent to wash the brake drum or rotor and other brake parts. The solution should be applied with low pressure to prevent dust from becoming airborne. Allow the solution to flow between the brake drum and the brake support or the brake rotor and caliper. The wheel hub and brake assembly components should be thoroughly wetted to suppress dust before the brake shoes or brake pads are removed. Wipe the brake parts clean with a cloth.
 - c. If an enclosed vacuum system or brake washing equipment is not available, carefully clean the brake parts in the open air. Wet the parts with a solution applied with a pump-spray bottle that creates a fine mist. Use a solution containing water, and, if available, a biodegradable, non-phosphate, water-based detergent. The wheel hub and brake assembly components should be thoroughly wetted to suppress dust before the brake shoes or brake pads are removed. Wipe the brake parts clean with a cloth.
 - d. Wear a respirator equipped with a HEPA filter approved by NIOSH or MSHA when grinding or machining brake linings. In addition, do such work in an area with a local exhaust ventilation system equipped with a HEPA filter.
 - e. **NEVER** use compressed air by itself, dry brushing, or a vacuum not equipped with a HEPA filter when cleaning brake parts or assemblies. **NEVER** use carcinogenic solvents, flammable solvents, or solvents that can damage brake components as wetting agents.
 4. Cleaning Work Areas. Clean work areas with a vacuum equipped with a HEPA filter or by wet wiping. **NEVER** use compressed air or dry sweeping to clean work areas. When you empty vacuum cleaners and handle used rags, wear a respirator equipped with a HEPA filter approved by NIOSH or MSHA, to minimize exposure. When you replace a HEPA filter, wet the filter with a fine mist of water and dispose of the used filter with care.
 5. Worker Clean-Up. After servicing brakes, wash your hands before you eat, drink or smoke. Shower after work. Do not wear work clothes home. Use a vacuum equipped with a HEPA filter to vacuum work clothes after they are worn. Launder them separately. Do not shake or use compressed air to remove dust from work clothes.
 6. Waste Disposal. Dispose of discarded linings, used rags, cloths and HEPA filters with care, such as in sealed plastic bags. Consult applicable EPA, state and local regulations on waste disposal.

Regulatory Guidance

References to OSHA, NIOSH, MSHA, and EPA, which are regulatory agencies in the United States, are made to provide further guidance to employers and workers employed within the United States. Employers and workers employed outside of the United States should consult the regulations that apply to them for further guidance.

1 Exploded Views

Wheel End



The RC-26-633 Series wheel end is shown here for illustration purposes.

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1 Exploded Views

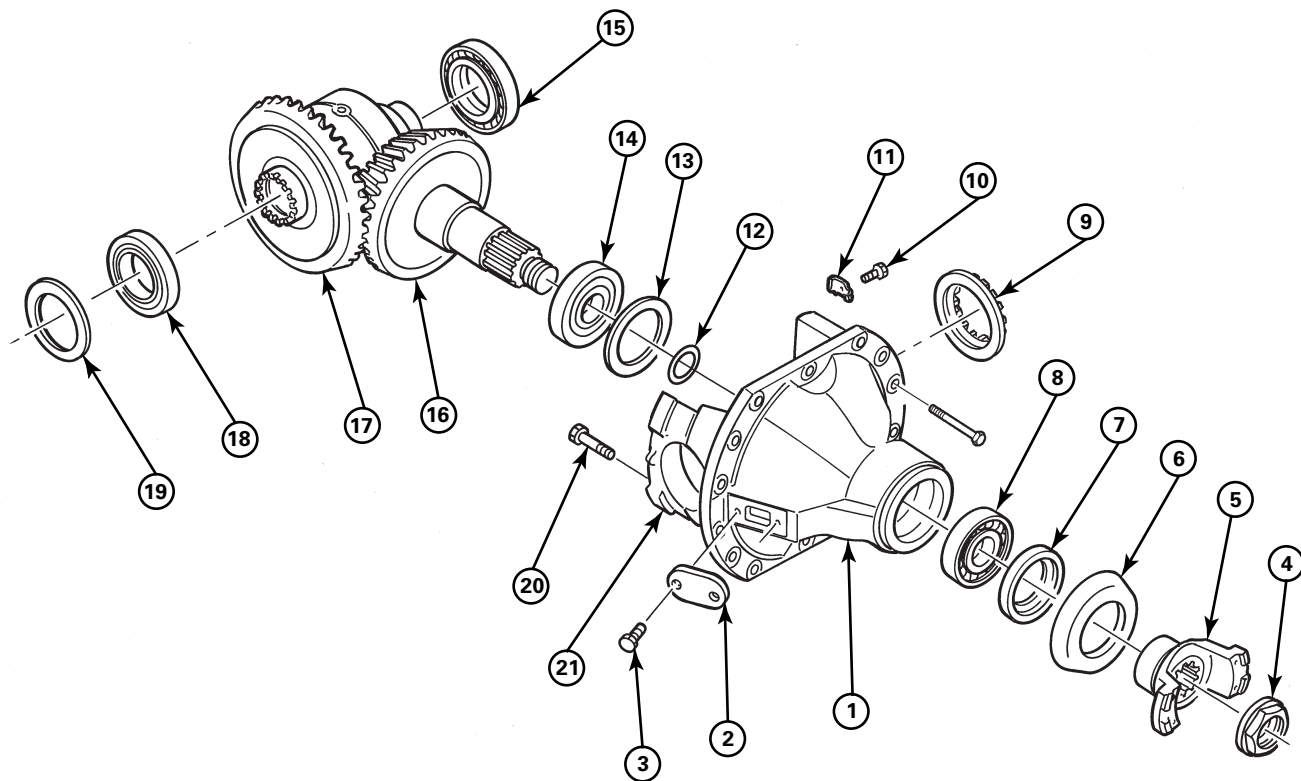
Item	Description
1	Capscrew
2	Plug
3	Level Screw
4	Washer
5	Thrust Screw
6	Nut
7	Planetary Spider
8	Planetary Pinion Shaft
9	Thrust Washer
10	Needle Bearing
11	Spacer
12	Planetary Pinion
13	Snap Ring
14	Thrust Button
15	Capscrew
16	Planetary Sun Gear
17	Coupling
18	Thrust Washer
19	Nut
20	Lock Plate
21	Planetary Ring Gear
22	Planetary Ring Gear Hub
23	Snap Ring
24	Bearing Cone
25	Bearing Cup
26	Wheel Hub
27	Capscrew
28	Wheel Stud
29	Oil Seal
30	ABS Tooth Wheel
31	Capscrew
32	ABS Sensor Bracket
33	ABS Sensor Bushing
34	Rubber Bushing
35	ABS Sensor Assembly

Item	Description
36	Bearing Spacer/Seal Wiper
37	Deflector
38	Spindle
39	Capscrew
40	Washer
41	Axle Shaft

NOTE: The difference between the RC-26-633 Series axle and the RC-26-634 Series axle is the RC-26-633 has three planetary pinion gears in the wheel end and the RC-26-634 has four planetary pinion gears in the wheel end.

1 Exploded Views

Carrier



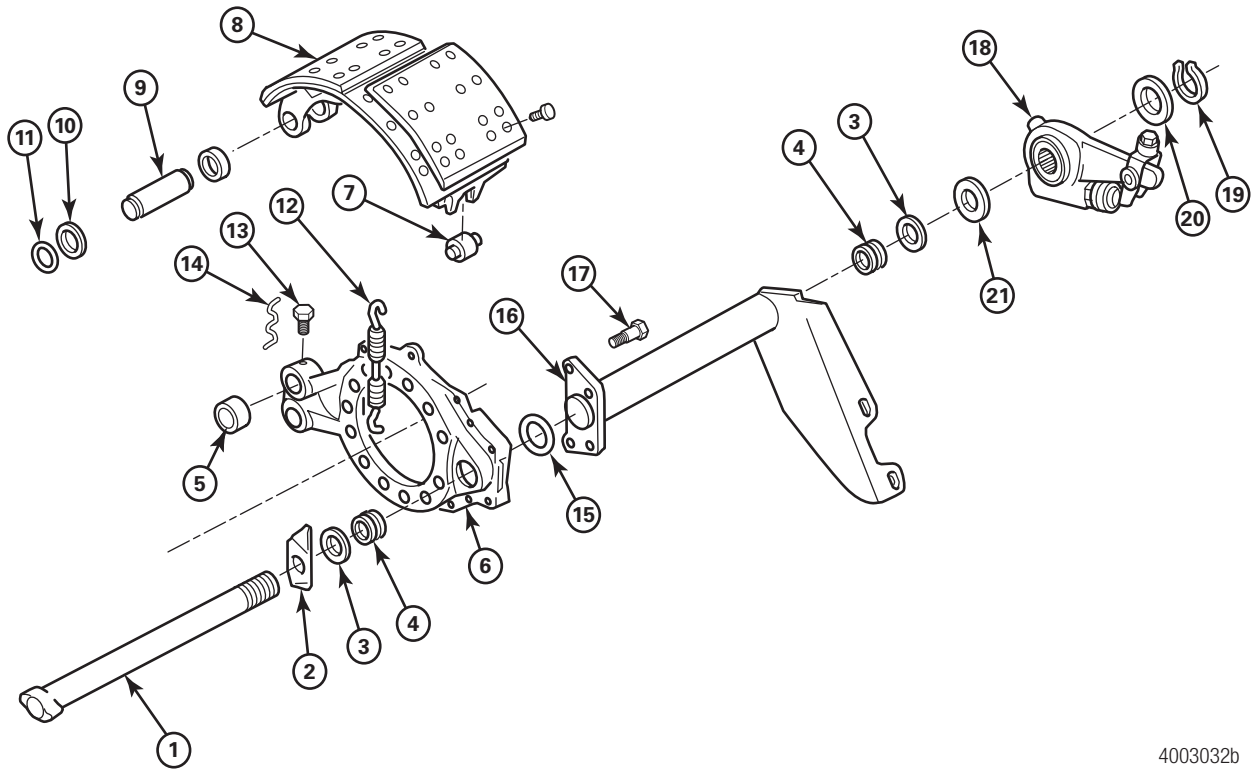
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Item	Description
1	Housing
2	Cover
3	Capscrew
4	Pinion Nut
5	Yoke
6	Deflector
7	Oil Seal
8	Pinion Bearing
9	Adjusting Ring
10	Capscrew
11	Lock Plate
12	Shim
13	Shim

Item	Description
14	Pinion Bearing
15	Differential Bearing
16	Pinion
17	Differential and Bevel Gear Assembly
18	Differential Bearing
19	Shim
20	Capscrew
21	Differential Bearing Cap

NOTE: Both the RC-26-633 and RC-26-634 Series axles use the same carrier.

16.5-Inch Cast Plus™ Cam Brake



4003032b

Item	Description
1	Camshaft
2	Cam Head Washer
3	Camshaft Seal
4	Camshaft Bushing
5	Anchor Pin Bushing
6	Brake Spider
7	Brake Shoe Roller
8	Brake Shoe and Lining Assembly
9	Anchor Pin
10	Anchor Pin Washer
11	Anchor Pin Snap Ring
12	Brake Shoe Return Spring
13	Anchor Pin Set Screw
14	Anchor Pin Set Screw Lock Wire
15	Chamber Bracket Seal

Item	Description
16	Chamber Bracket
17	Chamber Bracket Capscrew
18	Slack Adjuster
19	Snap Ring
20	Camshaft Spacing Washers
21	Thick Camshaft Washer

2 Introduction

Description

Meritor's RC-26-633 and RC-26-634 Series are double-reduction planetary drive axles. The first reduction is in the carrier, and the second reduction is in the wheel end. This allows for a smaller carrier ring gear and a lower bus floor. Special ground gearing in both the carrier and wheel end produces quieter operation. Figure 2.1.

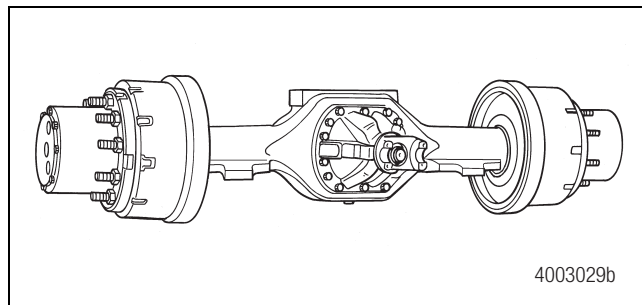


Figure 2.1

Difference Between the RC-26-633 and RC-26-634 Series Axles

The difference between the RC-26-633 Series axle and the RC-26-634 Series axle is the RC-26-633 has three planetary pinion gears in the wheel end, and the RC-26-634 has four planetary pinion gears in the wheel end. The RC-26-633 Series axle is used for illustration purposes in this manual. Figure 2.2 and Figure 2.3.

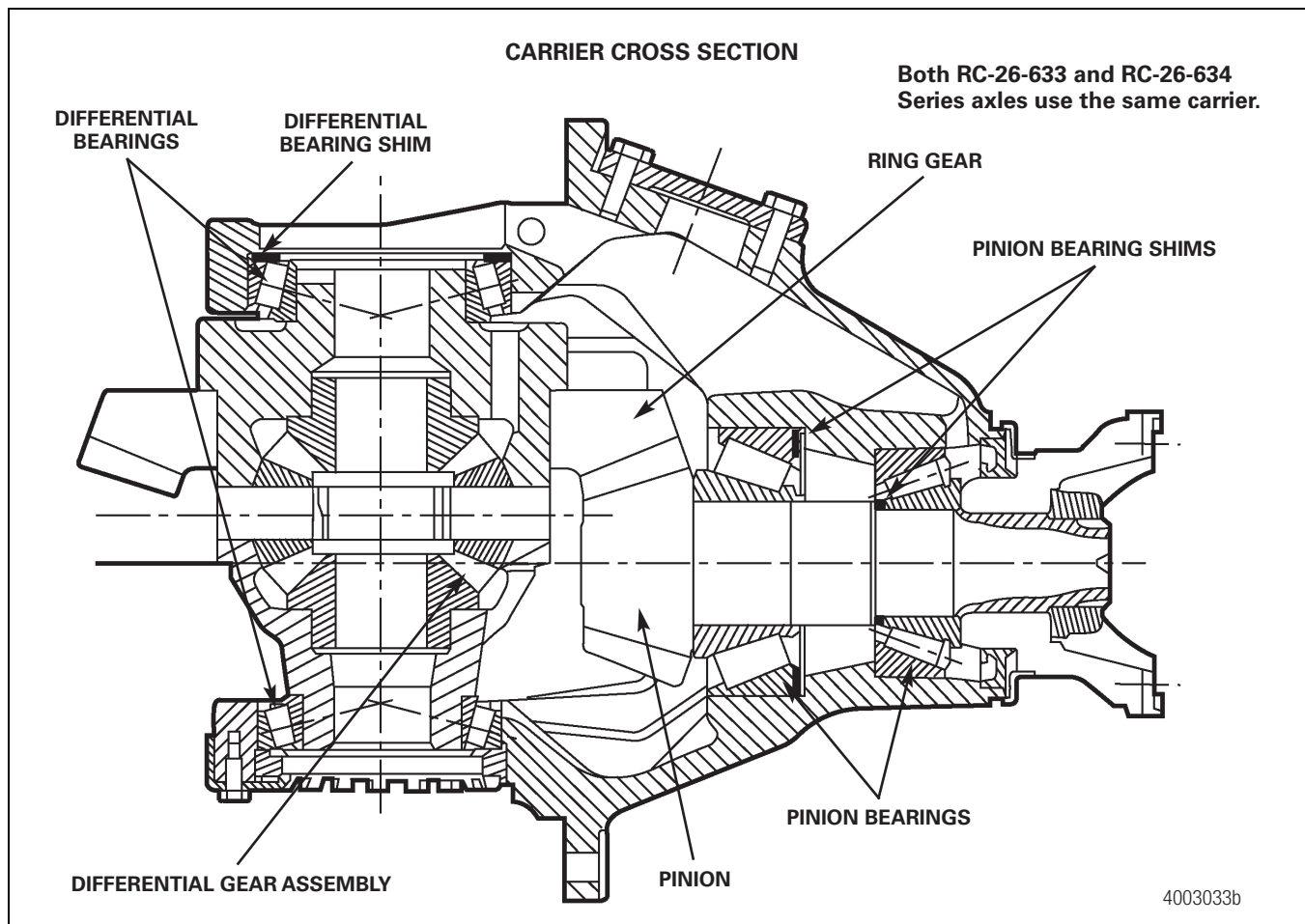


Figure 2.2

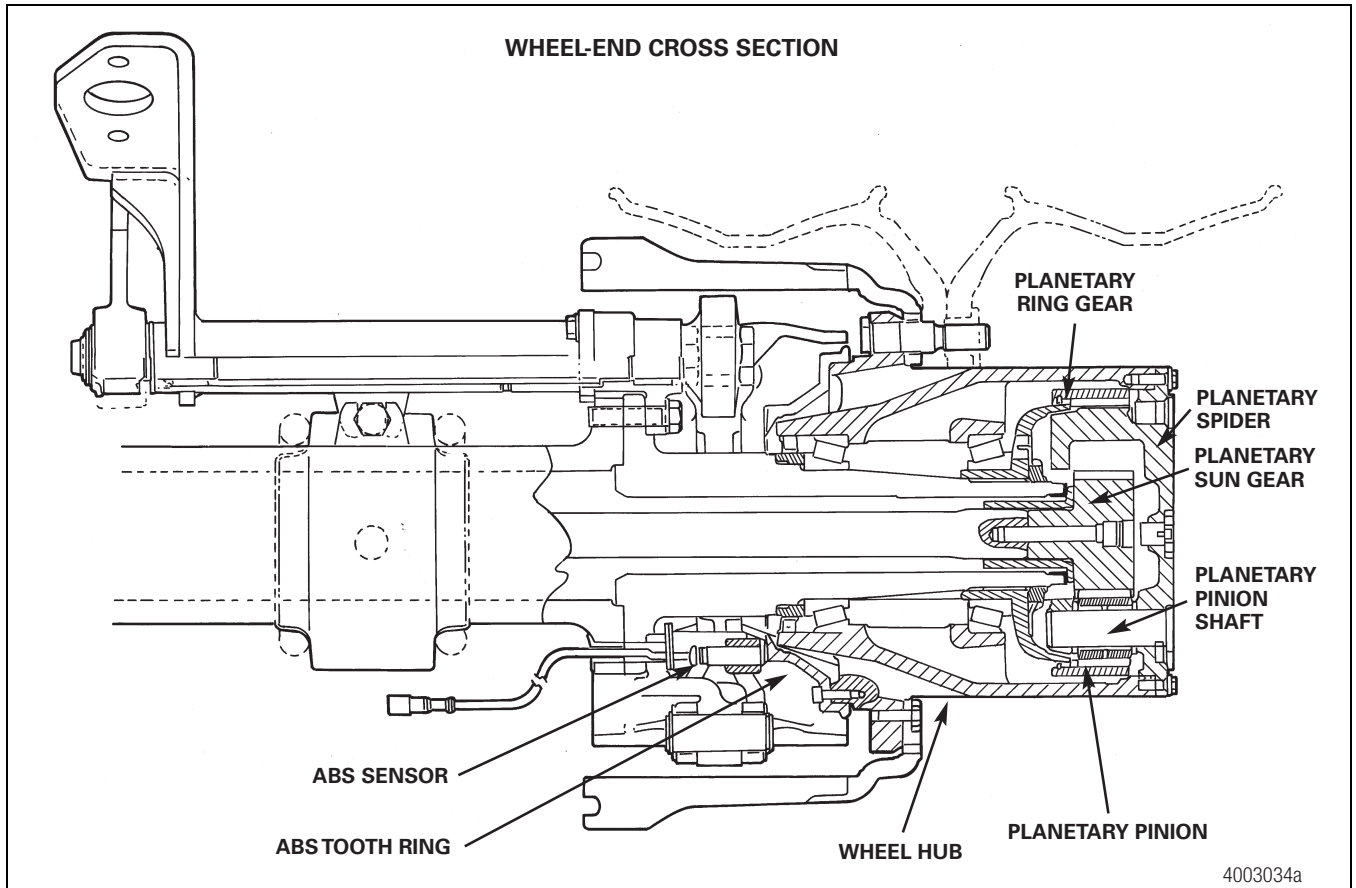


Figure 2.3

Brakes

The axle is equipped with Meritor Cast Plus™ cam brakes with a 16.5-inch diameter and 8.62-inch wide heavy-duty cast shoes. Figure 2.4. The axle also is equipped with the anti-lock braking system (ABS) sensor and tooth ring. Figure 2.3.

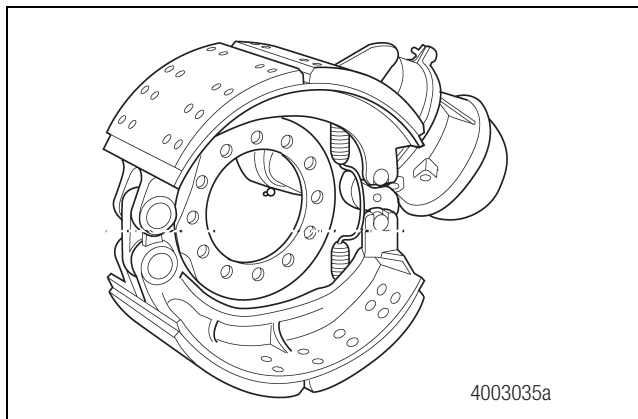


Figure 2.4

2 Introduction

Identification

The RC-26-633 planetary drive axle is identified by a letter and number designation that gives important information about the specific axle model.

The first seven letters and numbers of the designation identify a basic axle model. The second group of letters and numbers identify particular specifications. Figure 2.5.

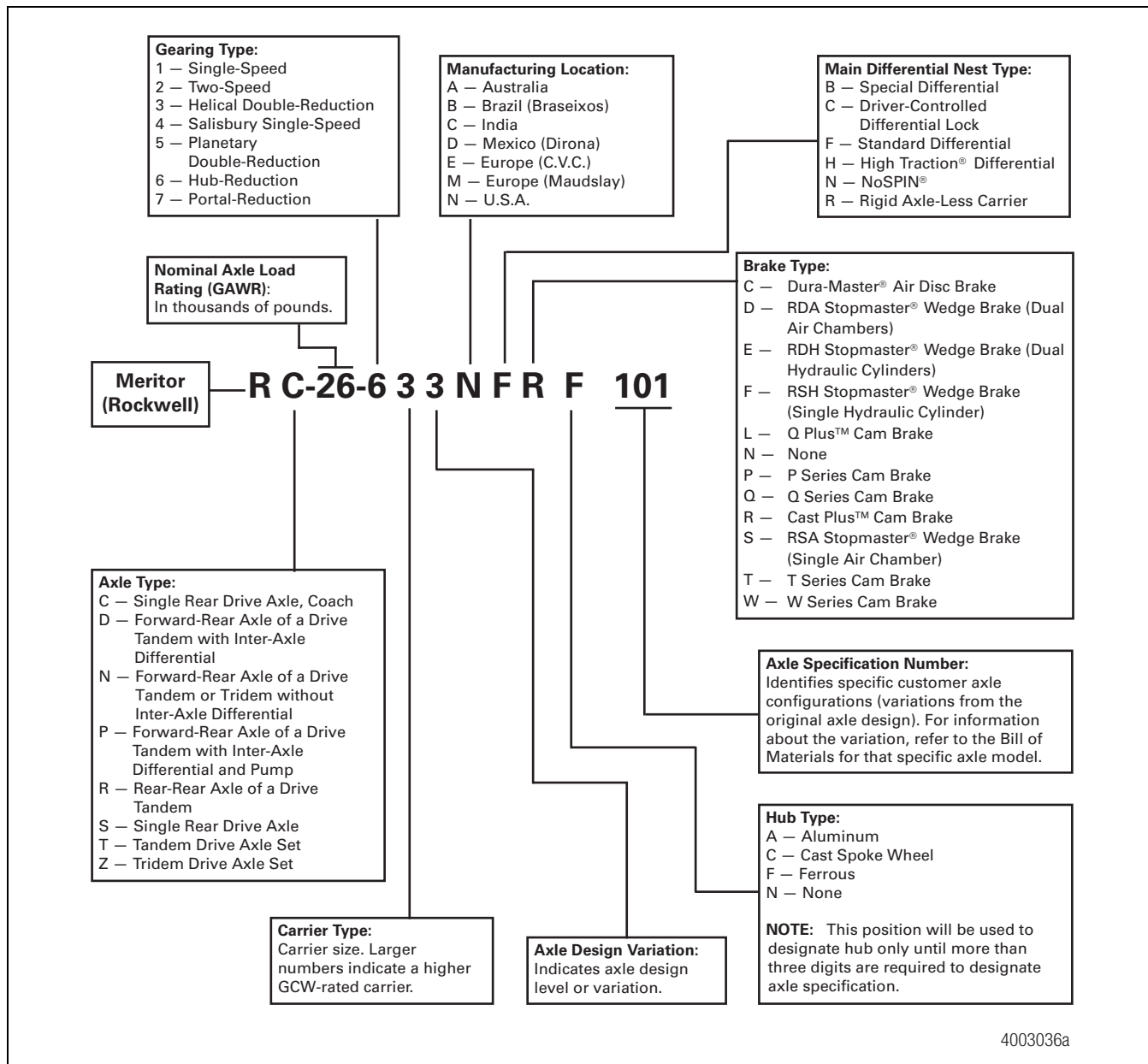


Figure 2.5

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.

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.

Removal and Disassembly

Brake Drum

WARNING

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.

1. Park the vehicle on a level surface. Block the wheels not being serviced to prevent the vehicle from moving.
2. Use a jack to raise the vehicle so that the wheels of the axle to be serviced are off the ground. Support the vehicle with safety stands.
3. Remove the wheel nuts, and tire and rim assemblies from both wheel ends.
4. Rotate the wheel ends so the drain plug in the spider is at the BOTTOM. Use a 12 mm Allen wrench to remove the plug and drain the lubricant from both wheel ends.
5. Remove the plug from the bottom of the axle housing. Drain the lubricant from the carrier center section.
6. Use a 16 mm socket to remove the five capscrews that secure the brake drum. Figure 3.1.
 - **If the drum is difficult to remove:** Install three M12 x 1.75 bolts into the drum push holes. Tighten the bolts sequentially until the drum separates from the hub.

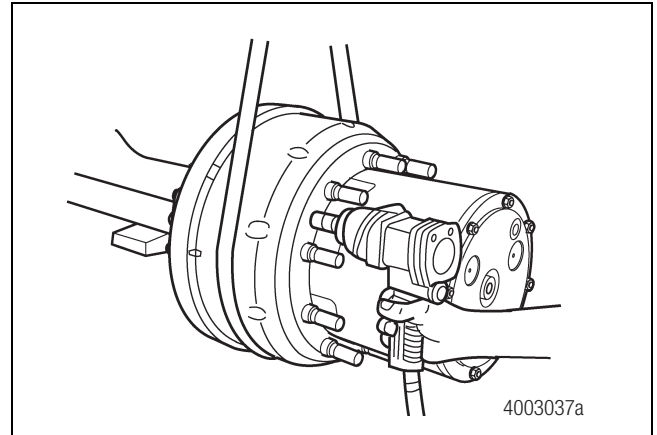


Figure 3.1

7. Use a lifting device to remove the brake drum. Figure 3.2.

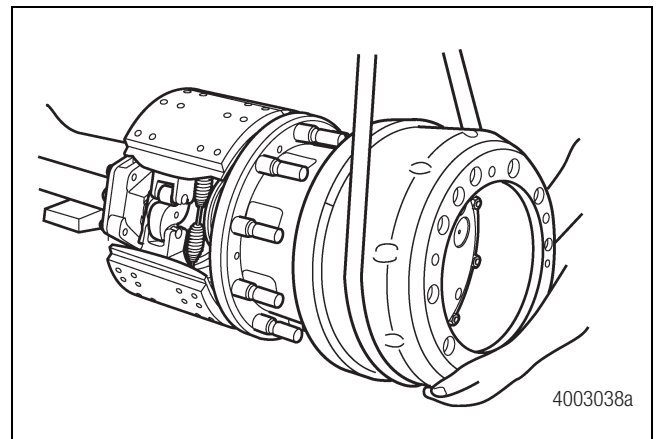


Figure 3.2

3 Wheel End

Planetary Spider Assembly

1. Use a 15 mm socket to remove the planetary spider cap screws. Figure 3.3.

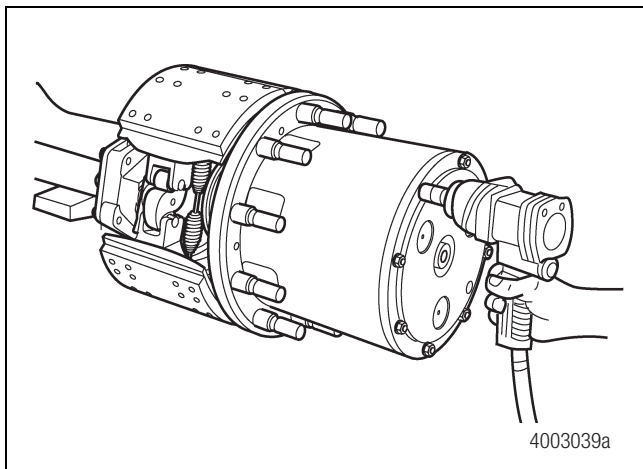


Figure 3.3

2. Use a 30 mm wrench to remove the thrust screw nut. Figure 3.4.

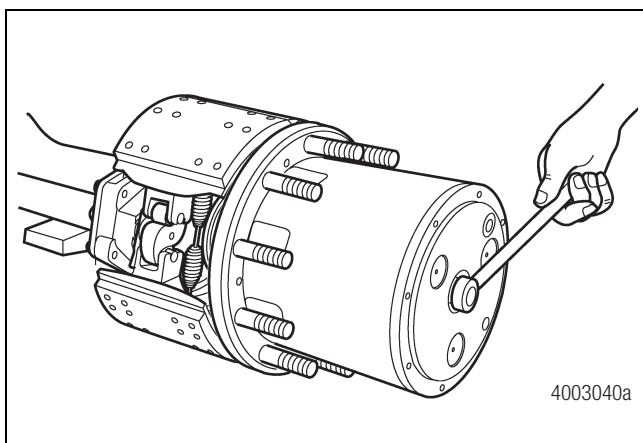


Figure 3.4

3. Use a 12 mm Allen wrench to turn the thrust screw CLOCKWISE to separate the planetary spider from the hub. Figure 3.5.

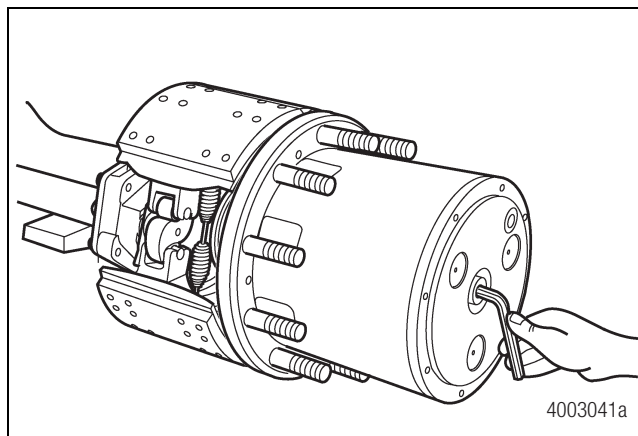


Figure 3.5

⚠ WARNING

Do not strike the planetary spider assembly with a hammer when you remove it from the hub. A hammer will damage the assembly and may cause pieces of the assembly to break off. Serious personal injury and damage to components can result.

4. Remove the planetary spider assembly from the hub. **Do not hit the assembly with a hammer.** Use a screwdriver or other suitable tool to help with removal. Figure 3.6.

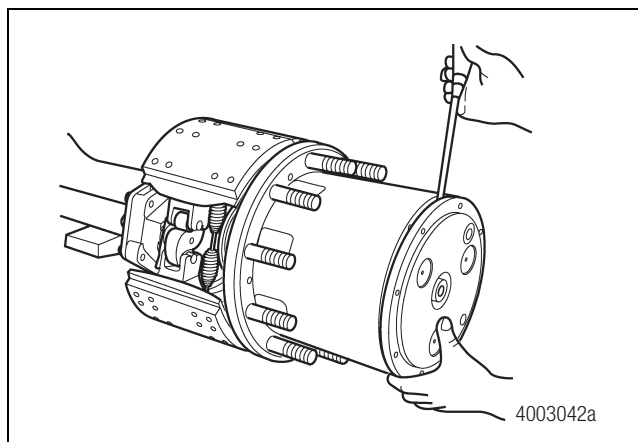


Figure 3.6

Sun Gear and Axle Shaft

1. Remove the sun gear and axle shaft assembly. Figure 3.7.

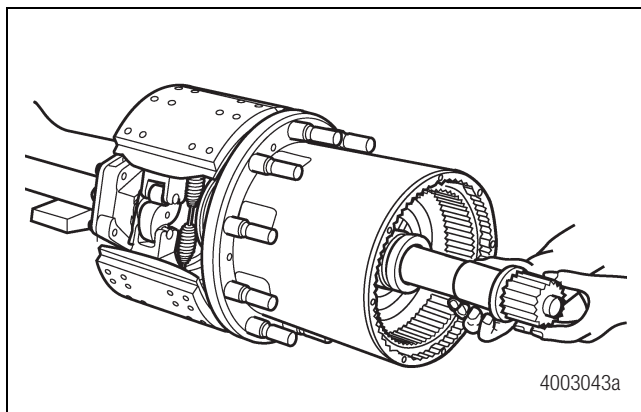


Figure 3.7

2. If necessary, remove the sun gear from the axle shaft.
 - A. Clamp the sun gear and shaft assembly in a vise. Remove the thrust button. Figure 3.8 and Figure 3.9.

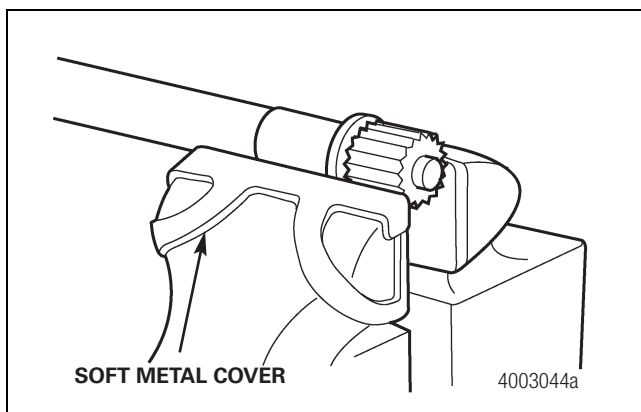


Figure 3.8

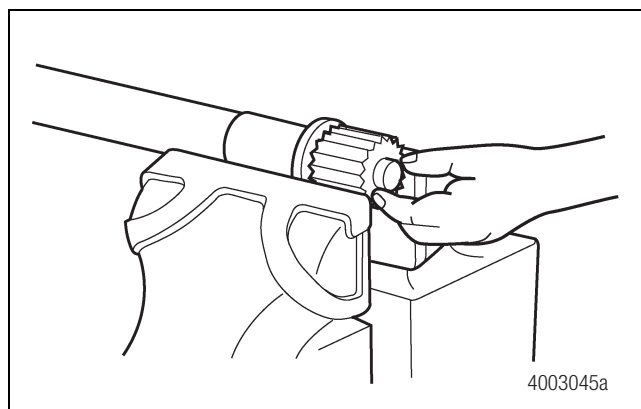


Figure 3.9

- B. Remove the screw that attaches the sun gear to the axle shaft. Separate the sun gear and coupling from the end of the shaft. Figure 3.10 and Figure 3.11.

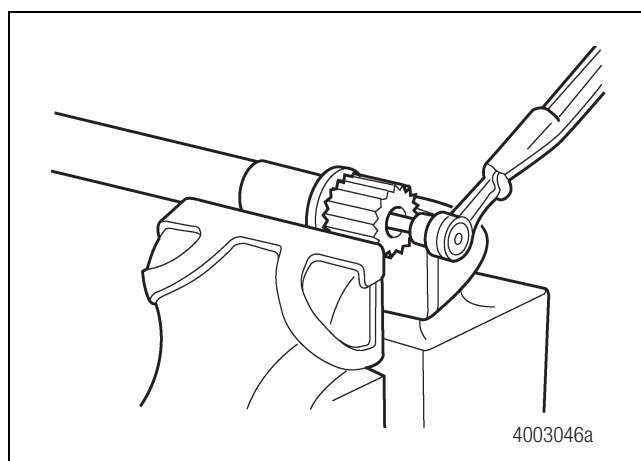


Figure 3.10

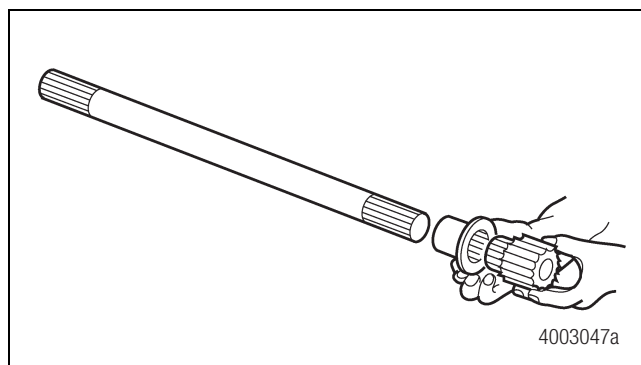


Figure 3.11

3 Wheel End

Spindle End Thrust Washer

Use the correct size expansion tool and slide hammer to remove the thrust washer. Figure 3.12.

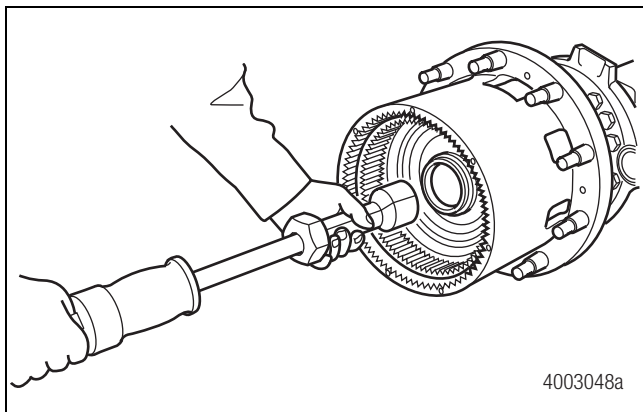


Figure 3.12

Wheel Bearing Nut

1. Bend back the two opposing tabs on the wheel bearing adjusting nut lock washer. Figure 3.13.

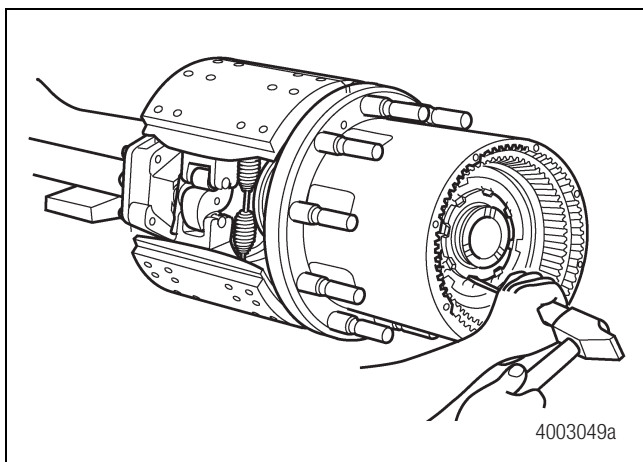


Figure 3.13

2. Use a wheel bearing adjusting nut spanner socket, tool drawing number 5231, to loosen the wheel bearing adjusting nut. Figure 3.14. Refer to Section 8 and Figure 8.9 for instructions to build the tool.

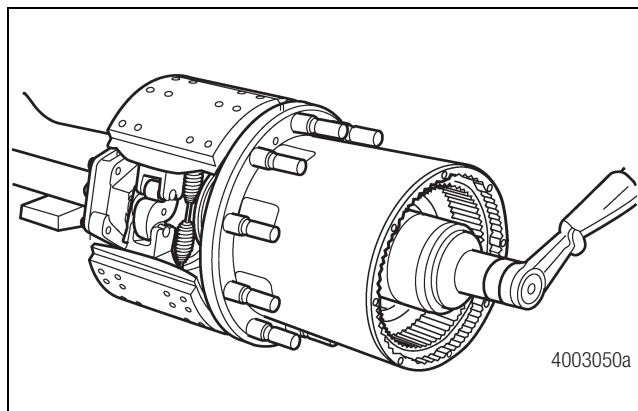


Figure 3.14

3. Remove the wheel bearing adjusting nut and lock washer. Discard the lock washer. Figure 3.15.

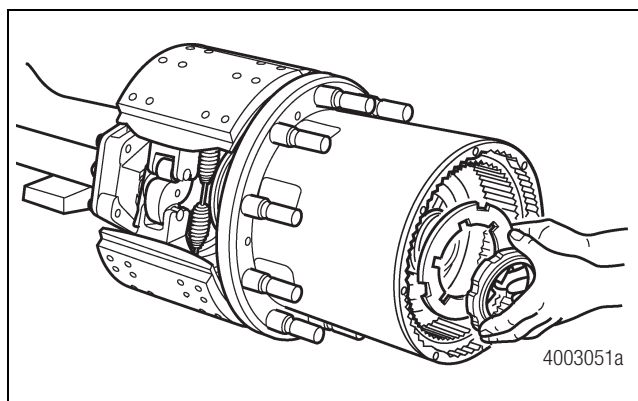


Figure 3.15

Wheel Hub and Ring Gear Hub Assembly

⚠ CAUTION

When you remove the wheel hub, do not let the ring gear hub assembly drop out of the wheel hub. Damage to components can result.

1. Use a lifting device to remove the wheel hub and ring gear hub assembly as a unit. Figure 3.16.

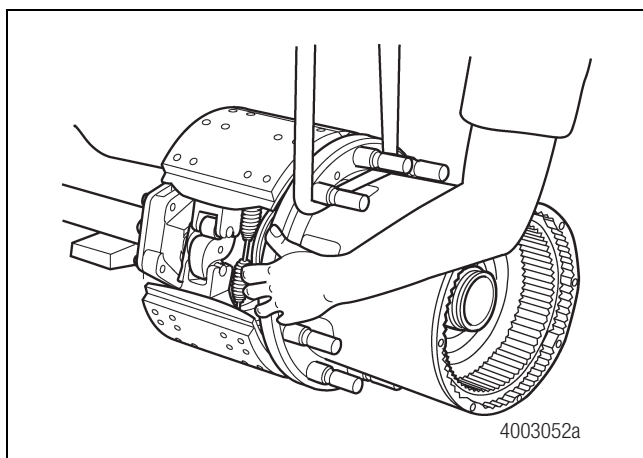


Figure 3.16

2. Remove the ring gear hub assembly from the wheel hub.

Brake and Spindle Assembly

1. Remove the rubber grommet that secures the anti-lock braking system (ABS) sensor cable in the housing. Remove the ABS sensor bracket and cable assembly. Figure 3.17.

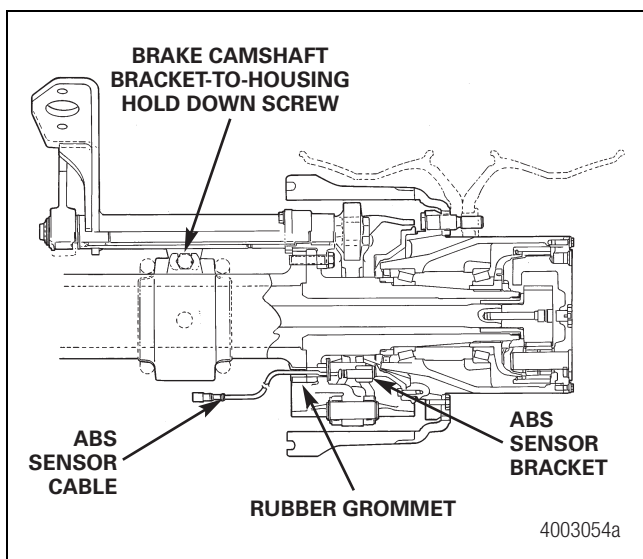


Figure 3.17

2. Use a 1-1/8-inch socket and wrench to remove the camshaft bracket-to-housing screw and nut. Disconnect the brake lines. Figure 3.18.

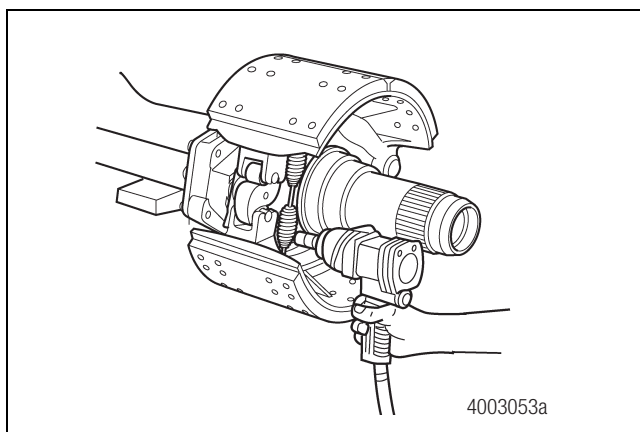


Figure 3.18

3. Before you remove the last brake assembly capscrew, install two 5/8-inch-11 studs, or capscrews with the heads removed, into the housing 180 degrees apart to support the spindle and brake during disassembly. Figure 3.19.

- **If you have to remove the spindle:** Use a 5/16-inch socket and wrench to remove the brake assembly capscrews. If necessary, remove the brake shoe return spring to remove the capscrews. Refer to Section 5. Figure 3.18.
- **If the seal wiper, bearing spacer or deflector are damaged:** Use a hammer and brass drift to remove the parts from the spindle. Use care not to damage the spindle.

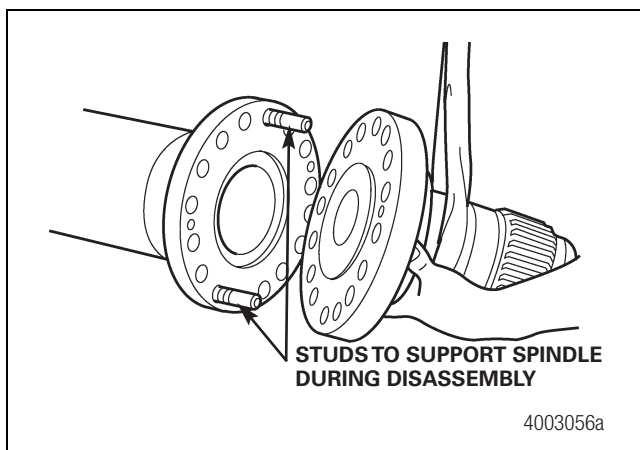


Figure 3.19

4. Use a lifting device to remove the brake assembly and spindle assembly. Figure 3.20.

3 Wheel End

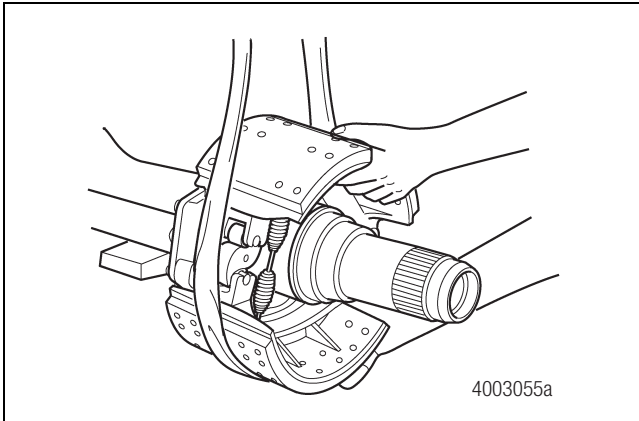


Figure 3.20

Bearings and Seal from the Hub

1. If the wheel bearings are to be replaced, use an 8 mm Allen wrench to remove the cap screw that secures the ABS tooth wheel to the hub. Remove the ABS tooth wheel.
2. Use a hammer and brass drift to tap the inner bearing cone and hub seal. Thoroughly clean any bearing retaining compound, if present. Figure 3.21.

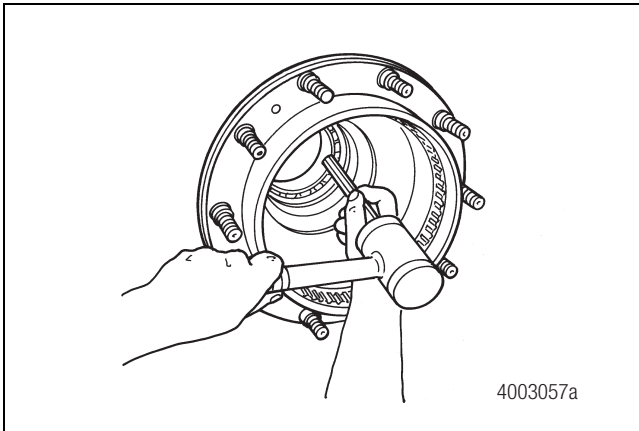


Figure 3.21

3. Use a hammer and brass drift to tap the inner and outer bearing cup from the hub.
4. Remove the bearing cone from the ring gear hub with a hammer and brass drift. Alternately insert the drift through the three locating holes to drive the bearing from the ring gear hub. Thoroughly clean any bearing retaining compound, if present. Figure 3.22.

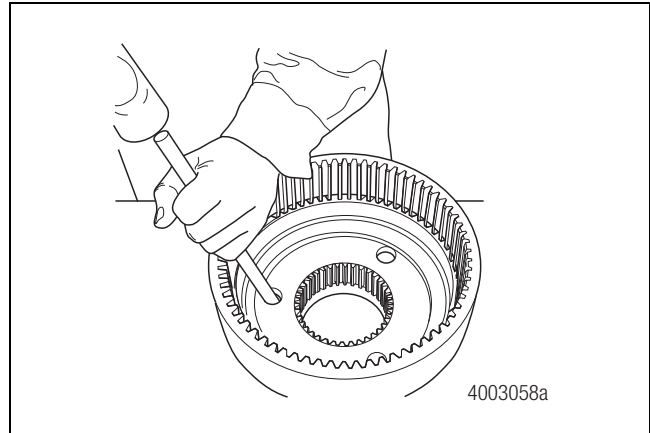


Figure 3.22

Ring Gear from the Hub

Remove the snap ring. Separate the ring gear from the hub. Figure 3.23.

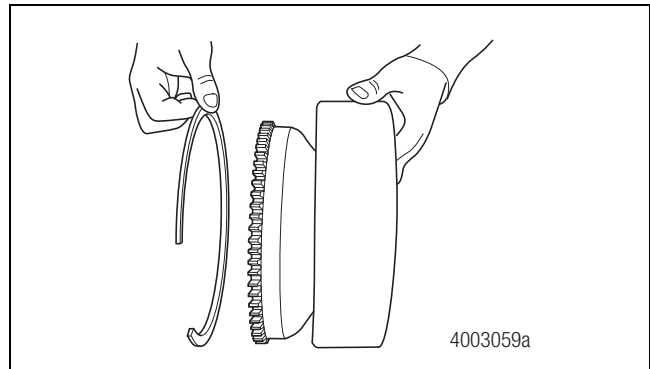


Figure 3.23

Prepare Parts for Assembly

Clean, Dry and Inspect Parts

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 or alkaline solutions. Then carefully follow the instructions.

CAUTION

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

If required, use a knife to remove gasket material from parts. Be careful not to damage the ground or polished surfaces.

Ground or Polished Parts

1. Use a cleaning solvent, kerosene or diesel fuel to clean ground or polished parts or surfaces. NEVER USE GASOLINE.
2. Remove gasket material from parts. Take care not to damage ground surfaces.
3. DO NOT clean ground or polished parts in a hot solution tank, water, steam or alkaline solution.

Parts with a Rough Finish

1. Use a cleaning solvent or a hot solution tank with a weak alkaline solution to clean parts with a rough finish.
2. Leave parts in the hot solution tank until they are completely cleaned and heated. When the parts are clean, remove them from the tank.

3. Wash the parts with water until you completely remove the alkaline solution.

Axle Assemblies

CAUTION

Close or cover all openings before steam cleaning. Steam can cause component damage. Examples of openings are breathers or air chamber vents.

Steam clean the axle on the outside to remove heavy amounts of dirt.

CAUTION

Dry bearings with clean paper or rags. Do not use compressed air, which can cause abrasive particles to contaminate the bearings. Damage to components and reduced lining life can result.

Dry Cleaned Parts

Immediately after cleaning, use clean paper, rags or compressed air to dry parts.

Prevent Corrosion

NOTE: Parts must be clean and dry before you lubricate them.

- **If you assemble the parts immediately after you clean them:** Lubricate the clean, dry parts with grease to prevent corrosion.
- **If you store the parts after you clean them:** Apply a corrosion-preventive material to all machined surfaces. Store the parts in a special paper or other material that prevents corrosion.

Inspect Parts

It is very important to inspect all parts carefully and completely before you assemble the axle. Check all parts for wear and stress. Replace all damaged parts before assembly.

Tapered Roller Bearings

Inspect the cup, cone, rollers and cage of all tapered roller bearings in the assembly. If any of the following conditions exist, replace the bearing.

- The center of the large diameter end of the rollers is worn level with or below the outer surface.

3 Wheel End

- The radius at the large diameter end of the rollers is worn to a sharp edge. Figure 3.24.
- A visible roller groove is worn in the inner race surfaces of the cup or cone. The groove can be seen at the small or large diameter end of both parts.
- Deep cracks or breaks appear in the surfaces of the cup, cone inner race or rollers. Figure 3.25.
- Bright wear marks appear on the outer surface of the roller cage. Figure 3.26.
- Etching and pitting is present on rollers and surfaces of the cup and cone inner race that touch the rollers. Figure 3.27.
- Spalling or flaking is present on the cup and cone inner race surfaces that touch the roller. Figure 3.28.

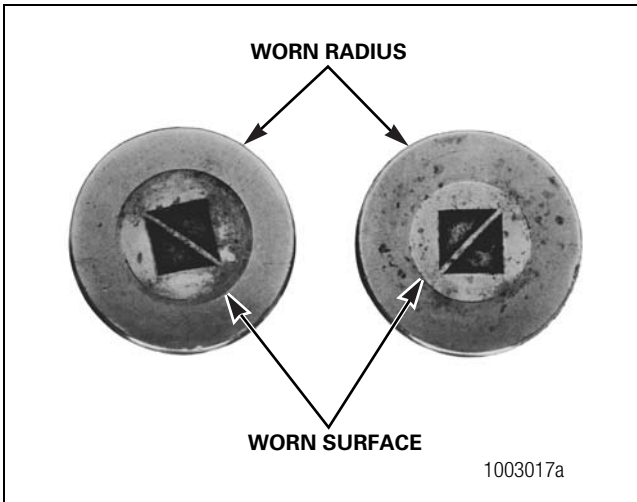


Figure 3.24

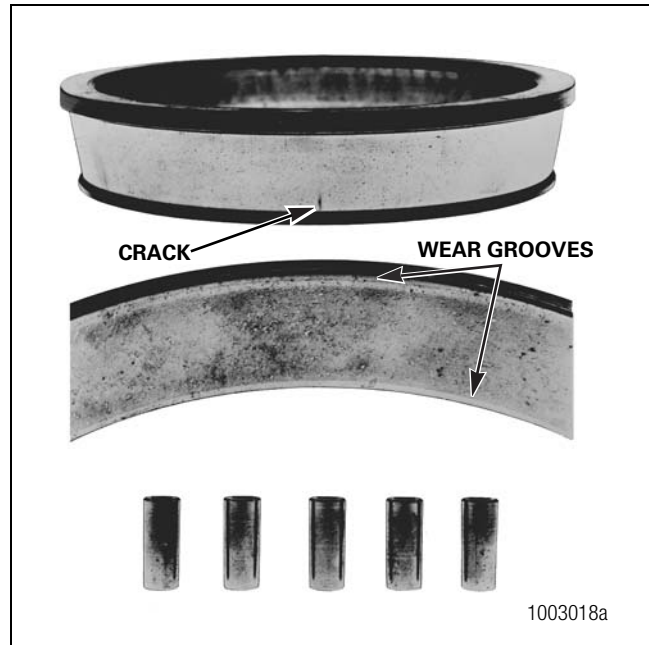


Figure 3.25

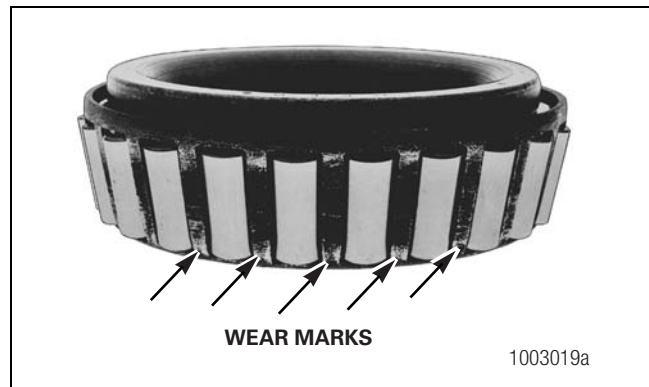


Figure 3.26

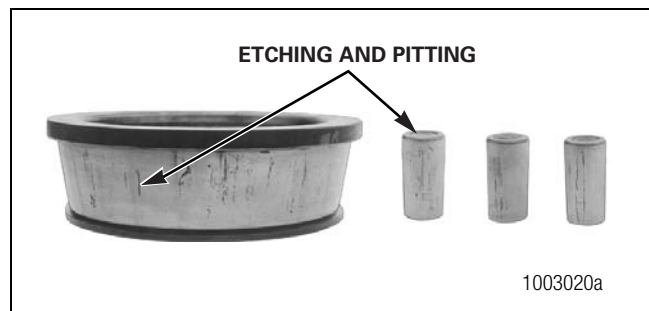


Figure 3.27



Figure 3.28

Inspection

Thrust Button, Thrust Screw and Coupling

NOTE: As a preventive maintenance procedure, you must inspect the internal components of the wheel ends every 24,000 miles (39 000 km) or at every brake reline, whichever comes first.

NOTE: Thrust surfaces can wear a combined total of 0.08-inch (2 mm) from their original position. If the wear is greater than 0.08-inch (2 mm), the wheel end must be disassembled and the internal parts inspected for wear.

1. Refer to the planetary assembly removal procedure in this section.
2. Inspect the thrust button and thrust screw.
 - If a groove or recess is worn into the thrust button face (from contact with the thrust screw): Replace the thrust button.
 - If the slotted end of the thrust screw is worn or shows signs of mushrooming or galling: Replace the thrust screw.

3. Inspect the coupling on the axle shaft for wear. The thickness of a new coupling is 0.24-inch (6 mm), with an allowable surface wear of 0.039-inch (1 mm) along any groove. Measure the thickness of the coupling along the thinnest part of the groove. If any measurement is 0.20-inch (5 mm) or less, replace the coupling.

NOTE: Slide the coupling back on the shaft for inspection. Do not remove it. If the coupling is worn and requires replacement, refer to Section 2.

- If the coupling thickness is less than the limits above: Replace the coupling.
4. Inspect the thrust washer on the end of the spindle for wear and damage, especially around the flange area.
 - If the thrust washer is worn, grooved or shows signs of galling: Replace the thrust washer.

Assembly and Installation

⚠ WARNING

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.

To avoid serious personal injury and possible damage to components, be very careful when using lifting devices.

- Verify that the lifting straps are not damaged.
- Do not subject lifting straps to any shock or drop loading.
- The lifting bolt threads must be fully engaged.

Observe all warnings and cautions provided by the press manufacturer to avoid damage to components and serious personal injury.

3 Wheel End

Brake and Spindle Assembly

NOTE: A new spindle assembly has the seal wiper, bearing spacer and deflector installed.

- **If these parts have been removed from the assembly:** Clean the diameter of the spindle race. Apply Loctite® 549 sealant to the spindle. Heat the parts to 212°F (100°C). Install the parts onto the spindle.
1. Before you install a new spindle assembly, apply Loctite® 680 adhesive on the outer diameter of the thrust washer. Use the correct size seal driver to install the washer. Install the thrust washer into the spindle end. Figure 3.29 and Figure 3.30.

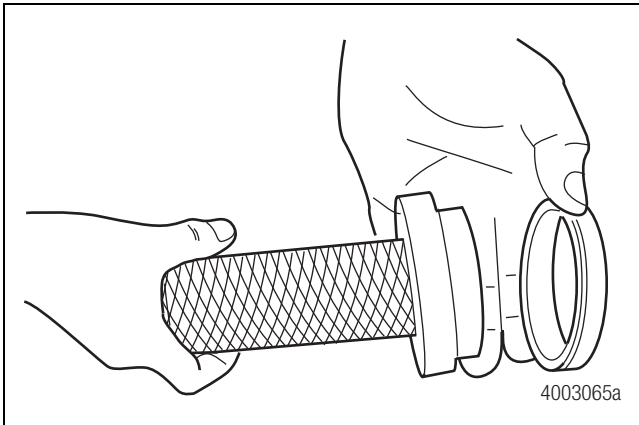


Figure 3.29

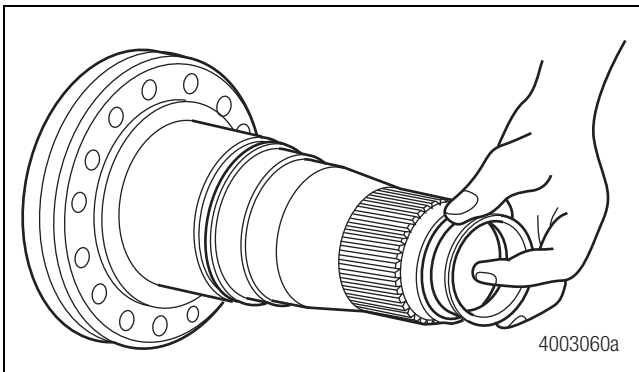


Figure 3.30

2. Thread two 5/8-inch-11 studs (or capscrews with the heads removed) into the housing 180 degrees apart. The studs will support the spindle and brake during assembly. Figure 3.31.

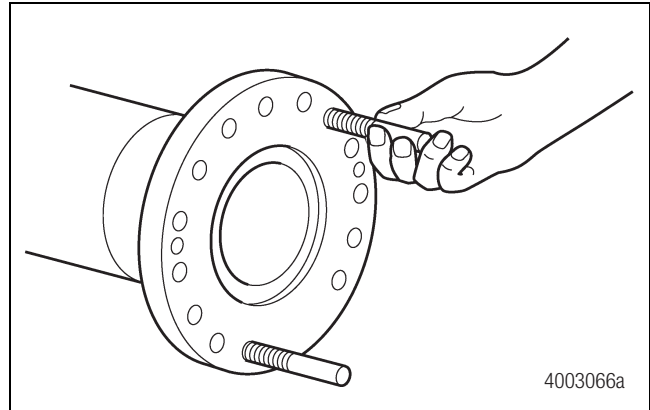


Figure 3.31

3. Apply a bead of Loctite® 5699 adhesive sealant, part number 2297-A-7021, or ThreeBond 1216E grey silicone RTV liquid gasket material under each capscrew hole on the housing flange. The bead must go around the inside of each capscrew hole. Figure 3.32.

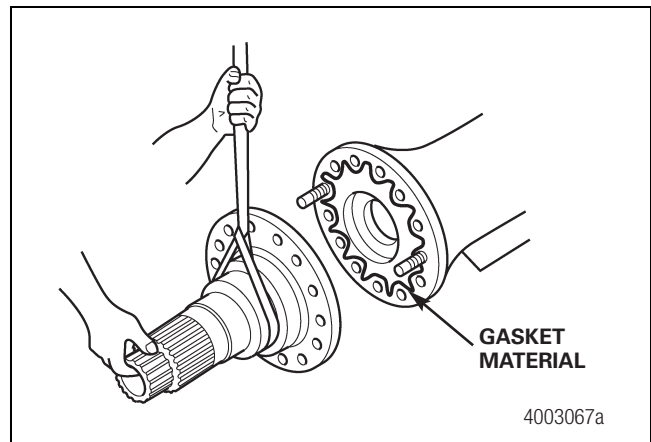


Figure 3.32

4. Use a lifting device to install the spindle and brake assembly. Figure 3.32 and Figure 3.33.

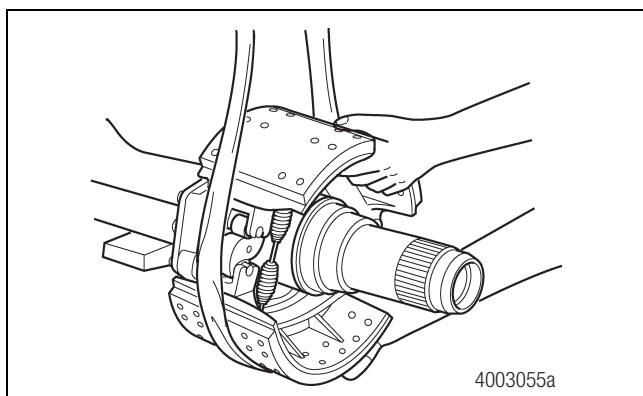


Figure 3.33

5. Position the brake so that the tab on the camshaft bracket lines up with the support tab on the housing.
6. Use a 5/16-inch socket and wrench to install all capscrews except the ones on each side of the top hole for the ABS sensor cable. Tighten the capscrews to 180-230 lb-ft (244-312 N•m). Figure 3.34.

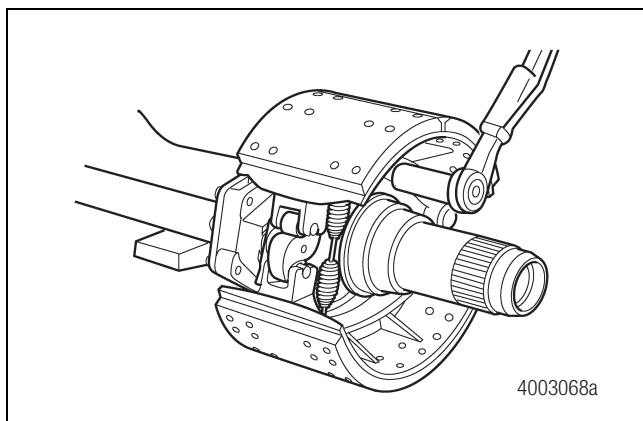


Figure 3.34

7. Install the brake shoe return spring. Refer to Section 5. Figure 5.14.
8. Install the ABS sensor/clip/bracket assembly. Insert the cable through the center open hole.



CAUTION

Do not use an impact wrench to tighten the capscrews. Damage to the ABS sensor can occur.

9. Use a 5/16-inch socket and wrench to install the two remaining spindle and brake capscrews. Use a torque wrench to tighten the capscrews to 180-230 lb-ft (244-312 N•m).

10. Use a 1-1/8-inch socket and wrench to install the brake camshaft bracket-to-housing capscrew and nut. Figure 3.35. Tighten them to 180-230 lb-ft (244-312 N•m).

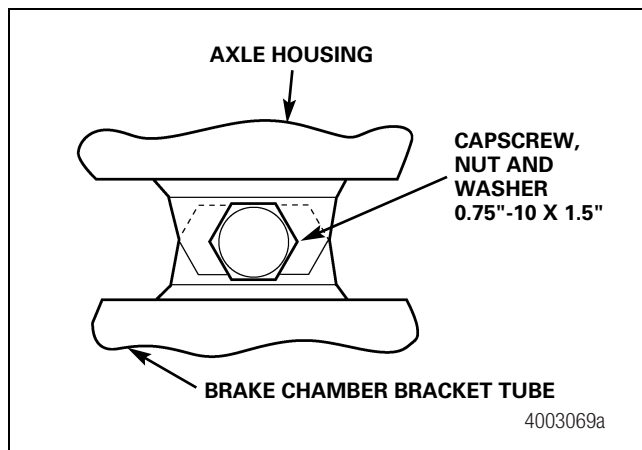


Figure 3.35

Bearing Cups and Seal into the Hub

1. Use a hub bearing cup driver, tool drawing number 5046, to press new bearing cups into the hub. Refer to Section 8, Figure 8.6, for instructions to build the tool.
2. Lubricate the hub bearing with GL-5, SAE 80W/90 gear oil before assembly. Figure 3.36.

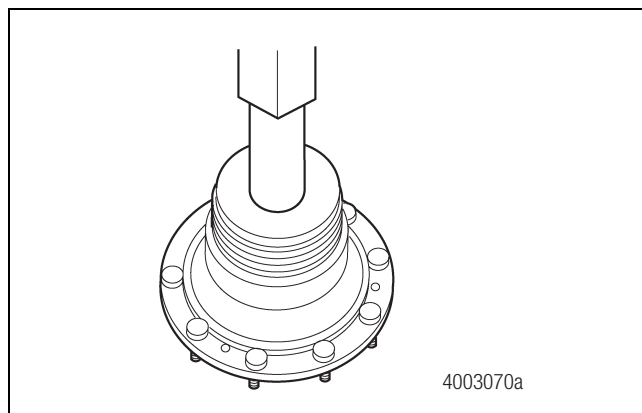


Figure 3.36

3. Install the inner bearing cone prior to installing the oil seal. Use a hub seal driver, tool drawing number 5203, to install the oil seal. Figure 3.37. Refer to Section 8, Figure 8.8, for instructions to build the tool.

3 Wheel End

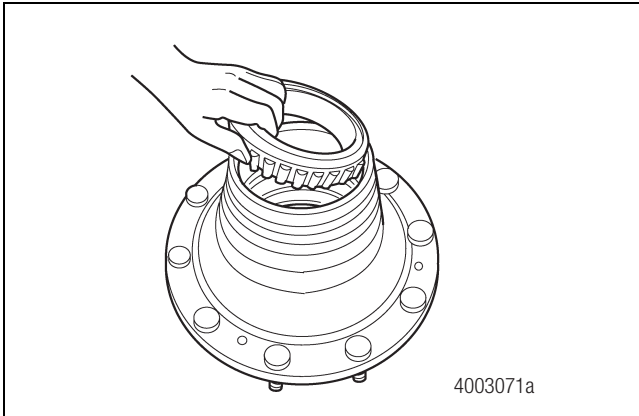


Figure 3.37

4. Use an 8 mm Allen wrench to install the ABS tooth wheel and capscrews. Tighten the capscrews to 20-30 lb-ft (27-41 N•m).



Hub and Ring Gear Assembly

The wheel hub contains the bearing cups, inner bearing cone, seal and ABS tooth wheel.

WARNING

Apply Loctite® 635 retaining compound only to the outer wheel bearing cone inner diameter (I.D.) before you assemble the bearing to the planetary ring gear hub. Spread the compound evenly around the I.D. making sure that there is no Loctite® compound on the thrust surfaces. Do not apply Loctite® compound to the ring gear hub journal outer diameter (O.D.) to prevent any possibility of a hydraulic lock, which can eventually cause the wheel bearing nut to lose clamp load. Serious personal injury and damage to components can result.

1. Apply Loctite® 635 retaining compound only to the outer wheel bearing cone inner diameter (I.D.) before you assemble the bearing to the planetary ring gear hub. Spread the compound evenly around the I.D. making sure that there is no Loctite® compound on the thrust surfaces. Do not apply Loctite® compound to the ring gear hub journal outer diameter (O.D.) to prevent any possibility of a hydraulic lock, which can eventually cause the wheel bearing nut to lose clamp load.

2. Press the outer wheel bearing cone onto the ring gear hub. Ensure the bearing is seated squarely on the planetary ring gear hub. Figure 3.38. Wipe off any excess Loctite® retaining compound. Adhere to the retaining compound cure times during the assembly procedure. Apply GL-5, SAE 80W/90, lubricant to the bearing rollers. Refer to Section 6.

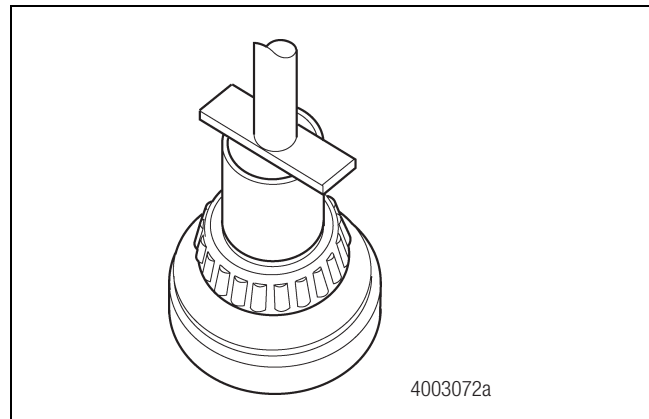


Figure 3.38

3. Use a lifting device to install the wheel hub. With the hub still in the lifting device, install the ring gear and ring gear hub assembly making sure the bearing cone on the ring gear hub assembly stays in place. Figure 3.39 and Figure 3.40.

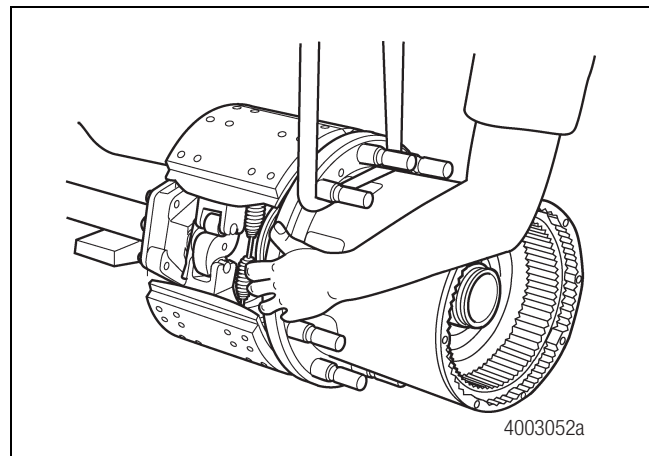


Figure 3.39

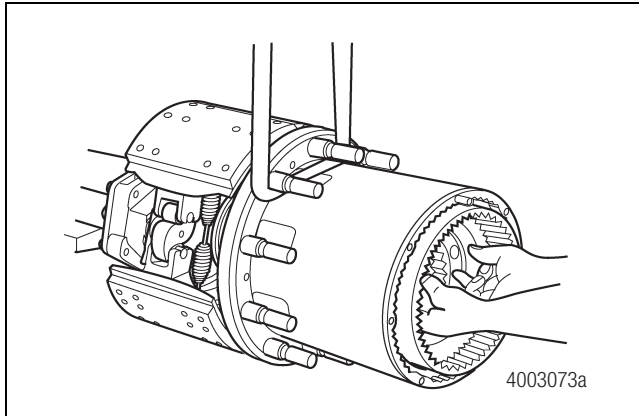


Figure 3.40

Adjust the Wheel Bearings

⚠ WARNING

When you adjust a wheel bearing, always use a torque wrench with the correct size socket to tighten the adjusting nut. Do not hit the adjusting nut with a hammer, or with a hammer and chisel or drift. This can damage the adjusting nut and prevent correct bearing adjustment, which can cause the wheel to separate from the vehicle during operation. Serious personal injury and damage to components can result.

NOTE: After 1,000 miles (1620 km), the hub bearings will fully seat. However, during disassembly, you may be able to hand-tighten the bearings. This is a normal occurrence and does not indicate that the bearings have loosened during operation.

1. Install a new lock washer and wheel bearing adjusting nut. Figure 3.41. Verify that the lock washer is on the shoulder of the adjusting nut. Figure 3.42.

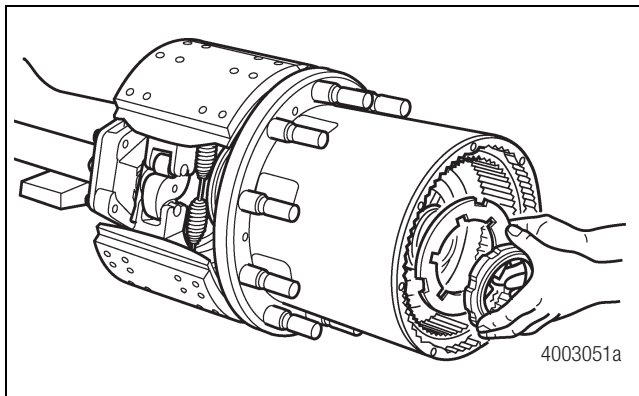


Figure 3.41

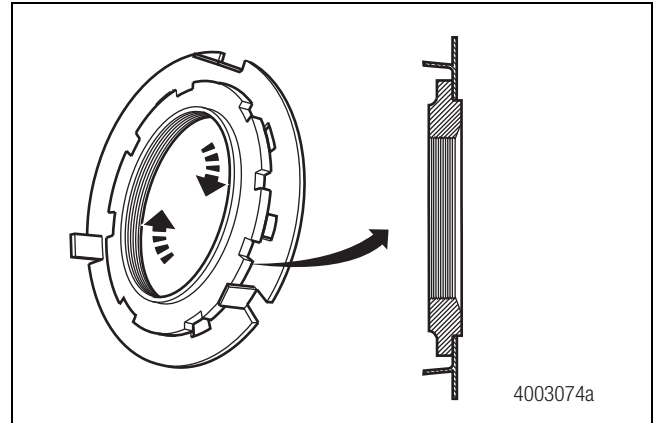


Figure 3.42

2. Use a wheel bearing adjusting nut spanner socket, tool drawing number 5231, to tighten the adjusting nut to 290 lb-ft (393 N•m). Do not use a hammer and chisel or drift to tighten the adjusting nut. Refer to Section 8, Figure 8.9, for instructions to build the tool. ⚠
3. After you tighten the adjusting nut to specification, verify that the lock washer moves freely between the nut and ring gear hub.
 - If the lock washer does not move freely: Loosen the adjusting nut and realign the lock washer.

⚠ 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.

4. While rotating the wheel hub, strike the hub several times with a brass or synthetic mallet to seat the bearings.
5. Rotate the wheel hub assembly fully, back and forth, several times. Recheck the adjusting nut torque. Back off the adjusting nut 1/16 turn. This step is important and either the wheel studs or the planetary spider capscrew holes may be used as potential references for backing off the adjusting nut. Figure 3.43.
 - If the lock washer tangs do not align with the adjusting nut: Back off or tighten, whichever is closest, the adjusting nut only enough to align two opposing tangs.

3 Wheel End

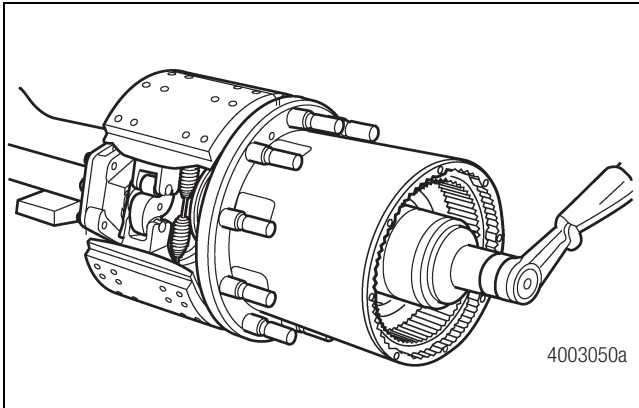


Figure 3.43

NOTE: This step is important to ensure correct wheel bearing adjusting nut retention.

6. Bend the two opposing lock washer tangs into the grooves in the wheel bearing adjusting nut. The tangs should be at a 45-degree angle to the ring gear hub. Figure 3.44.

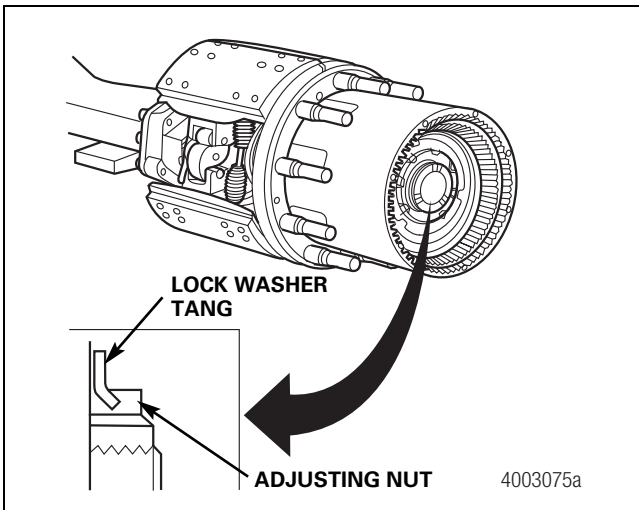


Figure 3.44

7. Verify that the ABS sensor contacts the tooth wheel and there is some slack in the sensor cable. If necessary, push the sensor further outboard until it contacts the tooth wheel.
8. Install the rubber grommet into the housing flange hole to protect the ABS cable.

Axle Shaft and Sun Gear

NOTE: Some axles may have unequal length axle shafts. Measure the shaft lengths. If they are different lengths, the difference is approximately 1.25-inches (31.8 mm). To install them correctly, look into the carrier pinion from the rear toward the front of the bus. Install the short shaft on the RIGHT. Install the long shaft on the LEFT.

1. Install the coupling and sun gear onto the axle shaft. Figure 3.45.

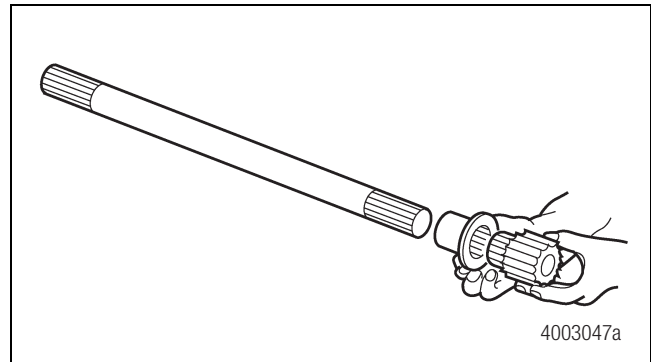


Figure 3.45

2. Clamp the sun gear and shaft assembly in a vise with a soft metal cover to protect the sun gear teeth. Apply Loctite® 242 threadlocker to the threads of the sun gear-to-shaft capscREW. Install the capscREW and tighten to 150 lb-ft (203 N•m). Figure 3.46. **ⓘ**

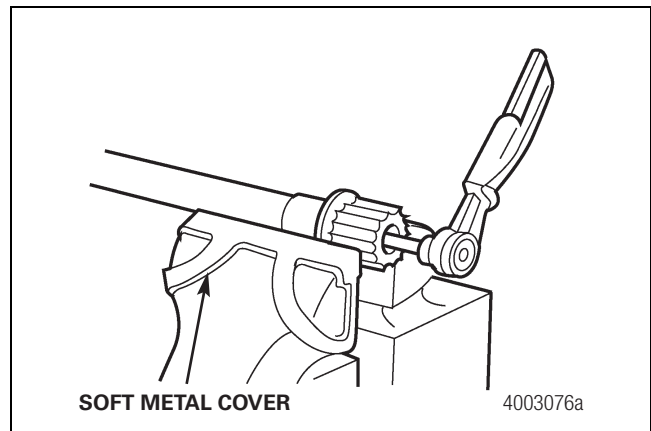


Figure 3.46

3. Install the shaft coupling sun gear assembly into the axle. Figure 3.47.

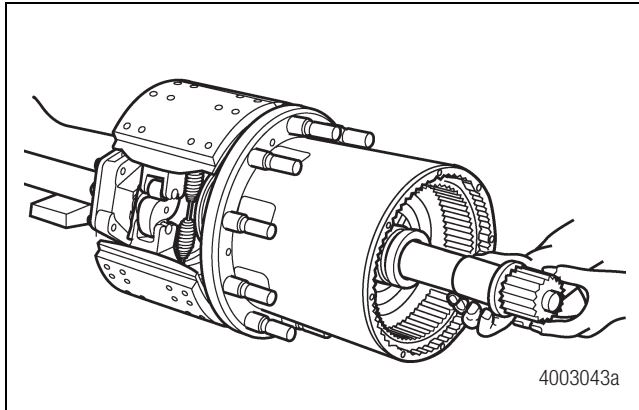


Figure 3.47

4. Install the thrust button into the end of the sun gear.
Figure 3.48.

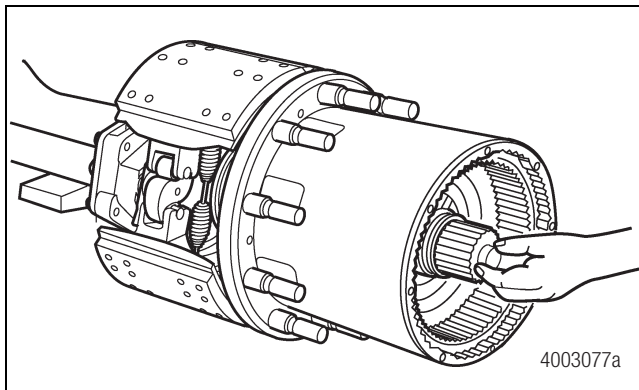


Figure 3.48

Planetary Spider Assembly

1. Apply a continuous 1/8-inch (3.2 mm) diameter bead of Loctite® 5699 adhesive sealant, part number 2297-A-7021, or ThreeBond 1216E grey silicone RTV sealant completely around the spider in the groove between the flange and splines, and on the spider face at the hole bolt circle diameter going around the inside of each hole. Figure 3.49.

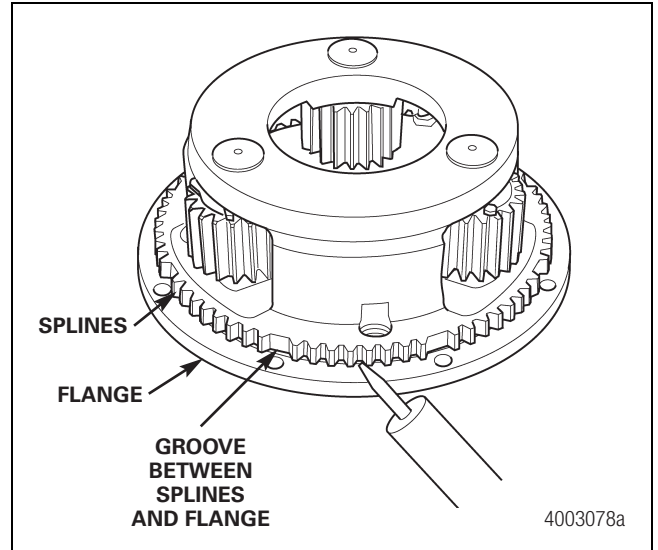


Figure 3.49

2. Apply Loctite® 242 threadlocker to the planetary spider-to-hub capscrews. Use a 15 mm socket and wrench to install the planetary spider assembly and capscrews. Tighten the capscrews to 44-55 lb-ft (60-75 N•m). Figure 3.50. 

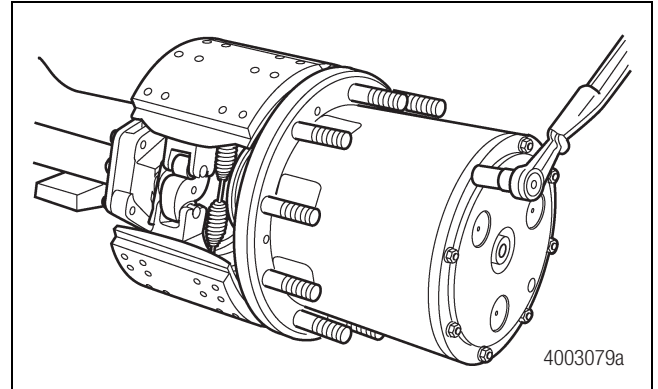


Figure 3.50

3. Use a 12 mm socket and wrench to remove the thrust screw and nut from the center of the spider. Clean the screw threads.
4. Apply Loctite® 242 threadlocker to the outer threads of the thrust screw and install the thrust screw. Install the locking nut onto the thrust screw, but do not tighten.
5. Use a 12 mm Allen wrench to turn the thrust screw CLOCKWISE until it contacts the thrust button to ensure that the sun gear and coupling fully contact the spindle thrust washer. Do not overtighten the thrust screw against the thrust button. Figure 3.51.

3 Wheel End

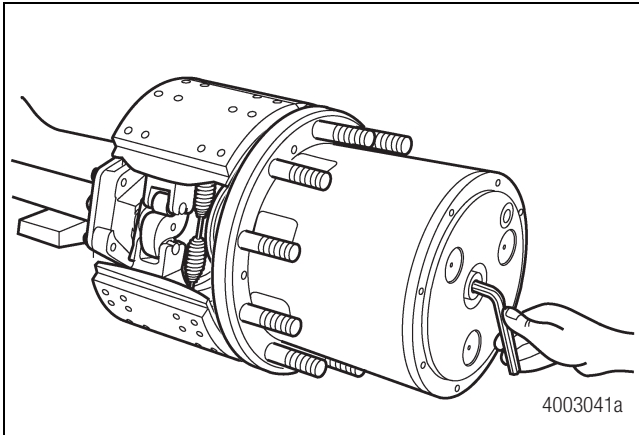


Figure 3.51

6. Back off the thrust screw 3/4 to one turn. This will produce a 0.044-0.059-inch (1.12-1.50 mm) gap between the thrust screw and thrust button surfaces.
7. Use a thrust screw locking nut, tool drawing number TC-75821, to attach onto the end of a torque wrench and install onto the locking nut. Refer to Section 8, Figure 8.10, for instructions to build the tool.
8. Insert an Allen wrench through the opening in the tool and into the thrust screw recess. Figure 3.52.

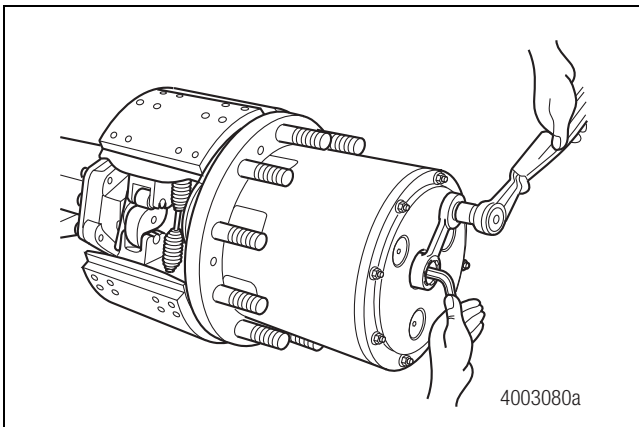


Figure 3.52

9. While holding the thrust screw stationary with the Allen wrench, tighten the locking nut to 150 lb-ft (203 N•m). Do not allow the thrust screw to turn, since this will change the gap.



10. Use a lifting device to install the brake drum. When you install hub piloted drums, always install the drum with the pilot in the 12 o'clock position to reduce assembly runout and minimize the possibility of a system vibration. Use a 16 mm socket and wrench to install the five cap screws and tighten them to 44-55 lb-ft (60-70 N•m). Figure 3.53.

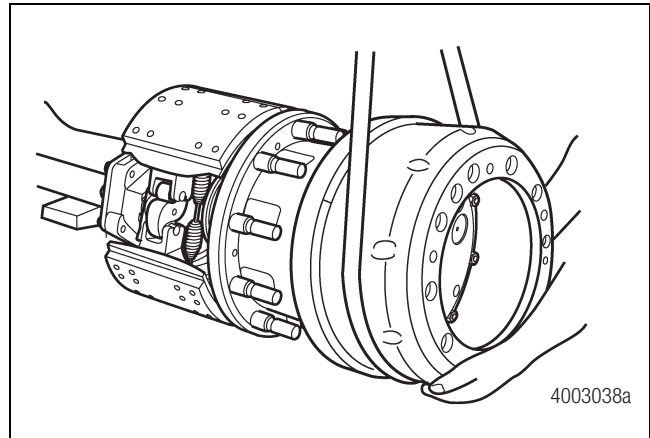


Figure 3.53

11. Remove the oil level cap screw and copper washer located in the center of the thrust screw. Do not remove the thrust screw and locknut, which will change the gap. Figure 3.54.

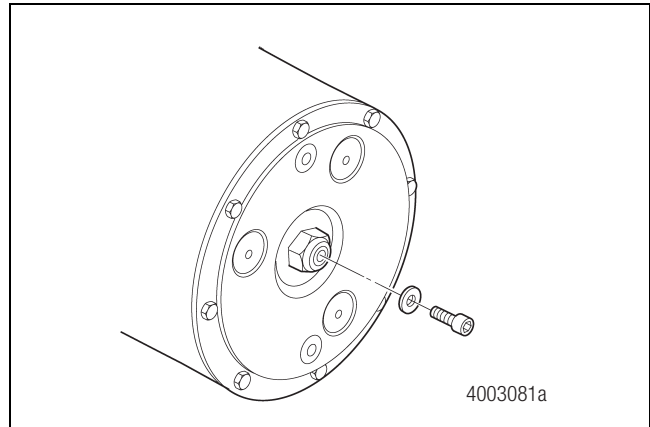


Figure 3.54

12. Fill the wheel ends and the carrier center section with GL-5, SAE 80W/90 gear oil. Refer to Section 6.
13. Install the copper washer and oil level cap screw. Tighten them to 8 lb-ft (11 N•m). Figure 3.54.

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.

Removal and Disassembly

Carrier

WARNING

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.

1. Park the vehicle on a level surface. Block the wheels not being serviced to prevent the vehicle from moving.
2. Raise the vehicle so that the wheels of the axle to be serviced are off the ground. Support the vehicle with safety stands.
3. Remove the drain plug from the bottom of the axle housing. Drain the lubricant.
4. Rotate the wheel ends so the drain plug in the spider is at the BOTTOM. Remove the plug and drain the lubricant from both wheel ends.
5. Disconnect the driveline universal joint from the pinion input yoke on the carrier.
6. Disassemble the planetary wheel ends and remove the axle shafts. Refer to Section 3.
7. Place a hydraulic roller jack under the carrier to support the assembly. Figure 4.1.

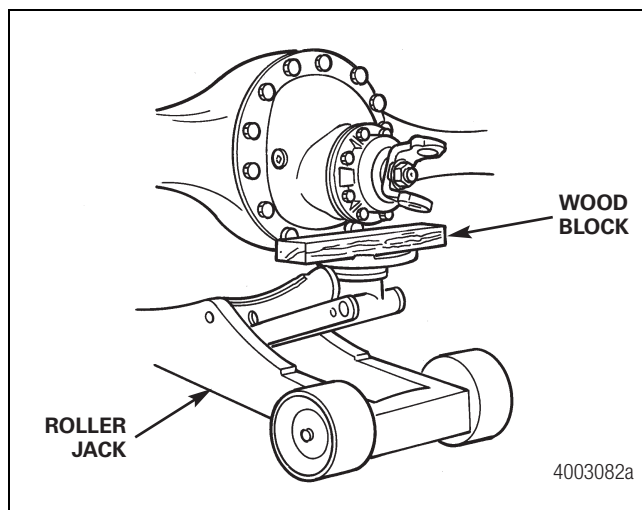


Figure 4.1

8. Use a 22 mm socket and wrench to remove all of the carrier-to-housing stud nuts and washers, except for the two at the top of the carrier.
9. Loosen, but do not remove, the remaining two carrier-to-housing stud nuts.
10. Use a pry bar to loosen the carrier in the axle housing. Take care not to damage the housing flange. Remove the top two carrier-to-housing stud nuts and washers.
11. Carefully remove the carrier from the axle housing. Use the pry bar to move it onto the hydraulic roller jack.
12. Use a lifting device to place the carrier into a repair stand. Figure 4.2.

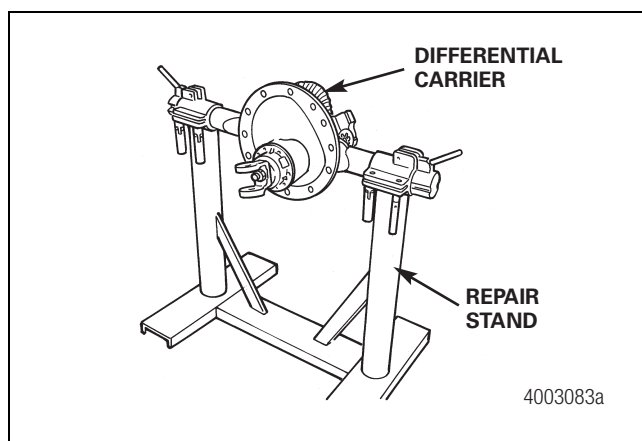


Figure 4.2

4 Carrier

Pinion Yoke

1. Before you remove the pinion shaft nut, check for the locations of the two flange stakes at the top of the nut.

CAUTION

Use a die grinder to remove the two flange stakes at the top of the pinion shaft nut. Do not use a chisel and hammer. Damage to the pinion shaft can result.

2. Use a die grinder to carefully remove the flange stakes without damaging the pinion's threads or stem. Do not use a chisel and hammer. Figure 4.3.

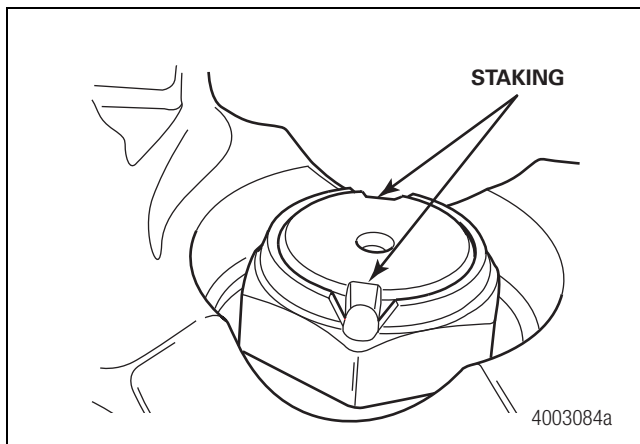


Figure 4.3

3. Install a flange or yoke bar to hold the yoke stationary while you are removing it. Figure 4.4.

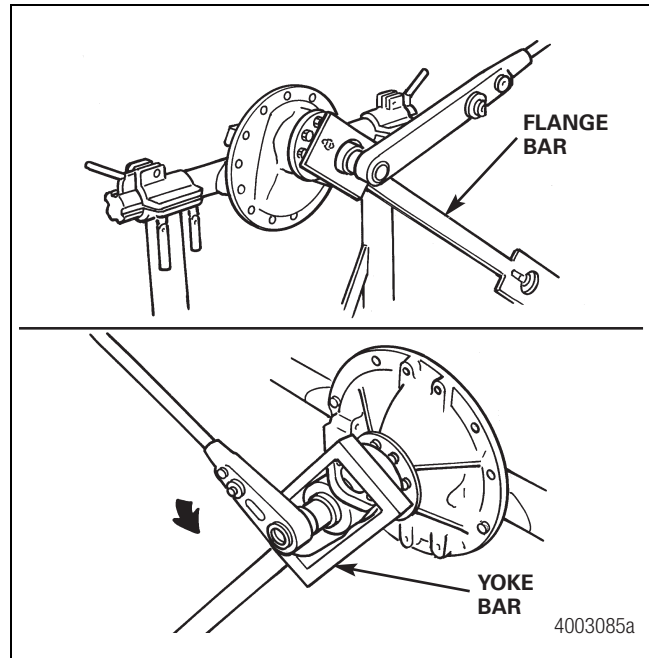


Figure 4.4

4. Loosen the yoke nut with a breaker bar and a 2-1/8-inch socket or an impact wrench. Once the nut is loose, remove it by hand, if possible.
 - **If you use an impact wrench:** Use the wrench only to loosen the yoke nut. Do not allow the nut to spin against the end of the shaft. Damage to the lead threads on the shaft can result.

CAUTION

Use a yoke or flange puller to loosen and remove the yoke or flange. Do not use a hammer or mallet, which can cause runout that affects alignment. Damage to components can result.

5. Use a yoke or flange puller to remove the yoke or flange. Do not use a hammer or mallet. Figure 4.5. Remove the pinion shaft oil seal. Discard the oil seal.

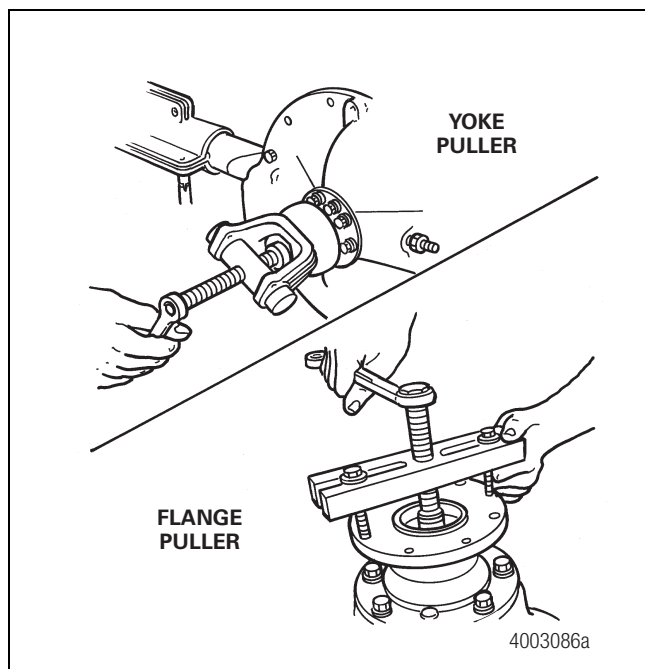


Figure 4.5

Differential and Gear Assembly

NOTE: The differential case halves are welded together. The differential assembly is welded to the ring gear. The differential-ring gear assembly cannot be serviced. You must replace it as an entire assembly and replace the pinion gear.

- **If any differential carrier components are damaged:** Meritor recommends that you replace the carrier assembly with a new unit.

1. Remove the lock plate that holds the differential bearing adjusting ring. Figure 4.6.

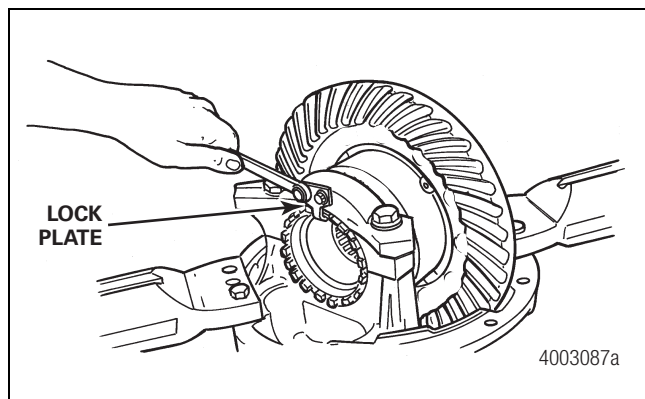


Figure 4.6

2. Use a 24 mm socket and wrench to loosen the differential bearing cap bolts. If necessary, apply heat to the carrier housing to loosen the Loctite® adhesive bond. Figure 4.7.

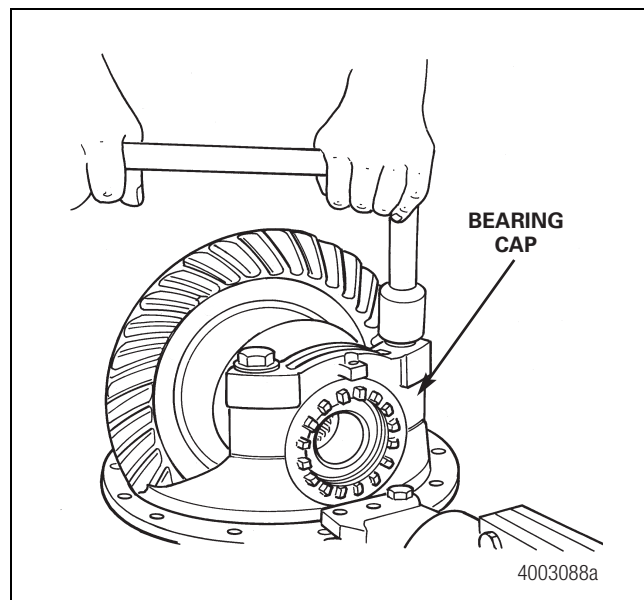


Figure 4.7

3. Loosen the differential bearing adjusting ring. Figure 4.8.

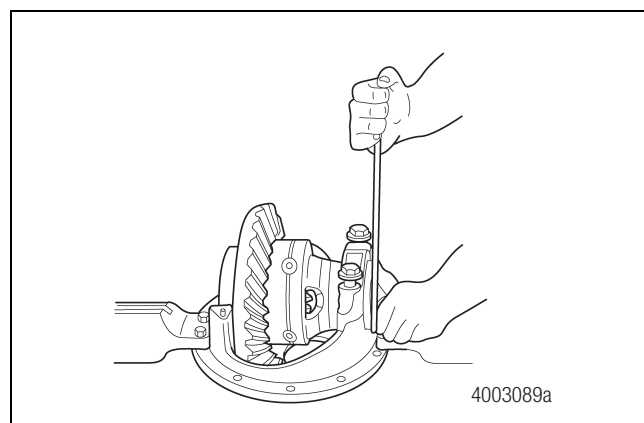


Figure 4.8

4. Remove the bolts, bearing caps and adjusting ring.

4 Carrier

WARNING

To avoid serious personal injury and possible damage to components, be very careful when you use lifting devices.

- Verify that the lifting straps are not damaged.
 - Do not subject lifting straps to any shock or drop loading.
 - The lifting bolt threads must be fully engaged.
5. Use a lifting device to remove the differential assembly.
Figure 4.9.

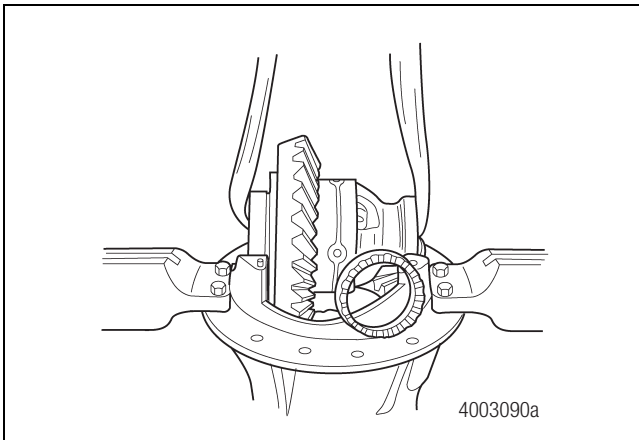


Figure 4.9

6. Use a bearing puller to remove the differential bearing cones.
Figure 4.10.

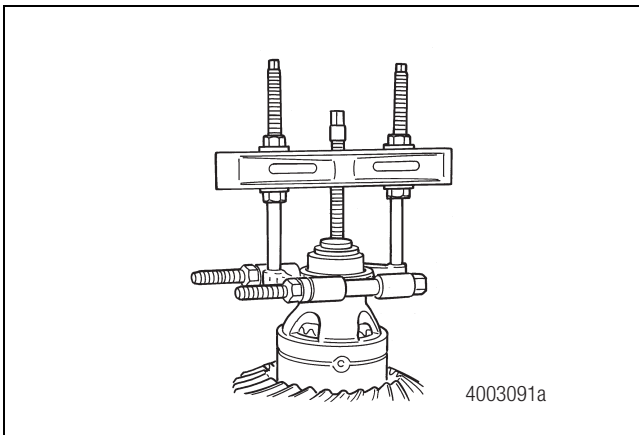


Figure 4.10

Pinion

WARNING

Observe all warnings and cautions provided by the press manufacturer concerning press operation to avoid serious personal injury and possible damage to components.

1. Press the pinion out of the carrier housing, which will remove the outer bearing cone from the pinion. Save the shim that was under the outer bearing cone. Figure 4.11.

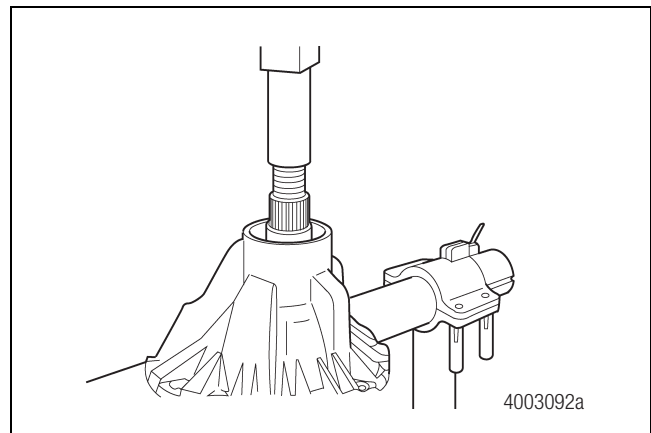


Figure 4.11

2. Use the correct puller to remove the inner bearing cone from the pinion. Figure 4.12.

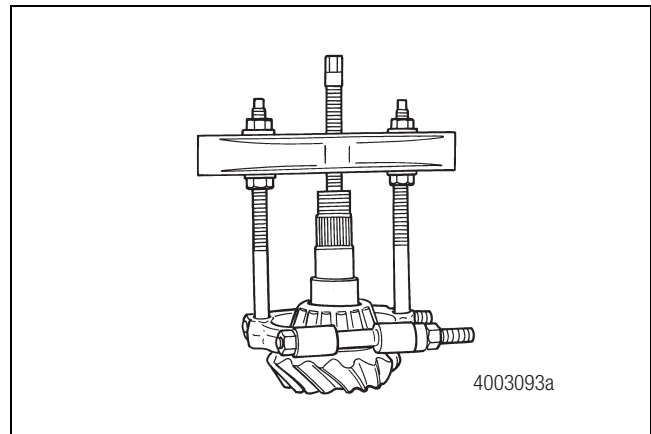


Figure 4.12

3. Use the correct puller and driver to remove the seal, and inner and outer bearing cups from the carrier housing. Save the shim that is under the inner bearing cup. Figure 4.13.

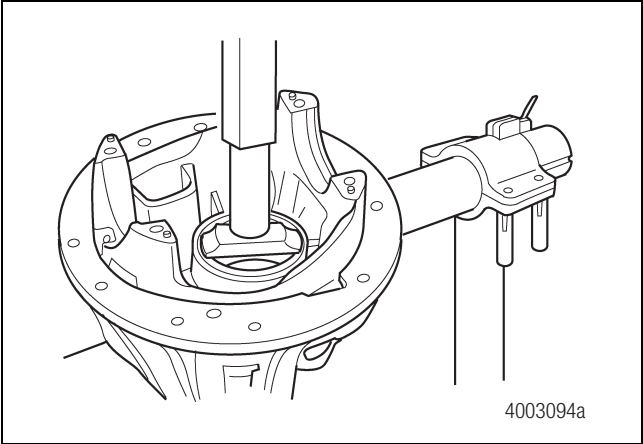


Figure 4.13

Assembly

Prepare Parts for Assembly

Refer to Section 3 for parts cleaning and inspection procedures.

Carrier

NOTE: The differential case halves are welded together. The differential assembly is welded to the ring gear. If the ring gear is worn or damaged, replace the ring gear and differential assembly as a complete unit and replace the pinion.

Table A: Machined Distance Specification

Machined distance on the new bevel set is larger than the old bevel set

Machined distance on the new bevel set is smaller than the old bevel set

5.8248-inches (147.95 mm) – 5.8228-inches (147.90 mm) = 0.0020-inch (0.05 mm) difference

Install a 0.0020-inch (0.05 mm) shim.

Add a weld or install a new shim.

Installation and Adjustment

Pinion Bearing Shims and Pinion

NOTE: The machined distance is engraved on the pinion head.

1. Compare the engraved machined distance from the ring gear axis to the inner pinion bearing shoulder of the old bevel gear set against the engraved machined distance of the new bevel gear set.
 - **If the engraved machined distance of the new bevel set is larger than the old bevel set:** Install a shim that equals the difference between the new and old bevel set. Refer to Table A. Figure 4.14.
 - **If the engraved machined distance of the new bevel set is smaller than the old bevel set:** Install a new shim. Refer to Table A. Figure 4.14.

4 Carrier

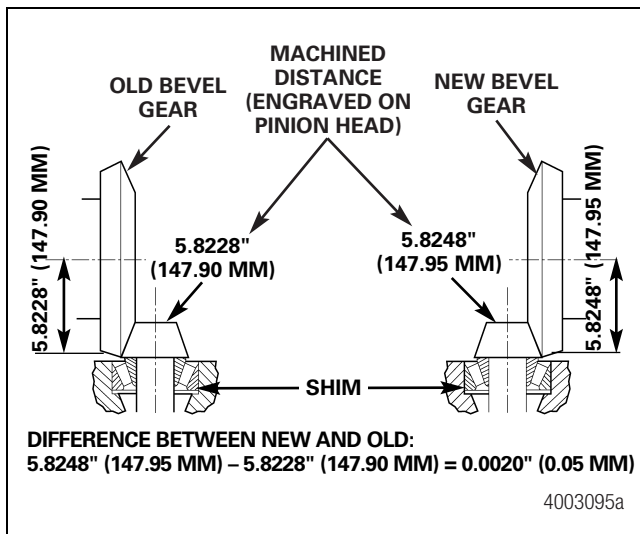


Figure 4.14

2. Use a grinding machine to adjust the inner shim between the inner bearing cup and the carrier housing.
3. Use a pinion bearing cup driver, tool drawing number 5023, to install the shim and press the inner bearing cup into the carrier housing. Figure 4.15. Refer to Section 8, Figure 8.3, for instructions to build the tool.

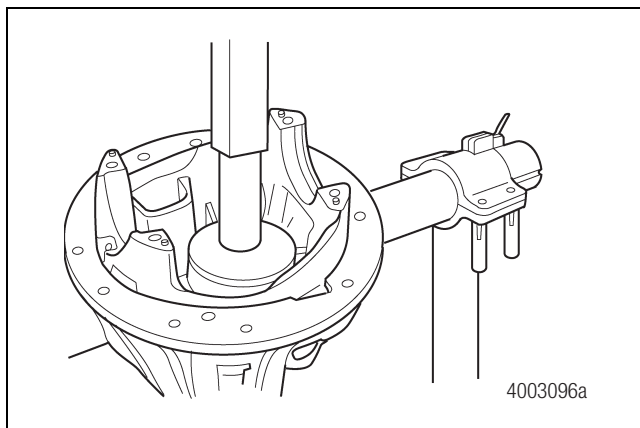


Figure 4.15

4. Use a pinion bearing cup driver, tool drawing number 5023, to install the outer bearing cup into the carrier housing. Figure 4.16. Refer to Section 8, Figure 8.3, for instructions to build the tool.

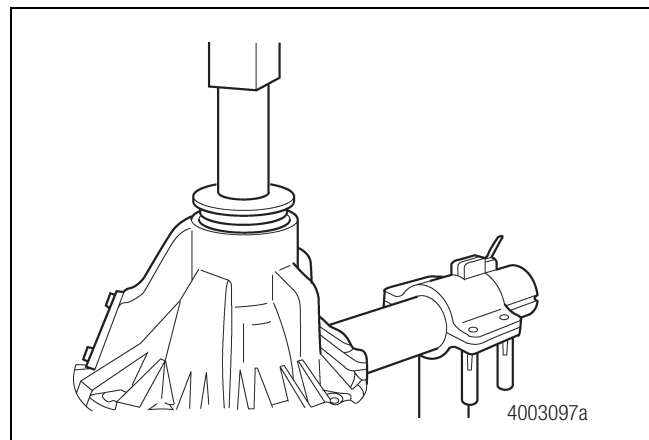


Figure 4.16

5. Use a pinion bearing cone driver, tool drawing number 5027, to press the inner bearing cone onto the pinion. Figure 4.17. Refer to Section 8, Figure 8.4, for instructions to build the tool.

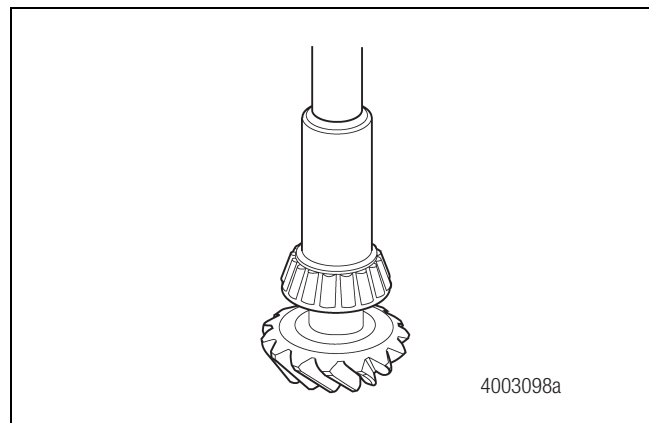


Figure 4.17

6. Install the pinion into the carrier housing. Use a pinion positioner, tool drawing number 5020, to secure the pinion. Figure 4.18. Refer to Section 8, Figure 8.1, for instructions to build the tool.

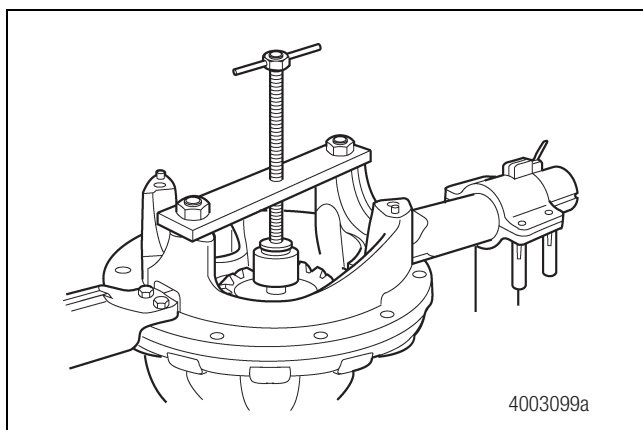


Figure 4.18

7. Measure the thickness of the old outer shim that goes under the outer pinion bearing cone. Adjust the thickness of the outer shim by the same amount as the inner shim.

For example, if 0.002-inch (0.05 mm) was removed from the inner shim, then 0.002-inch (0.05 mm) should also be removed from the outer shim.

8. Use a pinion bearing cone driver, tool drawing number 5027, to install the outer shim and press the outer bearing cone onto the pinion. Figure 4.19. Refer to Section 8, Figure 8.4, for instructions to build the tool.

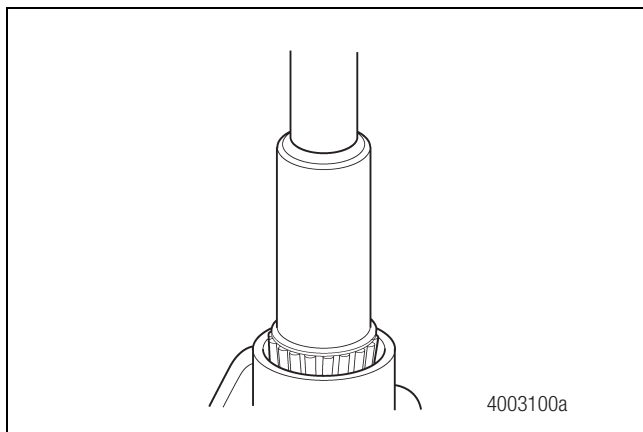


Figure 4.19

Pinion Bearing Preload

NOTE: Do not install the pinion oil seal at this time. It may be necessary to remove the pinion to adjust the contact pattern.

1. Apply a coating of lubricating oil to the pinion shaft. Slide the flange or yoke onto the shaft. If necessary, press the flange or yoke slightly to fully seat it. Install the pinion shaft nut.
2. Place a flange or yoke bar into position. Tighten the pinion shaft nut to 885-1032 lb-ft (1200-1400 N•m). Figure 4.20. 

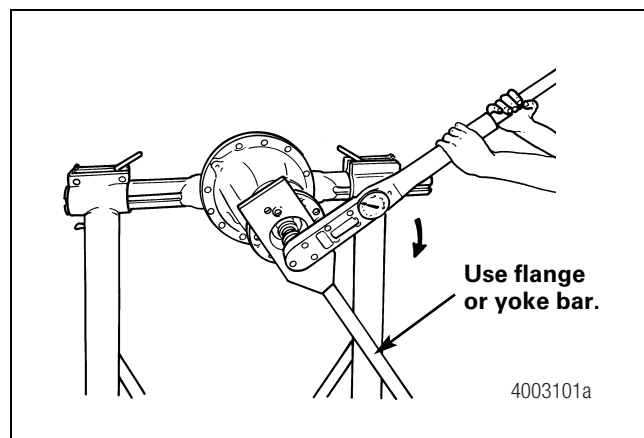


Figure 4.20

3. Check the pinion bearing preload. Attach a lb-in torque wrench to the pinion nut. Rotate the pinion. The value should be 38-48 lb-in (4.2-5.4 N•m). If not, adjust the outer shim accordingly. Figure 4.21. 
 - **If preload is less than 38-48 lb-in (4.2-5.4 N•m):** Use a thinner shim.
 - **If preload is more than 38-48 lb-in (4.2-5.4 N•m):** Use a thicker shim.

4 Carrier

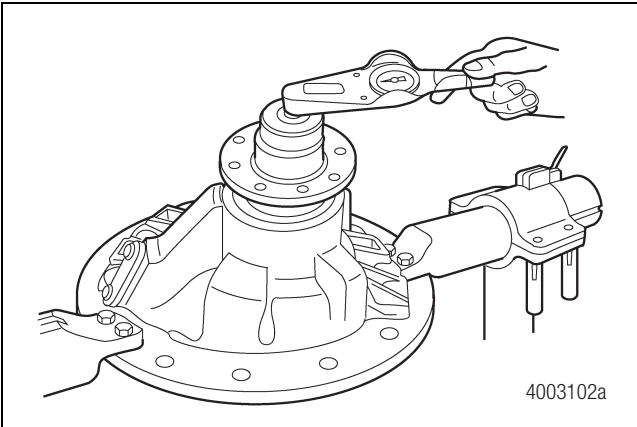


Figure 4.21

Differential Bearing Shim

1. Use a differential bearing cone driver, tool drawing number 5030, or a sleeve to press the bearing cones on the differential case. Figure 4.22. Refer to Section 8, Figure 8.5, for instructions to build the tool.

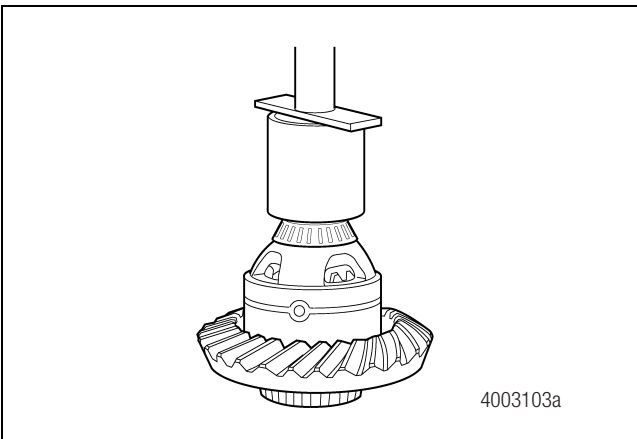


Figure 4.22

2. Measure the thickness of the old differential bearing shim. Adjust the shim thickness to the same value as the inner pinion bearing shim. For example, if the inner pinion bearing shim was decreased by 0.002-inch (0.05 mm), increase the differential bearing shim by 0.002-inch (0.05 mm).

Differential and Gear Assembly

1. Install the differential assembly and shim into the carrier housing. Place the shim between the bearing on the backside of the gear and the carrier housing.

2. Install the bearing caps and the differential bearing adjusting ring. Turn the ring so it just contacts the bearing.
3. Use a 24 mm socket and wrench to install the bearing cap bolts. Tighten the bolts to 123-137 lb-ft (167-186 N•m). Figure 4.23. 

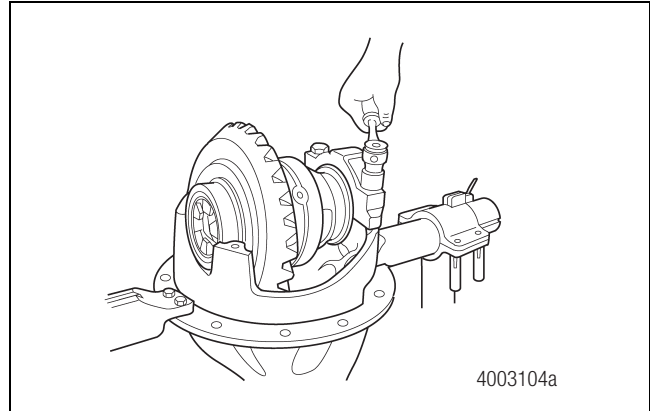


Figure 4.23

Differential Bearing Preload

1. Use a micrometer to measure the unloaded distance between the bearing caps. Figure 4.24.

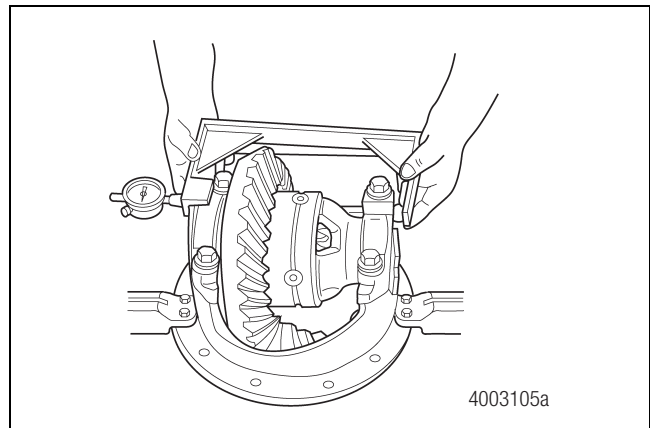


Figure 4.24

2. Loosen the bolts and tighten the adjusting ring to expand the distance.
3. Tighten the bolts to 123-137 lb-ft (167-185 N•m). Measure the distance between the bearing caps. The differential bearing preload is set correctly when the distance between the bearing caps under load has expanded 0.137-0.017-inch (0.3479-0.4318 mm) from the unloaded condition. 

Ring Gear Backlash

1. Measure the ring gear backlash. Attach a dial indicator onto the mounting flange of the carrier. Figure 4.25.

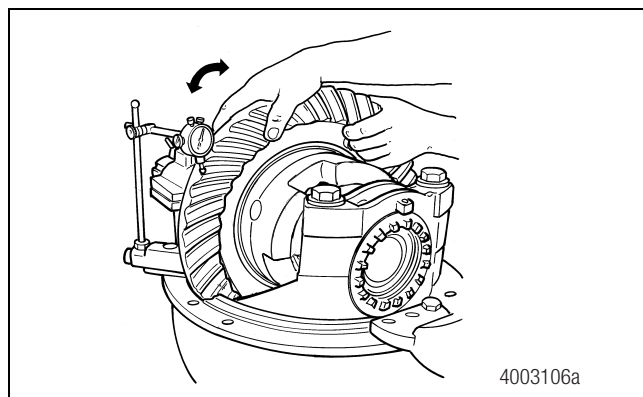


Figure 4.25

2. Adjust the dial indicator so that the plunger or pointer is against the tooth surface.
3. Adjust the indicator dial to ZERO. Hold the drive pinion in position.
4. While you read the dial indicator, rotate the differential and ring gear a small amount in both directions against the drive pinion teeth. The backlash reading should be within 0.004-0.008-inch (0.1016-0.2032 mm).
5. If necessary, remove or add differential shims to readjust the backlash.

Check the Gear Tooth Contact Pattern

1. Apply a marking compound to approximately 12 gear teeth of the ring gear. Rotate the ring gear so that the 12 gear teeth are next to the drive pinion. Figure 4.26.

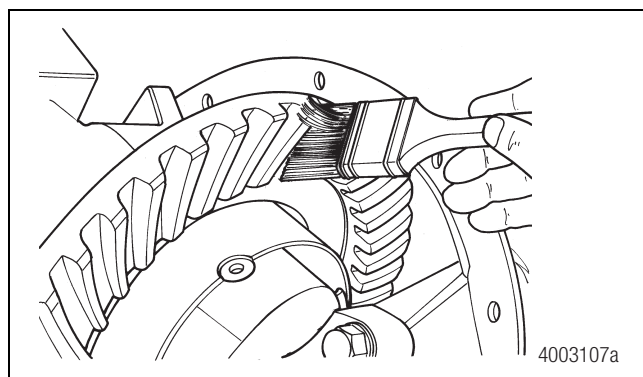


Figure 4.26

2. To obtain a tooth contact pattern, rotate the ring gear forward and backward until the 12 marked gear teeth go past the drive pinion six times. Repeat this procedure, if necessary, to get a clearer pattern. The following illustration shows a good gear contact pattern. Figure 4.27.

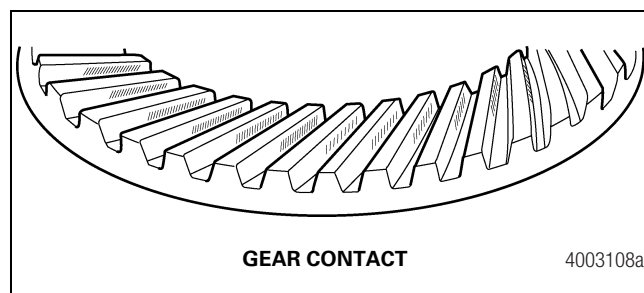


Figure 4.27

- **If the contact is too much toward the toe or small inside end of the gear:** Increase the gear backlash. Make the differential bearing shim thinner to move the gear away from the pinion. Figure 4.28.

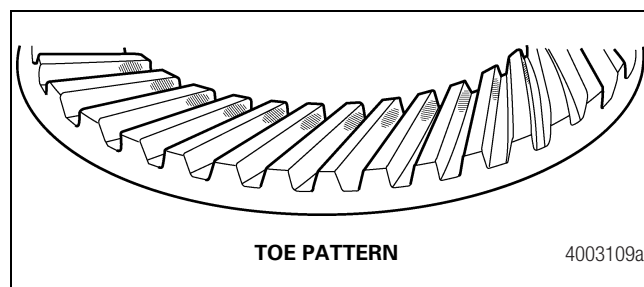


Figure 4.28

- **If the contact is too much toward the heel or large outside end of the gear:** Decrease the gear backlash. Make the differential bearing shim thicker to move the gear toward the pinion. Figure 4.29.

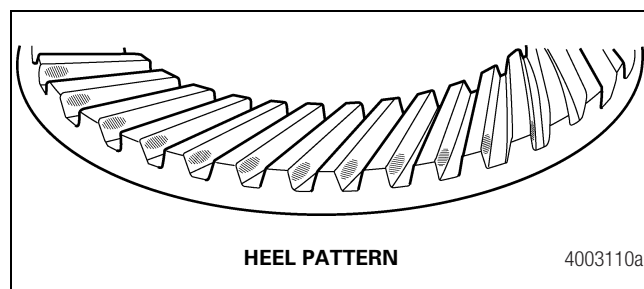


Figure 4.29

4 Carrier

- **If the contact is too low on the gear:** The pinion was installed too deeply into the carrier. Decrease the inner pinion shim to move the pinion away from the gear. Figure 4.30.

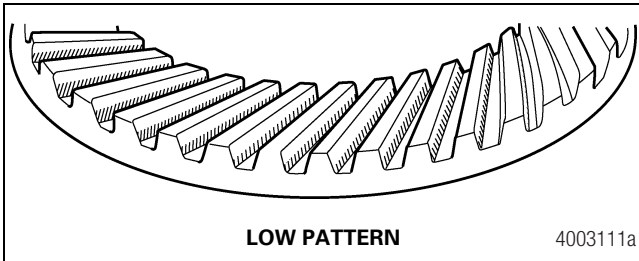


Figure 4.30

- **If the contact is too high on the gear:** The pinion was not installed deep enough into the carrier. Increase the inner pinion shim to move the pinion toward the gear. Figure 4.31.

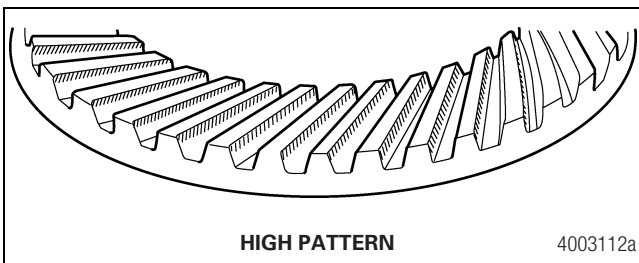


Figure 4.31

3. When the tooth patterns are correct, use a 24 mm socket to remove the differential bearing cap bolts.

⚠ WARNING

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.

4. Apply Loctite® 242 threadlocker to the bolt threads and tighten the bolt to 123-137 lb-ft (167-186 N·m). 

Pinion Seal

1. After you correctly set the gear contacts and backlash, remove the pinion yoke.

2. Inspect the seal bore for scratches, nicks and burrs that may cause a seal leak. Small nicks or burrs may be removed using a 400 grit or finer emery cloth. Severe damage to the bore requires replacing the carrier.
3. Apply Meritor specification O-616 grease to the seal bore.
4. On a new pinion seal, pack the seal deflector, the space between the two seal lips, with Meritor specification O-616 grease. Figure 4.32.

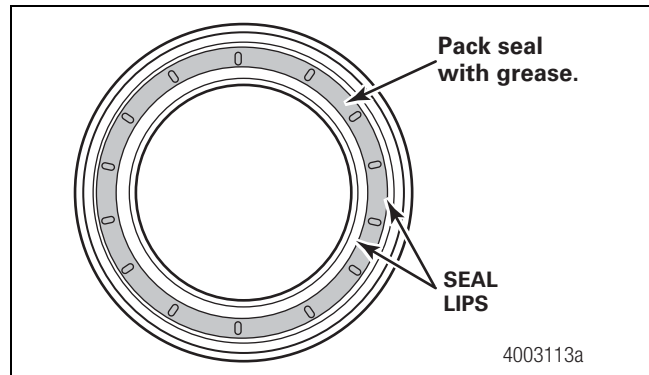


Figure 4.32

5. Use a pinion seal driver, tool drawing number 5088, to install the pinion seal. Refer to Section 8, Figure 8.7, for instructions on how to build the tool.

⚠ WARNING

Observe all warnings and cautions provided by the press manufacturer concerning press operation to avoid serious personal injury and possible damage to components.

6. Press until the metal flange of the seal is seated to the top of the bore. Figure 4.33.

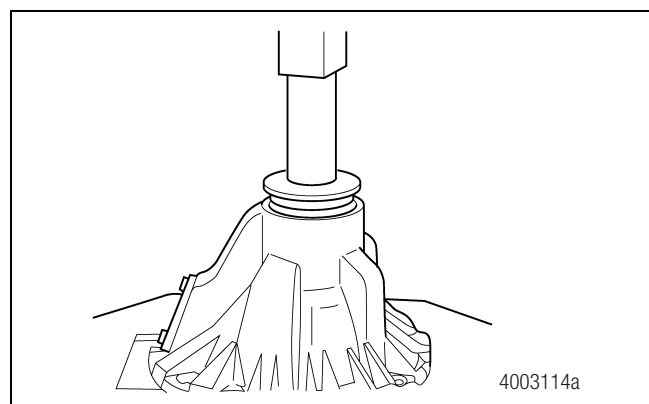


Figure 4.33

Pinion Yoke or Flange

1. Apply a coating of lubricating oil to the pinion shaft. Align the yoke so that the yoke ears will not interfere with staking the pinion nut. Slide the flange or yoke onto the shaft. If necessary, press the flange or yoke slightly to fully seat it.
2. Apply Permatex™ 80045 sealant to the pinion threads and the underside of the flange nut.
3. Install the flange nut onto the pinion shaft. Thread the nut several turns by hand.
4. Place a flange or yoke bar into position. Tighten the pinion shaft nut to 885-1032 lb-ft (1200-1400 N•m). Figure 4.34. 

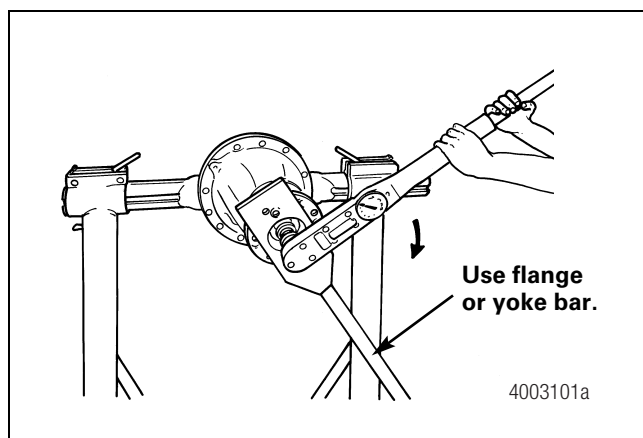


Figure 4.34

5. After you tighten the pinion nut, use a small chisel and hammer to stake the pinion nut to the shaft in two places. Figure 4.35.

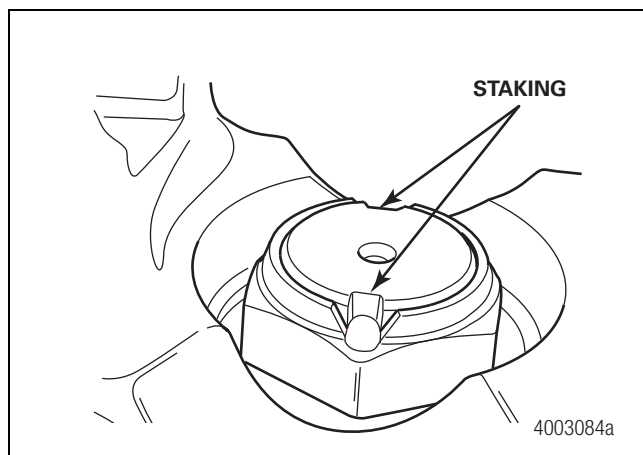


Figure 4.35

Carrier into the Housing

WARNING

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.

1. Clean the mounting surface of the axle housing. Apply a continuous 1/8-inch (3.2 mm) bead of Loctite® 5699 adhesive sealant, part number 2297-A-7021, or ThreeBond 1216E grey liquid silicone RTV gasket material to the mounting surface. Figure 4.36.

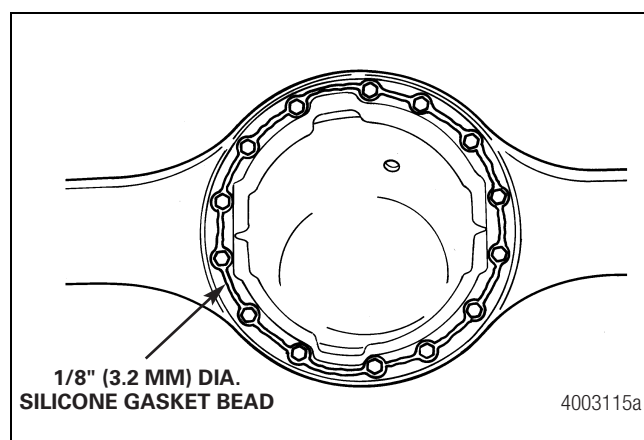


Figure 4.36

2. Install the carrier into the axle housing. Use a hydraulic roller jack or lifting tool.
3. Install the washers and nuts. Tighten the nuts to 140-152 lb-ft (190-206 N•m). 
4. Connect the driveline universal joint to the pinion input yoke on the carrier.
5. Install the axle shafts. Refer to Section 3.
6. Assemble the planetary wheel ends. Refer to Section 3.
7. Fill the wheel ends, axle and carrier housing with GL-5, SAE 80W/90 lubricant. Refer to Section 6.

5 Brakes

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.

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.

Removal and Disassembly

Wheels and Drums

WARNING

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.

1. Park the vehicle on a level surface. Block the wheels of the axle not being serviced.
2. Use a jack to raise the vehicle so that the wheels to be serviced are off the ground. Support the vehicle with safety stands.
3. Remove the wheel nuts, and tire and rim assemblies.

WARNING

Before you service a spring chamber, carefully follow the manufacturer's instructions to compress and lock the spring to completely release the brake. Verify that no air pressure remains in the service chamber before you proceed. Sudden release of compressed air can cause serious personal injury and damage to components.

4. If the brake has spring chambers, carefully cage and lock the spring so that the spring cannot actuate during disassembly.

5. Fully release the automatic slack adjusters so that the shoes retract and the drums clear the linings. Follow the instructions of the slack adjuster manufacturer. For Meritor automatic slack adjusters, refer to Maintenance Manual 4B, Automatic Slack Adjuster. To obtain this publication, refer to the Service Notes page on the inside front cover of this manual.

WARNING

To avoid serious personal injury and possible damage to components, be very careful when you use lifting devices.

- Verify that the lifting straps are not damaged.
 - Do not subject lifting straps to any shock or drop loading.
 - The lifting bolt threads must be fully engaged.
6. Remove the five screws that secure the brake drum. Use a lifting device to remove the brake drum.
 - **If the drum is difficult to remove:** Install three M12 x 1.75 bolts into the drum push holes. Tighten the bolts sequentially until the drum separates from the hub.

Brake Shoes

1. Remove the brake shoe return spring. Insert a return spring remover and assembler slotted plate, tool drawing number TC-78220, through the opening in the shoe. Figure 5.1. Refer to Section 8, Figure 8.11, for instructions to build the tool. You can also use a thin plate with a 1/4-inch (6.35 mm) slot.

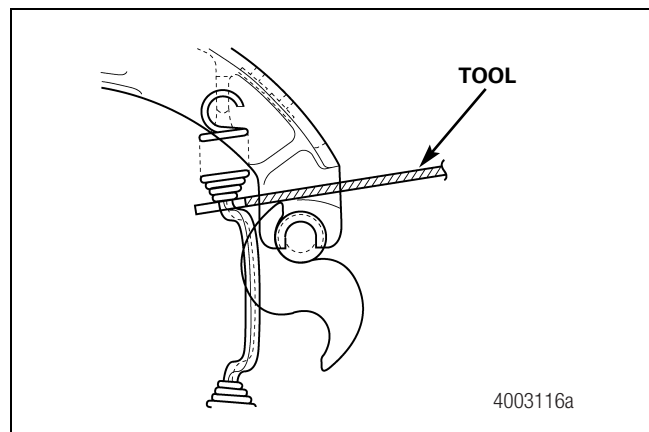


Figure 5.1

2. Remove the anchor pin snap rings, washers, set screws and lock wire. Figure 5.2.

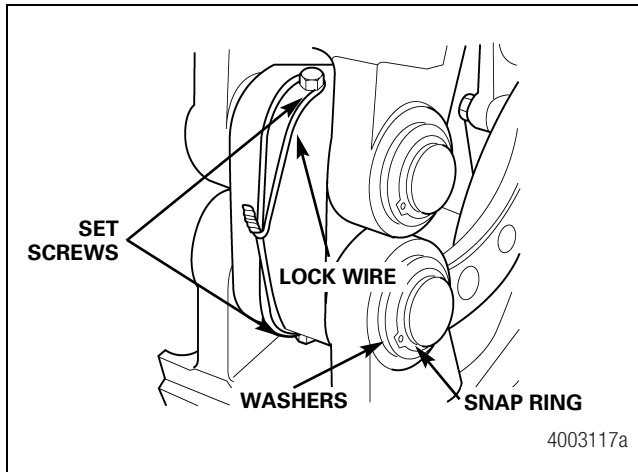


Figure 5.2

⚠ 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.

3. Use a brass drift to remove the anchor pins. Figure 5.3.

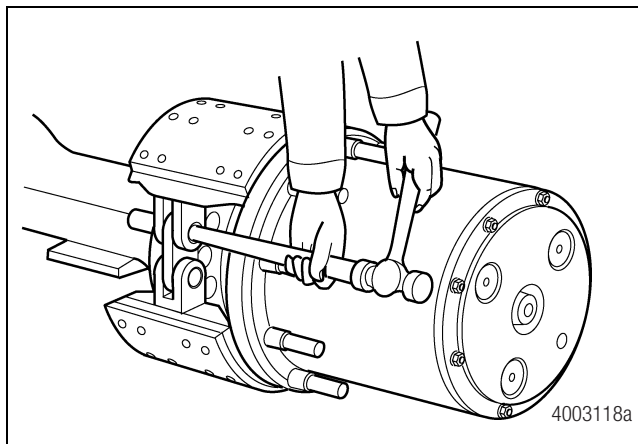


Figure 5.3

4. Remove the brake shoes. Figure 5.4. If necessary, remove the rollers. Figure 5.5.

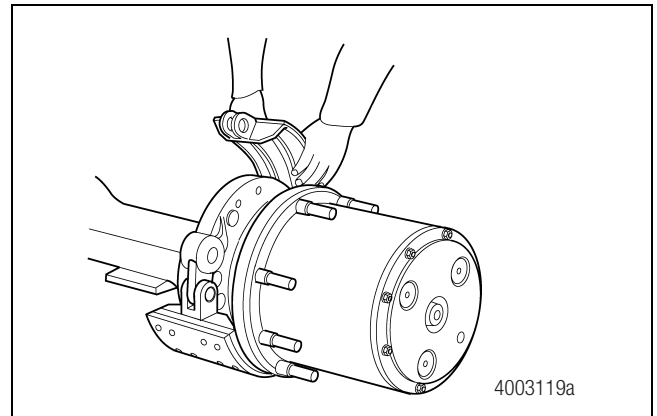


Figure 5.4

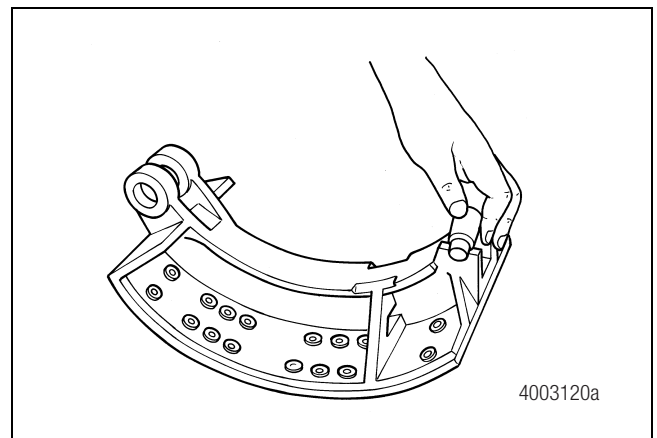


Figure 5.5

Camshaft

NOTE: If the camshaft must be removed, disassemble the planetary axle wheel end. Refer to Section 3.

1. Use a dial indicator to check the up-and-down and side-to-side end play of the camshaft to determine if you must replace the camshaft bushings. If the total movement is more than 0.030-inch (0.76 mm), replace the bushings. Figure 5.6.

5 Brakes

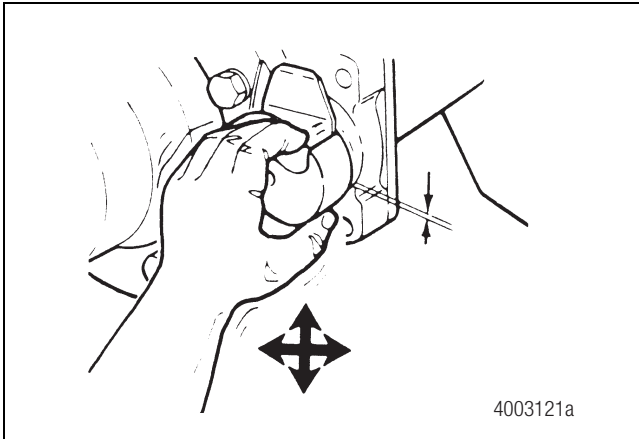


Figure 5.6

2. Remove the snap rings, washers and spacers from the camshaft.
3. Remove the two clevis pins from the clevis on the air chamber push rod. Remove the slack adjuster from the camshaft.
4. Pull the camshaft from the spider and bracket.
5. Use the correct size driver to remove the camshaft bushings and seals from the spider and bracket.

Prepare Parts for Assembly

NOTE: Refer to Section 3 for parts cleaning and inspection procedures.

Inspect Parts

You must inspect all parts carefully and completely before you assemble the axle or carrier. Check all parts for wear and replace worn or damaged parts.

1. Check the spider for expanded anchor pin holes and cracks. Replace damaged spiders and anchor pin bushings.
2. Check the camshaft bracket for broken welds, cracks and correct alignment. Replace damaged brackets.
3. Check anchor pins for corrosion and wear. Replace damaged anchor pins.
4. Check brake shoes for rust, expanded rivet holes and correct alignment. Replace a shoe with any of the above conditions.

On 16.5-inch (419 mm) brake shoes only, the anchor pin holes must not exceed 1.009-inches (25.6 mm) in diameter. Replace any shoe with a measurement that is not to specification.

5. Check the camshaft for cracks, wear and corrosion. Check the cam head, bearing journals and splines. Replace damaged camshafts.
6. Check the slack adjuster. Follow the vehicle manufacturer's recommendations. For Meritor slack adjusters, perform the following procedure.
 - A. For slack adjusters with a quick connect type clevis, check the gap between the clevis and the collar.
 - **If the gap exceeds 0.060-inch (1.52 mm):** Replace the clevis.
 - B. Check the clevis pins and the bushing in the arm of the slack adjuster.
 - **If the clevis pins are worn:** Replace the pins.
 - **If the bushing diameter exceeds 0.531-inch (13.5 mm):** Replace the bushing.

⚠ CAUTION

Turn the adjusting nut **COUNTERCLOCKWISE** only. If you turn the adjusting nut in the opposite direction while the pawl is installed, you will damage the pawl teeth. Damaged teeth prevent automatic adjustment. Replace damaged pawls before returning the vehicle to service.

- C. Check Meritor automatic slack adjusters by rotating the adjusting nut COUNTERCLOCKWISE with a lb-in torque wrench. Turn the gear 360 degrees or 22 rotations of the adjusting nut. Figure 5.7.
 - **If the slack adjuster is new or rebuilt:** The torque must be less than 25 lb-in (2.83 N•m) for 360 degrees. 
 - **If it's an in-service slack adjuster:** The torque must remain less than 40 lb-in (4.5 N•m) for 360 degrees. 
 - **If the torque value exceeds these specifications:** The slack adjuster is not working correctly. Disassemble, inspect, repair or replace the slack adjuster. For Meritor automatic slack adjusters, refer to Maintenance Manual 4B, Automatic Slack Adjuster. To obtain this publication, refer to the Service Notes page on the inside front cover of this manual.

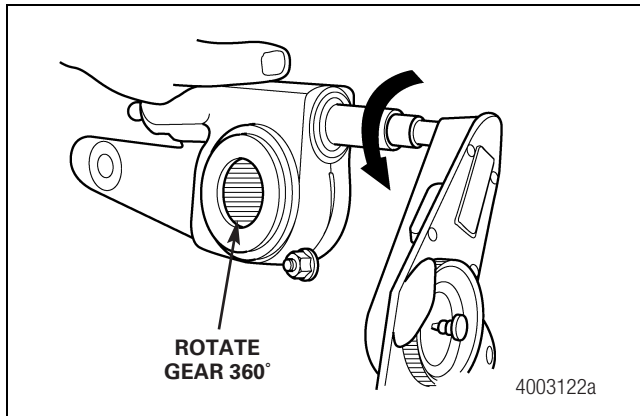


Figure 5.7

⚠ WARNING

Do not operate the vehicle with the brake drum worn or machined beyond the discard dimension indicated on the drum. Damage to components and serious personal injury can result.

⚠ CAUTION

Replace the brake drum if it is out-of-round. Do not turn or rebores a brake drum, which decreases the strength and capacity of the drum. Damage to components can result.

7. Use the following procedure to check the drum.
 - A. Check the brake drum for cracks, severe heat checking, heat spotting, scoring, pitting and distortion. Replace the drum as required.
 - B. Measure the inside diameter of the drum in several locations with a drum caliper or internal micrometer. Figure 5.8.
 - If the diameter exceeds the specifications supplied by the drum manufacturer: Replace the drum.

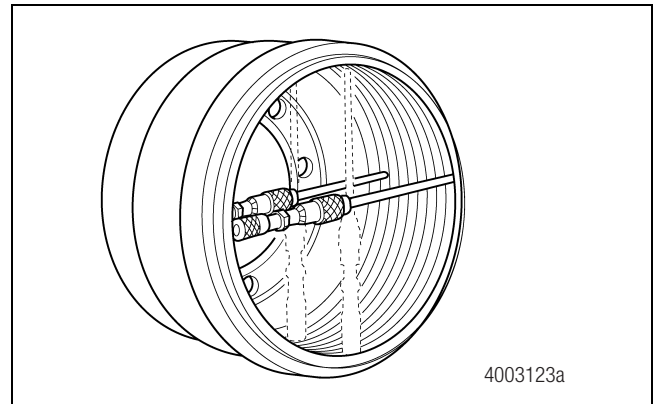


Figure 5.8

Installation and Adjustment

Camshaft

NOTE: Meritor recommends that you replace springs, rollers, anchor pins and cam bushings at each reline.

1. Tighten all the spider bolts to the correct torque. Figure 5.9.

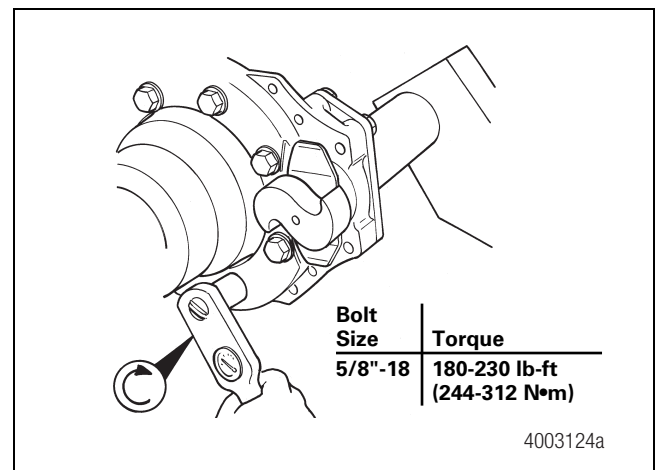


Figure 5.9

2. If removed, use a seal driver to install the new camshaft bushings and new seals into the spider and the camshaft bracket. Figure 5.10.

5 Brakes

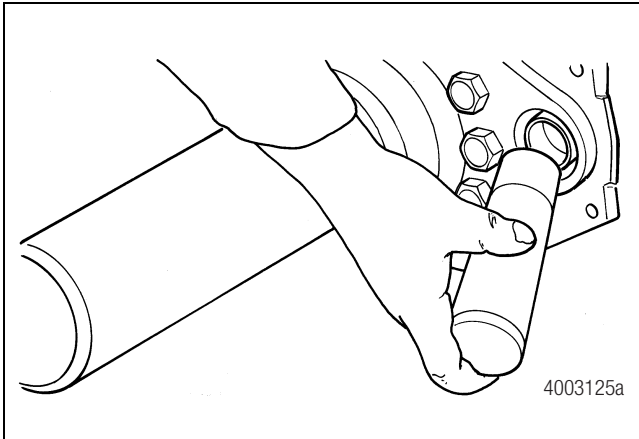


Figure 5.10

3. Install the seals with their lips toward the slack adjuster. Figure 5.11.

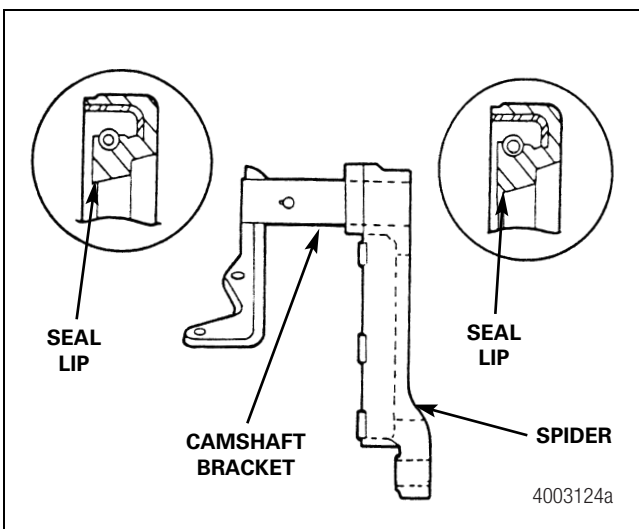


Figure 5.11

4. If the camshaft bracket was removed, install the gasket and bracket onto the spider. Tighten the capscrews to 44-55 lb-ft (60-75 N•m). Refer to Section 7.
5. Place the cam head washer onto the camshaft. Apply O-617-A or O-617-B chassis grease to the camshaft bushings and journals. Install the camshaft through the spider and bracket so that the camshaft turns freely by hand. Figure 5.12.

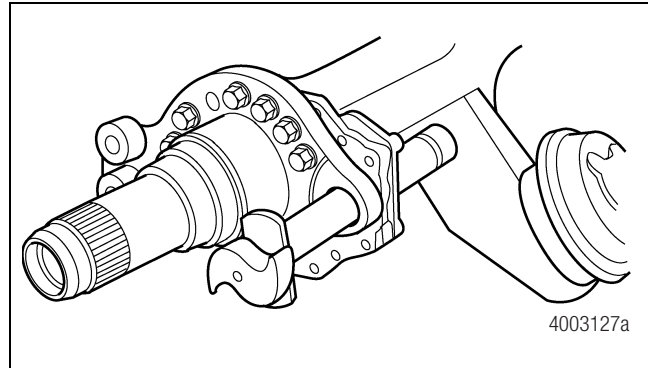


Figure 5.12

6. Assemble the planetary axle wheel end. Refer to Section 3.

Brake Shoes

1. If removed, install new anchor pin bushings. Align the holes in the bushings with the holes in the spider.
2. Install the new cam rollers. Place the brake shoes into position on the spider. Figure 5.13.

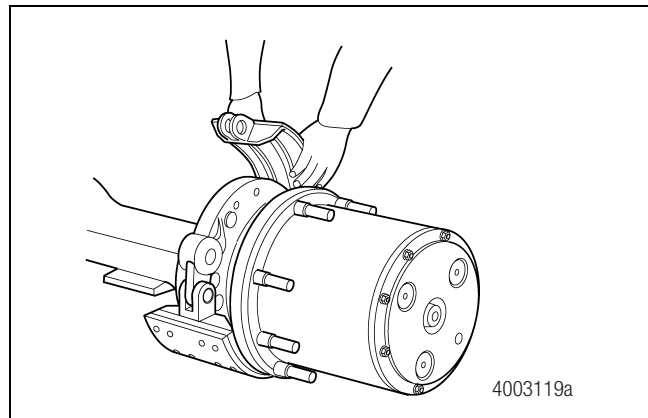


Figure 5.13

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.

3. Use a brass drift to install the anchor pins. Align the flat or groove on the pin with the holes in the spider and bushing.
4. Install the anchor pin washers and snap rings.

5. Install the anchor pin set screws. Tighten the screws to 10-15 lb-ft (13.6-20.3 N•m). 
6. Secure the anchor pin set screws with a lock wire.
7. Use brake spring tool, tool drawing number TC-78220, to install the shoe return spring onto the brake shoes. Figure 5.14. Refer to Section 8, Figure 8.11, for instructions on how to build the tool.

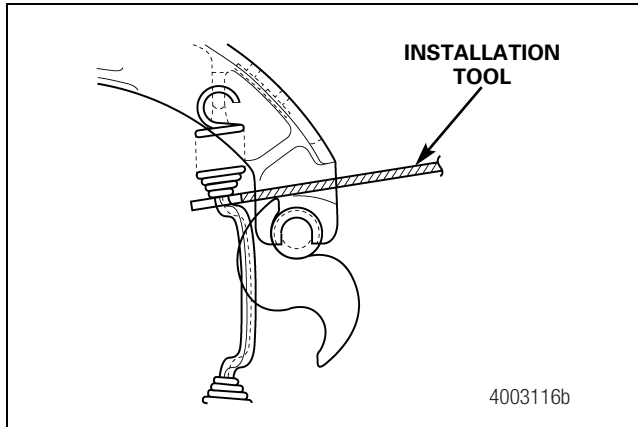


Figure 5.14

Automatic Slack Adjuster

NOTE: For non-Meritor automatic slack adjusters, refer to the manufacturer's instructions.

Handed and Unhanded Slack Adjusters

There are two different slack adjuster designs, handed and unhanded. For most applications, install a handed automatic slack adjuster so that the pawl faces inboard on the vehicle. The pawl can be on either side or on the front of the slack adjuster housing. Figure 5.15.

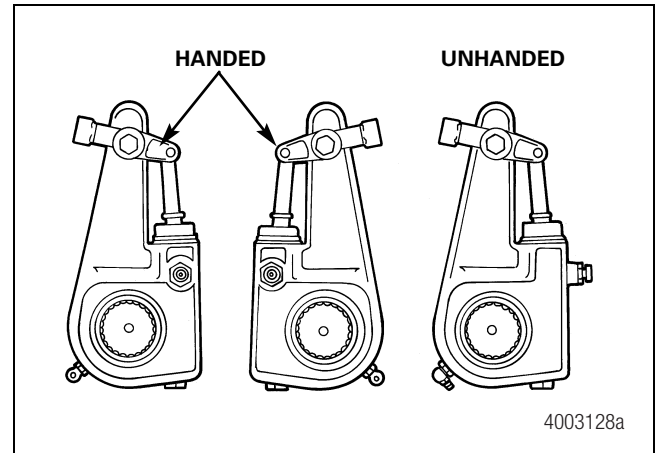


Figure 5.15

NOTE: Install the slack adjuster so that you can disengage the pull pawl when you adjust the brake.

Pull Pawl

A pull pawl is spring-loaded. Pry the pull pawl at least 1/32-inch (0.78 mm) to disengage the teeth. When you remove the pry bar, the pull pawl will re-engage automatically. Figure 5.16.

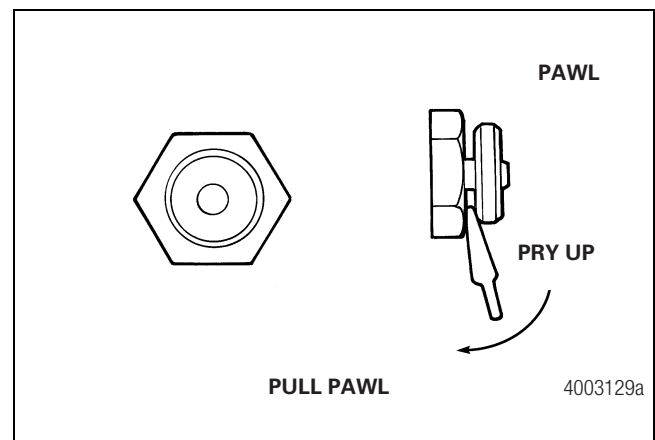


Figure 5.16

NOTE: Meritor automatic slack adjusters have lubrication holes in the gear splines. Do not operate the actuator before installing the slack adjuster. Some of the lubricant can pump through the holes and onto the splines.

1. Install the slack adjuster onto the camshaft or the power shaft.
2. If necessary, install spacing washers and the snap ring until there is a maximum clearance of 0.060-inch (1.52 mm) between the washer and the snap ring.

5 Brakes

⚠ CAUTION

You must disengage a pull pawl or remove a conventional pawl before rotating the manual adjusting nut, or you will damage the pawl teeth. A damaged pawl will not allow the slack adjuster to automatically adjust brake clearance. Replace damaged pawls before putting the vehicle in service.

3. Disengage the pawl. Turn the manual adjusting nut to align the holes in the slack adjuster arm and the clevis. Figure 5.17.

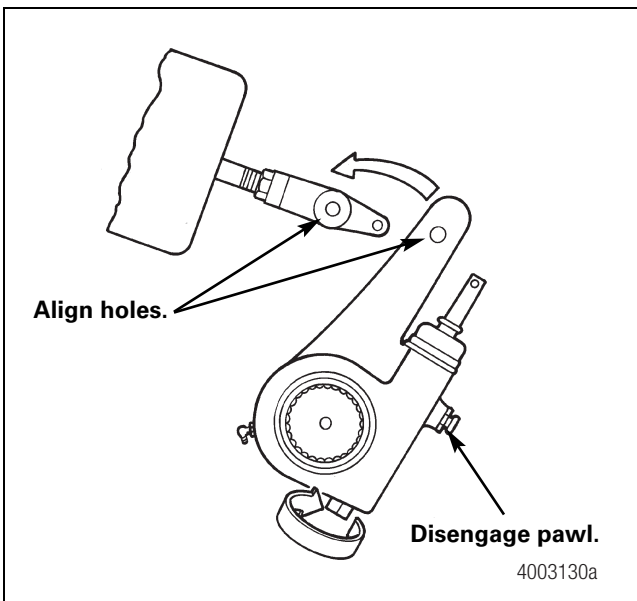


Figure 5.17

4. Rotate the slack adjuster by hand to ensure that it rotates freely when the brakes are applied. Refer to the chart in this section for the maximum allowable stroke by chamber type.

⚠ CAUTION

Always replace used clevis pin retainer clips with new ones when you service an automatic slack adjuster or chamber. Do not reuse retainer clips. Discard used clips. When you remove a retainer clip, it can bend or "gap apart" and lose retention. Damage to components can result.

5. Apply anti-seize compound to the two clevis pins. Install the clevis pins through the clevis and the slack adjuster and install the cotter pins or clevis pin retainer clips to hold the clevis pins in place. Figure 5.18.

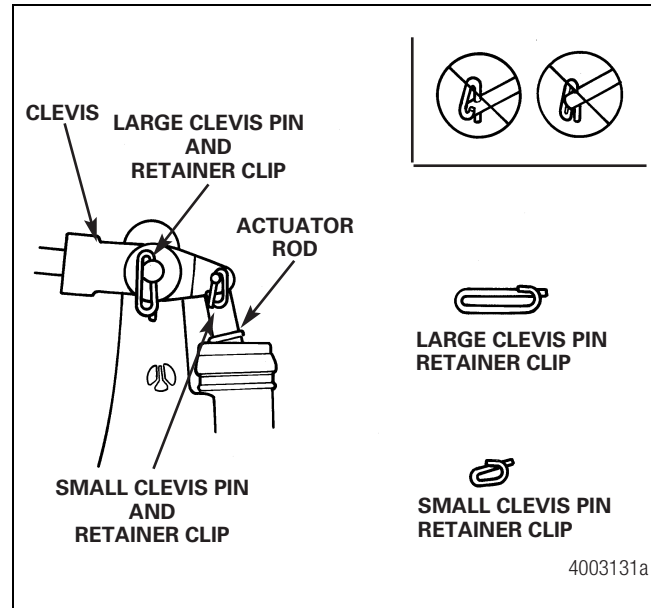


Figure 5.18

6. Adjust the brake.

Adjust the Brake

NOTE: Use Meritor slack adjuster template TP-4786 to set the slack adjuster clevis position. To obtain this template, refer to the Service Notes page on the front inside cover of this manual.

NOTE: For Meritor automatic slack adjusters, perform the following procedures to adjust the brake. For non-Meritor automatic slack adjusters, refer to the manufacturer's instructions.

⚠ CAUTION

You must disengage a pull pawl or remove a conventional pawl before rotating the manual adjusting nut, or you will damage the pawl teeth. A damaged pawl will not allow the slack adjuster to automatically adjust brake clearance. Replace damaged pawls before putting the vehicle in service.

1. For Meritor automatic slack adjusters, disengage a pull pawl or remove a conventional pawl.
2. Turn the adjusting nut until the linings touch the drum, then turn the adjusting nut 1/2 turn in the opposite direction.
3. Measure the distance from the center of the large clevis pin to the bottom of the air chamber. Figure 5.19.

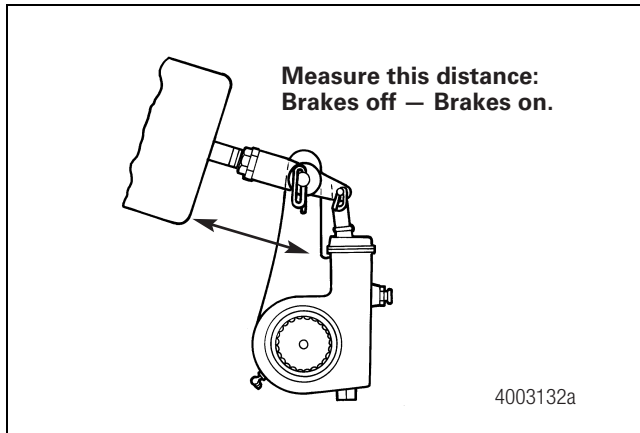


Figure 5.19

4. Use a pry bar to move the slack adjuster so that the linings are against the drum. Measure the same distance again. The difference between this measurement and the measurement in Step 3 is the free stroke.
5. Turn the adjusting nut until the free stroke is 5/8-3/4-inch (15.9-19.1 mm).
6. Check the adjustment. Apply the brakes and hold the pressure. With the pressure at 85 psi (5.9 bar), measure the distance from the center of the large clevis pin to the bottom of the air chamber.
7. The difference between the measurements in Step 3 and Step 6 is the adjusted chamber stroke. Turn the adjusting nut so that the adjusted stroke is as short as possible, but not so short that the free stroke is too short and the linings drag. The adjusted stroke must not be greater than the dimensions shown in the following table.

The U.S. Department of Transportation (DOT), Federal Highway Administration has issued the following specifications for cam brakes.

Table B: Cam Brake Adjustment Specifications

Maximum Stroke at Which Brake Must be Adjusted with 80-90 psi (5.5-6.2 bar) Air Pressure in the Air Chamber and a Clamp-Type Air Chamber

Chamber Type (Size)	Stroke Length Not to Exceed
30	2-inches (50.8 mm)
30 Long Stroke	2.5-inches (63.5 mm)

8. Release the pawl assembly.

⚠ WARNING

Before you service a spring chamber, carefully follow the manufacturer's instructions to compress and lock the spring to completely release the brake. Verify that no air pressure remains in the service chamber before you proceed. Sudden release of compressed air can cause serious personal injury and damage to components.

9. If the brake has spring chambers, carefully release the spring.
10. Test the vehicle to verify that the brake system operates correctly before you place the vehicle into service.

Visual Inspection of the Brake System

1. Check the complete air system for worn hoses and connectors. With air pressure at 100 psi (6.9 bar), brakes released and engine off, loss of air pressure must not exceed two psi (0.138 bar) a minute.
2. Check to see that the air compressor drive belt is tight. Air system pressure must rise to approximately 100 psi (6.9 bar) in two minutes.
3. The governor must be checked and set to the specifications supplied by the vehicle manufacturer.
4. Both wheel ends of each axle must have the same linings and drums. It is not necessary for the front axle brakes to be the same as the rear driving axle brakes.
5. Always follow the specifications supplied by the vehicle manufacturer for the correct lining to be used. Vehicle brake systems must have the correct friction material and these requirements can change from vehicle to vehicle.
6. The return springs must retract the shoes completely when the brakes are released. Replace the return springs each time the brakes are relined. The spring brakes must retract completely when they are released.
7. The "AL" factor is air chamber area multiplied by slack adjuster length. Figure 5.20. The "AL" factor must be equal for both ends of a single axle and all four ends of a tandem axle.

5 Brakes

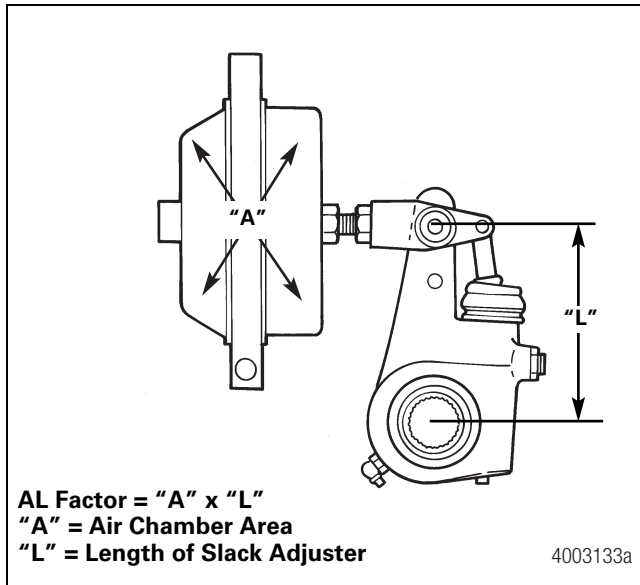


Figure 5.20

Guidelines

Return Springs — Replace cam brake return springs at every cam brake reline. The return spring is critical to alignment, accurate return of the brake away from the drum and correct automatic slack adjustment.

Linings — Insist on the same brand of quality vehicle manufacturer friction lining material to help ensure fewer relines and greater compatibility with your present system.

Hardware — When you service cam brakes, replace all the springs, anchor pins, bushings and rollers to help ensure maximum braking performance.

Drums — To help ensure balanced braking, even lining and drum wear, and correct function of the automatic slack adjuster, do not install a cast drum and a centrifuge drum onto the same axle. A cast drum and a centrifuge drum each absorbs and dissipates heat differently. When drum types and weights are mixed, different rates of heat absorption and dissipation occur that can affect the brake system.

Air Chambers — All brake chambers on the same axle must be the same size and type to help ensure a balanced brake system and maximum lining wear and drum life.

Replacement Parts — Always use vehicle manufacturer quality standard parts. Meritor brakes work as a system, and when you replace original parts with "will-fit" parts, you can compromise the performance of the entire system.

Brake Kits — Meritor brake shoes, rollers, camshafts and shoe return springs are designed to perform as a system. Always install vehicle manufacturer spec-level components during maintenance or when you upgrade from standard to long-life brakes to help ensure correct brake performance and maximum lining life.

Cam Heads — Cam heads can look the same, but they may not perform the same in your brake system. Two cam head profiles can appear to be identical, but very small differences in cams from different manufacturers can be significant enough to affect the performance of your brakes. To ensure a balanced brake system and optimum lining and drum life, always install the correct replacement cam.

Cam Rollers — To avoid flat spots, lubricate a cam roller directly in the web roller pocket, not at the cam-to-roller contact area. Flat spots can affect brake adjustment and result in premature brake wear or reduced braking performance.

Automatic Slack Adjusters —

- Automatic doesn't mean maintenance-free. Correctly installed and lubricated automatic slack adjusters help to ensure maximum brake system performance.
- Never mix automatic slack adjusters on the same axle. When you replace automatic slack adjusters, always use replacement parts that were originally designed for the brake system to help ensure even brake wear, balanced braking and maximum brake performance.

Carrier and Wheel Ends

Lubricant Type and Viscosity

Use a multigrade API GL-5 gear oil approved under MIL-PRF-2105E specification as shown below. 80W/90 viscosity is recommended for outside temperatures down to -15°F (-26°C). For temperatures below -15°F (-26°C), use 75W/90.

Use the following specifications only when servicing the carrier and wheel ends.

Table C: Lubricant Specification

Oil Description	Meritor Specification/Gear Oil Type	Outside Temp.	
		Min.	Max.
GL-5, SAE 80W/90	O-76D/Petroleum with EP Additives	-15°F (-26°C)	None
GL-5, SAE 75W/90	O-76E/Petroleum with EP Additives	-40°F (-40°C)	None

Lubrication Schedule*

Table D: Oil Change Interval

First oil change	2,500 miles (4023 km)
Oil change interval	25,000 miles (40 233 km)

*Use of the above specification and schedule advised.

Fill Procedure

The RC-26-633 axle has a common oil level between the carrier and the wheel ends. Three locations must be filled. The vehicle must be on a level surface when filling. Fill to the bottom of each fill plug hole.

Carrier

The fill plug is located in the axle housing bowl. Figure 6.1.

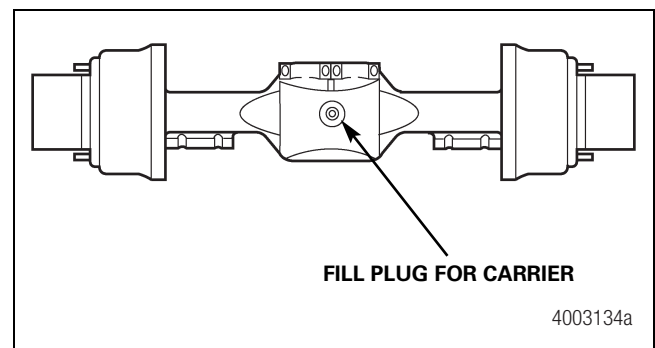


Figure 6.1

Original Design Wheel Ends

Rotate the wheel ends so the fill plug gives a level equal to the axle horizontal center line. Figure 6.2.

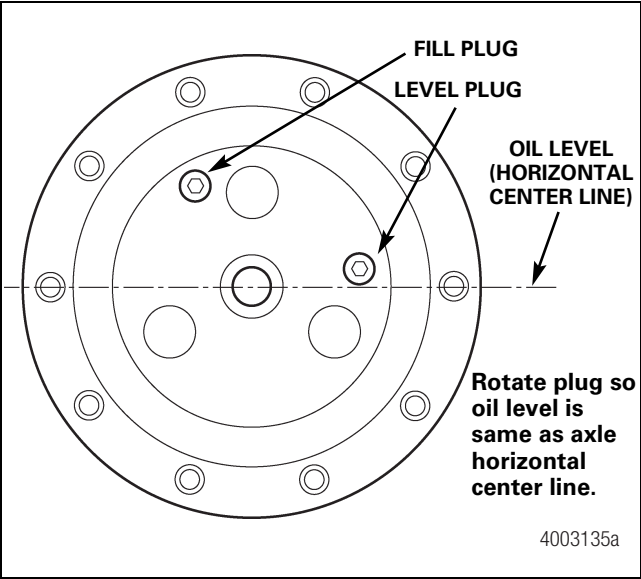


Figure 6.2

Revised Design Wheel Ends

There is a level hole and level capscrew in the center of the thrust screw. To fill, rotate the wheel end to get the fill hole on top. Fill until oil comes out of the level hole in the center. Install the level capscrew and washer. Tighten to 8 lb-ft (11 N•m). Figure 6.3. 

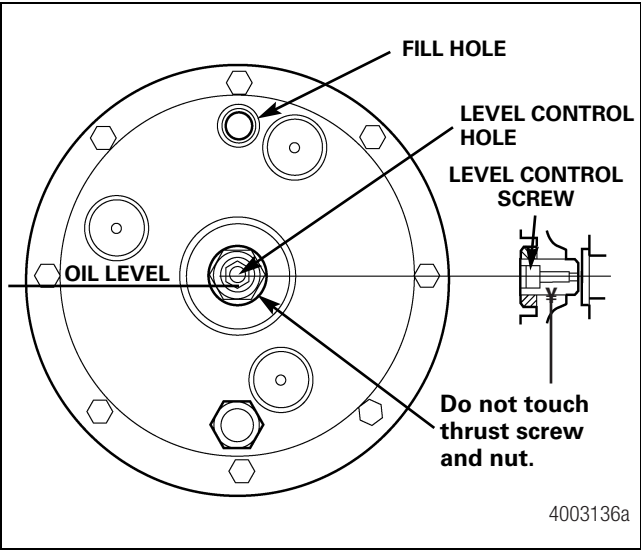


Figure 6.3

Lubricant Capacities

NOTE: The following are only approximate capacities. The axle should always be filled to the fill plugs.

- Carrier center section: 35.5 pints (16.7 liters)
- Each wheel end: 7.0 pints (3.3 liters)

Brakes

Camshaft Bushings

Meritor recommends that you install new camshaft bushings whenever you install a new camshaft or relined brake shoes.

Use Meritor specification O-617-A or O-617-B multi-purpose chassis grease. Refer to Table E for intervals. Lubricate through the fitting on the bracket or the spider until new grease flows from the inboard seal.

For complete lubrication information for Meritor brakes, refer to Maintenance Manual 1, Preventive Maintenance and Lubrication. To obtain this publication, refer to the Service Notes page on the front inside cover of this manual.

Table E: Lubrication Intervals

Brake Type	Interval
Cam	Every 50,000 miles (80 465 km), or every six months, whichever comes first
Cast Plus™	At least every four months when you replace the seals or reline the brakes. Lubricate more often for severe-duty operations. Determine lubrication intervals by inspecting internal parts and lubricant every two weeks during the first four-month period. Check for hardened or contaminated grease, and for the absence of grease.

Camshaft Splines and Clevis Pins

Use O-637 rust preventive grease. Do not mix this grease with other greases. This compound is also available from the Southwest Petro-Chemical Division of Witco Chemical Corp., 1400 S. Harrison, Olathe, KS 66061 as "Corrosion Control," part number SA8249496.

Lubricate when the brake is disassembled or when necessary.

Anchor Pins

Use O-617-A (NLGI Grade 1), O-617-B (NLGI Grade 2), O-645 (NLGI Grade 2) or O-692 (NLGI Grade 1 and Grade 2) greases.

When the brake is disassembled, or when necessary, lubricate the anchor pins where they touch the brake shoes.

Shoe Rollers

Use O-617-A or O-617-B multi-purpose chassis grease.

When the brake is disassembled, or when necessary, lubricate the rollers where they touch the brake shoes. Do not get grease on the part of the roller that touches the cam head.

Automatic Slack Adjuster

Table F shows the greases to use in Meritor automatic slack adjusters. Use these greases or their equivalent. Refer to Maintenance Manual 1, Preventive Maintenance and Lubrication, for more information. To obtain this publication, refer to the Service Notes page on the inside front cover of this manual.

Table F: Operating Temperature

–40°F (–40°C) and Above	Below –40°F (–40°C)
Clay-Base Greases	Synthetic Greases
- Meritor Spec O-616-A, part number A-1779-W-283 - Shell Darina EP-1 - Texaco Thermax EP-1 - Texaco Hytherm EP-1 - Aralub 3837 - Tribolube-12 Grade 1	- Meritor Spec O-645, part number 2297-X-4574 - Mobilgrease 28, Military - Mobiltemp SHC 32, Industrial
Lithium-Base Greases	
- Meritor Spec O-692 - Amoco Super Permalube number 2 - Citco Premium Lithium EP-2 - Exxon Ronex MP-2 - Kendall L-427 Super Blu number 2 - Mobilith AW-1 - Sohio Factran EP-2	

Use the schedule that gives the most frequent lubrication.

- Your fleet's chassis lubrication schedule.
- The chassis manufacturer's chassis lubrication schedule.
- A minimum of four times during the life of the linings.

Lubricate through the grease fitting until new grease flows from around the inboard splines or from the pawl assembly.

7 Specifications

Torque Specifications

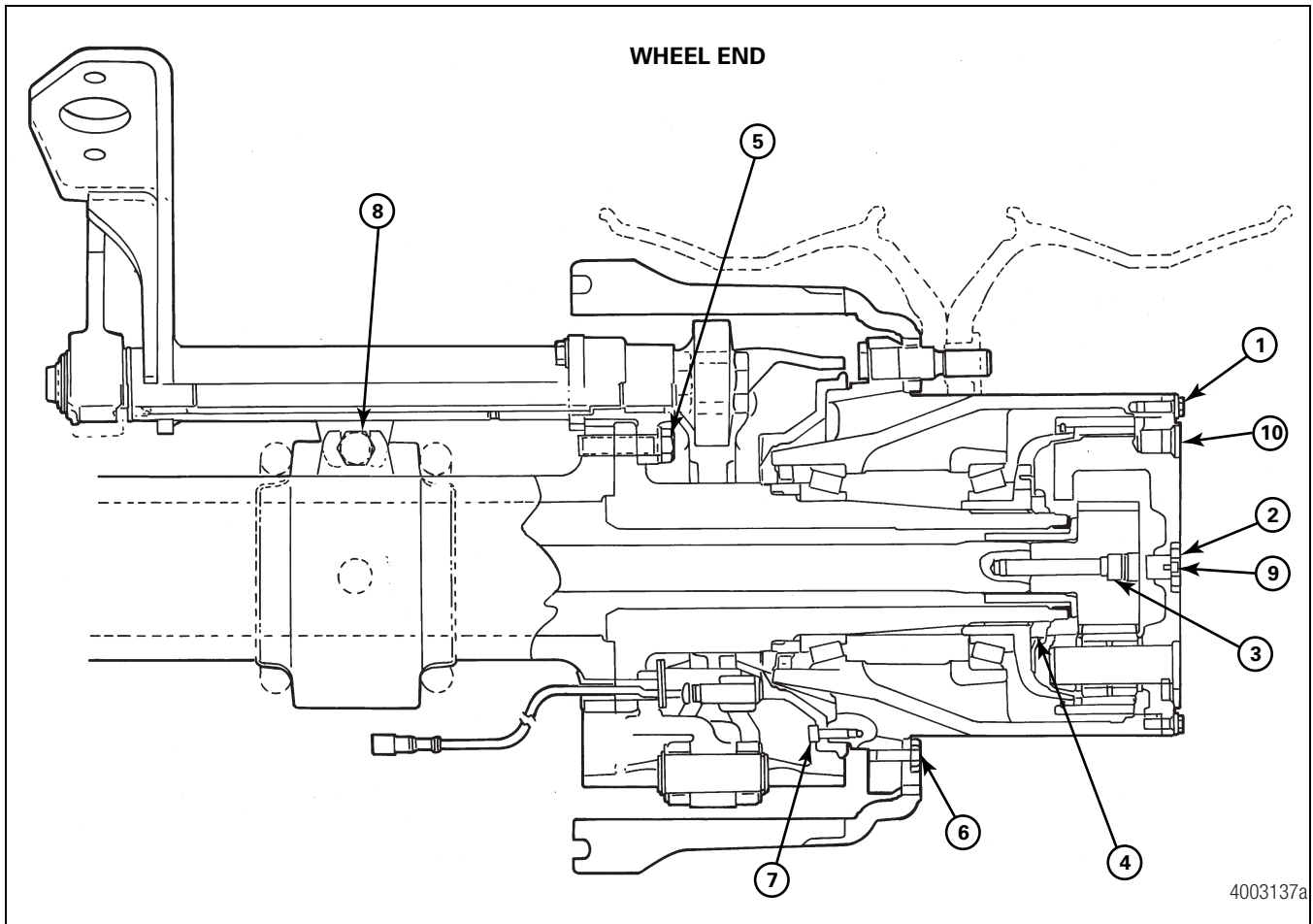


Figure 7.1

Table G: Wheel End

Item	Fastener	Torque Value*
1	Spider-to-hub capscrew	44-55 lb-ft (60-75 N•m)
2	Spider thrust screw nut	150 lb-ft (203 N•m)
3	Sun gear-to-shaft screw	150 lb-ft (203 N•m)
4	Wheel bearing adjusting nut	290 lb-ft (393 N•m) (back off 1/16 turn)
5	Spindle and brake-to-housing capscrew	180-230 lb-ft (244-312 N•m)
6	Drum-to-hub capscrew	44-55 lb-ft (60-75 N•m)
7	ABS tooth wheel-to-hub capscrew	22-30 lb-ft (30-41 N•m)
8	Brake camshaft bracket-to-housing support capscrew	180-230 lb-ft (244-312 N•m)
9	Oil level capscrew	8 lb-ft (11 N•m)
10	Oil fill and drain plug	18-25 lb-ft (24-34 N•m)

*Target the middle torque value of the range shown.

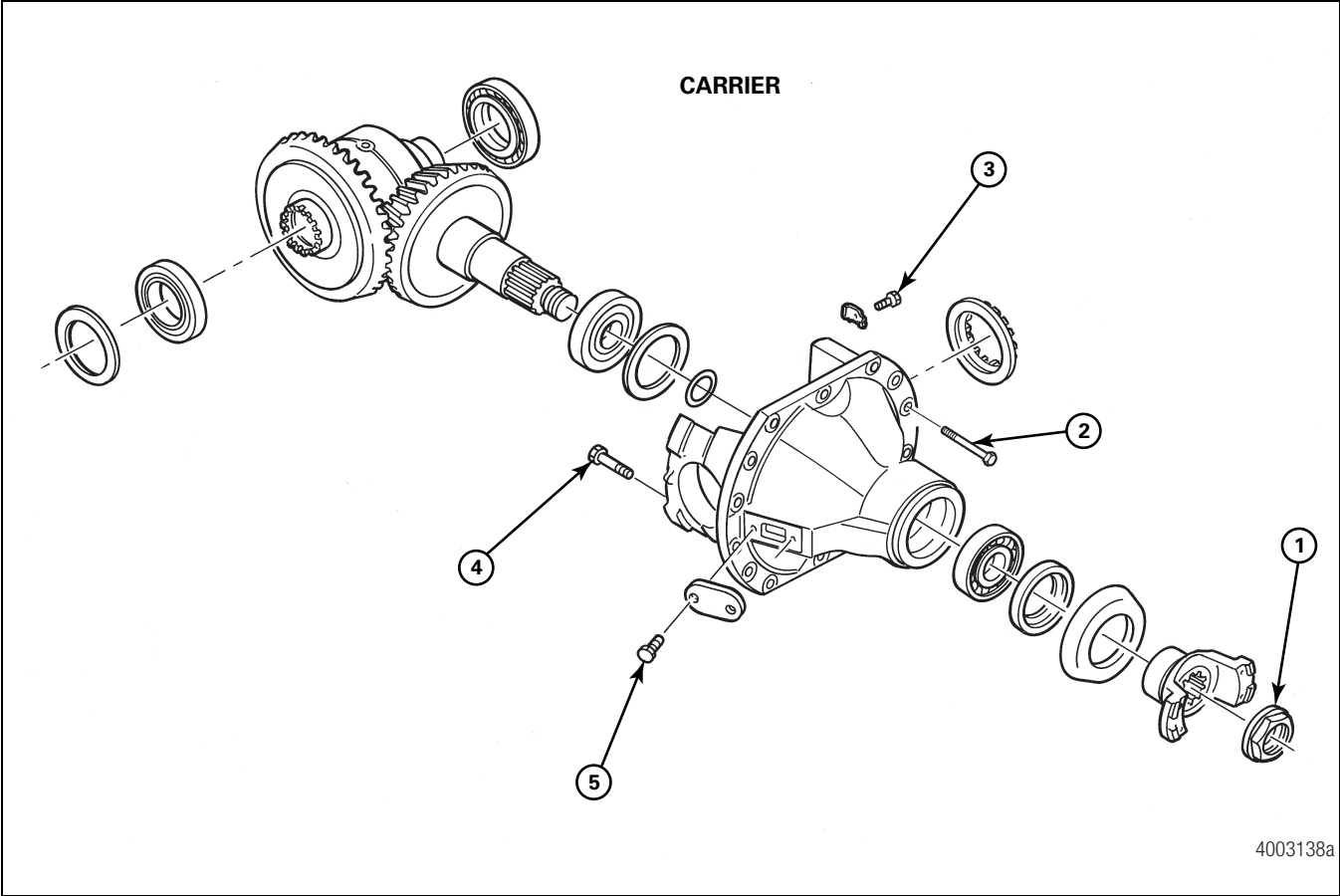


Figure 7.2

Table H: Carrier

Item	Fastener	Torque Value*
1	Pinion nut	885-1032 lb-ft (1200-1400 N•m)
2	Carrier-to-housing stud nut	140-152 lb-ft (190-206 N•m)
3	Differential bearing adjusting ring lock cap screw	11-18 lb-ft (15-25 N•m)
4	Differential bearing cap cap screw	123-137 lb-ft (167-186 N•m)
5	Cover cap screw	45-55 lb-ft (60-75 N•m)

*Target the middle torque value of the range shown.

7 Specifications

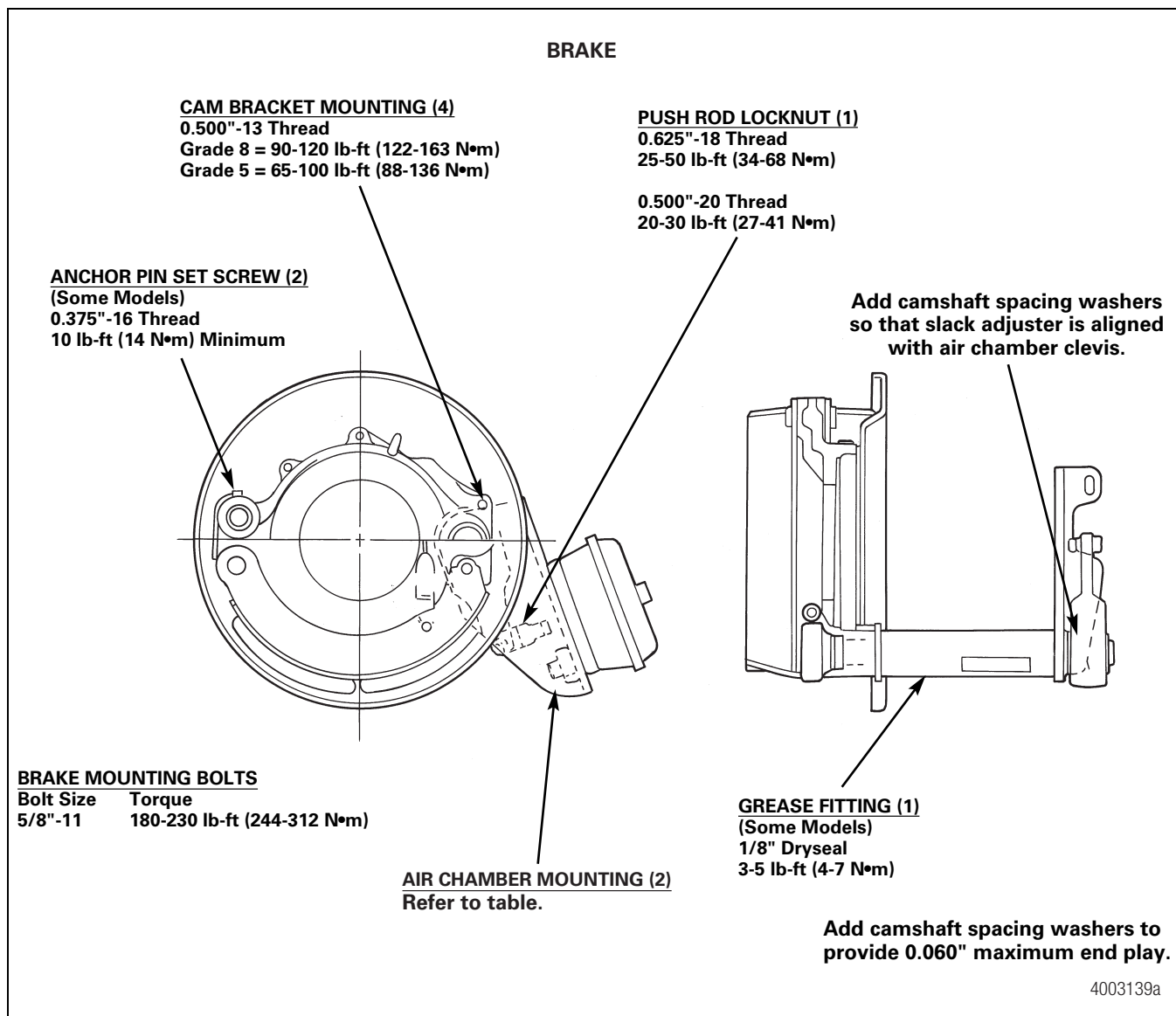


Figure 7.3

Table I: Air Chamber Mounting

Chamber Size	9	12	16	20	24	30	36	Spring Chamber
Bendix	20-30 lb-ft (27-41 N•m)		30-45 lb-ft (41-61 N•m)			45-65 lb-ft (61-88 N•m)		65-85 lb-ft (88-115 N•m)
Midland	35-50 lb-ft (48-68 N•m)				70-100 lb-ft (95-136 N•m)			
MGM	35-40 lb-ft (48-54 N•m)				100-115 lb-ft (136-156 N•m)			
Anchorlok					110-115 lb-ft with hex nut and washer (149-203 N•m)			
					85-95 lb-ft with locknut and washer (115-129 N•m)			

The following pages include drawings of the tools necessary to aid in the assembly and disassembly of the RC-26-633 planetary drive axle. Figure 8.1 through Figure 8.11.

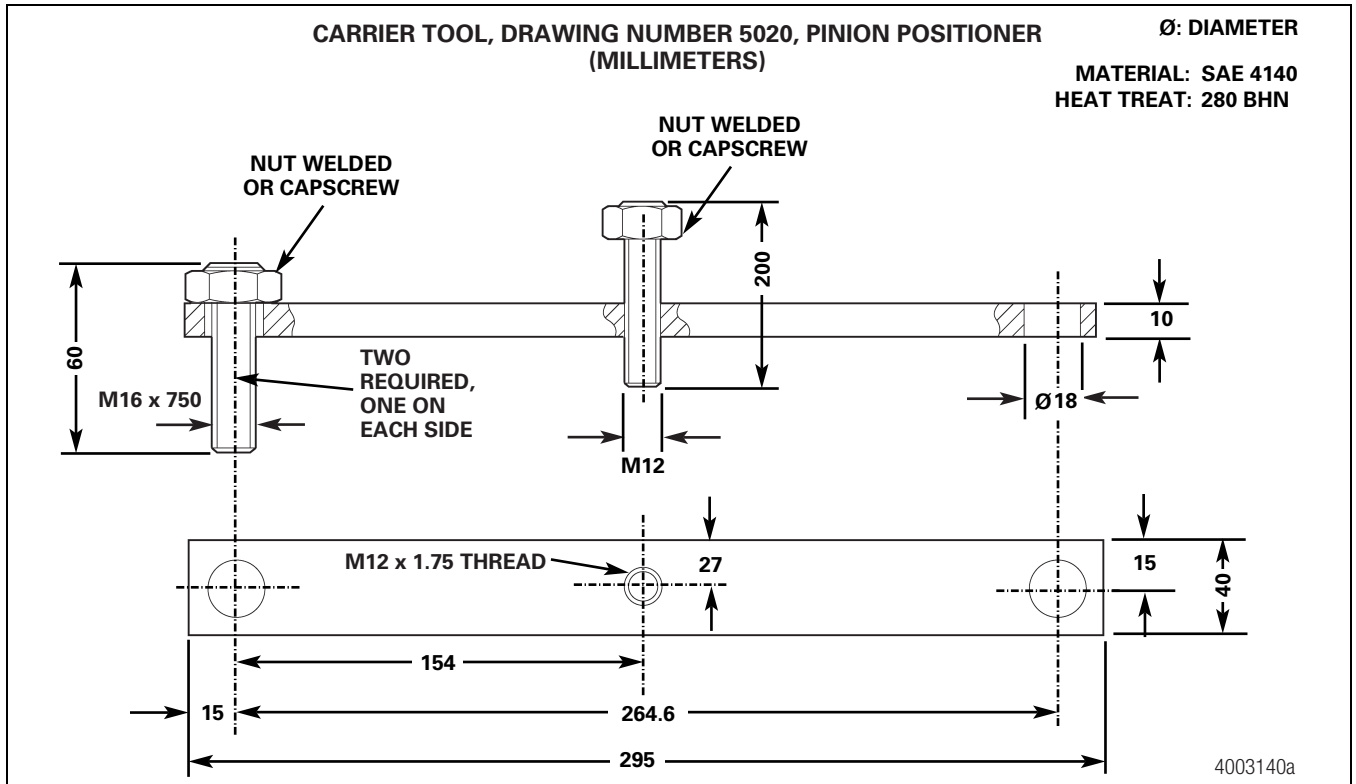


Figure 8.1

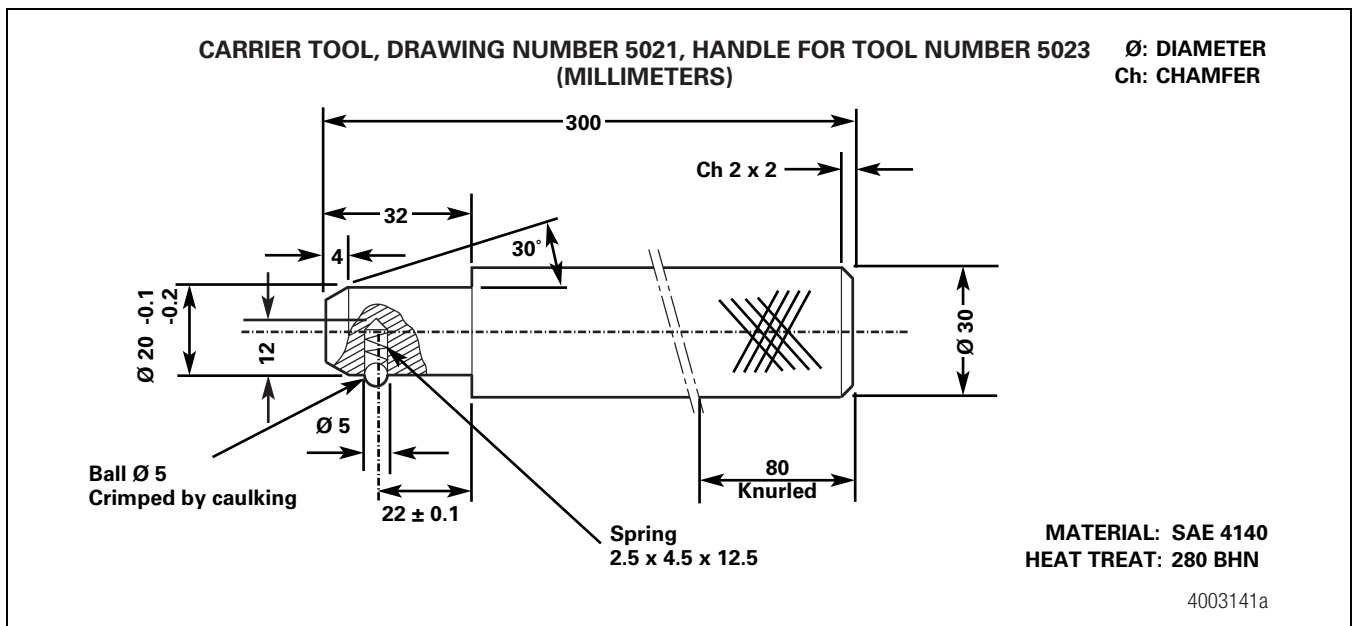


Figure 8.2

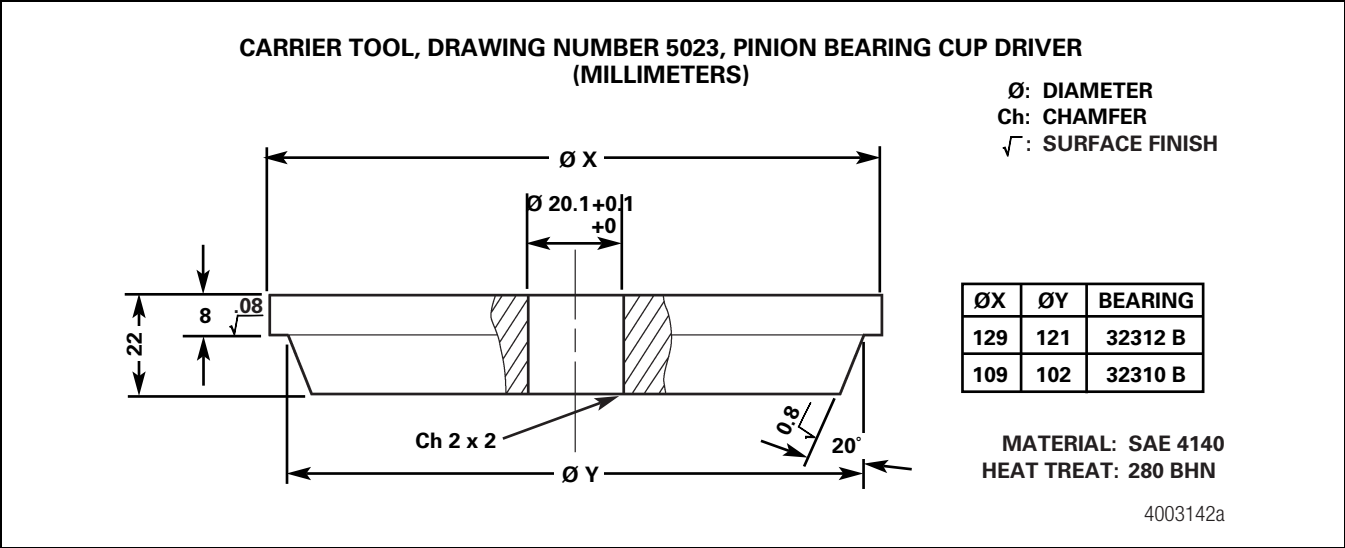


Figure 8.3

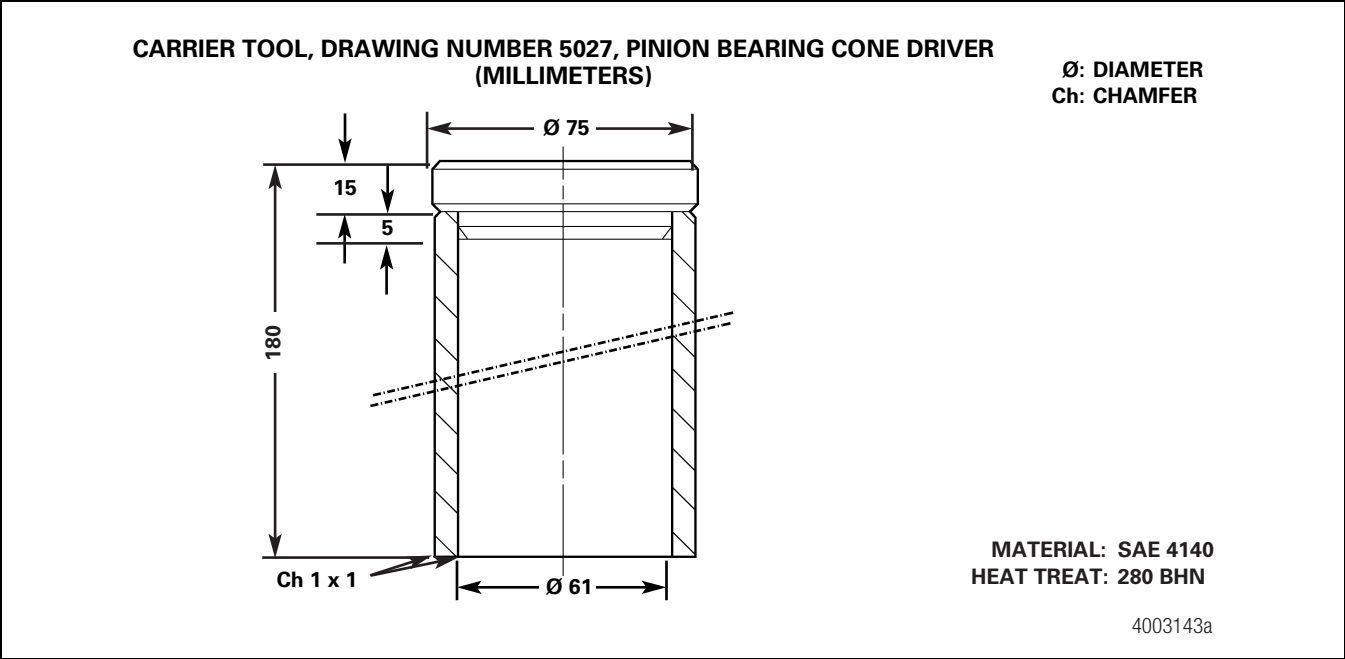


Figure 8.4

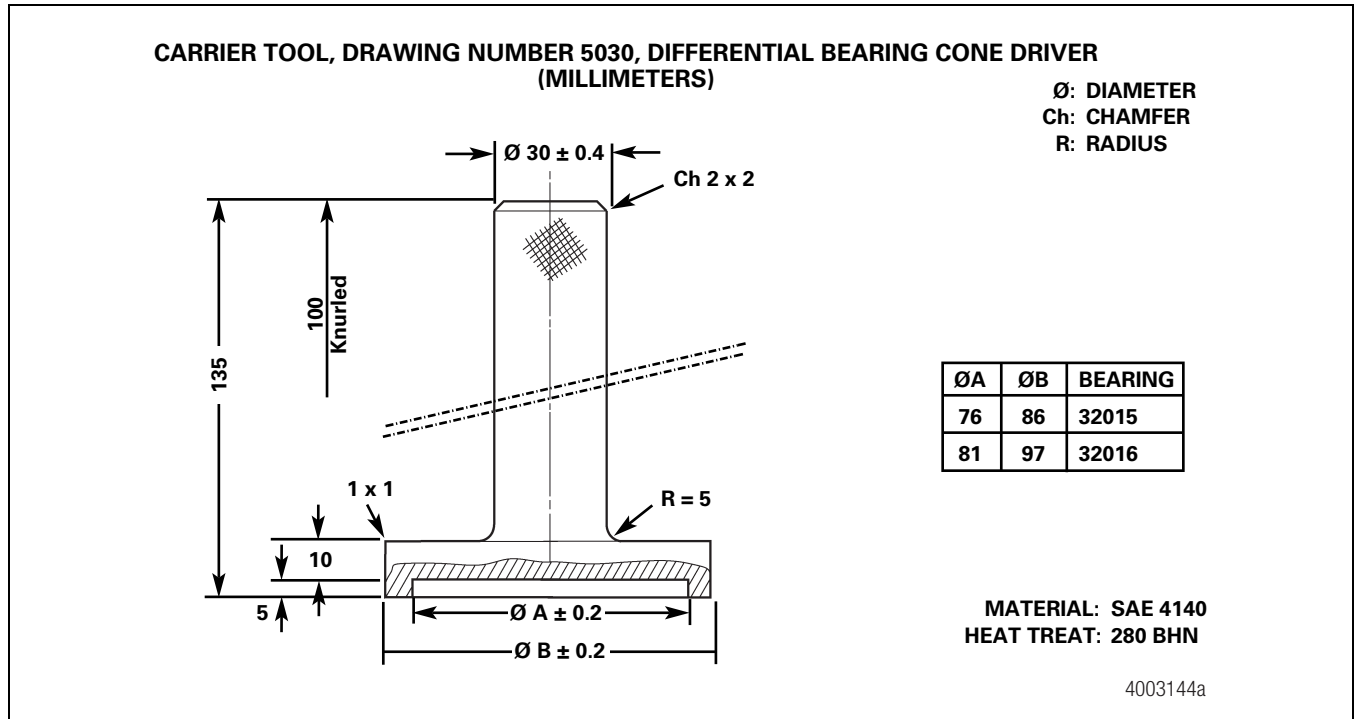


Figure 8.5

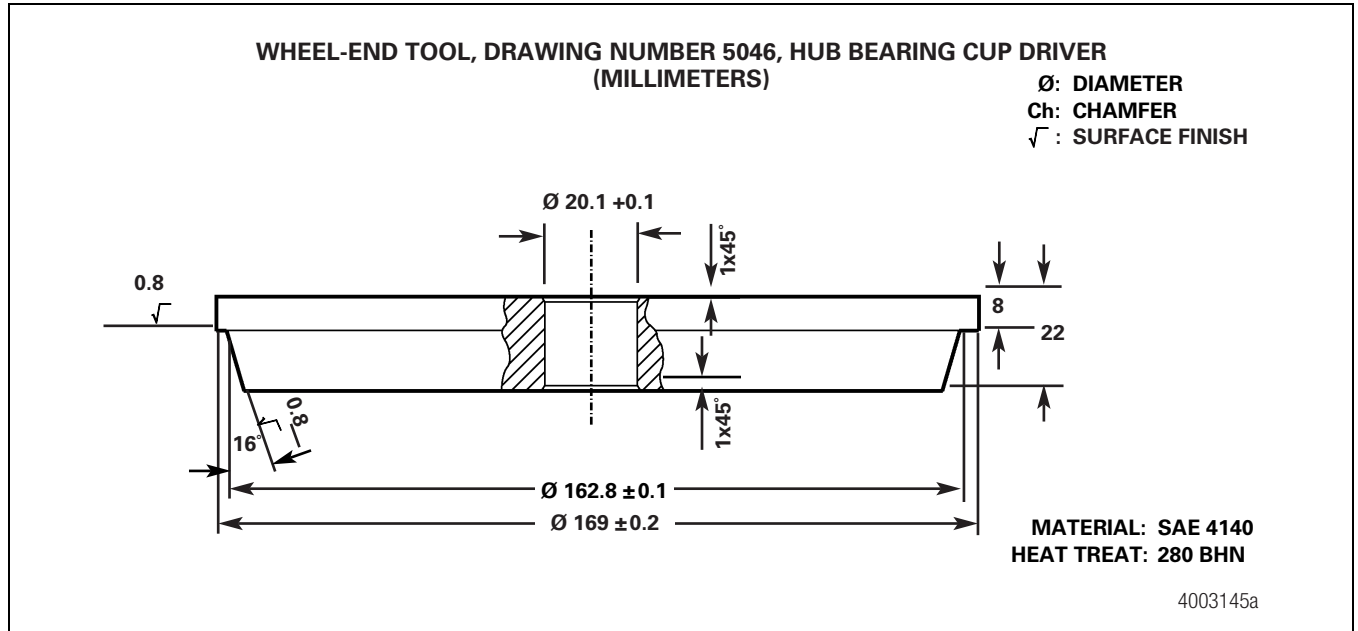


Figure 8.6

8 Special Tools

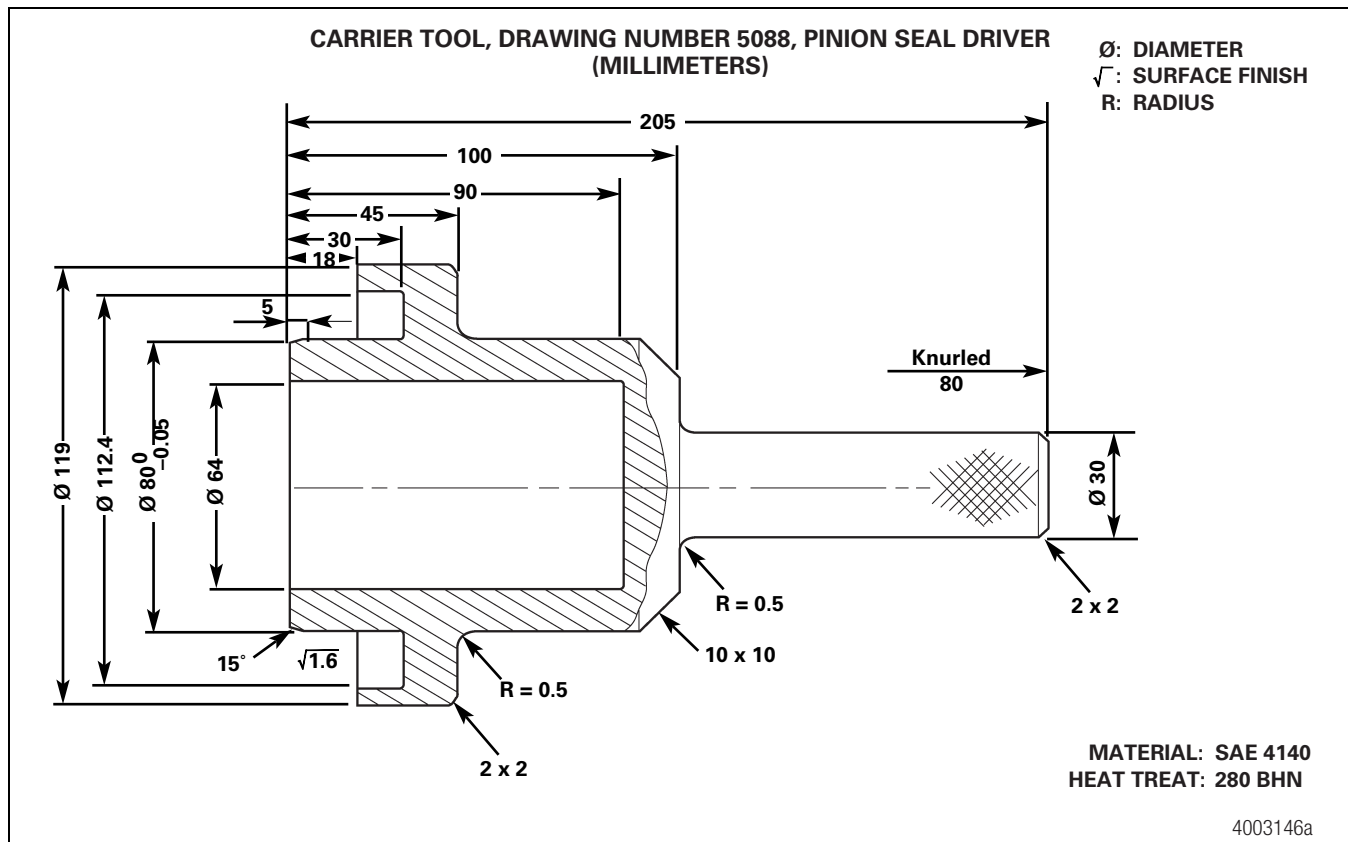


Figure 8.7

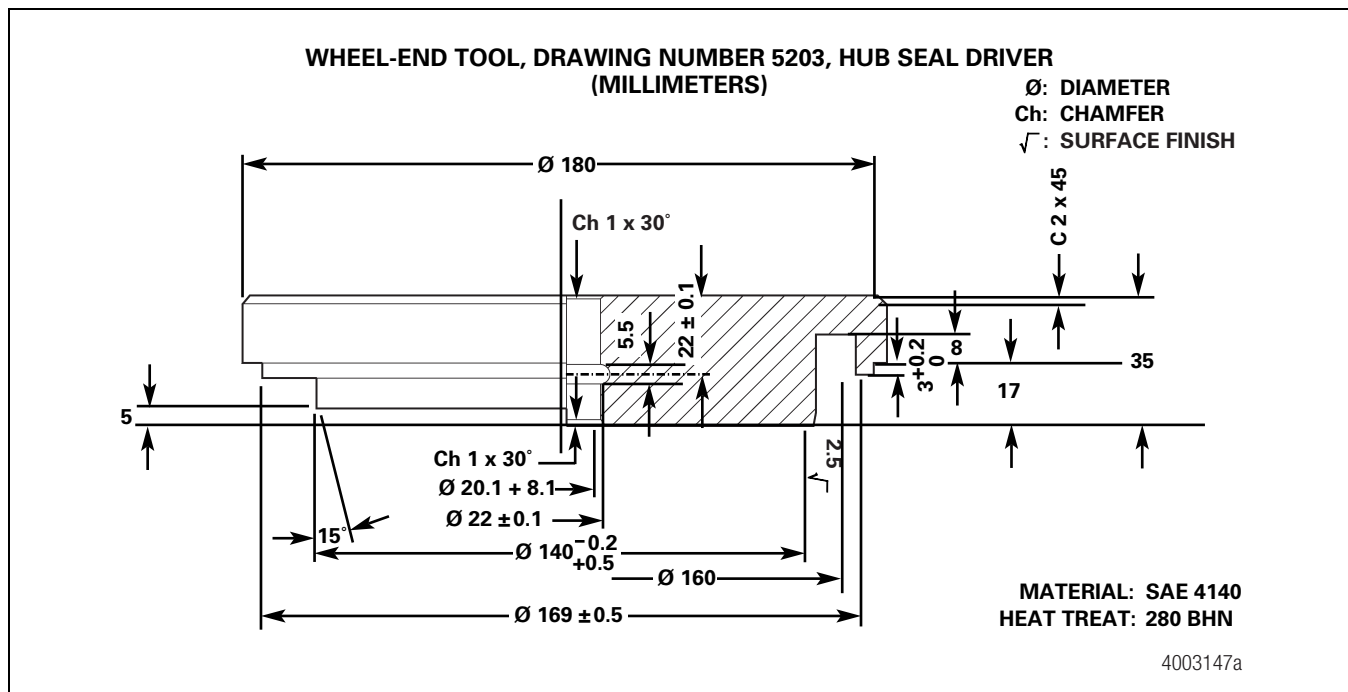


Figure 8.8

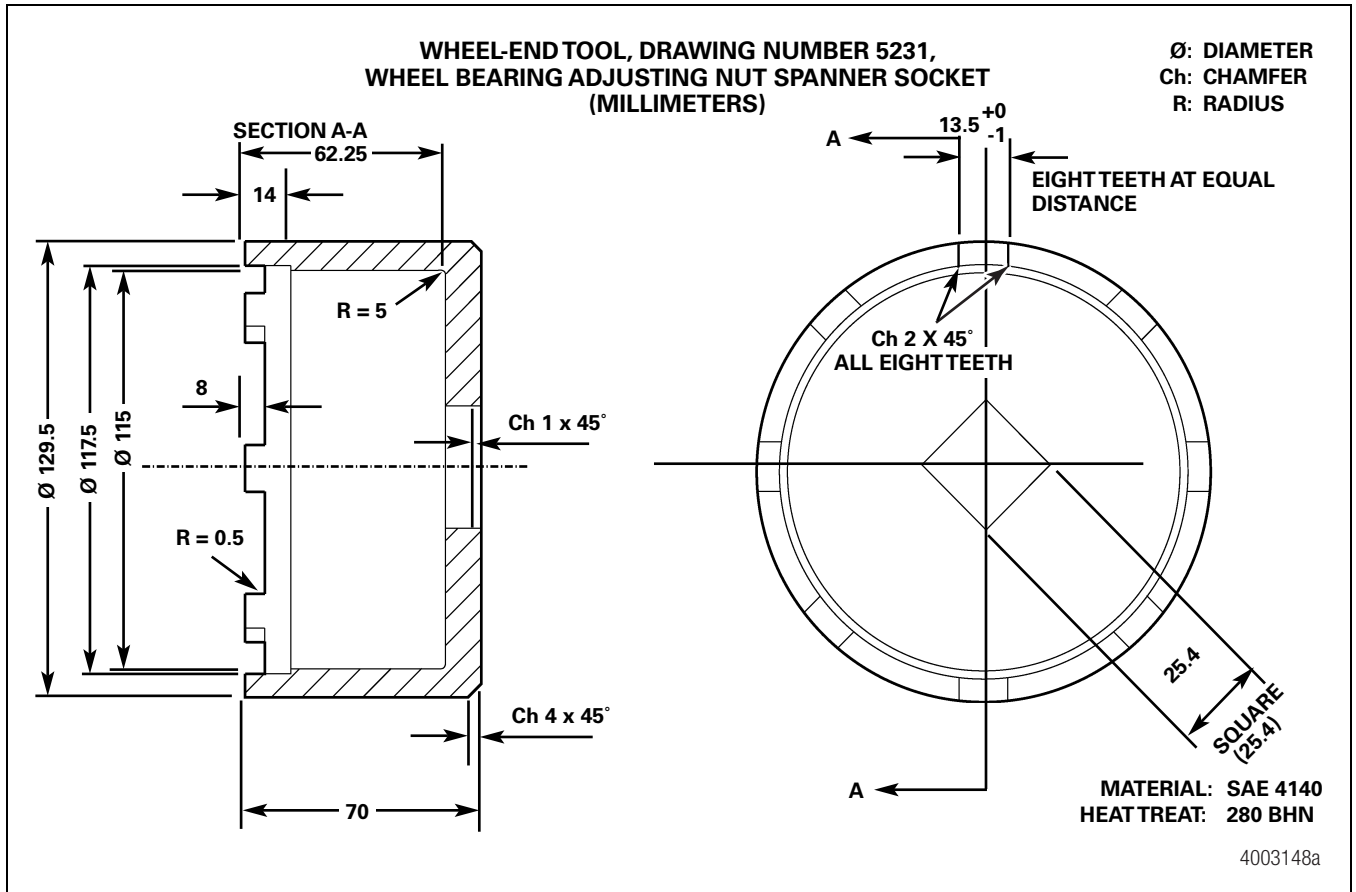


Figure 8.9

8 Special Tools

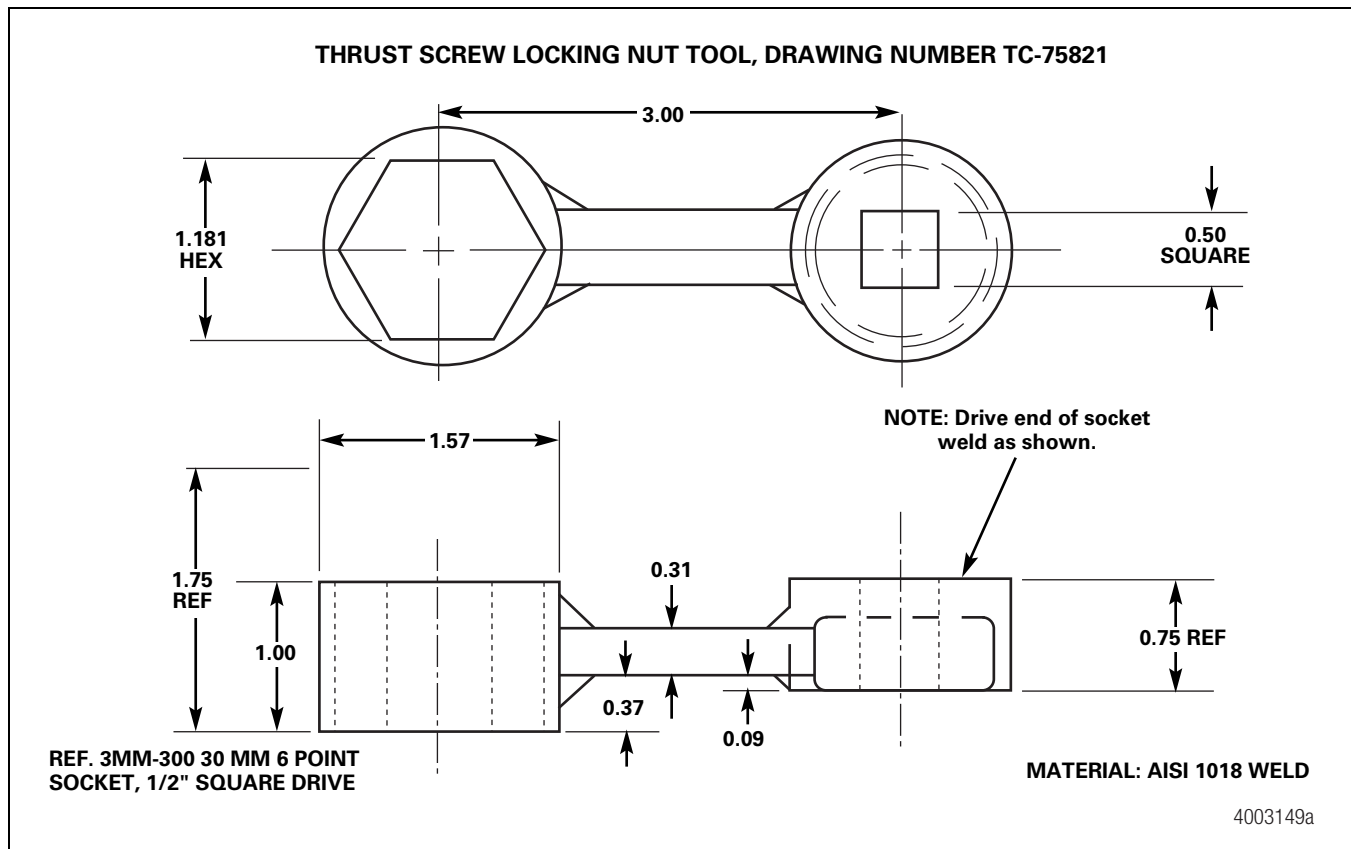


Figure 8.10

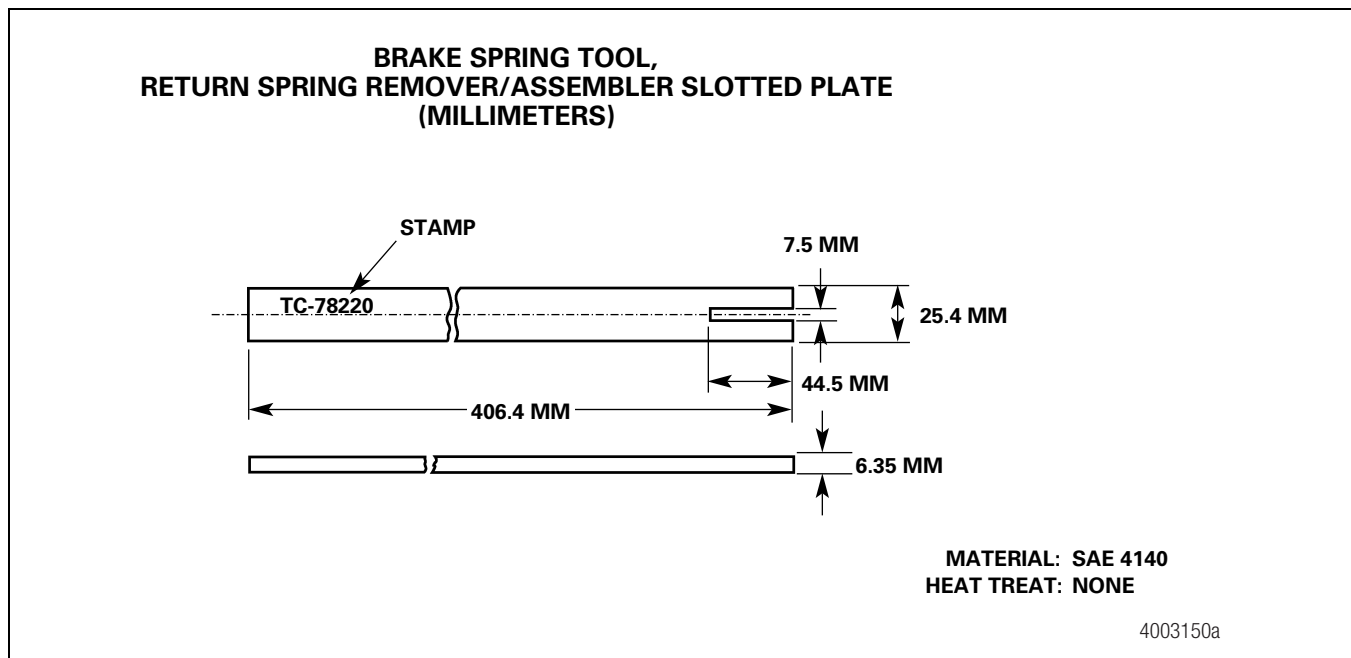


Figure 8.11

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.

To avoid serious personal injury and possible damage to components, be very careful when using lifting devices.

- Verify that the lifting straps are not damaged.
- Do not subject lifting straps to any shock or drop loading.
- The lifting bolt threads must be fully engaged.

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.

Replace

Damaged Wheel Studs

You can replace damaged wheel studs without removing the wheel hub. Use the following procedure.

Remove the Brake Drum

WARNING

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.

1. Park the vehicle on a level surface. Block the wheels not being serviced to prevent the vehicle from moving.
2. Raise the vehicle so that the wheels of the axle to be serviced are off the ground. Refer to the vehicle maintenance manual for instructions on raising the vehicle. Support the vehicle with safety stands.

3. Remove the wheel nuts and tire or rim assemblies from both wheel ends.
4. Remove the five brake drum holding capscrews.
 - **If the drum is difficult to remove:** Install three M12 x 1.75 bolts into the push holes. Tighten the bolts sequentially until the drum separates from the hub. Figure 9.1.

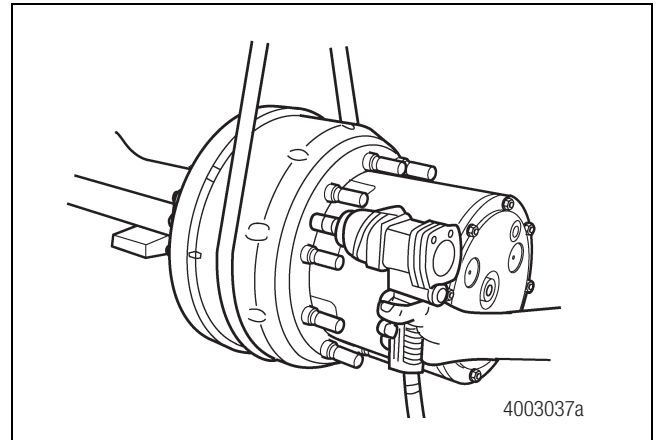


Figure 9.1

5. Use a lifting device to remove the brake drum. Figure 9.2.

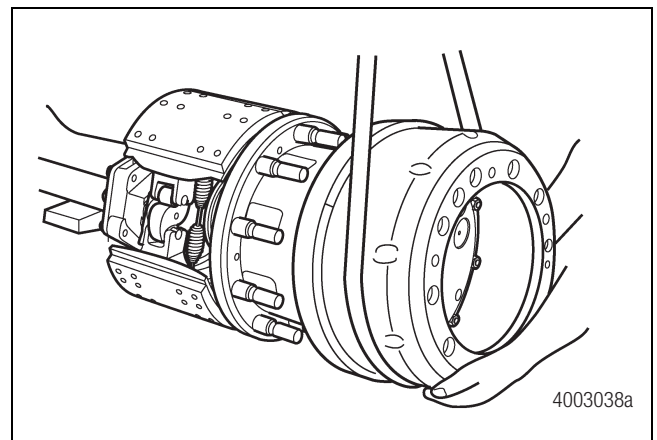


Figure 9.2

Inspect the Brake Drum

Refer to Section 5.

Remove the Wheel Stud from the Hub

1. Rotate the wheel hub to locate the wheel stud in the area between the brake shoes, cam or anchor area. This avoids damaging the brake shoes during stud removal. Figure 9.3.

9 Inspection and Maintenance

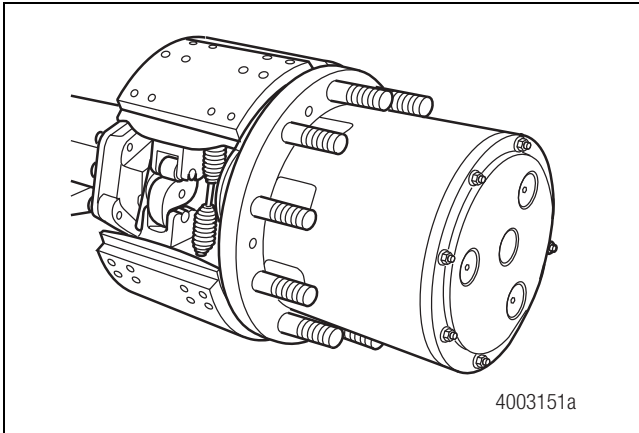


Figure 9.3

2. Pound out the stud and remove it through this clearance area.

NOTE: Be careful not to damage the return spring.

Install the Wheel Stud into the Hub

1. Insert the new stud into the wheel hub hole, and then install a spacer or stacked washers and a lug nut onto the threaded end of the stud.
2. Tighten the lug nut to approximately 300 lb-ft (407 N•m) to draw the stud into the hub and ensure it is fully seated. Remove the lug nut and spacer or washers. 
3. Repeat the removal and installation procedures above for the remaining wheel studs.

Install the Brake Drum

1. Use a lifting device to replace the brake drum. When you install hub piloted drums, always install the drum with the pilot in the 12 o'clock position to reduce assembly runout and minimize the possibility of a system vibration. Figure 9.2.
2. Install the five brake drum holding capscrews and tighten them to 45-55 lb-ft (60-75 N•m). Figure 9.1. 
3. Replace the tire or rim assemblies and install the lug nuts. Refer to the vehicle maintenance manual and tighten the lugs to specifications.
4. Lower the vehicle.

Inspection

Thrust Button, Thrust Screw and Coupling

NOTE: As a preventive maintenance procedure, you must inspect the internal components of the wheel ends every 24,000 miles (39 000 km) or at every brake reline, whichever comes first.

NOTE: Thrust surfaces can wear a combined total of 0.08-inch (2 mm) from their original position. If the wear is greater than 0.08-inch (2 mm), you must disassemble the wheel end and inspect the internal parts for wear.

Refer to Section 3 for wheel-end disassembly and assembly procedures.

1. Inspect the thrust button and thrust screw.
 - **If a groove or recess is worn into the thrust button face, from contact with the thrust screw:** Replace the thrust button.
 - **If the slotted end of the thrust screw is worn or shows signs of mushrooming or galling:** Replace the thrust screw.

NOTE: Slide the coupling back onto the shaft for inspection. Do not remove it.

2. Inspect the coupling on the axle shaft for wear. The thickness of a new coupling is 0.24-inch (6 mm), with an allowable surface wear of 0.039-inch (1 mm) along any groove. Measure the thickness of the coupling along the thinnest part of the groove. If any measurement is 0.20-inch (5 mm) or less, replace the coupling. Refer to Section 2.
 - **If the coupling thickness is less than the limits above:** Replace the coupling.
3. Inspect the thrust washer on the end of the spindle for wear or damage, especially around the flange area.
 - **If the thrust washer is worn, grooved or shows signs of galling:** Replace the thrust washer.

Meritor Heavy Vehicle Systems, LLC

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

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