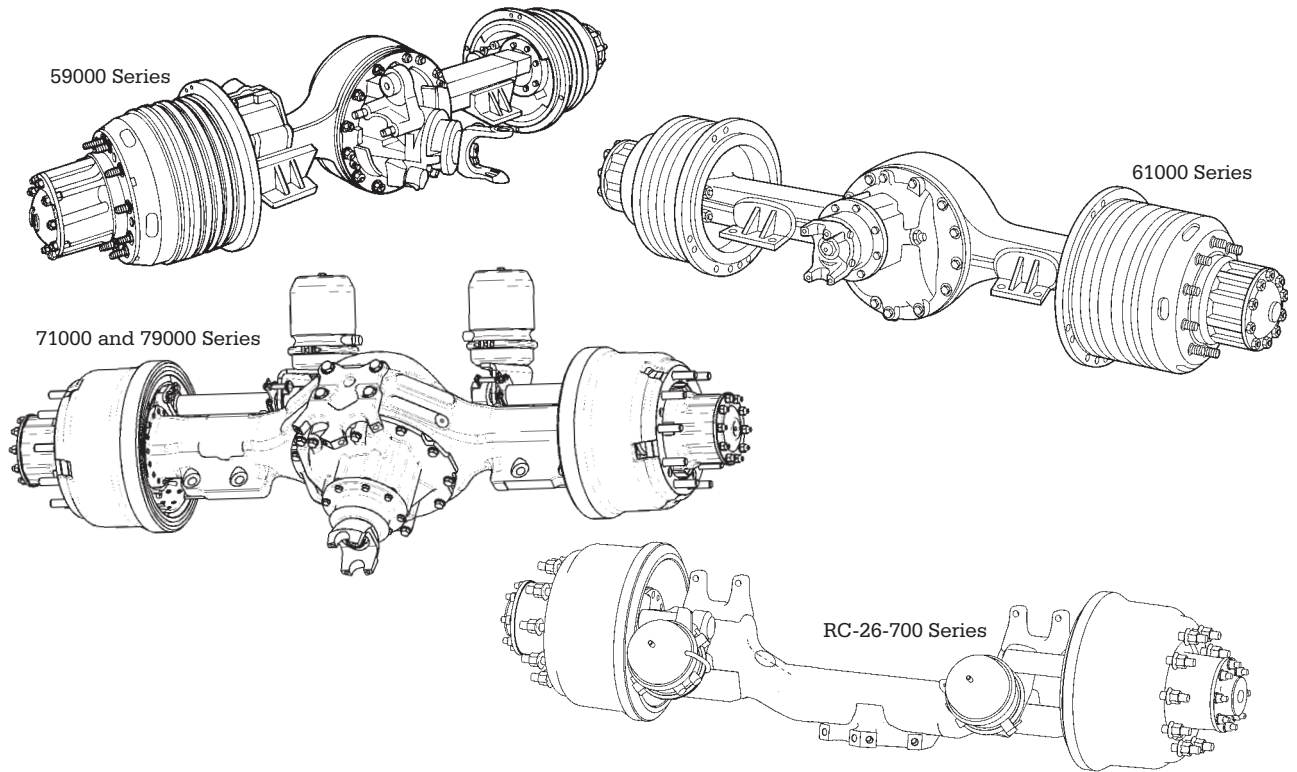


Maintenance Manual 23A

# Bus and Coach Rear Drive Axles

Revised 04-14



# Service Notes

## About This Manual

This manual provides maintenance and service information for the Meritor 59000, 61000, 71000, 79000, RC-23-160 and RC-26-700 Series bus and coach rear drive and center axles and T Series parking brake.

## 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, Service and Product Information

Visit Literature on Demand at [meritor.com](http://meritor.com) to access and order additional information.

Contact the Meritor OnTrac™ Customer Call Center at 866-668-7221 (United States and Canada); 001-800-889-1834 (Mexico); or email [OnTrac@meritor.com](mailto:OnTrac@meritor.com).

## If Tools and Supplies are Specified in This Manual

Contact Meritor's Commercial Vehicle Aftermarket at 888-725-9355.

Kiene Diesel Accessories, Inc., 325 S. Fairbanks Street, Addison, IL 60101. Call the company's customer service center at 800-264-5950, or visit their website at [kienediesel.com](http://kienediesel.com).

SPX/OTC Service Solutions, 655 Eisenhower Drive, Owatonna, MN 55060. Call the company's customer service center at 800-533-6128, or visit their website at [otctools.com](http://otctools.com).

Wright Tool Company, 1738 Maplelawn, Troy, MI 48084. Call the company's sales and service department at 800-783-9826 or visit their website at [service@wrighttoolcompany.com](http://service@wrighttoolcompany.com).

Lined shoe kits and brake hardware kits are available. You also can obtain the following conversion kits.

- A kit to convert Q Series cam brake shoes (except models with cast shoes) to Q Series brakes with "quick change" shoes
- A kit to convert standard 16.5-inch Q Series cam brakes to Q Plus™ cam brakes

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

pg. i	<b>Asbestos and Non-Asbestos Fibers</b>	pg. 27	Inspect Parts
<b>1</b>	<b>Section 1: Exploded Views</b>		Tapered Roller Bearings
	59000 Series Rear Axle	29	Brakes
3	61000 Series Rear Axle		Brake Drums
5	71000 and 79000 Series Rear Axle		Bushings and Linings
7	RC-23-160 Series Rear Axle		Camshaft
9	T Series Parking Brake — 59000 Series Rear Axle		Disc Brake Caliper and Brake Pads
<b>10</b>	<b>Section 2: Introduction</b>		Disc or Rotor
	Models Covered	31	Applying Adhesive and Silicone Gasket Material
	Description		Silicone Gasket Material
	Rear Axles		Repair Welding on Axle Housings
11	Center Axles		Do Not Bend or Straighten a Damaged Drive Axle Housing
	T Series Parking Brake	<b>32</b>	<b>Section 5: Assembly and Installation</b>
12	Identification		Installation Guidelines
<b>15</b>	<b>Section 3: Removal and Disassembly</b>		Preparation of Axle
	Removal		Installation
	Axle Shaft Removal Methods		Magnets to Axle Housing
16	Differential Carrier from the Axle Housing	33	Breathers
18	Axle Shafts from the Axle Housing	34	Differential Carrier into the Axle Housing
	Hub and Drum Assembly or Hub and Rotor Assembly from the Axle Housing		POSE™ Seal
19	Disassembly	35	Yoke
	Hub Assembly Without ABS: 59000, 61000, 71000, 79000 and RC-26-700 Series	36	Assembly
20	Hub Assembly with ABS: 59000, 61000, 71000, 79000 and RC-26-700 Series		Hub with W-Series Brakes Without ABS: 59000, 61000, 71000, 79000 and RC-26-700 Series
	Hub Assembly with Drum Brakes: RC-23-160 Series	37	Brake to the Housing Without ABS: 59000 and 61000 Series
21	Hub Assembly with Disc Brakes: RC-23-160 Series		Hub to the Axle Without ABS: 59000, 61000, 71000, 79000 and RC-26-700 Series
	Brakes from the Housing Without ABS: 59000, 61000, 71000, 79000 and RC-26-700 Series		Hub with W-Series Brakes with ABS: 59000, 61000, 71000, 79000 and RC-26-700 Series
	Brakes from the Housing: 59000, 61000, 71000, 79000 and RC-26-700 Series with ABS	38	Hub with Drum Brakes: RC-23-160 Series
22	Drum Brakes from the Housing: RC-23-160 Series	39	Brake to the Housing with ABS: 59000, 61000, 71000, 79000 and RC-26-700 Series
	Disc Brakes from the Housing: RC-23-160 Series	40	Hub to the Axle with ABS: 59000, 61000, 71000, 79000 and RC-26-700 Series
23	Removal		Brake to the Housing with Drum Brakes: RC-23-160 Series
	Axle Tube: 59000, 61000, 71000 and 79000 Series	41	Hub to the Axle with Drum Brakes: RC-23-160 Series
24	Parking Brake Shoes		Hub with Disc Brakes: RC-23-160 Series
25	Camshaft		Brake to the Housing with Disc Brakes: RC-23-160 Series
26	Torque Rod Brackets: 61000 Series Axles with Cast Housing, and 71000 and 79000 Series Axles	42	Hub to the Axle with Disc Brakes: RC-23-160 Series
<b>27</b>	<b>Section 4: Prepare Parts for Assembly</b>		Drum to Hub with W-Series Brakes: 59000, 61000, 71000 and 79000 Series
	Clean, Dry and Inspect Parts	43	Adjustment
	Ground and Polished Parts		Wheel Bearings
	Rough Parts	45	Installation
	Dry Cleaned Parts		Axle Tube: 59000 and 61000 Series
	Prevent Corrosion on Cleaned Parts		

# Contents

pg. 46	Torque Rod Brackets: 61000 with Cast Housing, and 71000 and 7900 Series Axles Camshaft
47	T Series Parking Brake
50	Lubrication Fill the Axle with Lubricant
<b>51</b>	<b>Section 6: Diagnostics</b> Troubleshooting
<b>52</b>	<b>Section 7: Lubrication</b> Lubrication Camshaft Bushings Camshaft Splines Anchor Pins
53	Shoe Rollers Axle
56	T Series Parking Brake Grease-Lubricated Wheel Ends
<b>57</b>	<b>Section 8: Specifications</b> Torque Specifications

## 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

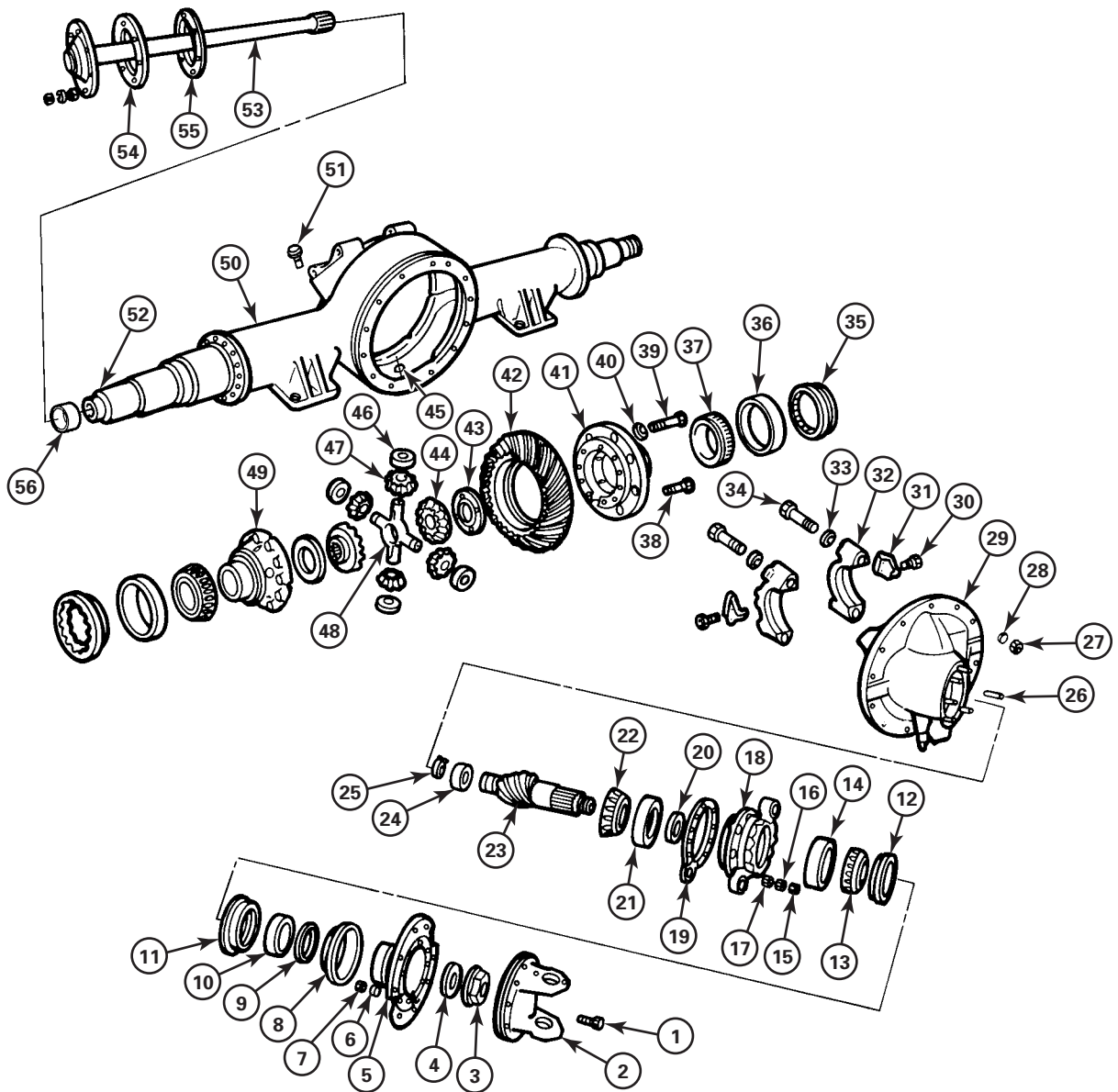
1. **Separate Work Areas.** Whenever feasible, service brakes in a separate area away from other operations to reduce risks to unprotected persons.
2. **Respiratory Protection.** OSHA has set a maximum allowable level of exposure for silica of 0.1 mg/m<sup>3</sup> as an 8-hour time-weighted average. 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.

59000 Series Rear Axle



4001366a

Item	Description
1	Bolt
2	Propeller Shaft Yoke Flange
3	Pinion Nut
4	Washer

Item	Description
5	Differential Companion Flange
6	Washer
7	Flange Nut
8	Dust Wiper

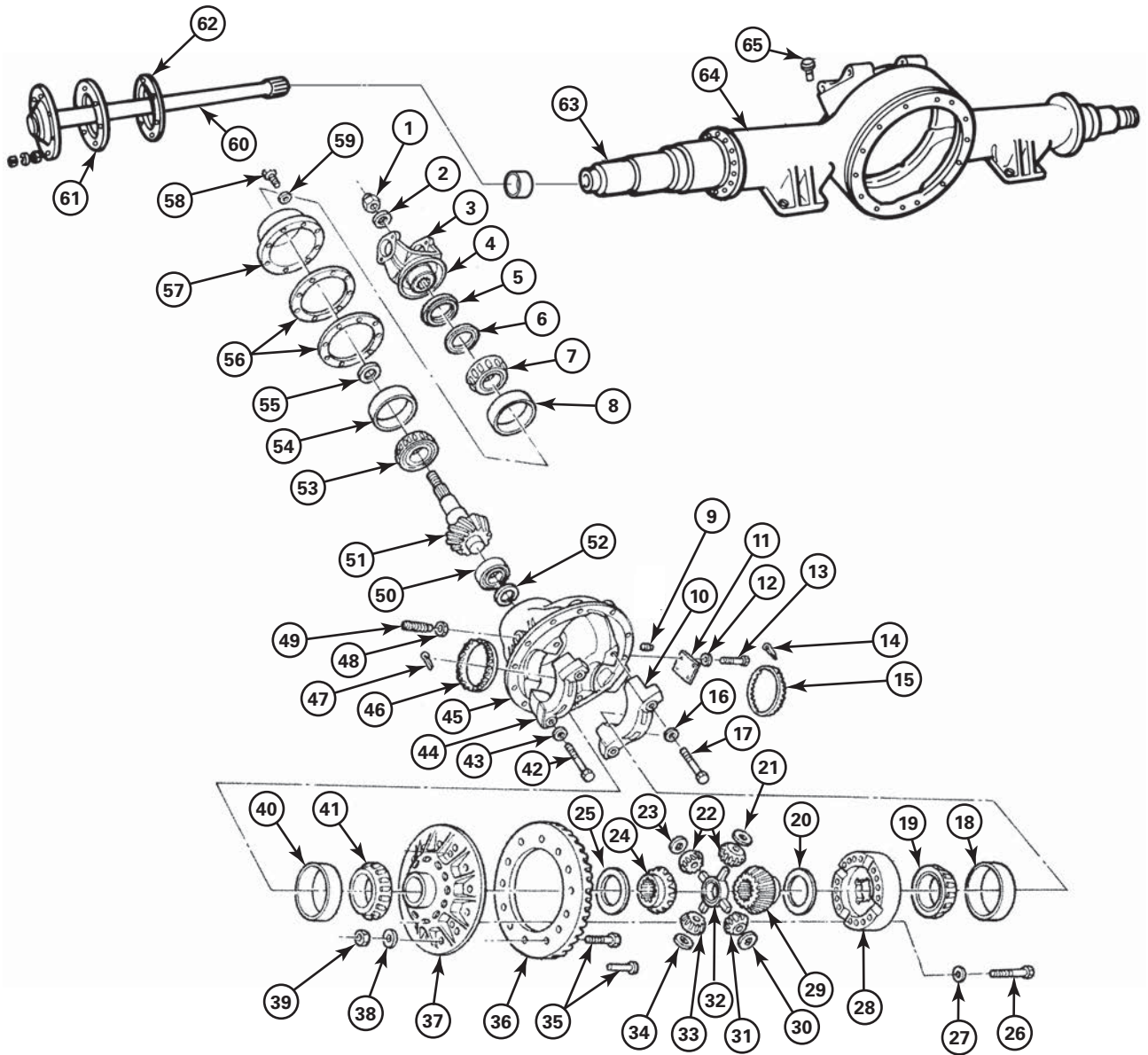
# 1 Exploded Views

Item	Description
9	Oil Seal
10	Oil Seal Wiper
11	Oil Deflector
12	Oil Seal Retainer
13	Outer Bearing Cone
14	Outer Bearing Cup
15	Nut
16	Washer
17	Dowel
18	Pinion Cage, Spider
19	Shim*
20	Spacer*
21	Inner Bearing Cup
22	Inner Bearing Cone
23	Drive Pinion
24	Rear Bearing
25	Lock Ring
26	Spider Stud
27	Nut
28	Washer
29	Differential Carrier
30	Lock Bolt
31	Adjusting Ring Lock
32	Bearing Cap
33	Washer
34	Differential Bearing Capscrew
35	Adjusting Ring
36	Differential Bearing Cup
37	Differential Bearing Cone
38	Drive Gear Capscrew
39	Differential Case Capscrew
40	Washer
41	Differential Left-Half Case
42	Drive Gear
43	Side Gear Thrust Washer

Item	Description
44	Side Gear
45	Magnetic Drain Plug
46	Pinion Thrust Washer
47	Differential Side Pinion
48	Spider
49	Differential Right-Half Case
50	Axle Housing
51	Breather
52	Load Tube
53	Axle Shaft
54	Gasket
55	Grease Seal, Optional
56	Grease Seal Sleeve, Optional

\* Thickness as required

61000 Series Rear Axle



4001367a

Item	Description
1	Drive Pinion Nut
2	Drive Pinion Washer
3	Input Yoke or Flange
4	Deflector
5	POSE™ Seal
6	Triple Lip or Main Seal

Item	Description
7	Outer Bearing Cone
8	Inner Bearing Cup
9	Plug <sup>1</sup>
10	Right-Half Adjusting Ring
11	Adjusting Ring Cotter Pin
12	Not Applicable



# 1 Exploded Views

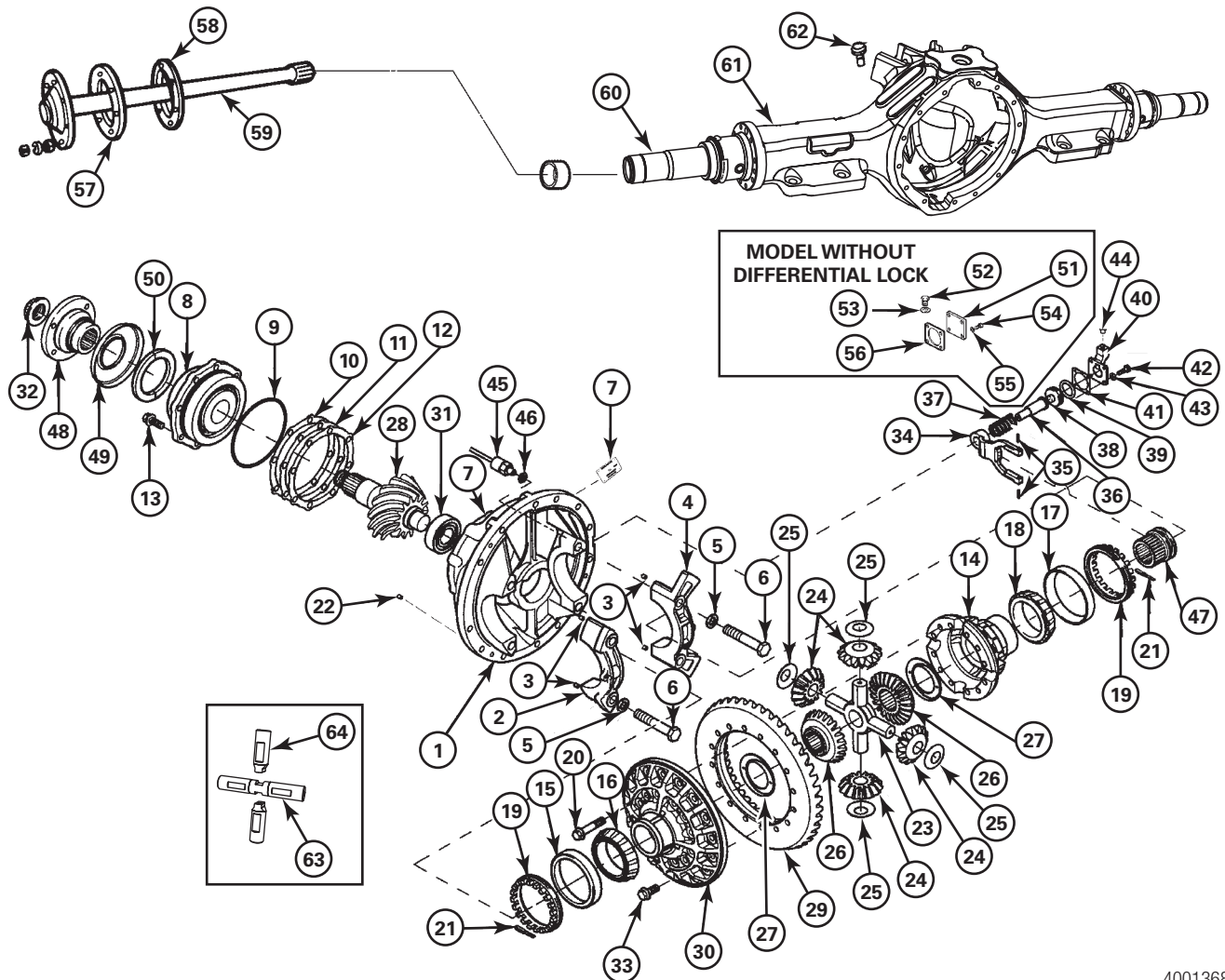
Item	Description
13	Not Applicable
14	Differential Side Gears
15	Differential Pinion Thrust Washers
16	Differential Pinions
18	Differential Side Gear Thrust Washers
19	Differential Right-Half Bearing Cone
20	Differential Right-Half Bearing Cup
22	Differential Case Capscrew
23	Differential Case Washers
24	Main Differential Case, Plain Half
25	Differential Spider
26	Ring Gear-to-Case Half Bolts or Rivets <sup>2</sup>
27	Ring Gear, Pinion Drive Gear
28	Main Differential Case, Flange Half
29	Ring Gear Bolt Washer
30	Ring Gear Bolt Nut
31	Differential Left-Half Bearing Cone
32	Differential Left-Half Bearing Cup
35	Differential Bearing Cap Capscrews
36	Washers
37	Differential Left-Half Bearing Cap
38	Carrier
39	Adjusting Ring
40	Adjusting Ring Cotter Pin
41	Thrust Screw Jam Nut <sup>1</sup>
42	Thrust Screw <sup>1</sup>
43	Snap Ring
44	Spigot Bearing
45	Drive Pinion
46	Pinion Inner Bearing Cone
47	Pinion Inner Bearing Cup
48	Pinion Bearing Spacer <sup>2</sup>
49	Shims <sup>2</sup>
50	Drive Pinion Bearing Cage
51	Bearing Cage Capscrew

Item	Description
52	Washer
54	Bolt-On Cover <sup>1</sup>
55	Washer <sup>1</sup>
56	Bolt <sup>1</sup>
58	Axle Shaft
59	Load Tube
60	Axle Housing
61	Breather
62	Gasket
63	Grease Seal, Optional
64	Grease Seal Sleeve, Optional

<sup>1</sup> Not available on all designs

<sup>2</sup> Thickness as required

## 71000 and 79000 Series Rear Axle



4001368c

Item	Description
1	Carrier
2	Left-Half Bearing Cap
3	Pin
4	Right-Half Bearing Cap
5	Bearing Cap Washer
6	Bearing Cap Capscrew
7	Identification Plate
8	Pinion Bearing Cage
9	O-Ring, Pinion Cage
10	Pinion Cage Shim

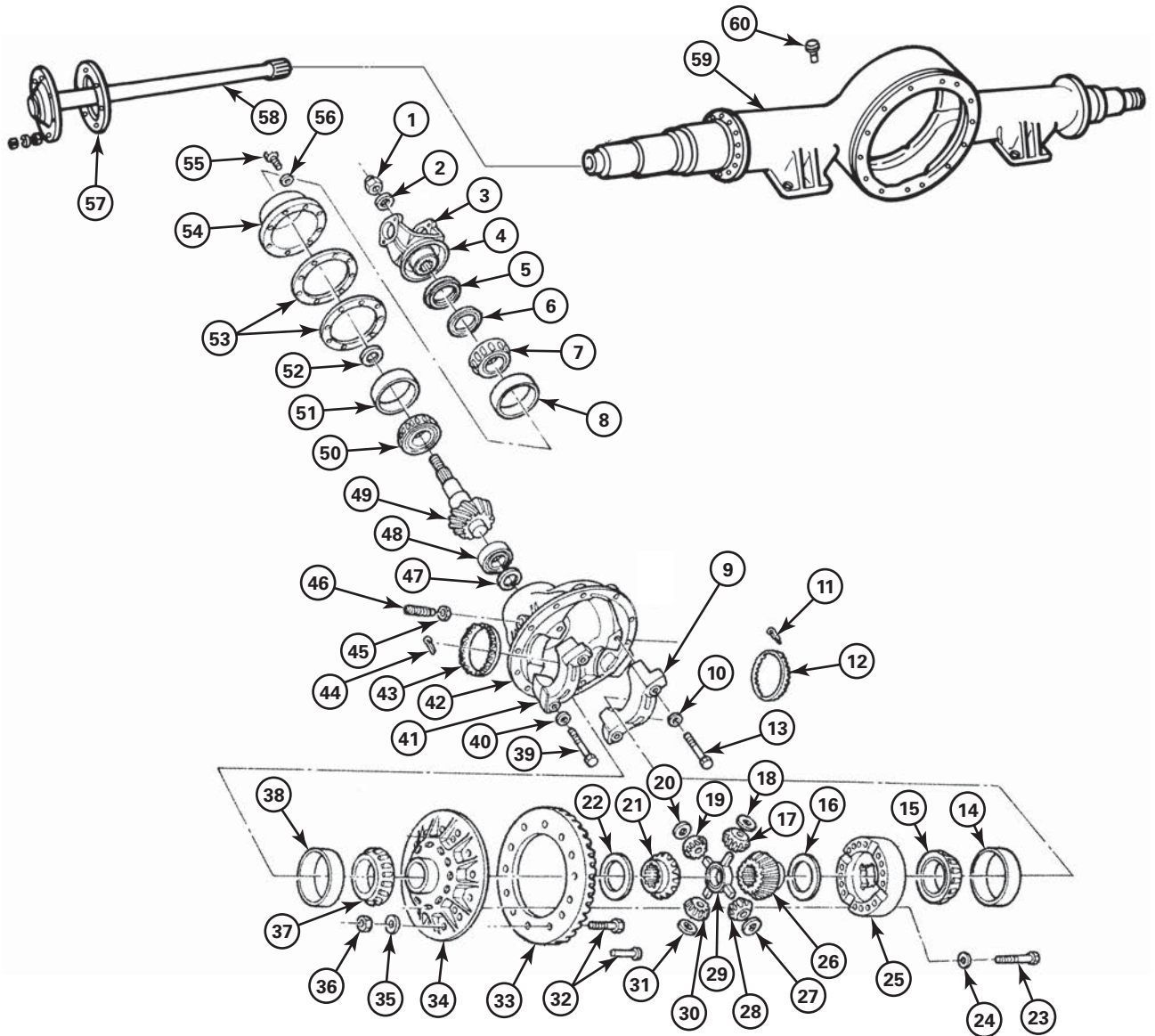
Item	Description
11	Pinion Cage Shim
12	Pinion Cage Shim
13	Pinion Cage Capscrew
14	Plain Half Differential Case
15	Differential Left-Half Bearing Cup
16	Differential Left-Half Bearing Cone
17	Differential Right-Half Bearing Cup
18	Differential Right-Half Bearing Cone
19	Adjusting Ring
20	Differential Case Screw

# 1 Exploded Views

Item	Description
21	Cotter Pin
22	Plug
23	Differential Spider (71000 Series)
24	Differential Pinion
25	Differential Pinion Thrust Washer
26	Differential Side Gear
27	Side Gear Thrust Washer
28	Drive Pinion
29	Drive Gear
30	Flange Half Differential Case
31	Pinion Spigot Bearing
32	Drive Pinion Nut
33	Drive Gear Screw
34	Shift Fork
35	Shift Fork Pin
36	Shift Shaft
37	Shift Shaft Spring
38	Piston
39	Piston O-Ring
40	Cylinder End Cover
41	Cylinder Cover Gasket
42	Cover Capscrew
43	Cover Capscrew Washer
44	Plug
45	Sensor Switch
46	Locknut Sensor Switch
47	Clutch Collar
48	Companion Flange
49	Deflector
50	Pinion-Pac Seal
	Model Without Differential Lock
51	End Cover
52	Sensor Switch Hole Blanking Plug
53	Washer Plug
54	End Cover Capscrew

Item	Description
55	End Cover Capscrew Washer
56	End Cover Gasket
57	Gasket
58	Grease Seal, Optional
59	Axle Shaft
60	Load Tube
61	Axle Housing
62	Breather
63	Differential Spider Leg (79000 Series)
64	Differential Spider Leg Half (79000 Series)

RC-23-160 Series Rear Axle



4001369a

Item	Description
1	Drive Pinion Nut
2	Drive Pinion Washer
3	Input Yoke or Flange
4	Deflector
5	POSE™ Seal
6	Triple Lip or Main Seal

Item	Description
7	Outer Bearing Cone
8	Inner Bearing Cup
9	Differential Right-Half Bearing Cap
10	Washers
11	Adjusting Ring Cotter Pin
12	Right-Half Adjusting Ring

# 1 Exploded Views

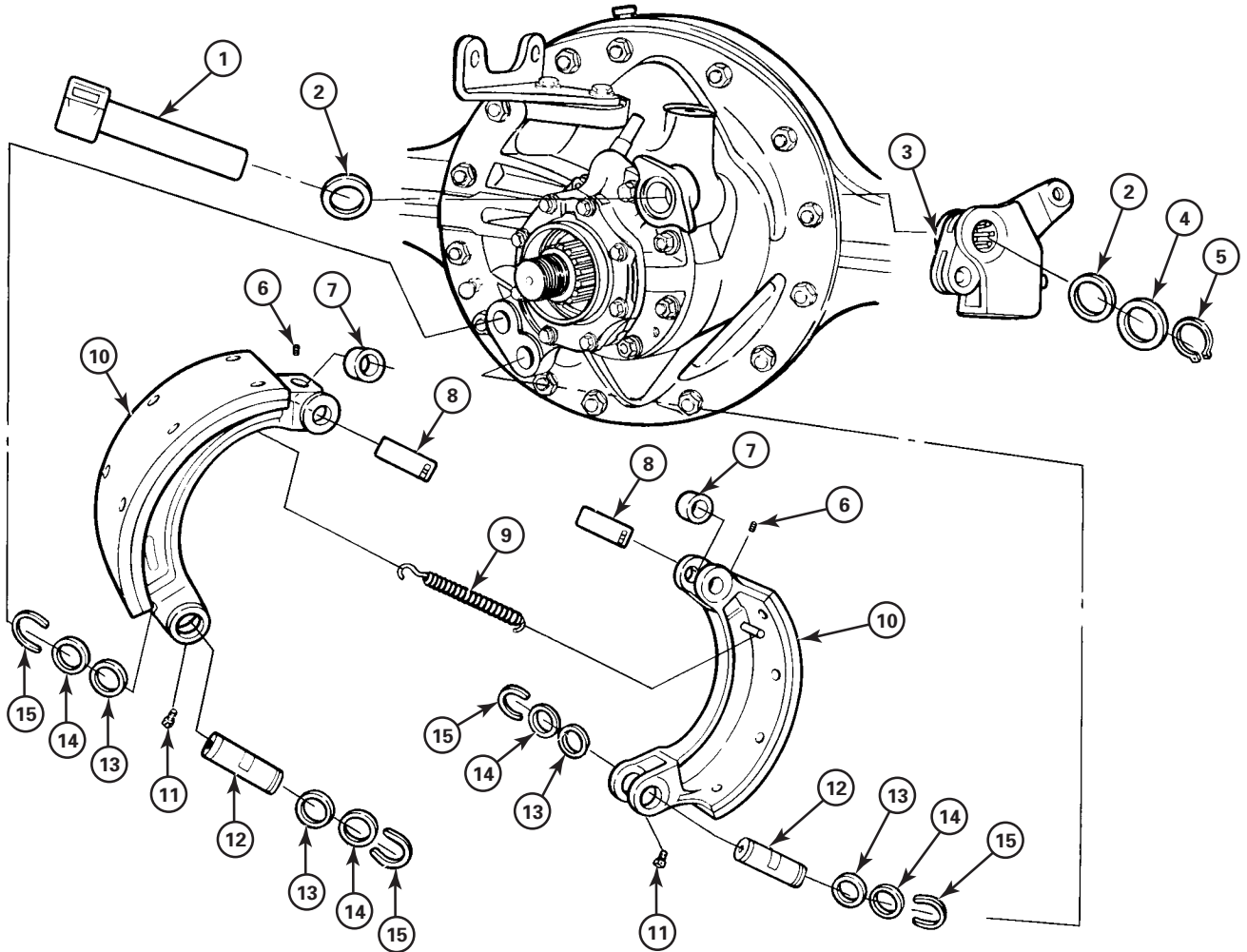
Item	Description
13	Differential Bearing Cap Capscrew
14	Differential Right-Half Bearing Cup
15	Differential Right-Half Bearing Cone
16	Differential Side Gear Thrust Washer
17	Differential Pinion
18	Differential Pinion Thrust Washer
19	Differential Pinion
20	Differential Pinion Thrust Washer
21	Differential Side Gear
22	Differential Side Gear Thrust Washer
23	Differential Case Capscrew
24	Differential Case Washer
25	Main Differential Case, Plain Half
26	Differential Side Gear
27	Differential Pinion Thrust Washer
28	Differential Pinion
29	Differential Spider
30	Differential Pinion
31	Differential Pinion Thrust Washer
32	Bolts or Rivets — Ring Gear-to-Case Half <sup>1</sup>
33	Ring Gear, Pinion Drive Gear
34	Main Differential Case, Flange Half
35	Ring Gear Bolt Washer
36	Ring Gear Bolt Nut
37	Differential Left-Half Bearing Cone
38	Differential Left-Half Bearing Cup
39	Differential Bearing Cap Capscrews
40	Washer
41	Differential Left-Half Bearing Cap
42	Carrier
43	Adjusting Ring
44	Adjusting Ring Cotter Pin
45	Thrust Screw Jam Nut <sup>2</sup>
46	Thrust Screw <sup>2</sup>
47	Snap Ring

Item	Description
48	Spigot Bearing
49	Drive Pinion
50	Pinion Inner Bearing Cone
51	Pinion Inner Bearing Cup
52	Pinion Bearing Spacer <sup>1</sup>
53	Shims <sup>1</sup>
54	Drive Pinion Bearing Cage
55	Bearing Cage Capscrew
56	Washer
57	Gasket
58	Axle Shaft
59	Axle Housing
60	Breather

<sup>1</sup> Thickness as required

<sup>2</sup> Not available on all designs

T Series Parking Brake — 59000 Series Rear Axle



4001370a

Item	Description
1	Camshaft
2	Washer
3	Adjuster Assembly
4	Washer
5	Snap Ring
6	Set Screw
7	Cam Roller
8	Shaft
9	Spring

Item	Description
10	Brake Shoe Assembly
11	Lock Screw
12	Anchor Pin
13	Oil Seal
14	Oil Seal Retainer
15	Anchor Pin Lock

## 2 Introduction

### Models Covered

59722	59843	61143	71163
59723	61042	61152	79063
59732	61043	61153	79163
59733	61052	61162	RC-23-160
59752	61053	61163	RC-26-700
59753	61063	71063	T Series Parking Brake
59842	61142	71162	

### Description

#### Rear Axles

The Meritor bus and coach rear drive axles are available in the 59000, 61000, 71000, 79000, RC-23-160 and RC-26-700 Series.

#### 59000 Series

- Spiral bevel gearing is used in an angle drive carrier. The pinion is at a 63 angle to the axis of the axle shafts.
- Optional conventional single-reduction and double-reduction carriers with hypoid gearing are also available.
- A driveline parking brake is installed on the flange of some angle drive carriers.
- The housing is designed with replaceable axle tubes at the wheel spindles. Figure 2.1.

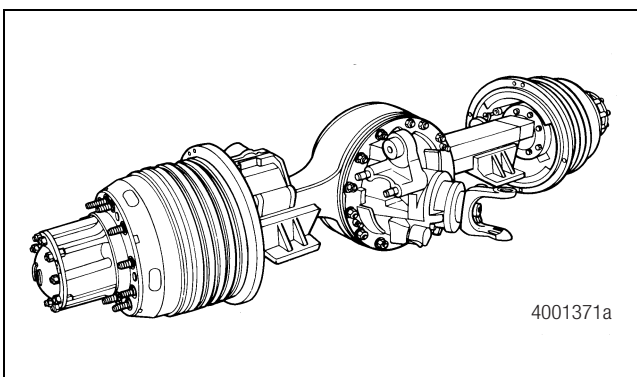


Figure 2.1

#### 61000 Series

- The single-reduction carrier is combined with a hypoid drive pinion and a ring gear.
- Optional double-reduction carriers are also available.

- The housing is designed with replaceable axle tubes at the wheel spindles.
- The housing has weld-on torque rod brackets. Figure 2.2.

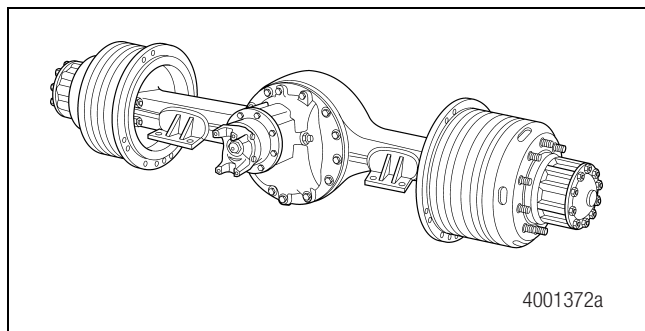


Figure 2.2

#### 71000 and 79000 Series

- The single-reduction carrier is combined with a hypoid drive pinion and a ring gear.
- The housing is designed with replaceable axle tubes at the wheel spindles.
- The housing has bolt-on torque rod brackets. Figure 2.3.

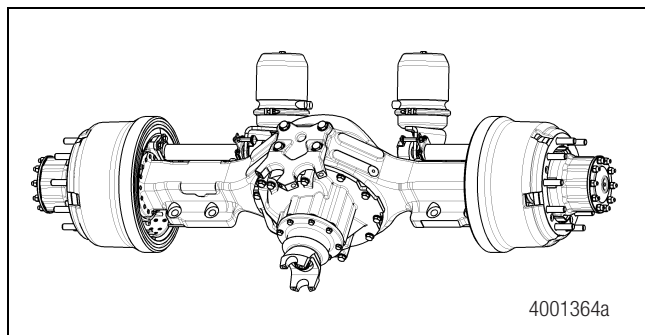


Figure 2.3

### RC-23-160 Series

- The single-reduction carrier is combined with a hypoid drive pinion and a ring gear.
- The housing is designed without replaceable axle tubes at the wheel spindles. Figure 2.2.

### Center Axles

The Meritor bus and coach center axles are available in the 61000, 71000, 79000 and RC-26-700 Series.

### 61000, 71000 and 79000 Series

- Center axles are identical to the 61000, 71000 and 79000 Series drive axles except without carriers or axle shafts.
- The spindle ends are capped so only the wheel end is filled with lubricant.
- A hubcap is used to keep lubricant in the wheel end instead of an axle shaft. Figure 2.4.

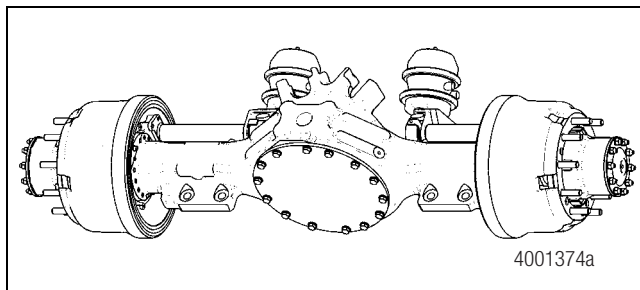


Figure 2.4

### RC-26-700 Series

- Tubular deep-drop axles are designed for low floor applications. Figure 2.5.

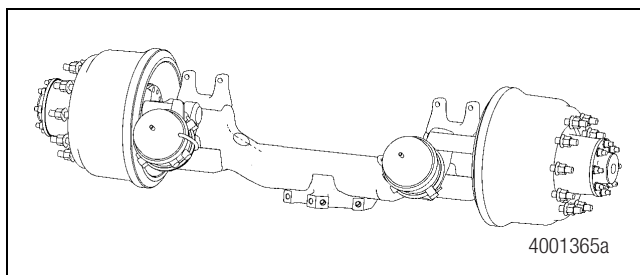


Figure 2.5

### T Series Parking Brake

The 59000 Series parking brake is a Meritor T Series brake installed on the drive pinion bearing cage in the differential carrier.

- An air chamber with an automatic slack adjuster is attached to the parking brake camshaft.
- A brake drum is installed on the yoke flange.
- The brake assembly has an outer diameter of 12-inches (304 mm).
- The brake shoes are 4.5-inches (114 mm) wide. Figure 2.6.

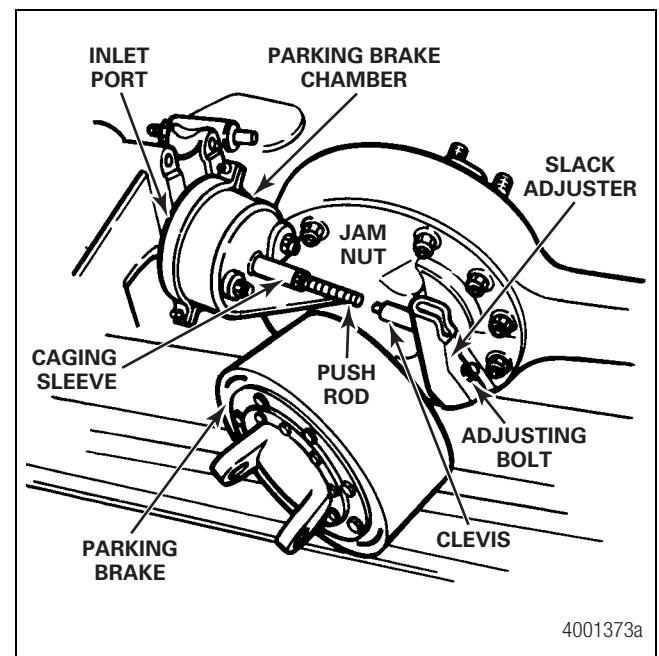


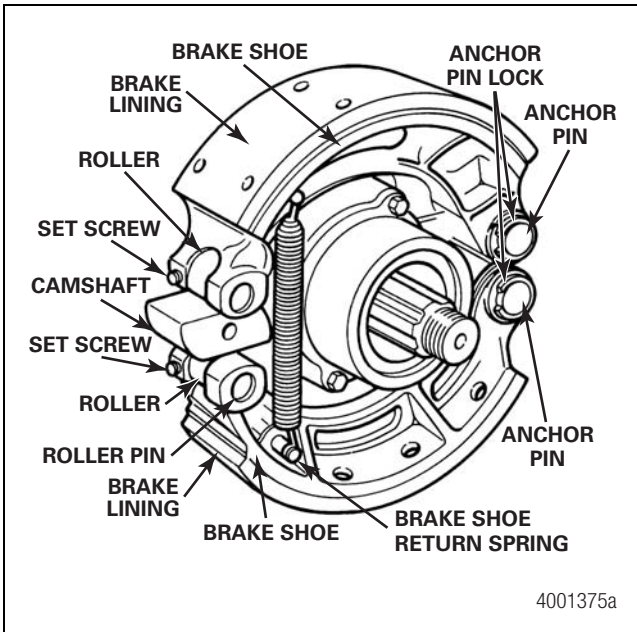
Figure 2.6

When the slack adjuster push rod moves, the camshaft rotates and moves the brake shoes against the drum.

Anchor pins allow the brake shoes to move. The anchor pins are fastened to the bearing cage with a lock screw and a lock wire. Each anchor pin has a replaceable bushing. A roller is installed into the cam end of each brake shoe. Rivets fasten a one-piece lining to each shoe. Figure 2.7.



## 2 Introduction



**Figure 2.7**

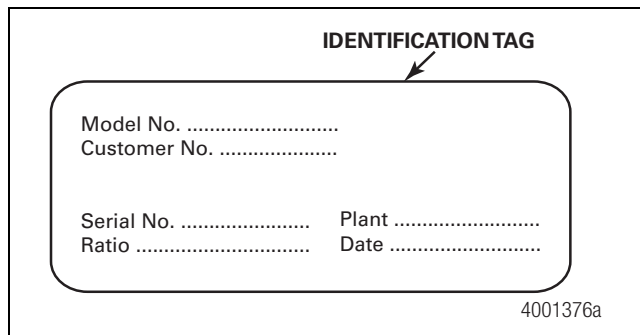
The camshaft is installed into bushings in the drive pinion bearing cage and the differential carrier. A fitting lubricates each bushing. The adjusting lever is installed onto the splined end of the camshaft. Figure 2.7.

## Identification

**Table A: Number Cross Reference**

Previous Number	Current Number
59732	59752
59733	59753
61132	61152
61143	61153
	RC-23-160

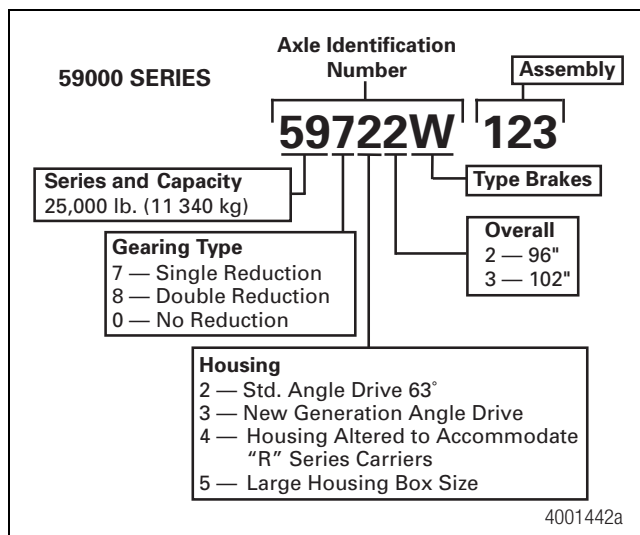
An identification tag is located on the axle housing or the differential carrier. Use the model number and the ratio number marked on the tag to order replacement parts. Figure 2.8.



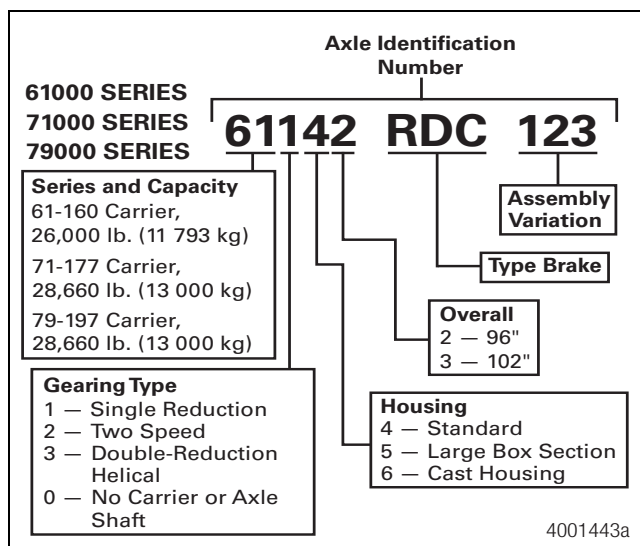
**Figure 2.8**

The RC-23-160 coach rear axle is identified by a letter and number system that provides information about the specific axle model. The first seven positions of the designation identify a basic axle model. The second group of letters and numbers identify complete axle specifications. Figure 2.11.

The model number designation for the 59000, 61000, 71000 and 79000 Series axles are identified in Figure 2.9 and Figure 2.10.



**Figure 2.9**



**Figure 2.10**

## 2 Introduction

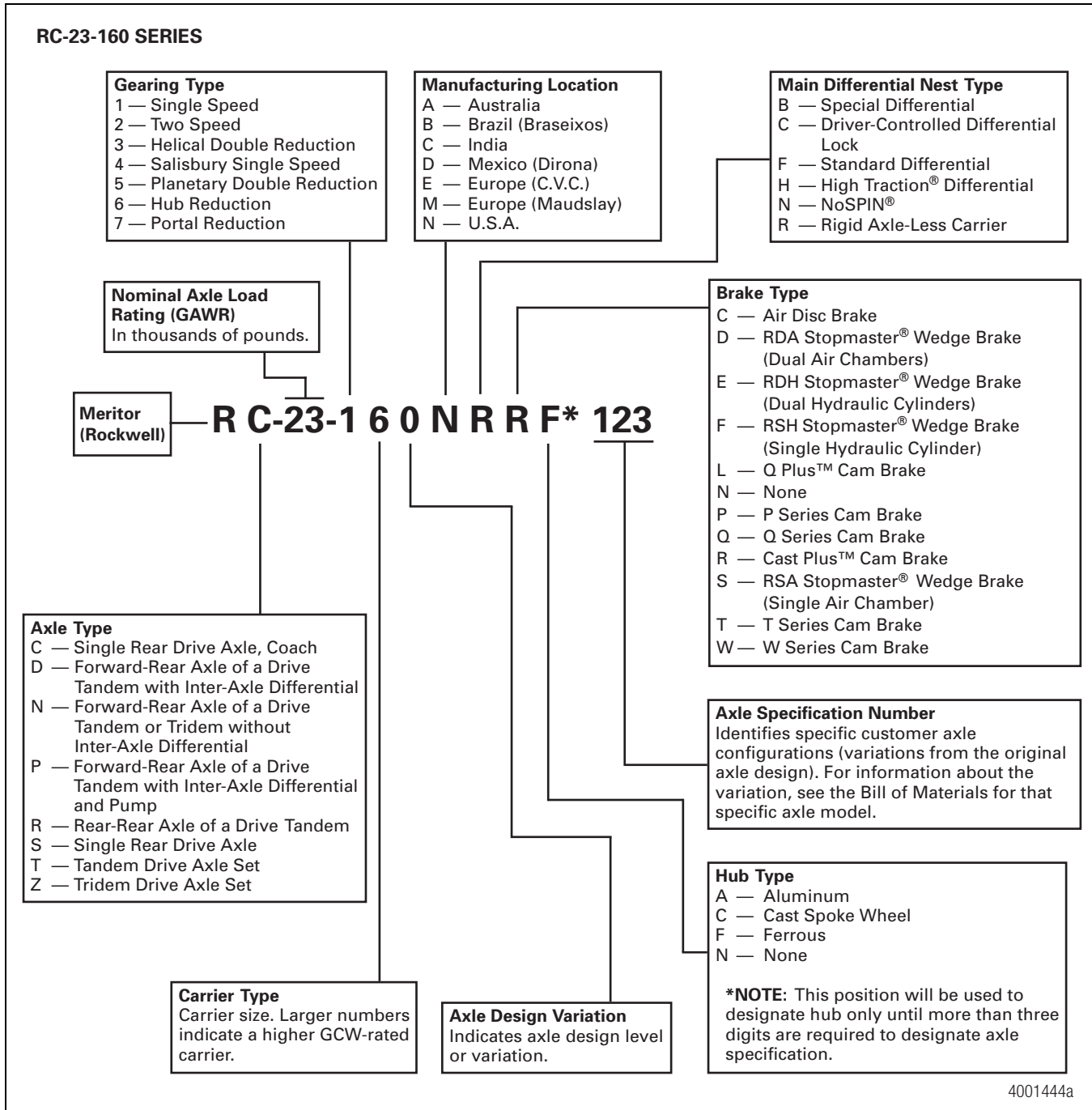


Figure 2.11

### 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.

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.

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.

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

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.

### Removal

#### Axle Shaft Removal Methods

##### Use Special Tools Recommended by Meritor

To help prevent serious personal injury and damage to components when you remove the axle shaft from the housing, Meritor recommends that you use the following tools in the table below. Refer to the Service Notes page at the front inside cover of this manual for information on how to contact the manufacturers to obtain the tools.

- **If the tools are not available when you remove the axle shaft:** Follow procedures for using the Brass Drift Method or the Air Vibration Method.

Tool	Part Number	Manufacturer
Axle Shaft Remover	K-1280	Kiene Diesel Accessories, Inc.
Axle Stud Cone Plier	7077	SPX OTC

#### Brass Drift Method

1. Loosen the axle shaft nuts until they are flush with the ends of the studs.

#### **⚠ WARNING**

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

2. Hold a 1-1/2-inch diameter brass drift or brass hammer against the center of the axle shaft, inside the round driving lugs. Figure 3.1.

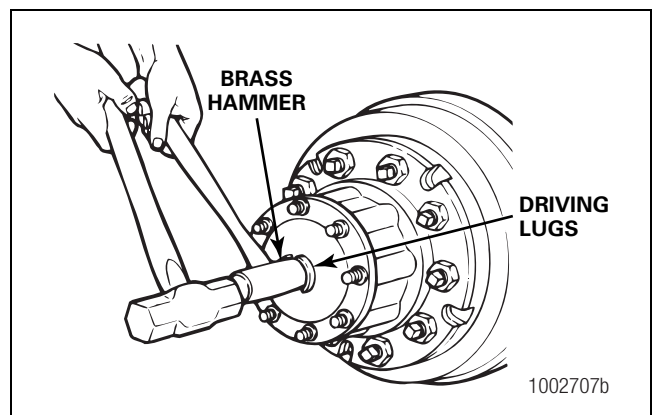


Figure 3.1

3. Strike the end of the drift with a large hammer, five to six pounds, and the axle shaft and tapered dowels will loosen.
4. Mark each axle shaft before it is removed from the axle assembly.
5. Remove the tapered dowels and separate the axle shafts from the main axle hub assembly. Figure 3.2.

### 3 Removal and Disassembly

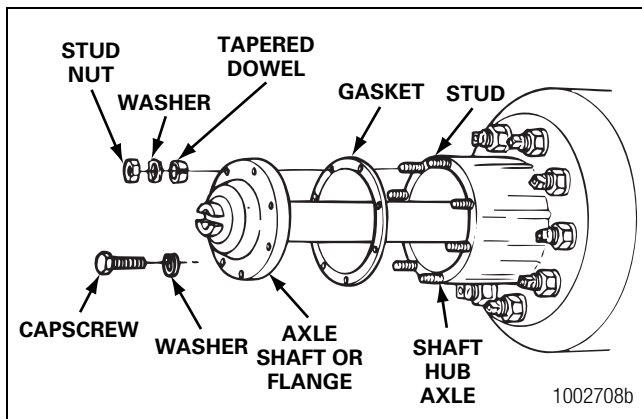


Figure 3.2

6. Install a cover over the open end of each axle assembly hub where an axle shaft was removed.

#### Air Hammer Vibration Method

1. Loosen the axle shaft nuts until they are flush with the ends of the studs.

#### **⚠ WARNING**

Wear safe eye protection when using an air hammer. When using power tools, axle components can loosen and break off causing serious personal injury.

#### **⚠ CAUTION**

Do not use a chisel or wedge to loosen the axle shaft and tapered dowels. Using a chisel or wedge can result in damage to the axle shaft, the gasket and seal, and the axle hub.

2. Use a round hammer bit and an air hammer to loosen the tapered dowels and axle shaft.
3. Place the round hammer bit against the axle shaft or flange between the hub studs. Operate the air hammer at alternate locations between the studs to loosen the tapered dowels and axle shaft from the hub. Figure 3.3.

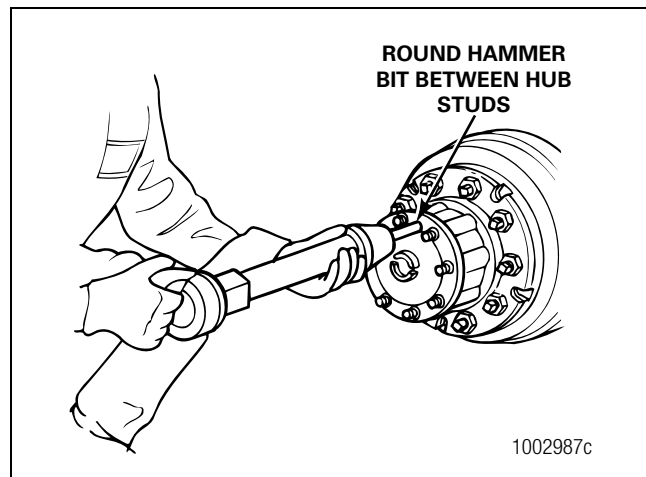


Figure 3.3

4. Mark each axle shaft before it is removed from the axle assembly.
5. Remove the tapered dowels and separate the axle shaft from the main axle hub assembly. Figure 3.2.

#### Differential Carrier from the Axle Housing

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 to be serviced are off the ground. Support the vehicle with safety stands.
3. Place a drain pan under the axle housing.
4. Remove the drain plug from the bottom of the axle housing. Drain the lubricant from the assembly. Install the drain plug and tighten it to 35 lb-ft (47 N•m). **ⓘ**
5. Cage the spring in the parking brake air chamber. Refer to the air chamber manufacturer's procedure.
6. Remove the stud nuts and washers from the flanges of both axle shafts. Figure 3.4.

### 3 Removal and Disassembly

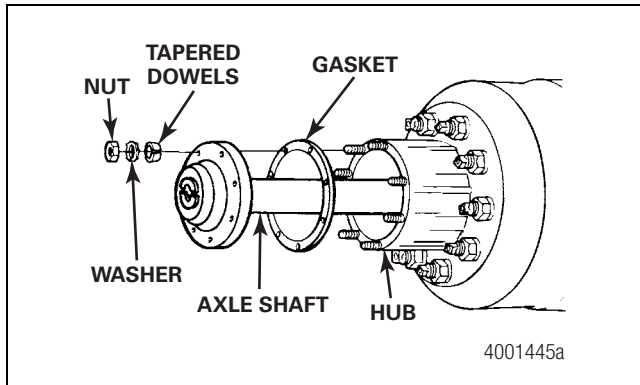


Figure 3.4

#### ⚠ WARNING

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

#### ⚠ CAUTION

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

7. If used, remove the tapered dowels in the flanges of both axle shafts. Refer to the procedures in this section.
8. Disconnect the drive shaft from the yoke.
9. Disconnect the air lines and the electrical connectors.
10. Place a hydraulic roller jack under the differential carrier to support the assembly. Figure 3.5.

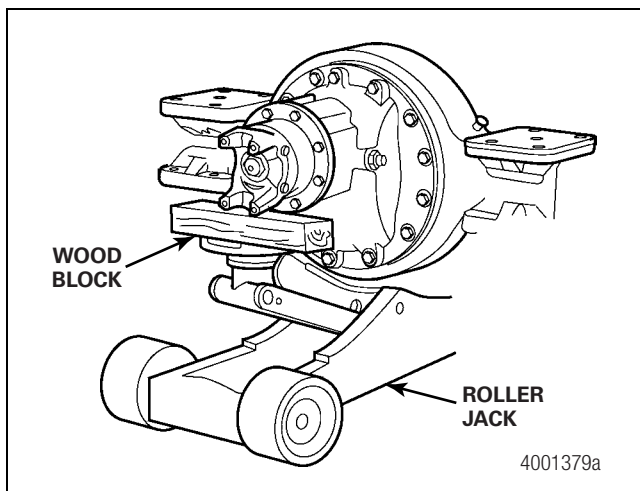


Figure 3.5

**NOTE:** Two capscrews or stud nuts and washers in the TOP of the carrier housing secure the carrier.

11. Remove all of the capscrews or stud nuts and washers that secure the carrier to the axle housing, except the two fasteners in the TOP of the carrier.
12. Loosen the two fasteners in the TOP of the carrier, but do not remove them.
13. Loosen the differential carrier by striking the mounting flange at several points with a leather mallet. Remove the two fasteners in the TOP of the carrier that secure the carrier to the axle housing.
14. Use a hydraulic roller jack and a pry bar with a round end to remove the carrier from the axle housing. Take care when you use the pry bar so that you don't damage the carrier or the housing flange.

#### ⚠ WARNING

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

**NOTE:** A carrier stand is available from SPX Kent-Moore. Refer to the Service Notes page on the front inside cover of this manual to obtain the stand.

### 3 Removal and Disassembly

15. Use a lifting tool to lift the differential carrier by the input yoke or the flange and place the assembly into a carrier repair stand. Figure 3.6.

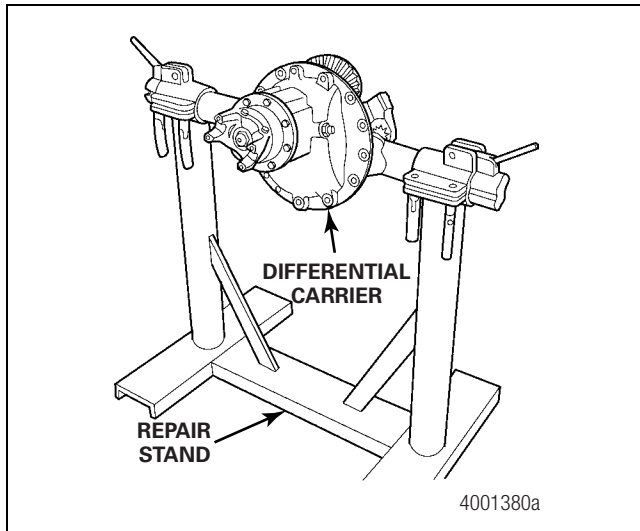


Figure 3.6

16. Place a holding tool on the yoke. Remove the nut that secures the yoke to the input shaft. Remove the washer.
17. Use a puller tool to remove the yoke.

**NOTE:** The POSE™ seal will remain on the yoke or the flange as the yoke or the flange is removed from the carrier.

18. If a POSE™ seal is on the hub, remove it from the hub with your hand.
19. If equipped, remove the parking brake. Refer to the procedure in this section.
20. Disassemble and assemble the differential carrier. For disassembly and assembly procedures for single-reduction carriers, refer to Maintenance Manual 5 or 5A, Single-Reduction Differential Carriers, or Maintenance Manual MM-0140, Single-Reduction Differential Carrier, Series 7. For optional carriers, refer to Maintenance Manual 6, Double-Reduction Differential Carriers. To obtain these publications, refer to the Service Notes page on the front inside cover of this manual.

#### Axle Shafts from the Axle Housing

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 to be serviced are off the ground. Support the vehicle with safety stands.
3. For drive axles, remove the stud nuts and the washers from the flanges of both axle shafts. For center axles, remove the nuts and the washers from both hubcaps. Remove the hubcaps. Figure 3.7.

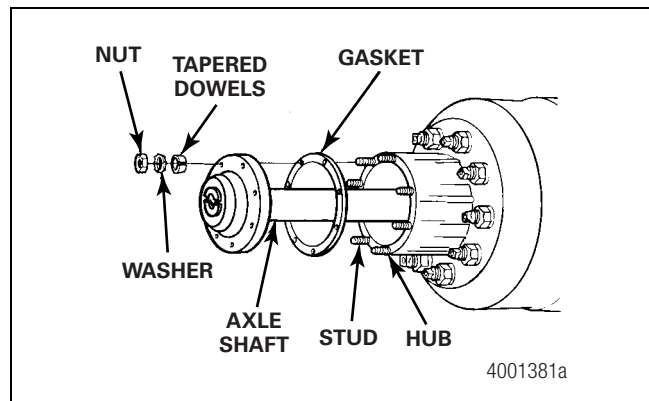


Figure 3.7

4. For drive axles, loosen the tapered dowels in the flanges of both axle shafts. Refer to the procedures in this section for removal methods.

#### Hub and Drum Assembly or Hub and Rotor Assembly from the Axle Housing

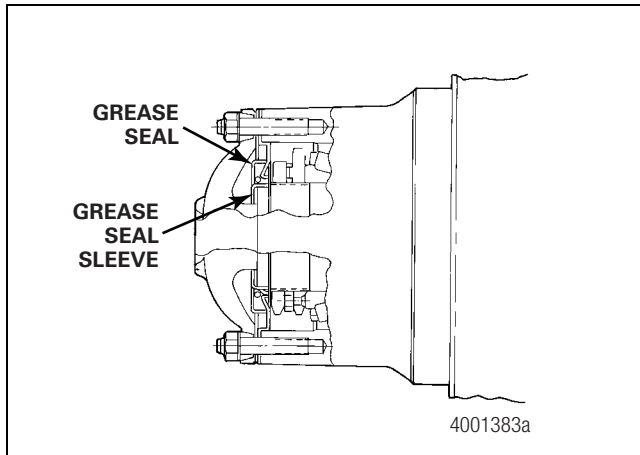
1. Cage the spring in the parking brake air chamber. Refer to the air chamber manufacturer's procedure.

#### **⚠ WARNING**

When you perform a wheel bearing adjustment, observe the following guidelines.

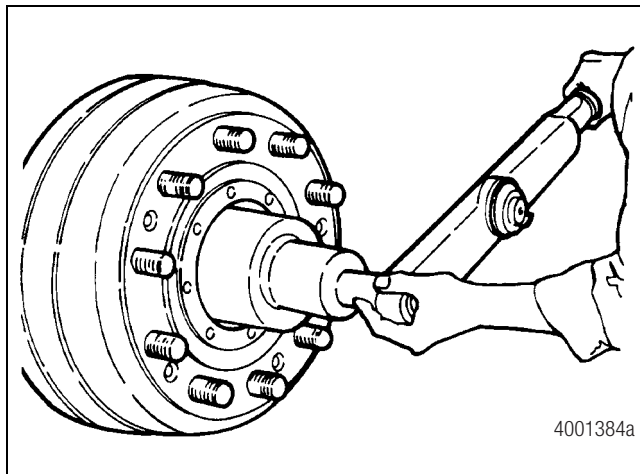
- Always use the correct size wrench socket.
- Always use a torque wrench to tighten the adjusting nuts to the correct adjusting torque.
- Do not tighten or loosen the adjusting nuts by hitting the nuts with a hammer or by hitting a chisel or a drift placed against the nuts with a hammer. Damage to the nuts can result. Damaged adjusting nuts can prevent a correct wheel bearing adjustment, cause possible loss of vehicle wheel-end equipment and cause serious personal injury.

2. For optional grease-lubricated wheel ends, remove the grease seal on the outboard end of the hub. Discard the seal. Figure 3.8.



**Figure 3.8**

3. If equipped, straighten the stamped retainer from the outer wheel bearing nut. Remove the outer wheel bearing nut, stamped retainer, lock washer and inner wheel bearing nut from the spindle. Figure 3.9.



**Figure 3.9**

**NOTE:** You can remove the hub, drum or rotor, and wheel assembly as an assembly. To support the weight, use an appropriate wheel dolly.

4. Pull the hub, drum or rotor, and wheel assembly **STRAIGHT** off the spindle. If necessary, hit the inside of the wheel with a mallet to loosen it. Be careful that the outer bearing cone does not fall when the hub is removed.

## Disassembly

### **⚠ WARNING**

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

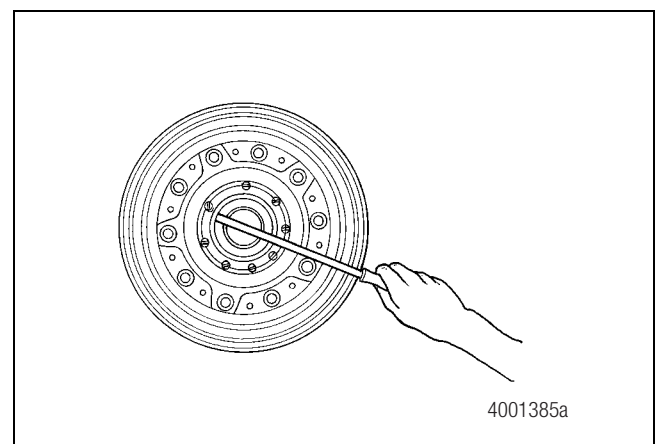
### Hub Assembly Without ABS: 59000, 61000, 71000, 79000 and RC-26-700 Series

1. Remove the wheel and tire assembly from the hub.
2. To disassemble the drum from the hub, remove the flat-head capscrews from the drum, if equipped.

### **⚠ WARNING**

**Do not hit the wheel studs with a steel hammer or remove the studs by twisting. Damage to the parts can occur and metal fragments can cause serious personal injury.**

3. If it is necessary to remove the wheel studs from the hub, remove the nuts from the inside of the hub flange. Remove the oil deflector, if equipped. Place the hub into a press with the drum mounting surface supported by the press. Press the studs through the hub. If a press is not available, use a brass hammer or a drift.
4. The wheel seal is in a seal retainer. If you are only removing the oil seal, use a long screwdriver to remove the oil seal from the hub. Discard the old seal. Figure 3.10.



**Figure 3.10**

5. To remove the inner bearing cone, remove the screws that secure the seal retainer to the hub and remove the seal retainer.



### 3 Removal and Disassembly

6. Use a press and a sleeve, or a bearing puller, to remove the inner and the outer bearing cups from the hub. Remove the oil seal sleeve from the axle housing.
7. For optional grease-lubricated wheel ends, remove the grease seal sleeve from the end of the spindle.

#### Hub Assembly with ABS: 59000, 61000, 71000, 79000 and RC-26-700 Series

1. Remove the wheel and tire assembly from the hub.
2. To remove the drum from the hub, remove the flat-head capscrews from the drum, if equipped.
3. If it is necessary to remove the wheel studs from the hub, remove the nuts from the inside of the hub flange. Remove the oil deflector, if used. Place the hub into a press with the drum mounting surface supported by the press. Press the studs through the hub. Figure 3.11.

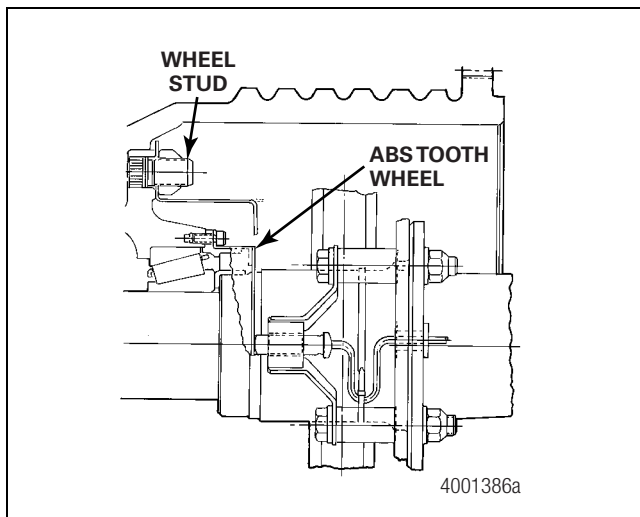


Figure 3.11

4. The wheel seal is located in a seal retainer located below the ABS tooth wheel. Remove the capscrews that secure the ABS tooth wheel and the seal retainer to the hub. Figure 3.11.
5. Use a press and a suitable driver to remove the oil seal from the seal retainer. Discard the old seal.
6. Remove the inner bearing cone from the hub.
7. Use a press and a sleeve, or a bearing puller, to remove the inner and the outer bearing cups from the hub.
8. Remove the oil seal sleeve from the axle housing.

9. For optional grease-lubricated wheel ends, remove the grease seal sleeve from the end of the spindle.

#### Hub Assembly with Drum Brakes: RC-23-160 Series

1. Remove the wheel and tire assembly from the hub.
2. Remove the brake drum.
3. If it is necessary to remove the wheel studs from the hub, place the hub into a press. Support the hub flange and press the studs through the hub. If a press is not available, use a brass hammer or a drift.
4. If necessary, use a long screwdriver to remove the oil seal from the hub. Discard the oil seal. Figure 3.12.

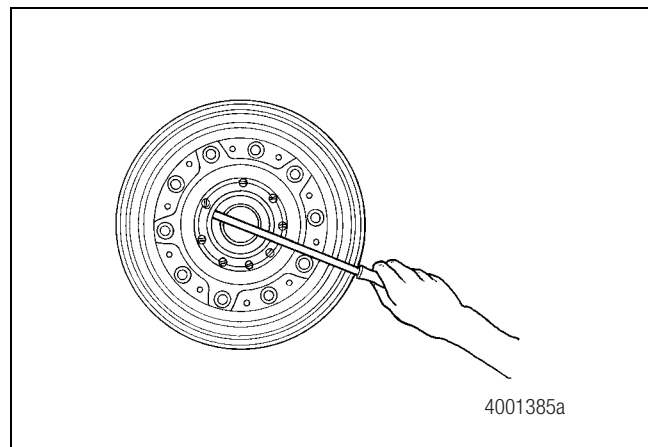
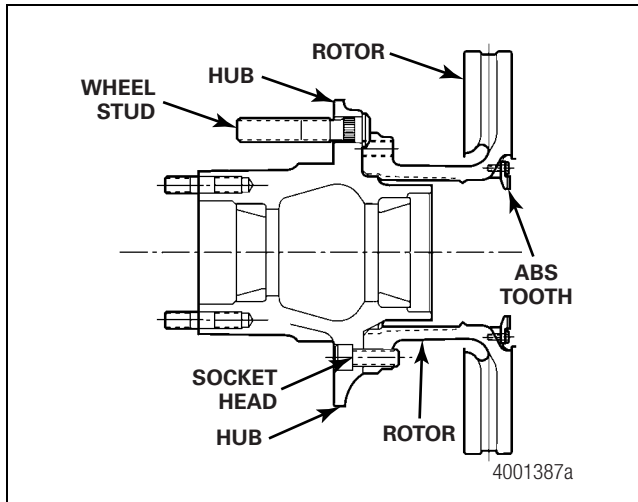


Figure 3.12

5. Remove the inner bearing cone from the hub.
6. Use a press and a sleeve, or a bearing puller, to remove the inner and the outer bearing cups from the hub.
7. If necessary, use a suitable puller to remove the ABS tooth wheel from the hub.
  - **If the tooth wheel will remain on the hub:** Protect the tooth wheel when you handle the hub to prevent damage to the teeth.

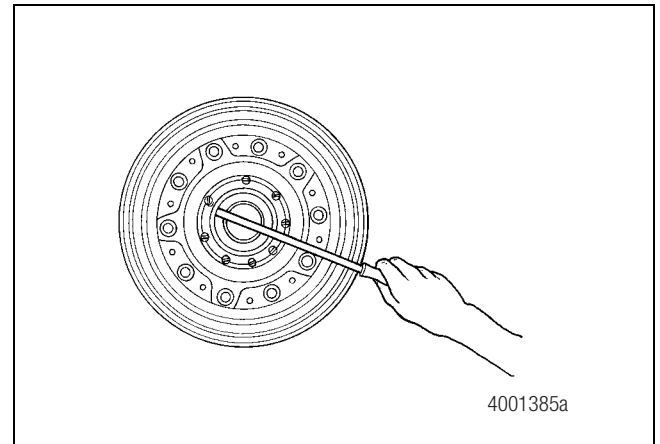
#### Hub Assembly with Disc Brakes: RC-23-160 Series

1. Remove the wheel and tire assembly from the hub.
2. If it is necessary to remove the rotor, remove the 10 socket-head capscrews that secure the rotor to the hub. Remove the rotor from the hub. Figure 3.13.



**Figure 3.13**

3. If necessary, remove the ABS tooth wheel from the rotor by removing the retaining capscrews.
  - **If the tooth wheel will remain on the hub:** Protect the tooth wheel when you handle the hub to prevent damage to the teeth.
4. If it is necessary to remove the wheel studs from the hub, place the hub into a press. Support the hub flange and press the studs through the hub. If a press is not available, use a brass hammer or a drift.
5. If necessary, use a long screwdriver to remove the oil seal from the hub. Discard the oil seal. Figure 3.14.



**Figure 3.14**

6. Remove the inner bearing cone from the hub.
7. Use a press and a sleeve, or a bearing puller, to remove the inner and the outer bearing cups from the hub.

#### Brakes from the Housing Without ABS: 59000, 61000, 71000, 79000 and RC-26-700 Series

1. Disassemble the brake. Refer to Maintenance Manual 23B, Bus and Coach Brakes. To obtain this publication, refer to the Service Notes page on the front inside cover of this manual.
2. Remove the bolts, nuts and washers that secure the brake spider to the housing.
3. Drill out the rivets that secure the brake spider to the housing. Verify that the spider and the housing are not damaged.
4. Remove the brake spider from the housing.

#### Brakes from the Housing: 59000, 61000, 71000, 79000 and RC-26-700 Series with ABS

1. Disassemble the brake. Refer to Maintenance Manual 23B, Bus and Coach Brakes. To obtain this publication, refer to the Service Notes page on the front inside cover of this manual.
2. Remove the bushing on the ABS sensor cable where the cable comes through the housing brake flange. Figure 3.15.

### 3 Removal and Disassembly

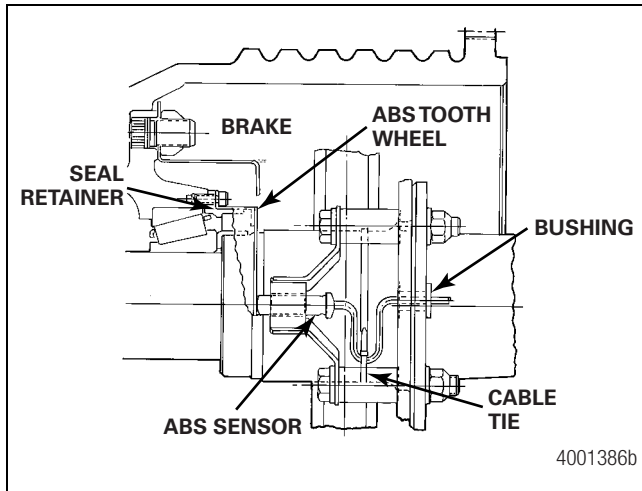


Figure 3.15

3. Cut the cable tie.
4. Pull the cable through the brake flange.
5. If required, remove the hose clamp that secures the ABS block to the housing.
6. Remove the bolts, nuts and washers that secure the brake spider to the housing.
7. If required, remove the ABS block mounting capscrews. Figure 3.16.

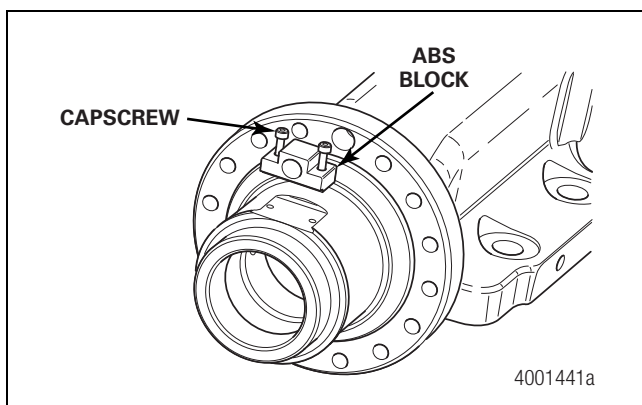


Figure 3.16

8. Use hand pressure to disassemble the ABS sensor from the ABS spring clip and the ABS support bracket. Figure 3.17.

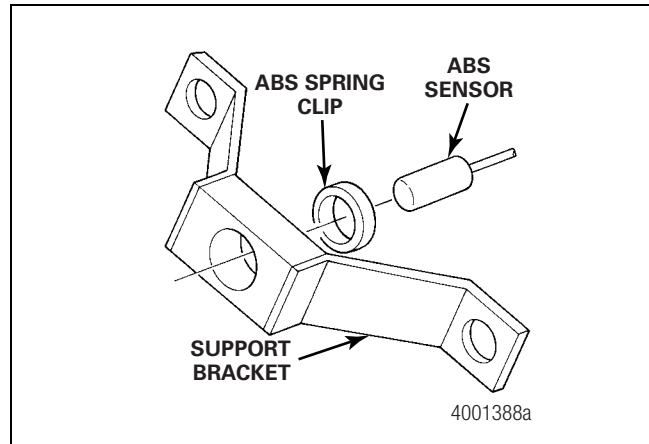


Figure 3.17

9. Drill out the rivets that secure the brake spider to the housing. Verify that the spider and the housing are not damaged.
10. Remove the brake spider from the housing.

#### Drum Brakes from the Housing: RC-23-160 Series

1. Disassemble the brake. Refer to Maintenance Manual 23B, Bus and Coach Brakes. To obtain this publication, refer to the Service Notes page on the front inside cover of this manual.
2. Disassemble the ABS sensor block from the housing by removing the two socket-head capscrews that secure the upper block to the lower block.
3. Use your hand to remove the ABS sensor from the bushing and the upper block.

#### Disc Brakes from the Housing: RC-23-160 Series

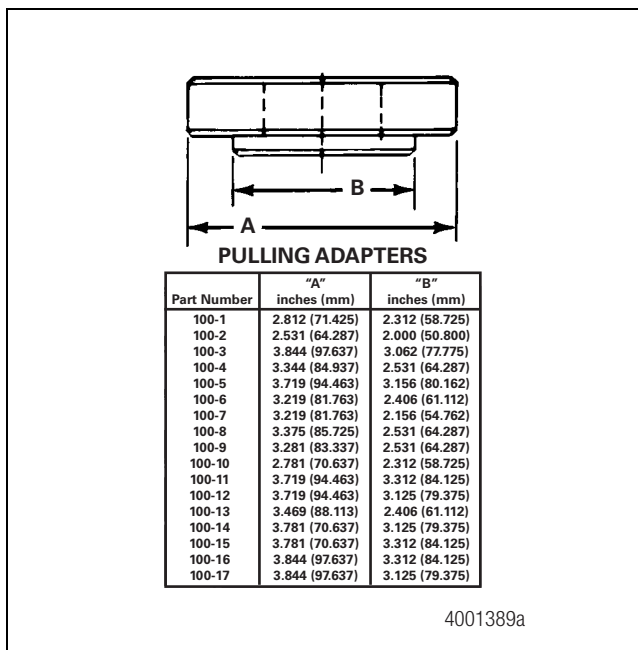
1. Remove the brake caliper from the torque plate. Refer to the brake manufacturer's procedure.
2. Remove the ABS sensor from the torque plate.
3. Use your hand to remove the ABS sensor from the bushing and the upper block.
4. Remove the bolts, nuts and washers that secure the brake spider or the torque plate to the housing.
5. Remove the brake spider or the torque plate from the housing.

## Removal

### Axle Tube: 59000, 61000, 71000 and 79000 Series

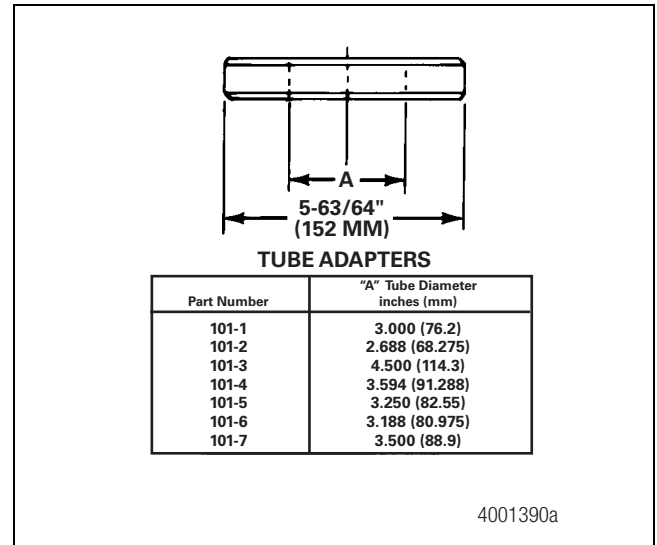
The following tools are required to remove and install the axle tube. The tools are available from the Wright Tool Company. The adapters, clamping strap and pilot plate must be ordered separately. To obtain these tools, refer to the Service Notes page on the front inside cover of this manual.

- Tool set WTC HY-100 includes a hydraulic ram, two-speed hydraulic pump, puller tube, two puller screws, connecting nut, hex nut, speed nut and electric hydraulic pump.
- Two pulling adapters: Measure dimension "A" and "B" on the axle tube. The adapter outer diameter must be slightly smaller than the tube outer diameter. Figure 3.18.



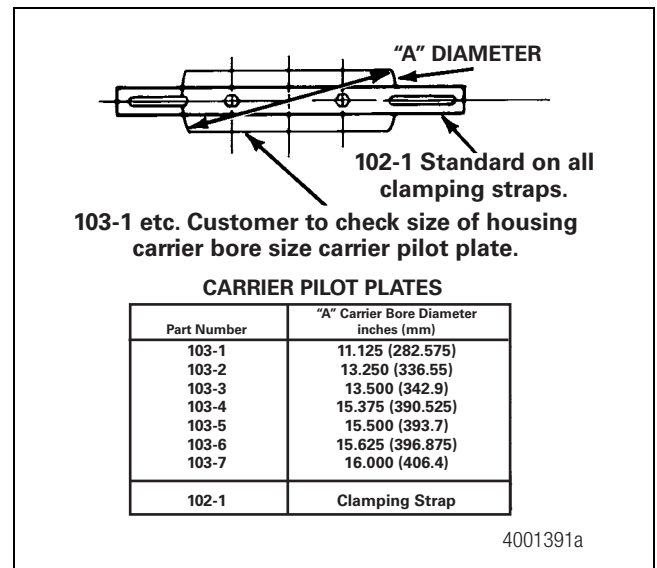
**Figure 3.18**

- Tube adapter: Measure dimension "A" on the axle tube. The tube adapter inner diameter must be slightly larger than the tube outer diameter. Figure 3.19.



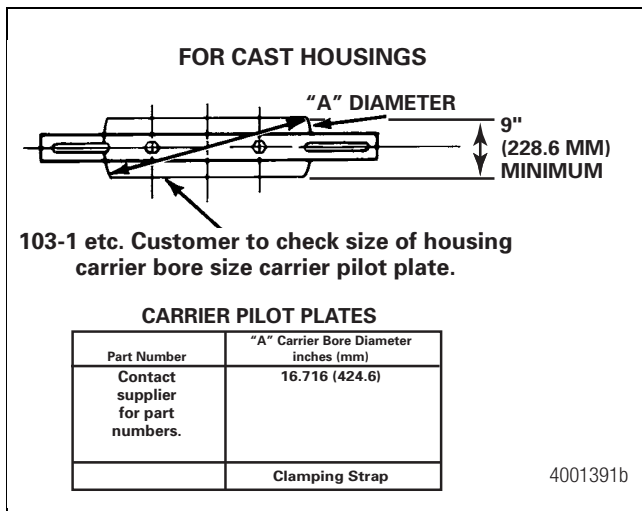
**Figure 3.19**

- One pilot plate and one clamping strap: The pilot plate prevents the axle housing from collapsing when the tube is installed. Measure dimension "A" in the axle housing. The clamping strap fits all pilot plates. Figure 3.20 and Figure 3.21.



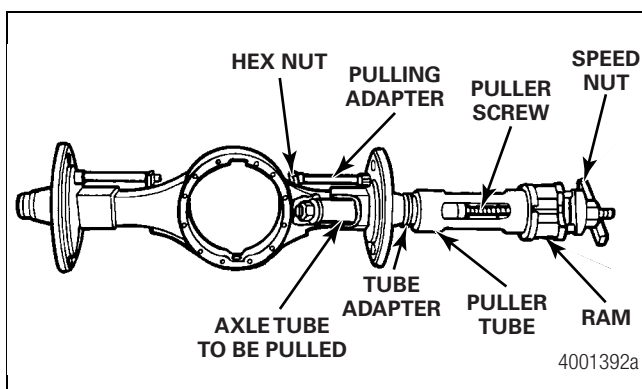
**Figure 3.20**

### 3 Removal and Disassembly



**Figure 3.21**

1. Remove the tire and wheel assembly and the hub and drum assembly. Refer to the manufacturer's procedure.
2. Remove the axle shafts and the differential carrier. Refer to the procedure in this section.
3. For models with a cast housing, a dowel is located on the axle centerline on the carrier side of the spindle. Drill a 0.5-inch (13 mm) diameter hole in the middle of the dowel. The hole should be 0.63-0.79-inch (16-20 mm) deep. Tap the hole and use a puller to remove the dowel.
4. Install the pulling adapter into each end of the axle tube. Figure 3.22.



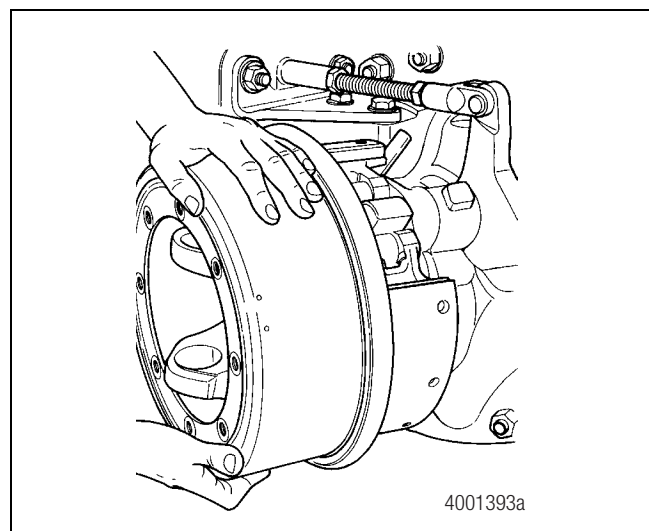
**Figure 3.22**

5. Place the tube adapter into the hub side of the axle tube. Figure 3.22.
6. Install the puller tube against the tube adapter. Figure 3.22.

7. Connect the hydraulic ram to the puller tube. Install the speed nut onto the hydraulic ram. Figure 3.22.
8. Connect the hydraulic ram to the hydraulic pump. Apply pressure and remove the axle tube from the housing. Figure 3.22.

### Parking Brake Shoes

1. Park the vehicle on a level surface. Block the wheels to prevent the vehicle from moving.
2. Release the brake system air pressure.
3. Cage the spring in the spring chamber, if used. Refer to the spring chamber manufacturer's procedure.
4. Remove the bolts and the washers that secure the brake drum to the flange on the yoke. Slide the drum onto the drive shaft. Figure 3.23.



**Figure 3.23**

5. To remove the brake drum, disconnect the drive shaft. Remove the brake drum.
6. Remove the spring from the brake shoes. Figure 3.24.

### 3 Removal and Disassembly

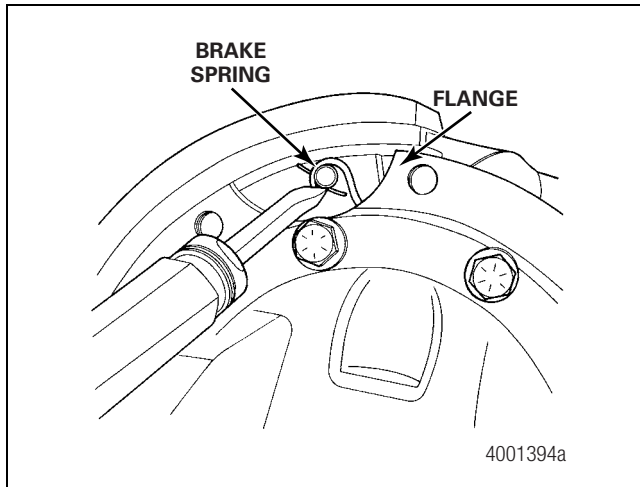


Figure 3.24

7. Remove the lock that secures the shoe to the anchor pin. Remove the oil seal retainer and the oil seal from the anchor pin. Figure 3.25.

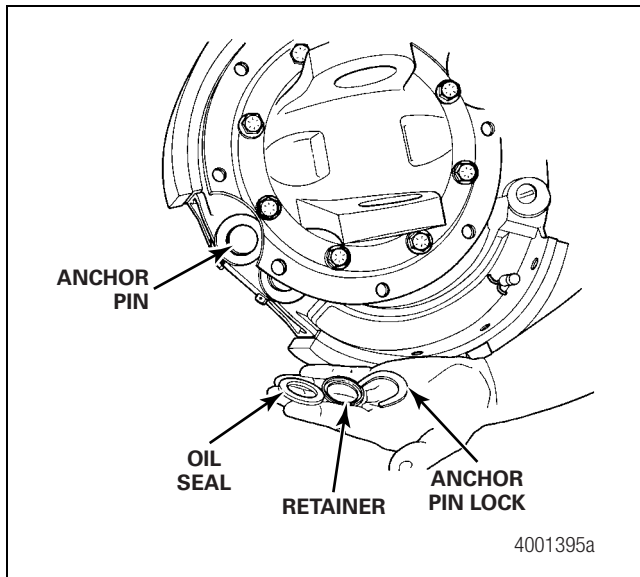


Figure 3.25

8. Remove the lock wire from the anchor pin. Loosen the lock screws for the anchor pin.
9. Use a brass drift and a punch to remove the anchor pin from the bearing cage. Remove the brake shoes. Figure 3.26.

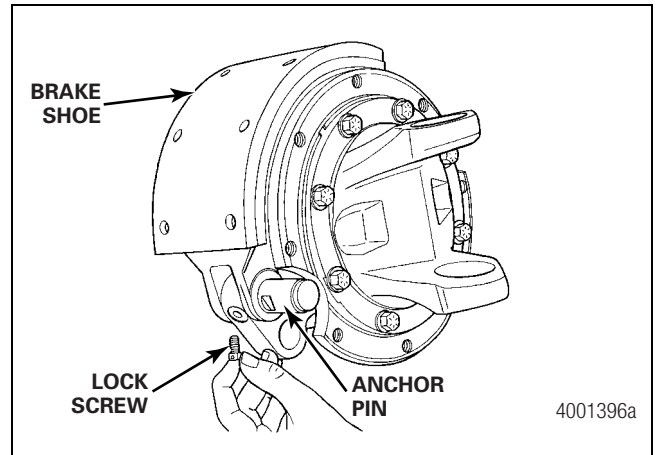


Figure 3.26

10. If necessary, remove the cam roller. Remove the set screw that secures the shaft to the shoe. Remove the roller and the shaft from the shoe. Figure 3.27.

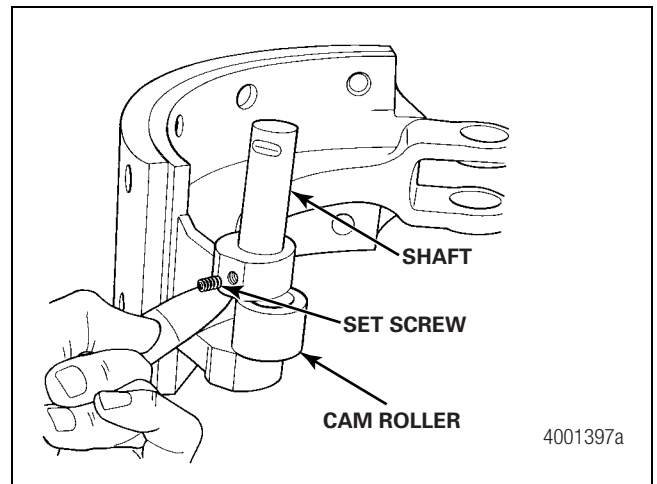


Figure 3.27

#### Camshaft

1. Remove the brake shoes and the drum. Refer to the procedure in this section.
2. Remove the yoke from the drive pinion. Refer to the procedure in this section.
3. Disconnect the parking brake linkage from the adjusting lever.
4. Remove the snap ring and the washers that secure the adjusting lever to the camshaft. Remove the lever. Figure 3.28.

### 3 Removal and Disassembly

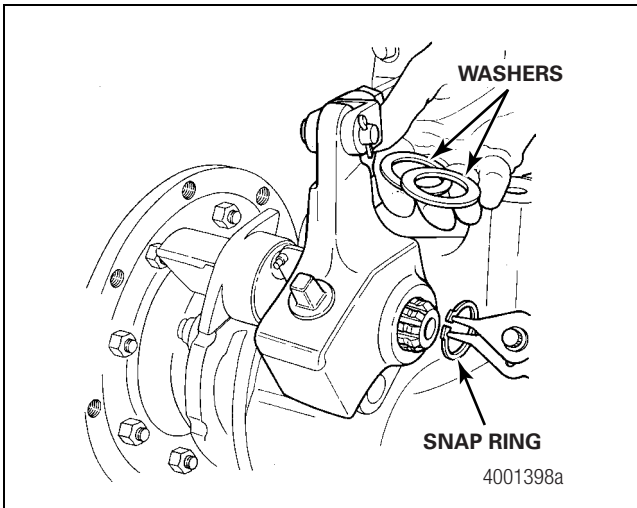


Figure 3.28

#### Torque Rod Brackets: 61000 Series Axles with Cast Housing, and 71000 and 79000 Series Axles

1. Remove the bolts and the washers that secure the torque rod bracket to the housing.
  2. The bracket is connected to the housing with a press-fit dowel. Pull the bracket perpendicular to the mounting surface to remove the bracket. It may be necessary to rotate the bracket around the dowel while pulling to remove the bracket.
  3. Remove the dowel from the housing.
- **If any of the threaded holes in the housing are stripped or the dowel hole is elongated out-of-round:** Replace the housing.

5. Remove the camshaft from the front of the bearing cage. Figure 3.29.

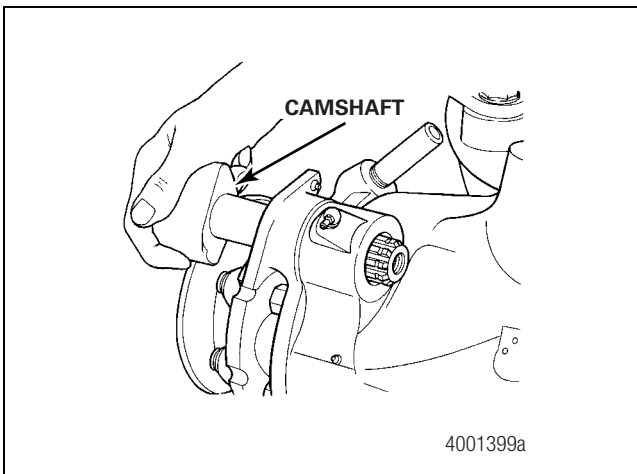


Figure 3.29

6. If worn or damaged, remove the oil seal in the bearing cage.
7. If worn or damaged, replace the camshaft bushings in the differential carrier and the bearing cage. Use a hammer and a driver tool to remove the bushings.

### 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.

#### **WARNING**

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

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

### Clean, Dry and Inspect Parts

#### Ground and Polished Parts

Use a cleaning solvent to clean ground or polished parts or surfaces. Kerosene or diesel fuel oil can be used for this purpose. DO NOT USE GASOLINE.

- Do NOT clean ground or polished parts in a hot solution tank, water, steam or alkaline solutions.

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

#### Rough Parts

Rough parts can be cleaned with cleaning solvent or in a hot solution tank with a weak alkaline solution.

Parts must remain in hot solution tanks until completely cleaned and heated.

When removed from the hot solution, wash the parts with water until the alkaline solution is removed.

#### Dry Cleaned Parts

Parts must be dried immediately after cleaning and washing.

Dry the parts using soft clean paper or cloth rags.

#### **CAUTION**

Bearings can be damaged if dried by rotating with compressed air.

Except for bearings, parts can be dried with compressed air. Do not dry bearings by spinning with compressed air.

#### Prevent Corrosion on Cleaned Parts

Apply a light oil to cleaned and dried parts that are not damaged and are to be immediately assembled.

If parts are to be stored, apply a good corrosion preventative to all surfaces. Store the parts inside special paper or other material that prevents corrosion.

### Inspect Parts

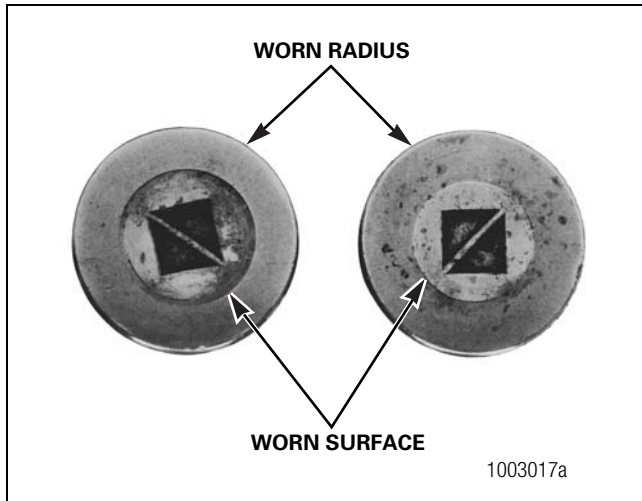
#### Tapered Roller Bearings

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

- The center of the large-diameter end of the rollers is worn level or below the outer surface.
- The radius at the large-diameter end of the rollers is worn to a sharp edge. Figure 4.1.

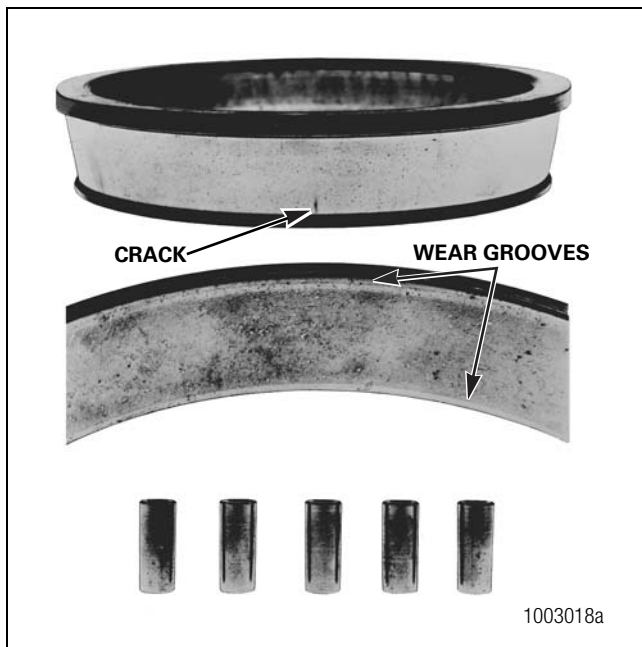


## 4 Prepare Parts for Assembly



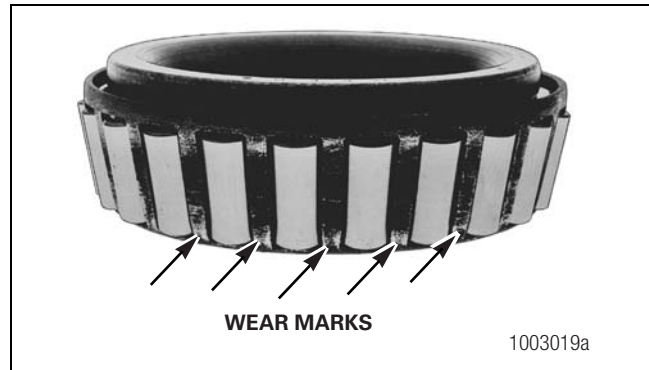
**Figure 4.1**

- You find a roller groove at the small- or large-diameter end of the cup or cone inner race surfaces.
- You can see deep cracks or breaks in the cup, cone, and inner race or roller surfaces. Figure 4.2.



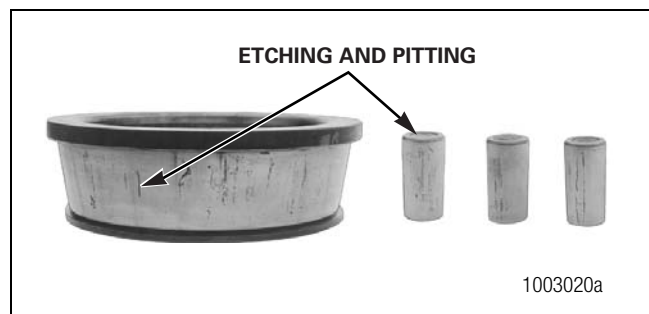
**Figure 4.2**

- You can see bright wear marks on the outer surface of the roller cage. Figure 4.3.



**Figure 4.3**

- The rollers are damaged. Figure 4.4.



**Figure 4.4**

- The cup and cone inner race surfaces that touch the rollers are damaged. Figure 4.5.



**Figure 4.5**

### Brakes

Meritor recommends that you replace the following parts at each reline.

- Springs
- Clevis pins
- Rollers
- Camshaft seals
- Anchor pins

For additional brake information, refer to Maintenance Manual 23B, Bus and Coach Brakes. To obtain this publication, refer to the Service Notes page on the front inside cover of this manual.

### Brake Drums

Replace a drum if the drum is cracked, worn or damaged.

- **If a drum is out-of-round:** Remove material from the inside of the drum.
- **If the inner diameter of a drum is more than 12.09-inches (307 mm):** Replace the drum.

### Bushings and Linings

Replace the linings if they are worn to the top of the rivet.

Replace the bushings if they are worn or damaged.

### Camshaft

If the camshaft is worn or damaged, replace the camshaft.

Replace the camshaft bushings if they are worn or damaged.

### Disc Brake Caliper and Brake Pads

Refer to the brake manufacturer's inspection procedures.

### Disc or Rotor

#### **WARNING**

**You must replace a damaged disc. The brake system may not operate correctly. Damage to components and serious personal injury can result.**

When you reline the brakes, you must measure the thickness of the disc.

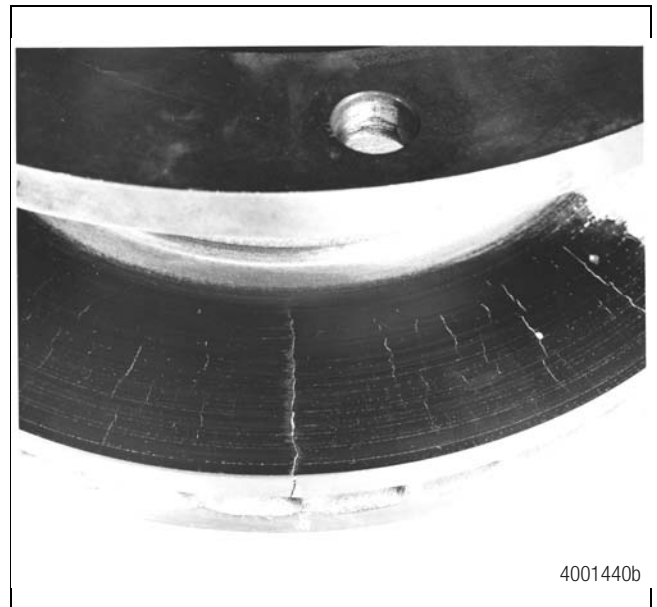
When you inspect the brakes, also inspect both sides and the outer diameter of the disc. Inspect for the following.

- Cracks
- Heat checking
- Grooves or scores
- Blue marks or bands

### Cracks

A crack can extend through a section of the disc and can cause the two sides of the crack to separate. Figure 4.6.

- **If you find any cracks:** Replace the disc.



**Figure 4.6**

### Heat Checking

Heat checking produces cracks in the surface of the disc. Heat checking can be light or heavy. Light heat checking is very fine, tight, small cracks. Light heat checking is normal. You can continue to use a disc with light heat checking. Heavy heat checking produces surface cracks that have width and depth. Figure 4.7.

- **If you find heavy heat checking:** Replace the disc.

## 4 Prepare Parts for Assembly

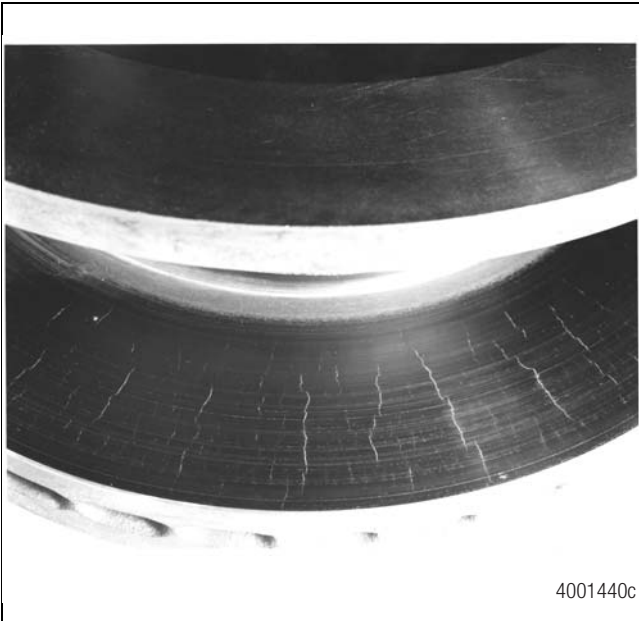


Figure 4.7

### Grooves or Scores

Check both sides of the disc for deep grooves or scores. Light scoring is normal in rotors. Figure 4.8.

- **If the grooves or scores are deep:** Replace the disc.

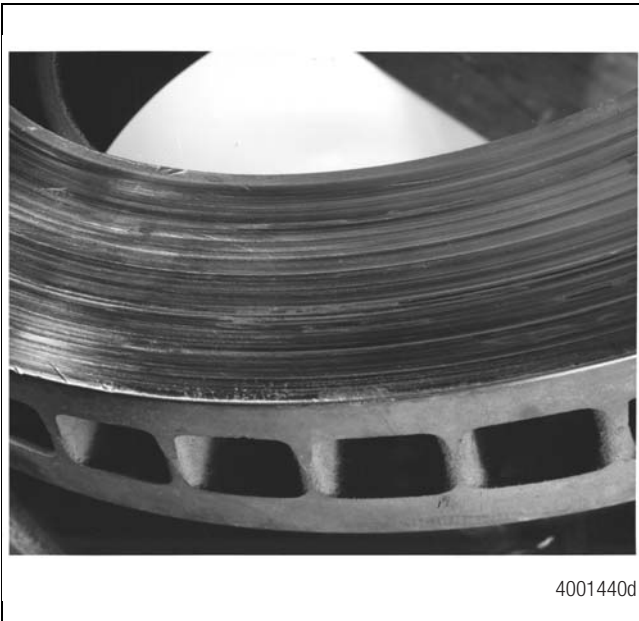


Figure 4.8

### Blue Marks or Bands

Blue marks or bands indicate that the disc was very hot. Figure 4.9.

- **If blue marks or bands are present:** Check for dragging brake linings or severe overloading.

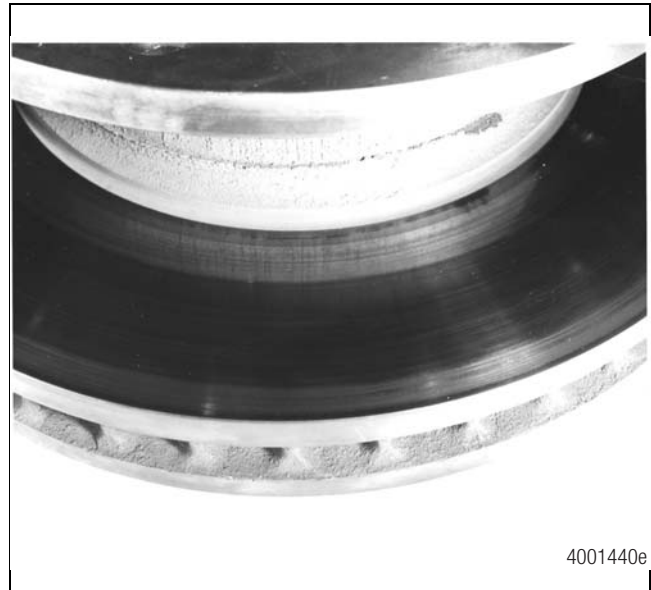


Figure 4.9

### Measure the Disc Thickness

Measure the disc thickness when you reline the brakes. Discs with vents must be at least 1.626-inches (41.3 mm) thick. Figure 4.10.

- **If the disc thickness is less than the specification:** Replace the disc.

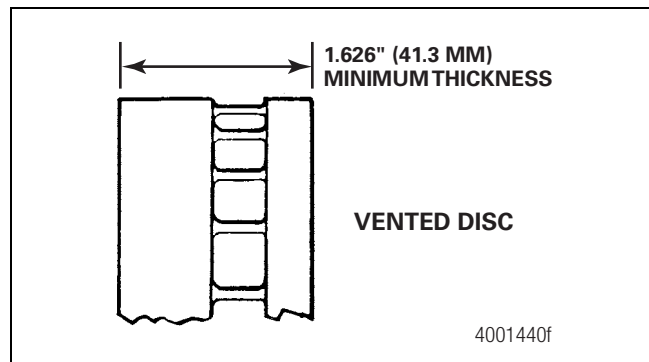


Figure 4.10

### Applying Adhesive and Silicone Gasket Material

#### Silicone Gasket Material

##### **⚠ 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.

**NOTE:** You can use the following silicone gasket products, or equivalent, on Meritor components.

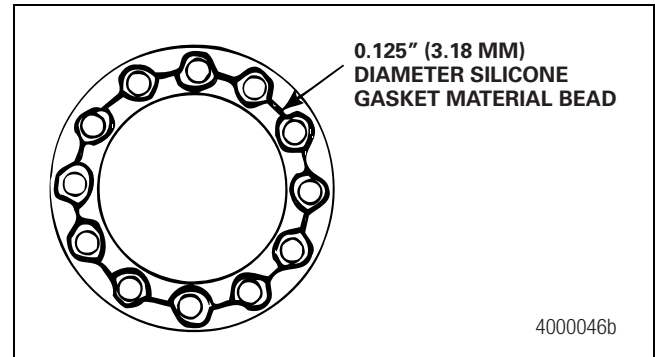
The following products are available in three oz. (85 gram) tubes.

- Three Bond Liquid Gasket number TB 1216 (Grey), Meritor part number 2297-Z-7098
- Loctite® Ultra Grey Flange Sealant number 5699, Meritor part number 2297-A-7021

The following product is available in 120 oz. (3.4 kg) cartridges.

- Three Bond RTV1216 (Grey), Meritor part number 2297-A-7051

1. Remove all old gasket material from both surfaces.
2. Clean the surfaces where you'll apply the silicone gasket material. Remove all oil, grease, dirt and moisture. Dry both surfaces.
3. Apply a 0.125-inch (3.18 mm) diameter continuous bead of silicone gasket material around one surface. Also apply the gasket material around the edge of all the fastener holes on that surface. Figure 4.11.



**Figure 4.11**

4. Assemble the components immediately to permit the gasket material to compress evenly between the parts.
5. Tighten the fasteners to the required torque specification for that size fastener. Refer to Section 7.
6. Wait 20 minutes before filling the assembly with lubricant. Refer to Section 7.

### Repair Welding on Axle Housings

For complete repair welding instructions, refer to Maintenance Manual 8, Drive Axle Housings. To obtain this publication, refer to the Service Notes page on the front inside cover of this manual.

##### **⚠ WARNING**

Do not repair weld on ductile cast iron housings. Repair welding can weaken the structural integrity of a component; in particular, heat-treated parts. Serious personal injury and damage to components can result.

### Do Not Bend or Straighten a Damaged Drive Axle Housing

##### **⚠ WARNING**

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

Always replace a damaged drive axle housing. Do not bend or straighten a damaged housing, which can misalign or weaken it, and void Meritor's warranty.

## 5 Assembly and Installation

### Hazard Alert Messages

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

#### WARNING

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

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

**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.**

### Installation Guidelines

#### Preparation of Axle

If the axle was removed from under the vehicle and has to be installed back under the vehicle, for optimal axle performance and service life, it is important that the following guidelines are followed.

These guidelines are intended only as an aid during axle installation and may not cover all the details and are by no means intended to replace any required due diligence or other instructions from the vehicle manufacturer.

- All axle interface/mounting surfaces must be clean, dry and free of rust, lubricants, paint, grease, transparent/protective masks and other foreign matter.
- All axle interface/mounting surfaces must be clear of any installation interferences.
- The axle must be filled with the correct volume and type of axle lubricant as recommended in the maintenance manual (including wheel hub lubrication, if any).
- All grease points on the axle must be checked for correct greasing, and re-greased, if necessary.
- The axle must be installed and applied as approved in the appropriate application approval documents.

- All axle interface hardware and their respective torques must be correctly selected to be compatible with the axle and application requirements. Also, the torques for the various axle interface fasteners must be correctly maintained throughout the service life of the vehicle.
- Make certain that absolutely no working interference exists between the axle and other components of the vehicle during all situations (including worst cases of jounce, roll, etc., and their worst combinations).
- All lubrication schedules, maintenance and periodic inspections, specifications, etc., must be correctly followed as specified in the appropriate Meritor maintenance manuals. Also, refer to the appropriate maintenance manuals for other service information.

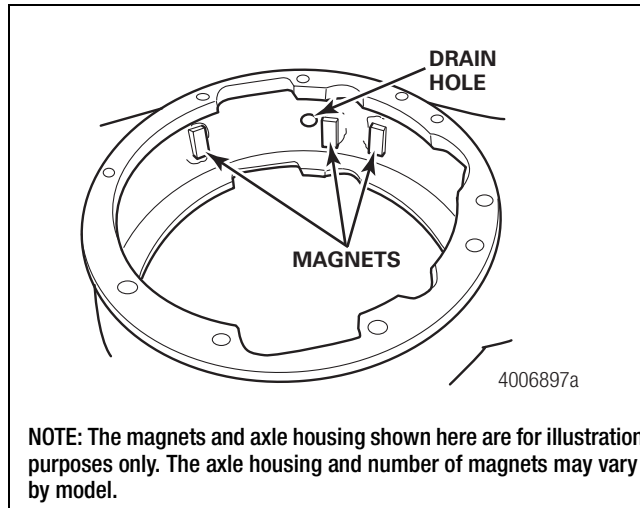
### Installation

#### Magnets to Axle Housing

Depending on the axle model and manufacture date, the axle housing may have four or six extra magnets installed in the axle housing in addition to fill and drain plugs. If the original axle housing had extra magnets that were removed during disassembly, install the magnets using the following procedure.

1. Clean the inside of the axle so it is free of any lubricants, dirt and other foreign matter.
2. Clean the magnets so they are free of any lubricants, dirt and other foreign matter.
3. Apply RTV silicone sealant to one of the larger surfaces on the magnet.
4. Install the magnets into the bottom of the axle housing to the axle housing internal flat surface. Figure 5.1. Position three magnets on either side of the drain hole as follows.
  - A. Locate the drain hole near the center of the axle housing bowl. Depending on the axle model, the drain hole is either offset from the bowl centerline or located on the bowl centerline.
  - B. Position the first magnet on the drain hole side approximately one inch (25.4 mm) away from the drain hole. Other magnets on that side should be approximately 1.5-inches (38 mm) away from the previous one.

- C. Position the first magnet on the opposite side of the bowl centerline so it is symmetrical to the first magnet on the drain hole side. Other magnets on that side should be approximately 1.5-inches (38 mm) away from the previous one.



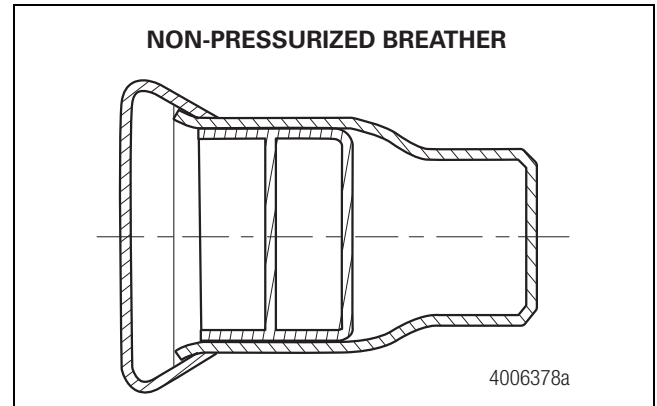
**Figure 5.1**

5. Press the magnets in place so that the adhesive squeezes evenly on all four sides. Ensure there is sealant beneath the magnet. Do not squeeze all the sealant from underneath the magnets.

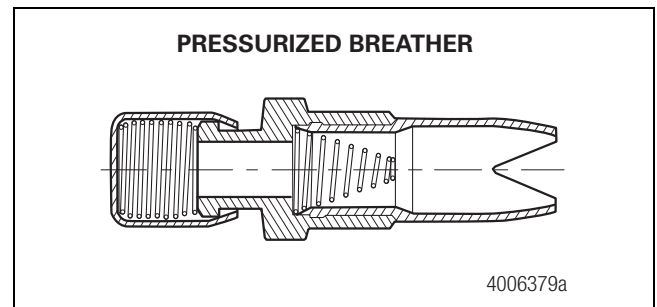
When you install the magnets, allow the sealant to cure according to the sealant manufacturer cure times. After correct installation, the magnets will be approximately symmetrical on either side of the axle bowl centerline and will not interfere with any other component during axle operation.

### Breathers

Both an older non-pressurized and a newer pressurized breather are available for the rear drive axle. Figure 5.2 and Figure 5.3.



**Figure 5.2**



**Figure 5.3**

### **⚠ WARNING**

Take care when you use Loctite<sup>®</sup> 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<sup>®</sup> adhesive material gets into your eyes, follow the manufacturer's emergency procedures. Have your eyes checked by a physician as soon as possible.

1. Usually sealant has been preapplied to the threads on a pressurized breather. If sealant has not been applied, apply Loctite<sup>®</sup> 592 sealant to the threads.
2. Install a breather into the axle.
  - A. Tighten a non-pressurized breather to 20-24 lb-ft (27-32.5 N•m). **ⓘ**
  - B. Tighten a pressurized breather to 12-18 lb-ft (16.5-24.5 N•m). **ⓘ**

## 5 Assembly and Installation

### Differential Carrier into the Axle Housing

#### **⚠ WARNING**

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

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

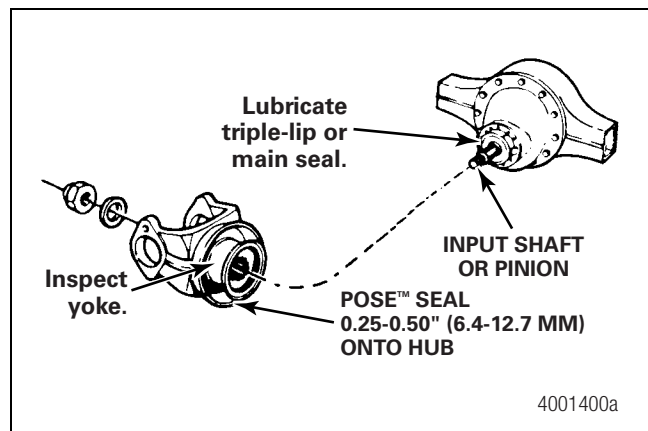
1. Park the vehicle on a level surface. Block the wheels to prevent the vehicle from moving. Support the vehicle with safety stands. Do not work under a vehicle supported only by jacks. Jacks can slip and fall over. Serious personal injury and damage to components can result.
2. Inspect the inside of the axle housing and the carrier mounting surface. Use a cleaning solvent to remove dirt. Use compressed air to dry the cleaned areas.
3. Inspect the axle housing for damage. If necessary, repair or replace the axle housing.
4. Check for loose studs, if used, in the housing mounting surface. Remove and clean loose studs.
5. Apply liquid adhesive to threaded holes. Install the studs into the axle housing. Tighten to specification. Refer to Section 7.
6. If used, install the parking brake onto the differential carrier. Refer to the procedure in this section.

### POSE™ Seal

1. Apply the lubricant used in the axle housing to the yoke or the flange hub.
2. Verify that the lips of the POSE™ seal, and the outer retainer of the triple-lip seal or the main seal, are clean and free from dirt and particles that may contribute to oil leakage between the seals.

**NOTE:** The POSE™ seal will position itself correctly as the yoke or the flange is pressed onto the shaft.

3. Install the POSE™ seal onto the yoke or the flange hub by hand. The lips of the seal must face toward the end of the hub, opposite the shoulder. Slide the POSE™ seal onto the hub until the lips are 0.25-0.50-inch (6.4-12.7 mm) from the end of the hub. Do not install the POSE™ seal against the shoulder. Figure 5.4.



**Figure 5.4**

**NOTE:** After you install the POSE™ seal onto the yoke hub, immediately install the yoke and seal assembly to the pinion shaft. If you do not immediately install the yoke and POSE™ seal to the pinion shaft, the self-positioning capabilities of the seal could be hindered and contamination or damage to the POSE™ seal system may occur. The yoke must be completely seated before you tighten the pinion nut to the input shaft.

4. Before you install the yoke or the flange onto the input shaft or the pinion, apply the lubricant used in the axle housing to the hub area where the POSE™ seal has wiped off the lubricant.
5. Install the yoke or the flange.

### Yoke

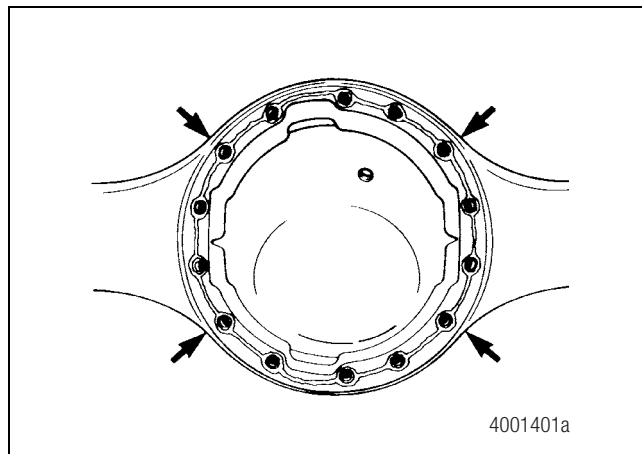
**NOTE:** A yoke installation tool, D80T-4859-B, is available from OTC Tool and Equipment Division. To obtain this tool, refer to the Service Notes page on the front inside cover of this manual.

1. Use the yoke installation tool, D80T-4859-B or equivalent, to install the yoke.
2. Install the washer and the nut that secure the yoke to the drive pinion. Use a holding tool and tighten the nut. Refer to Section 8.
3. Apply silicone gasket material to the carrier mounting surface on the housing. Refer to Section 4.

### **CAUTION**

**Do not use a hammer or a mallet to install the carrier. A hammer or a mallet will damage the carrier mounting flange and cause leaks.**

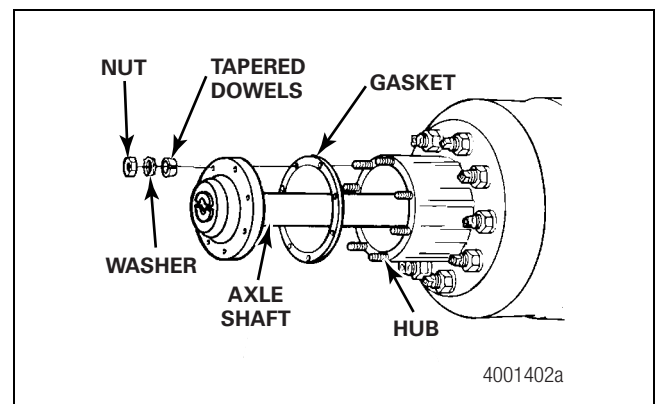
4. Use a hydraulic roller jack or a lifting tool to install the carrier into the axle housing.
5. Install the nuts or capscrews and washers into the four corner locations around the carrier and the axle housing. Hand-tighten the fasteners. Figure 5.5.



**Figure 5.5**

6. Carefully push the carrier into position. Tighten the four fasteners two or three turns each in a crisscross pattern. Figure 5.5.
7. Repeat Step 6 until the four fasteners are tightened to the correct torque value. Refer to Section 8.

8. Install the remaining fasteners and washers that hold the carrier in the axle housing. Tighten the fasteners to the correct torque value. Refer to Section 8.
9. Connect the drive shaft to the yoke.
10. For grease-lubricated wheel ends, install a new grease seal onto the hub studs and the housing spindle.
11. Install the gaskets and the axle shafts into the axle housing and the carrier. The gasket and the axle shaft flange must fit flat against the wheel hub.
12. Install the tapered dowels at each stud and into the axle shaft flange. Use a punch or a drift and hammer if necessary. Figure 5.6.



**Figure 5.6**

13. Install the nuts and the washers onto the studs. Tighten the nuts to the correct torque value. Refer to Section 8.
14. Connect the air lines and the electrical connectors.
15. Release the spring in the air chamber. Refer to the manufacturer's instructions.



## 5 Assembly and Installation

### Assembly

#### **⚠ 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.

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

#### Hub with W-Series Brakes Without ABS: 59000, 61000, 71000, 79000 and RC-26-700 Series

1. If the wheel studs were removed from the hub, place the hub into a press with the drum side on top. Align the grooves on the studs with the grooves in the stud holes in the hub. Press the studs into position. If a press is not available, use a brass hammer.

#### **⚠ CAUTION**

Replacing wheel studs can affect the fit of the drum onto the hub. If new wheel studs have been installed in the hub, there may be some localized swelling on the hub flange. When there is swelling on the hub flange, use a hand grinder to remove a small amount of material over each stud. Do not remove material from the flange area between the studs, which will weaken the drum mounting area. Damage to components can result.

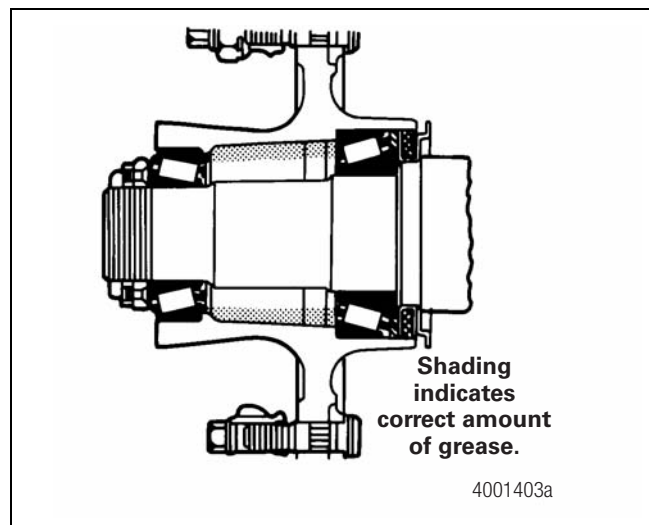
2. Use a ring gauge measuring 12.7510-12.7520-inches (323.875-323.900 mm) to check the flange diameter.
  - If the ring gauge fits over the flange: Proceed to Step 3.
  - If the ring gauge does not fit over the hub flange because of swelling: Use one of the following methods to remove the swelling on the hub flange. Remove only enough material to allow for an easy ring gauge or drum fit. Do not remove material from the flange area between the studs, which will weaken the drum mounting area.
- A. Use a hand grinder to remove a small amount of material over each stud. Check the ring gauge or drum fit frequently to ensure that you're not removing too much material.

- B. Use a lathe to machine the hub flange and remove any swells. Locate the lathe on the bearing cups. Check the ring gauge or drum fit frequently to ensure that you're not removing too much material.

3. Install the oil deflector. Install the nuts. Tighten the nuts to 175-250 lb-ft (237-339 N•m). **ⓘ**
4. Use a press and a sleeve to install the inner and the outer bearing cups into the hub.
5. Use a suitable driver to install a new oil seal into the oil seal retainer. The seal must be flush with the top of the retainer.
  - If the seals are higher than the seal retainer bore length: Use a suitable driver to install the seals until the seal seats in the retainer.

**NOTE:** Meritor specification O-617-B grease is thinner than O-617-A grease and permits easier packing of the wheel bearings.

6. For optional grease-lubricated wheel ends, pack the areas of the hub between the two bearings with Meritor specification O-617-A or O-617-B grease up to the smallest diameter of the bearing cups. Figure 5.7.



**Figure 5.7**

7. Pack the inner bearing cone with Meritor specification O-617-A or O-617-B grease.
8. Install the inner wheel bearing cone into the hub. Install the seal retainer into the hub. Tighten the retainer capscrews to 20-30 lb-ft (27-41 N•m). **ⓘ**
9. Use a suitable driver to install the seal wiper onto the housing.

- For optional grease-lubricated wheel ends, use a suitable driver to install the grease seal sleeve onto the end of the spindle.

### Brake to the Housing Without ABS: 59000 and 61000 Series

- Install the brake spider onto the housing.
- Install the bolts and the nuts that secure the spider to the housing. Use a hardened washer under the head of the bolt and under the nut. Tighten the nuts to the correct torque. Refer to Section 8.
- If the rivets were removed, replace them with bolts, washers and locknuts.
  - For stamped steel housings:** Use 5/8"-18 Grade 8 bolts, hardened washers and Grade 8 locknuts.
  - For cast housings:** Use M16x2 Grade 10.9 bolts, hardened washers and Grade 10.9 locknuts.
- Reassemble the brake. Refer to Maintenance Manual 23B, Bus and Coach Brakes. To obtain this publication, refer to the Service Notes page on the front inside cover of this manual.

### Hub to the Axle Without ABS: 59000, 61000, 71000, 79000 and RC-26-700 Series

- Install the hub assembly onto the spindle. Do not damage the oil seal when you install the hub. Press the hub until the inner bearing is flat against the face of the spindle.

**NOTE:** Meritor specification O-617-B grease is thinner than O-617-A grease and permits easier packing of the wheel bearing.

- For optional grease-lubricated wheel ends, pack the outer bearing cone with Meritor specification O-617-A or O-617-B grease.
- Install the outer bearing cone onto the spindle and push it into its cup inside the hub.
- Adjust the wheel bearings. Refer to the procedure in this section.
- 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 wheel nuts and spacers, if required, to ensure that the brake drum is in contact with the hub.

- Attach the magnetic base of a dial indicator to the housing. Measure brake drum total indicator runout (TIR) approximately one-inch (25 mm) from the open end of the drum. The runout should not exceed 0.015-inch (0.381 mm).

- If runout exceeds specifications:** Remove the drum from the hub. Rotate the drum and install it. Verify that runout does not exceed 0.015-inch (0.381 mm).
- If you are unable to rotate the drum to provide the correct runout:** Remove and turn the drum. The maximum diameter should be at least 0.1-inch (2.5 mm) less than the maximum dimension marked on the outer edge of the drum to maintain correct drum wear allowance. Verify that runout does not exceed 0.015-inch (0.381 mm).
- If turning the drum does not provide the correct runout:** Replace the drum.

### Hub with W-Series Brakes with ABS: 59000, 61000, 71000, 79000 and RC-26-700 Series



- If the wheel studs were removed from the hub, place the hub into a press with the drum side on top. If a press is not available, use a brass hammer. Align the grooves on the studs with the grooves in the stud holes in the hub. Press the studs into position.

#### CAUTION

Replacing wheel studs can affect the fit of the drum onto the hub. If new wheel studs have been installed in the hub, there may be some localized swelling on the hub flange. When there is swelling on the hub flange, use a hand grinder to remove a small amount of material over each stud. Do not remove material from the flange area between the studs, which will weaken the drum mounting area. Damage to components can result.

- Use a ring gauge measuring 12.7510-12.7520-inches (323.875-323.900 mm) to check the flange diameter.
  - If the ring gauge fits over the flange:** Proceed to Step 3.
  - If the ring gauge does not fit over the hub flange because of swelling:** Use one of the following methods to remove the swelling on the hub flange. Remove only enough material to allow for an easy ring gauge or drum fit. Do not remove material from the flange area between the studs, which will weaken the drum mounting area.

## 5 Assembly and Installation

- A. Use a hand grinder to remove a small amount of material over each stud. Check the ring gauge or drum fit frequently to ensure that you're not removing too much material.
  - B. Use a lathe to machine the hub flange and remove any swells. Locate the lathe on the bearing cups. Check the ring gauge or drum fit frequently to ensure that you're not removing too much material.
3. Install the oil deflector. Install the nuts. Tighten the nuts to 175-250 lb-ft (237-339 N•m). 
  4. Use a press and a sleeve to install the inner and the outer bearing cups into the hub.
  5. For optional grease-lubricated wheel ends, pack the area of the hub between the two bearings with Meritor specification O-617-A or O-617-B grease up to the smallest diameter of the bearing cups.
    - **If the seals are higher than the seal retainer bore length:** Use a suitable driver to install the seals until the seal seats in the retainer.
- NOTE:** Meritor specification O-617-B grease is thinner than O-617-A grease and permits easier packing of the wheel bearings.
7. Pack the inner bearing cone with Meritor specification O-617-A or O-617-B grease. Figure 5.8.
  8. Install the inner wheel bearing cone into the hub. Install the seal retainer and the ABS tooth wheel onto the hub. Tighten the retaining capscrews to 20-30 lb-ft (27-41 N•m). 
  9. Use a suitable driver to install the seal wiper onto the housing.
  10. For optional grease-lubricated wheel ends, use a suitable driver to install the grease seal sleeve onto the end of the spindle.
  11. Use wheel nuts and spacers, if required, to ensure that the brake drum contacts the hub. 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.
  12. Attach the magnetic base of a dial indicator to the housing. Measure brake drum total indicator runout (TIR) approximately one-inch (25 mm) from the open end of the drum. The runout should not exceed 0.015-inch (0.381 mm).
    - **If runout exceeds specifications:** Remove the drum from the hub. Rotate the drum and install it. Verify that runout does not exceed 0.015-inch (0.381 mm).
    - **If you are unable to rotate the drum to provide the correct runout:** Remove and turn the drum. The maximum diameter should be at least 0.1-inch (2.5 mm) less than the maximum dimension marked on the outer edge of the drum to maintain correct drum wear allowance. Verify that runout does not exceed 0.015-inch (0.381 mm).
    - **If turning the drum does not provide the correct runout:** Replace the drum.

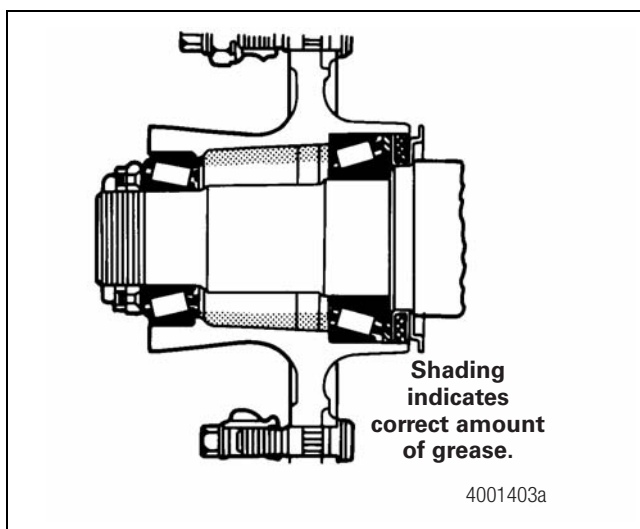


Figure 5.8

### Hub with Drum Brakes: RC-23-160 Series

1. If the wheel studs were removed from the hub, place the hub into a press with the wheel mounting surface pointing down. If a press is not available, use a brass hammer.
2. Align the serrations on the stud with the serration marks in the hub, if the hub was previously used. Press the stud into the hub.
3. Use a press and a sleeve to install the inner and the outer bearing cups into the hub.
4. Use a suitable driver to install the ABS tooth wheel onto the hub. Do not damage the tooth wheel.

**NOTE:** Meritor specification O-617-B grease is thinner than O-617-A grease and permits easier packing of the wheel bearings.

## 5 Assembly and Installation

5. Pack the inner bearing cone with Meritor specification O-617-A or O-617-B grease.
6. Install the inner wheel bearing cone into the hub.
7. Use a suitable driver to install a new seal into the hub until the seal is seated in the hub.

### Brake to the Housing with ABS: 59000, 61000, 71000, 79000 and RC-26-700 Series

1. Install the brake spider onto the housing.
2. Assemble the ABS spring clip and the ABS sensor into the ABS support bracket. Figure 5.9.

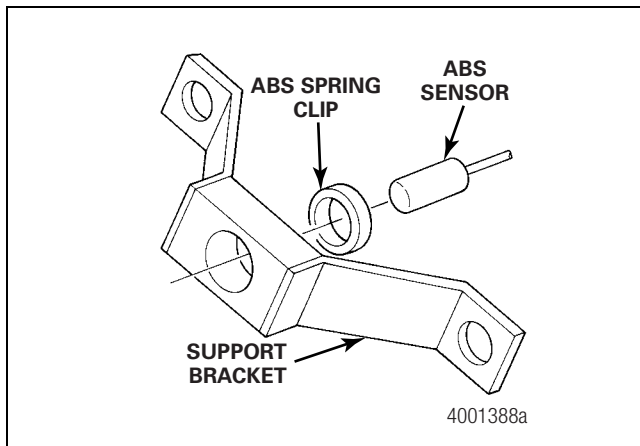


Figure 5.9

3. Route the connector end of the ABS sensor through the exit hole in the brake spider and the housing brake flange. Figure 5.10.

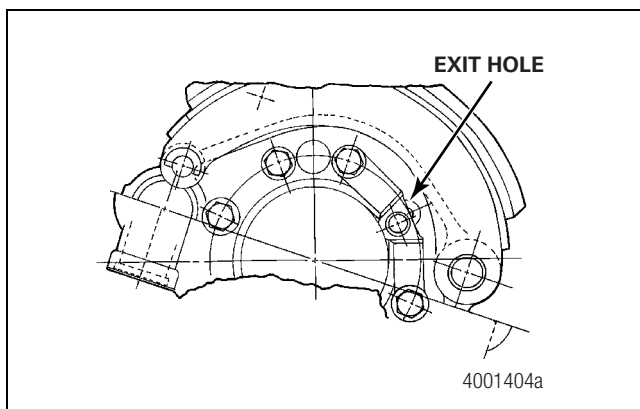


Figure 5.10

4. With the ABS sensor block in contact with the housing, use the bolts, washers and nuts to secure the support bracket assembly to the brake spider. Use washers under the bolt heads and under the nuts. Tighten the nuts to hold the bracket in position. Figure 5.11.

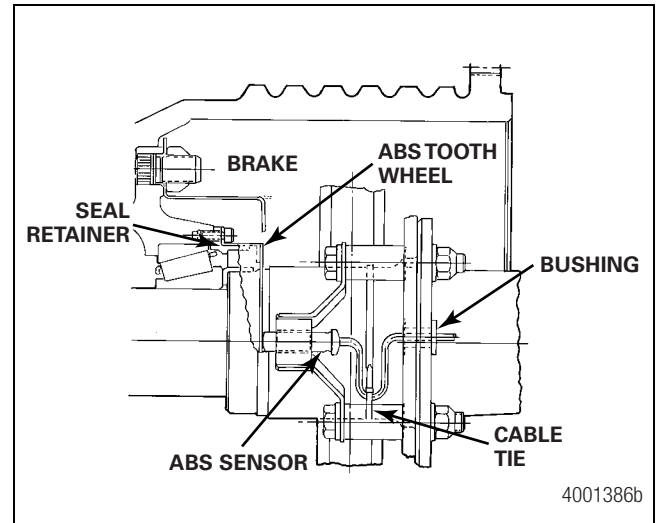



Figure 5.11

5. For cast housings, use M6x1 socket-head capscrews to secure the ABS sensor block to the housing. Tighten the capscrews to 8-12 lb-ft (11-16 N•m). Figure 5.12. 

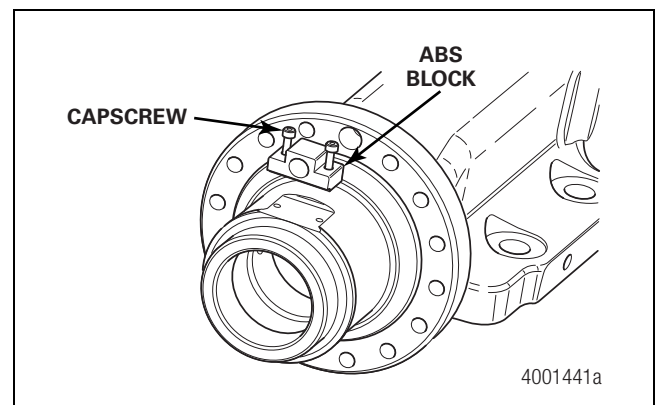


Figure 5.12

6. Tighten all other spider attachment fasteners to the correct torque. Refer to Section 8.
7. If required, install the hose clamp that secures the ABS sensor to the housing. The ABS sensor mounting block must contact the housing.



## 5 Assembly and Installation

8. If the rivets have been removed, replace them with bolts, washers and locknuts.
  - **For stamped steel housings:** Use 5/8"-18 Grade 8 bolts, hardened washers and Grade 8 locknuts.
  - **For cast housings:** Use M16x2 Grade 10.9 bolts, hardened washers and Grade 10.9 locknuts.

### Hub to the Axle with ABS: 59000, 61000, 71000, 79000 and RC-26-700 Series

1. Install the hub assembly onto the spindle. Do not damage the oil seal when you install the hub assembly. Press the hub until the inner bearing is flat against the face of the spindle.

**NOTE:** Meritor specification O-617-B grease is thinner than O-617-A grease and permits easier packing of the wheel bearing.

2. For optional grease-lubricated wheel ends, pack the outer bearing cone with Meritor specification O-617-A or O-617-B grease.
3. Install the outer bearing cone onto the spindle and push it into its cup inside the hub.
4. Adjust the wheel bearings. Refer to the procedure in this section.
5. For stamped steel housings, verify that the ABS sensor and the ABS tooth wheel on the hub are aligned and the ABS sensor block contacts the housing. Tighten the two bracket mounting bolts to 180-230 lb-ft (244-312 N•m). 
6. For cast housings, use M6x1 socket-head capscrews to secure the ABS block to the housing. Tighten the capscrews to 8-12 lb-ft (11-16 N•m). 
7. Push the ABS sensor toward the tooth wheel until contact is made.
8. Rotate the hub. Check the relationship of the ABS sensor and the tooth wheel. A 0.020-inch (0.5 mm) maximum gap is allowed between the sensor and the tooth wheel.
9. Fasten the sensor wire to the housing with a cable tie. Install the bushing onto the ABS cable at the exit hole.

10. Complete the brake assembly. Refer to Maintenance Manual 23B, Bus and Coach Brakes. For ABS braking systems, refer to Maintenance Manual 28, ABS for Trucks, Tractors and Buses (C Version ECUs) and Maintenance Manual 30, ABS for Trucks, Tractors and Buses (D Version ECUs). To obtain these publications, refer to the Service Notes page on the front inside cover of this manual.

### Brake to the Housing with Drum Brakes: RC-23-160 Series

1. Install the brake spider onto the housing.
2. Install the bolts and the nuts that secure the spider or the torque plate to the housing. Use a hardened washer under the bolt head and under the nut. Tighten to the correct torque. Refer to Section 8.
3. Assemble the brake. Refer to Maintenance Manual 23B, Bus and Coach Brakes. To obtain this publication, refer to the Service Notes page on the front inside cover of this manual.
4. Install the ABS sensor spring clip into the upper ABS mounting block in the direction of the arrow on the block.
5. Install the ABS sensor fully into the spring clip.
6. Route the ABS sensor cable through the hole in the brake flange.



### Hub to the Axle with Drum Brakes: RC-23-160 Series

1. Install the hub assembly onto the spindle. Do not damage the oil seal when you install the hub assembly. Press the hub until the inner bearing is flat against the face of the spindle.
2. Install the outer bearing cone onto the spindle. Push it into its cup inside the hub.
3. Adjust the wheel bearings. Refer to the procedure in this section.
4. Push the ABS sensor toward the tooth wheel on the hub until the sensor contacts the tooth wheel.

5. Rotate the hub. Check the relationship of the ABS sensor and the tooth wheel. A 0.020-inch (0.5 mm) maximum gap is allowed between the ABS sensor and the tooth wheel. For ABS braking systems, refer to Maintenance Manual 28, ABS for Trucks, Tractors and Buses (C Version ECUs) and Maintenance Manual 30, ABS for Trucks, Tractors and Buses (D Version ECUs). To obtain these publications, refer to the Service Notes page on the front inside cover of this manual.
6. 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 wheel nuts and spacers, if required, to ensure that the brake drum contacts the hub.
7. Attach the magnetic base of a dial indicator to the housing. Measure brake drum total indicator runout (TIR) approximately one-inch (25 mm) from the open end of the drum. The runout should not exceed 0.015-inch (0.381 mm).
  - **If runout exceeds specifications:** Remove the drum from the hub. Rotate the drum and install it. Verify that runout does not exceed 0.015-inch (0.381 mm).
  - **If you are unable to rotate the drum to provide the correct runout:** Remove and turn the drum. The maximum diameter should be at least 0.1-inch (2.5 mm) less than the maximum dimension marked on the outer edge of the drum to maintain correct drum wear allowance. Verify that runout does not exceed 0.015-inch (0.381 mm).
  - **If turning the drum does not provide the correct runout:** Replace the drum.

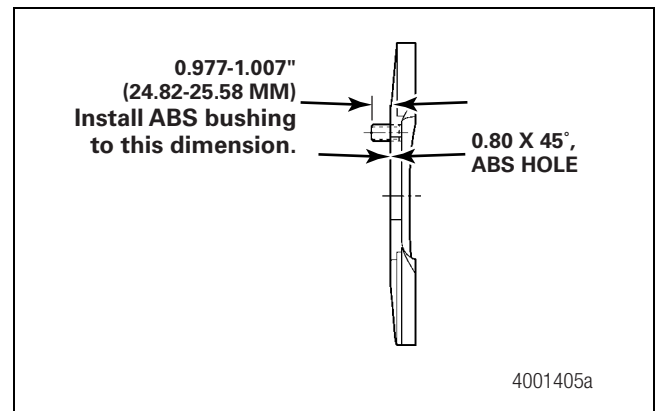
### Hub with Disc Brakes: RC-23-160 Series

1. If the wheel studs were removed from the hub, place the hub into a press with the wheel mounting surface facing down. If a press is not available, use a brass hammer.
  2. If the hub was previously used, align the serrations on the stud with the serration marks in the hub. Press the stud into the hub.
  3. Use a press and a sleeve to install the inner and the outer bearing cups into the hub.
- NOTE:** Meritor specification O-617-B is thinner than O-617-A grease and permits easier packing of the wheel bearings.
4. Pack the inner bearing cone with Meritor specification O-617-A or O-617-B grease.

5. Install the inner wheel bearing cone into the hub.
6. Use a suitable driver to install a new seal into the hub until the seal is seated in the hub.
7. If the ABS tooth wheel was removed from the rotor, install the tooth wheel. Tighten the 1/4"-20 capscrews to 105-135 lb-in (12-15 N•m). 
8. If the rotor was removed from the hub, install the rotor. Tighten the 5/8"-18 socket-head capscrews to 180-230 lb-in (244-312 N•m). 

### Brake to the Housing with Disc Brakes: RC-23-160 Series

1. If the ABS sensor bushing was removed from the torque plate, use a suitable driver to install the bushing. The bushing must extend beyond the torque plate 0.977-1.007-inches (24.82-25.58 mm). Figure 5.13.



**Figure 5.13**

2. Install the torque plates onto the housing.
3. Install the bolts and the nuts that secure the torque plate to the housing. Use a hardened washer under the bolt head and under the nut. Tighten the nut to the correct torque. Refer to Section 8.
4. Install the ABS sensor spring clip into the sensor bushing in the torque plate. Install the clip through the brake flange in the housing.
5. Install the ABS sensor fully into the spring clip.

## 5 Assembly and Installation

### Hub to the Axle with Disc Brakes: RC-23-160 Series

1. Install the hub assembly onto the spindle. Do not damage the oil seal when you install the hub assembly. Press the hub until the inner bearing is flat against the face of the spindle.
2. Install the outer bearing cone onto the spindle. Push the cone into its cup inside the hub.
3. Adjust the wheel bearings. Refer to the procedure in this section.
4. Push the ABS sensor toward the tooth wheel on the rotor until the sensor contacts the tooth wheel.
5. Rotate the hub. Check the relationship of the ABS sensor and the tooth wheel. A 0.020-inch (0.5 mm) maximum gap is allowed between the ABS sensor and the tooth wheel. Refer to Maintenance Manual 28, ABS for Trucks, Tractors and Buses (C Version ECUs) and Maintenance Manual 30, ABS for Trucks, Tractors and Buses (D Version ECUs) for ABS braking systems. To obtain these publications, refer to the Service Notes page on the front inside cover of this manual.
6. Assemble the brake. Refer to the disc brake manufacturer's instructions.
7. Attach the magnetic base of a dial indicator to the housing. Measure the disc brake rotor inside surface runout. The runout should not exceed 0.015-inch (0.381 mm).
  - **If runout exceeds specifications:** Remove the rotor from the hub. Rotate the rotor and install it. Verify that runout does not exceed 0.015-inch (0.381 mm).
  - **If you are unable to rotate the rotor to provide the correct runout:** Remove and turn the rotor. The minimum dimension should be at least 1.626-inches (41.3 mm). You must turn both sides of the rotor to ensure that the braking surfaces are parallel to each other. Verify that runout does not exceed 0.015-inch (0.381 mm).
  - **If turning the rotor does not provide the correct runout:** Replace the rotor.

### Drum to Hub with W-Series Brakes: 59000, 61000, 71000 and 79000 Series

#### WARNING

You must carefully follow installation procedures when you install a brake drum onto a hub. An incorrect installation can cause the drum to fracture, which will affect braking performance. Loss of vehicle control, serious personal injury and damage to components can result.

**NOTE:** Replacing wheel studs can affect the fit of the drum onto the hub. If new wheel studs have been installed in the hub, there may be some localized swelling on the hub flange.

#### A Hub Mounted on the Axle

1. Use a wire brush to remove any rust, burrs and debris on both mating surfaces. Use a cloth dampened with water or a water-base solution to clean the brake drum pilot on both the brake drum and the hub flange.
2. Install the drum onto the hub. Carefully slide the drum onto the hub flange. Do not force the brake drum over the flange. 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.
  - **If the brake drum does not install easily over the hub flange:** Refer to the hub assembly procedure in this section to adjust the fit of the drum on the flange.
3. Install the wheel nuts and suitable spacers to fasten the drum to the hub.
4. Attach the magnetic base of a dial indicator to the axle housing. Measure brake drum total indicator runout (TIR) approximately one-inch (25 mm) from the open end of the drum. The runout should not exceed 0.015-inch (0.381 mm).
  - **If runout exceeds specifications:** Remove the drum from the hub. Rotate the drum and install it. Verify that runout does not exceed 0.015-inch (0.381 mm).
  - **If you are unable to rotate the drum to provide the correct runout:** Remove and turn the drum. The maximum diameter should be at least 0.1-inch (2.5 mm) less than the maximum dimension marked on the outer edge of the drum to maintain correct drum wear allowance. Install the drum. Verify that runout does not exceed 0.015-inch (0.381 mm).
  - **If turning the drum does not provide correct runout:** Replace the drum.

### A Hub Not Mounted on the Axle

- Use a wire brush to remove any rust, burrs and debris on both mating surfaces. Use a cloth dampened with water or a water-base solution to clean the brake drum pilot on both the brake drum and the hub flange.
- Assemble the hub, drum and wheel. Do not force the brake drum over the flange. 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.
  - If the brake drum does not install easily over the hub flange:** Refer to the hub assembly procedure in this section to adjust the fit of the drum on the flange.
- Mount the hub, drum and wheel assembly onto a suitable spindle with the wheel bearings correctly adjusted.
- Attach the magnetic base of a dial indicator to the spindle base. Measure brake drum total indicator runout (TIR) approximately one-inch (25 mm) from the open end of the drum. The runout should not exceed 0.015-inch (0.381 mm).
  - If runout exceeds specifications:** Remove the drum from the hub. Rotate the drum and install it. Verify that runout does not exceed 0.015-inch (0.381 mm).
  - If you are unable to rotate the drum to provide the correct runout:** Remove and turn the drum. The maximum diameter should be at least 0.1-inch (2.5 mm) less than the maximum dimension marked on the outer edge of the drum to maintain correct drum wear allowance. Install the drum. Verify that runout does not exceed 0.015-inch (0.381 mm).
  - If turning the drum does not provide correct runout:** Replace the drum.
- Mount the hub assembly onto the axle. Refer to the procedure in this section.

## Adjustment

### Wheel Bearings

#### WARNING

When you perform a wheel bearing adjustment, observe the following guidelines.

- Always use the correct size wrench socket.

- Always use a torque wrench to tighten the adjusting nuts to their correct adjusting torque.
  - Do not tighten or loosen the adjusting nuts by hitting the nuts with a hammer or by hitting a chisel or a drift placed against the nuts with a hammer. Damage to the nuts can result. Damaged adjusting nuts can prevent a correct wheel bearing adjustment, cause possible loss of vehicle wheel-end equipment and cause serious personal injury.
- For disc brake wheel ends, back off the brake caliper until the rotor is clear from the pad linings about 1/16-inch (1.588 mm) gap or more. Refer to Maintenance Manual MM-0467, DiscPlus™ EX225 Air Disc Brake, for more information about EX225 disc brake inspection and adjustment. To obtain this publication, refer to the Service Notes page on the front inside cover of this manual. Figure 5.14.

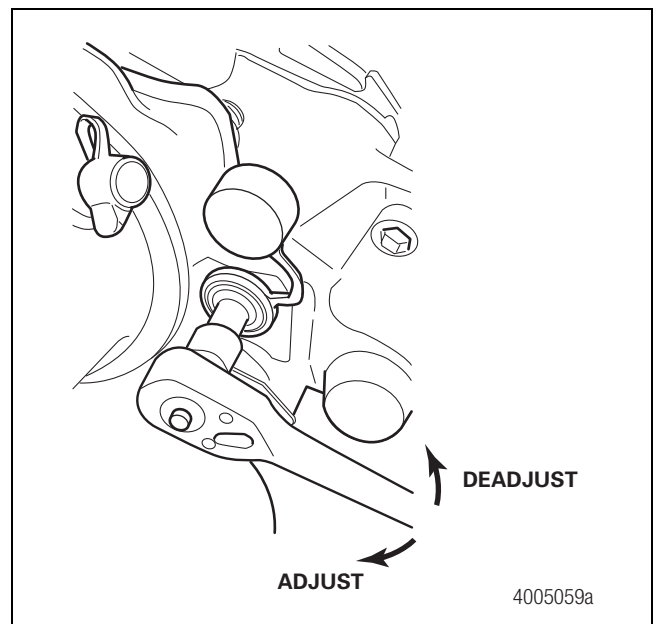


Figure 5.14

- Install the inner wheel bearing adjusting nut onto the spindle and against the outer bearing so that the pin in the inner bearing adjusting nut is pointing away from the bearing. Figure 5.15.



## 5 Assembly and Installation

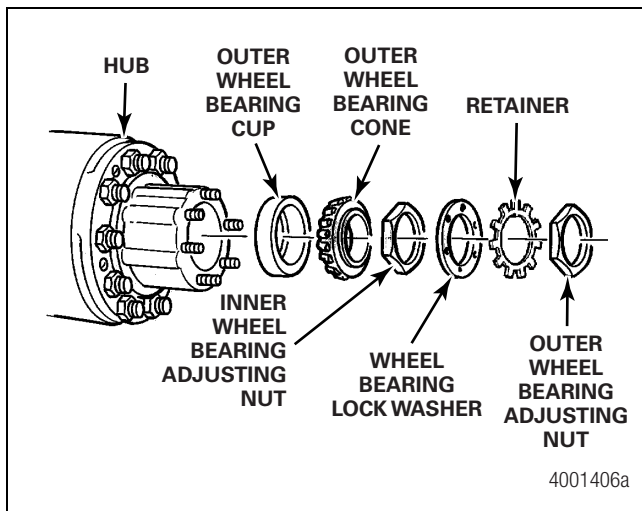


Figure 5.15

3. Tighten the adjusting nut to 200 lb-ft (272 N•m) while rotating the hub a minimum of five revolutions to fully seat the wheel bearings. **ⓘ**
4. Loosen the inner adjusting nut one full turn.
5. Retighten to 50 lb-ft (68 N•m). **ⓘ**
6. Loosen the inner adjusting nut 1/4 turn.
7. Install the lock washer. If the hole in the washer is not aligned with the inner adjusting nut pin, remove the washer, turn the washer over and reinstall it. The pin and the hole should now be aligned. If not, slightly adjust the inner adjusting nut. Use whichever lock washer side causes the least movement of the adjusting nut. Figure 5.16.

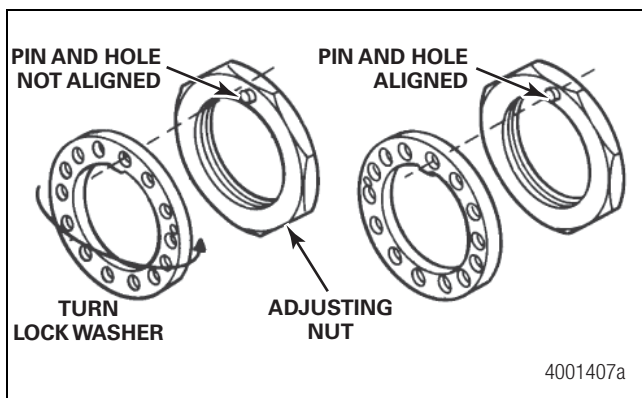


Figure 5.16

8. Assemble the stamped retainer and the outer wheel bearing adjusting nut onto the spindle.

9. Tighten the outer nut.
    - **If the thread pitch diameter is 2.62-inches or greater:**  
Tighten the outer nut to 100-250 lb-ft (136-399 N•m). **ⓘ**
    - **If the thread pitch diameter is 1.12-2.61-inches:**  
Tighten the outer nut to 100-150 lb-ft (136-203 N•m). **ⓘ**
  10. Check and adjust the wheel end play to ensure it is 0.001-0.005 inch (0.025-0.127 mm). Use the following procedure to check the end play.
    - A. Attach the magnetic base of a dial indicator to the hub face. Touch the dial indicator stem against the end of the spindle.
    - B. Slightly rotate the hub in both directions while pushing inward until the dial indicator does not change. Set the dial indicator to ZERO.
    - C. Slightly rotate the hub in both directions while pulling OUTWARD until the dial indicator does not change.
    - D. Read the end play measurement on the dial indicator.
      - **If end play does not meet specification:** Remove the outer wheel bearing adjusting nut, the stamped retainer and the lock washer. Tighten or loosen the inner adjusting nut as required to set the correct end play. Repeat Step 6 through Step 8.
- NOTE:** If you rotate the inner adjusting nut by one hole position, the end play setting will change by approximately 0.005-inch (0.127 mm). If the lock washer is turned over and installed, the end play setting will change by approximately 0.002 inch (0.051 mm).
11. When end play is correct, bend the two opposing tabs on the stamped retainer over the flats of the outer wheel bearing adjusting nut.
  12. For optional grease-lubricated wheel ends, install a new grease seal onto the hub studs and the housing spindle. Refer to Section 3.
  13. Install the axle shafts, gasket and tapered dowels at each stud.
  14. Install the nuts and the washers onto the studs. Tighten the nuts to the correct torque value. Refer to Section 8.

## Installation

### Axle Tube: 59000 and 61000 Series

1. Install the two puller screws into the axle housing. Connect the puller screws with the connecting nut. Figure 5.17.

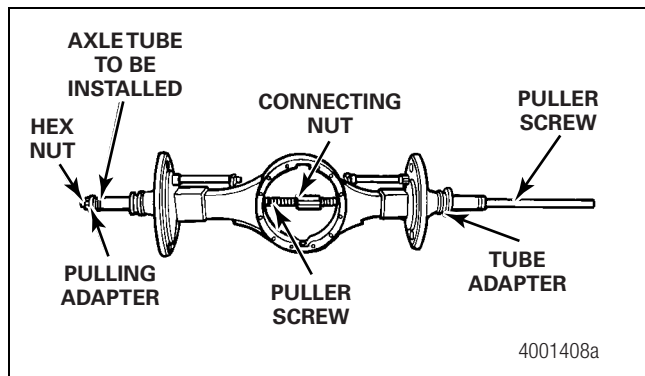


Figure 5.17

2. Install the pulling adapter into each end of the axle tube. Figure 5.17.
3. Install the axle tube and the adapters into the housing. Install the hex nut. Figure 5.17.
4. Position the tube adapter at the opposite end of the axle housing. Figure 5.17.
5. Install the puller tube onto the tube adapter. Figure 5.18.

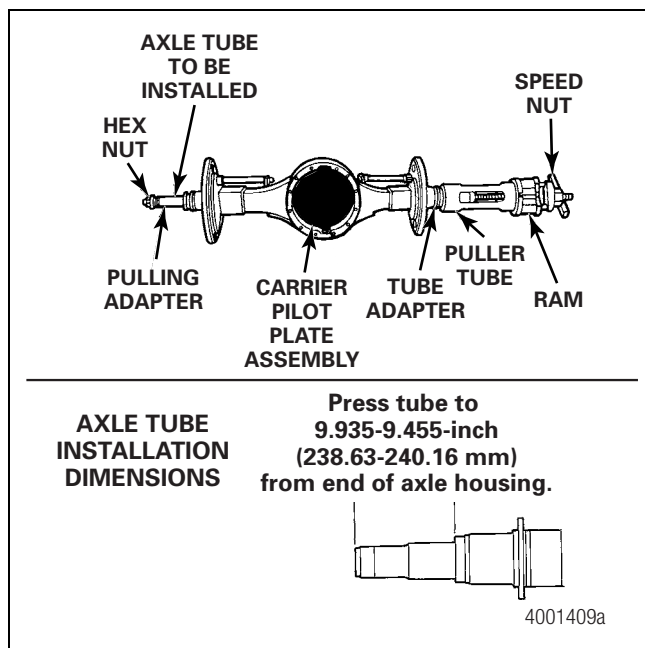


Figure 5.18

6. Install the hydraulic ram onto the puller tube. Install the speed nut onto the puller screw. Tighten the nut to secure the ram and the tube to the axle housing. Figure 5.18.
7. Install the carrier plate assembly to support the carrier ring during tube installation.
8. Connect the hydraulic ram to a hydraulic pump. Figure 5.18.
9. Apply pressure to install the axle tube into the housing. Press the axle tube into the housing until the end of the tube is 9.935-9.455-inches (238.63-240.16 mm) from the end of the axle housing. Figure 5.18.

**NOTE:** The hole for the dowel must not go through the spindle. If the hole goes through the spindle, oil will leak out of the dowel hole and the housing will not pass a pressure test.

10. Install a dowel into the housing and the spindle. Figure 5.19.

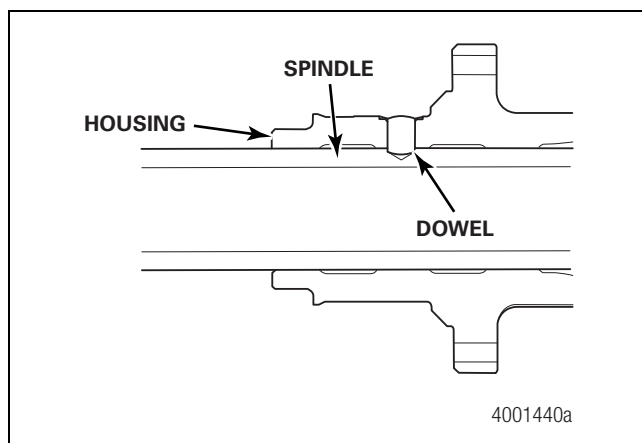


Figure 5.19

- A. Drill a 0.79-inch (20 mm) diameter hole in the new spindle with a tolerance of +0.005-inch (0.130 mm) and -0.00004-inch (0.001 mm). The hole should be 1.2-1.3-inches (30.5-32.5 mm) deep. Measure the depth from the flat spotface on the housing to the tip of the drill bit. Align the hole with the hole in the housing.

## 5 Assembly and Installation

### **⚠ 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.

- B. Apply Loctite® 277 threadlocker to the surface of the dowel. Install the dowel into the housing and the spindle. Use a hammer to fully seat the dowel. The dowel should be approximately flush with the spotface on the housing.
11. Install the differential carrier. Refer to the procedure in this section.
  12. Install the hub and drum assembly, axle shafts and tire and wheel assembly. Refer to the vehicle manufacturer's instructions. 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.

### **Torque Rod Brackets: 61000 with Cast Housing, and 71000 and 79000 Series Axles**

**NOTE:** Meritor recommends using anti-seize lubricant on the dowel to ease installation. If used, apply the anti-seize only to the outer circumference of the dowel.

1. Use a hammer to install the dowel into the housing. The dowel must be fully seated in the hole. The dowel can be an integral part of the bracket.
2. Verify that the mounting surfaces on the housing and the bracket are clean and dry. If an anti-seize lubricant was used as described in the NOTE above, wipe any excess from the housing surface.

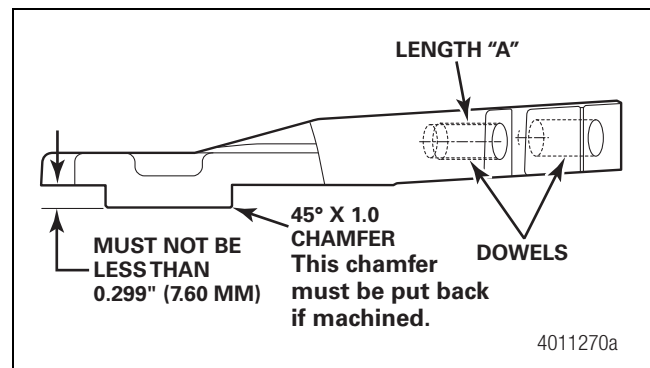
### **⚠ CAUTION**

The dowel must only be machined if the bracket does not fully seat. If the dowel is machined unnecessarily, damage to the bracket and axle housing can result.

3. Use a hammer to install the bracket onto the dowel. The bracket must be fully seated against the housing. Some brackets have the dowel as an integral part of the bracket.

Depending on when the axle housing was manufactured, the bracket may or may not fully seat.

- **If the bracket does not fully seat:** Use one of the following options to correct it.
  - Contact Meritor's Commercial Vehicle Aftermarket at 888-725-9355 to order the correct part.
  - Machine the dowel length "A", 0.16-inch (4 mm) shorter as shown in Figure 5.20.

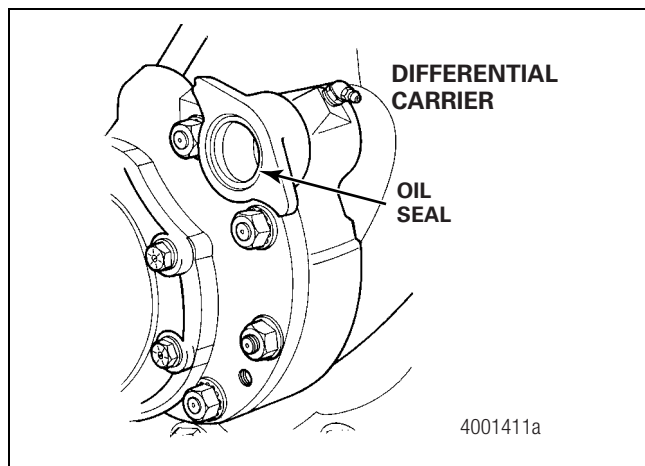


**Figure 5.20**

4. Apply Loctite® 277 threadlocker at the capscrew holes. Install the M20x2.5 capscrews and the hardened washers. Tighten the capscrews to 340-400 lb-ft (460-540 N•m). **ⓘ**

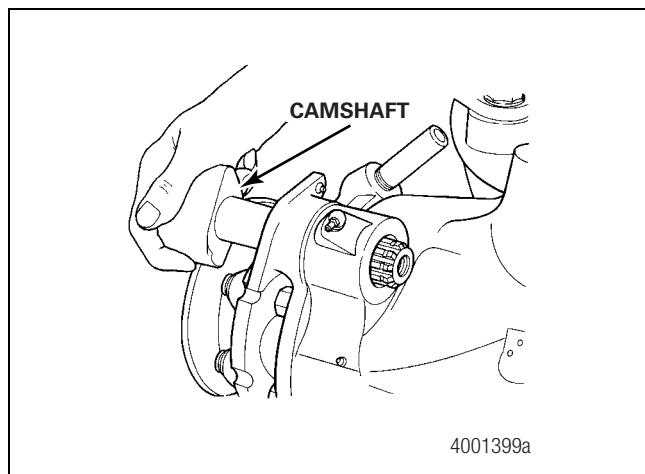
### **Camshaft**

1. If removed, install the bushings into the differential carrier and the bearing cage. Use a hammer and a driver tool to install the bushings.
2. Install a new oil seal into the bearing cage. The seal lip must be installed toward the bushing. Figure 5.21.



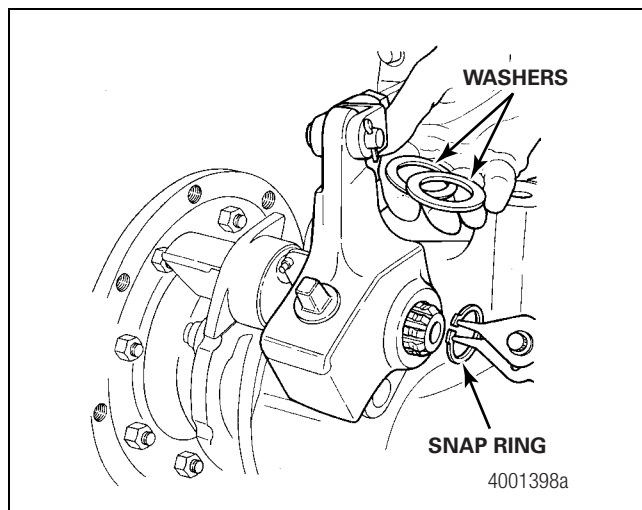
**Figure 5.21**

3. Lubricate the camshaft and the camshaft bushing. Refer to Section 7.
4. Install the splined end of the camshaft through the bearing cage and the differential carrier. Be careful not to damage the bushings and the oil seal when you install the camshaft. Figure 5.22.



**Figure 5.22**

5. Install a washer onto the end of the camshaft.
6. Lubricate the camshaft splines with an anti-seize lubricant, Meritor specification O-637 or equivalent.
7. Install the adjusting lever onto the camshaft. Install the washers and the snap ring. Figure 5.23.



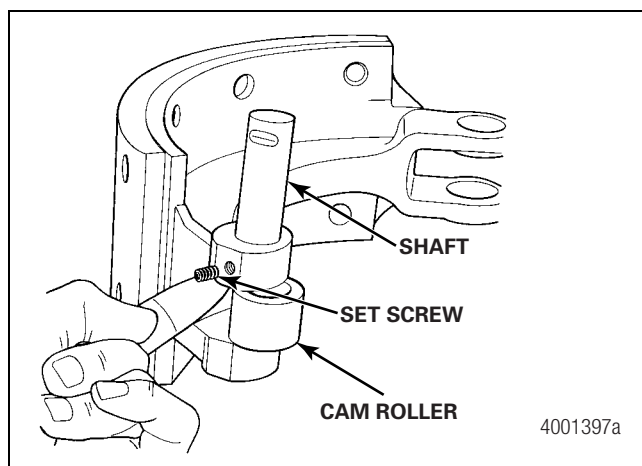
**Figure 5.23**

8. Connect the parking brake linkage to the adjusting lever.
9. Install the yoke. Refer to the procedure in this section.
10. Install the brake shoes. Refer to the procedure in this section.

### T Series Parking Brake

#### Brake Shoes

1. Lubricate the anchor pins and the bushings. Refer to Section 7.
2. If removed, install the cam rollers into the shoe. Place the roller into the shoe. Install the shaft through the shoe and the roller. Align the set screw slot in the shaft with the hole in the shoe. Install and tighten the set screw. Figure 5.24.



**Figure 5.24**

## 5 Assembly and Installation

3. Place the brake shoes onto the bearing cage.
4. Install the anchor pins into the brake shoes. Verify that the flat side of the pin is installed toward the lock screw in the shoe. Figure 5.25.

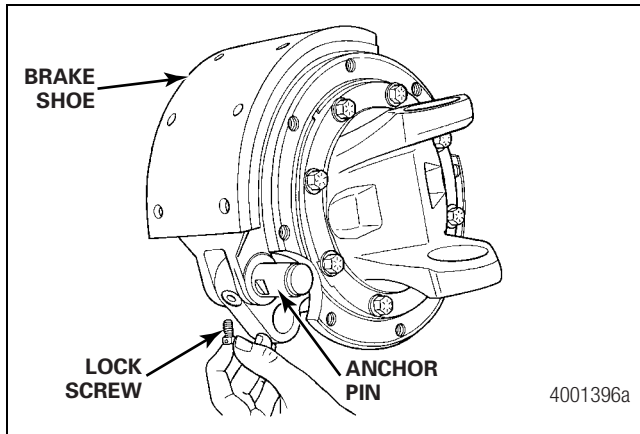


Figure 5.25

5. Use a hammer and a brass drift to install the anchor pins into the shoes. Figure 5.25.
6. Tighten the lock screws. Install the lock wire onto the anchor pin.
7. Install the oil seal and the oil seal retainers onto the anchor pins. Install the snap ring. Figure 5.26.

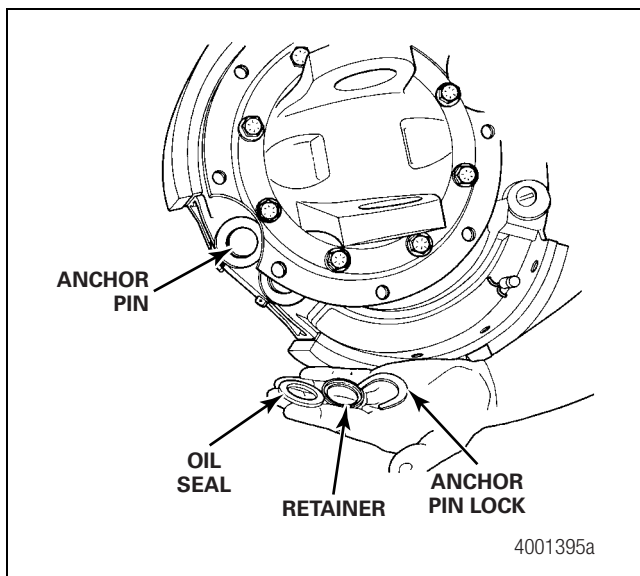


Figure 5.26

8. Place the brake shoes against the cam. Use brake spring pliers to install the return spring onto the shoes. Verify that the rollers in the brake shoes are against the low points of the cam. Figure 5.27.

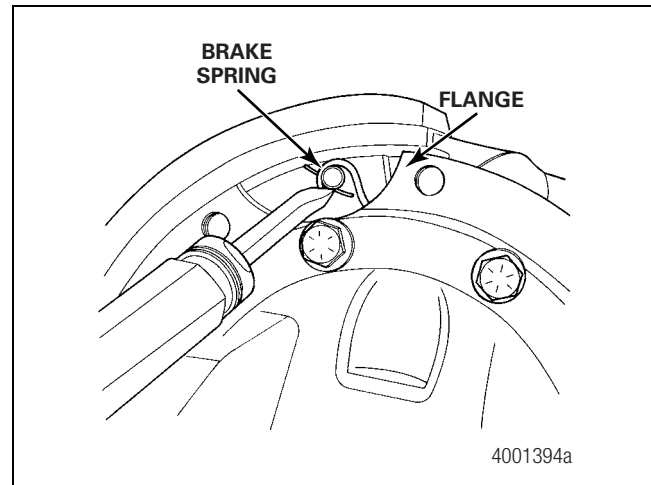


Figure 5.27

9. Lubricate the cam and the rollers. Refer to Section 7.
10. Install the brake drum onto the yoke flange. Install the nuts and the washers. Tighten the nuts to 85-115 lb-ft (116-155 N•m). Figure 5.28. **ⓘ**

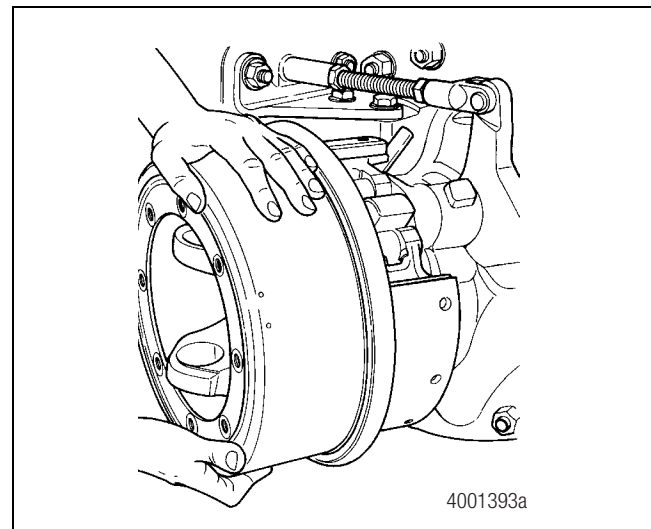


Figure 5.28

11. If removed, connect the drive shaft to the yoke.
12. Adjust the parking brake linkage and the lining-to-drum clearance. Refer to the procedures in this section.

### Adjust the Lining-to-Drum Clearance

1. Park the vehicle on a level surface. Block the wheels to prevent the vehicle from moving.
2. Release the parking brake.
3. Remove all dirt from the adjusting lever and the back of the drum.
4. Use a feeler gauge to measure the clearance between the lining and the drum. Figure 5.29.

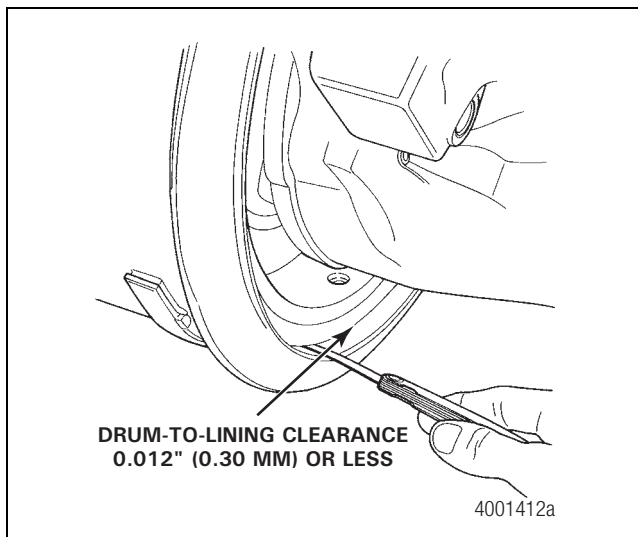


Figure 5.29

5. If the clearance is more than 0.012-inch (0.30 mm), turn the adjusting bolt adjusting lever until the clearance is correct. Figure 5.30.

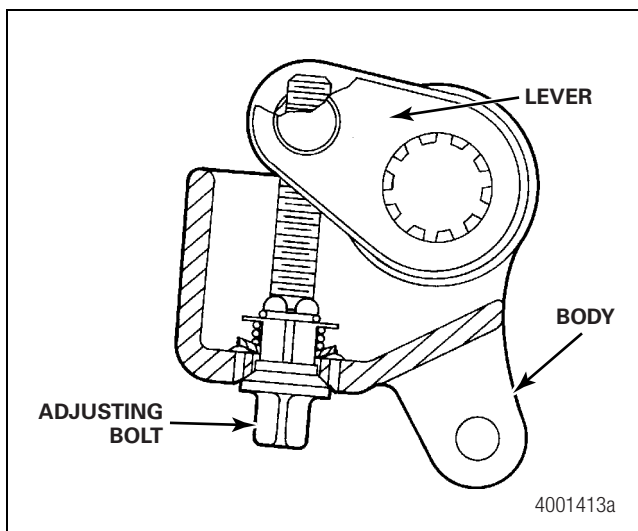


Figure 5.30

6. Operate the parking brake. Check for correct operation.

### Adjust the Linkage

1. Park the vehicle on a level surface. Block the wheels to prevent the vehicle from moving.
2. Release the brake system air pressure.
3. Tighten the spring chamber caging sleeve until the sleeve touches the non-pressure plate in the housing.
4. Remove and discard the cotter pin and the clevis pin. Disconnect the clevis from the slack adjuster. Loosen the clevis jam nut.
5. Rotate the push rod clevis until the center of the clevis pin hole is 10-inches (254 mm) from the chamber non-pressure plate. Tighten the jam nut. Figure 5.31.

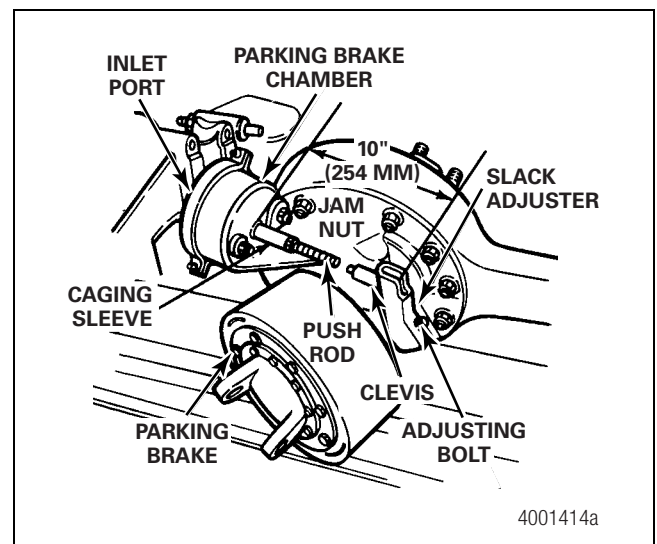


Figure 5.31


6. Apply the brake system air pressure.
7. Move the slack adjuster to connect the clevis. Install the clevis pin and a new cotter pin to fasten the clevis to the slack adjuster.
8. Adjust the lining-to-drum clearance. Refer to the procedure in this section.

## 5 Assembly and Installation

### Lubrication

#### Fill the Axle with Lubricant

**NOTE:** For additional lubrication information, 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.

1. Park the vehicle on a level surface. Block the wheels to prevent the vehicle from moving. The axle lubricant capacity changes when the drive pinion angle changes.
2. Remove the fill plug from the side of the axle housing bowl cover.
3. Add the axle lubricant through the fill plug hole. Fill the axle with the lubricant until the lubricant level is even with the bottom of the fill plug hole. Refer to Section 8.
4. Install the fill plug. Tighten the plug to 35 lb-ft (47 N•m) minimum. When correctly installed, one complete thread of the fill plug is visible between the housing and the plug head. 
5. Road test the vehicle in an unloaded condition for 1-2 miles (1.6-3.2 km) at speeds not more than 25 mph (40 km/h). Recheck the lubricant levels and all of the fasteners.

## Troubleshooting

### WARNING

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

Table B: T Series Parking Brake

Condition	Possible Causes	Actions Required	
<b>Parking brake does not apply or there is not enough braking force.</b>	The camshaft is worn or damaged.	Remove and replace the camshaft.	
	The air chamber is not installed correctly.	Install the air chamber correctly.	
	There is a leak or restriction in the air lines.	Repair the air lines.	
	The air chamber air diaphragm is damaged.	Repair or replace the air chamber.	
	The parking brake is not adjusted correctly.	Adjust the parking brake.	
	There is grease or other contamination on the brake linings.	Replace the brake linings.	
	The linings are worn, damaged or missing.	Replace the brake linings.	
	<b>Parking brake does not release when air pressure is released.</b>	The air chamber power spring is not fully released (spring is caged).	Release the power spring in the air chamber and uncage the spring.
		The air pressure that holds the springs in a compressed position is not fully released.	Repair the air system.
		The parking brake is not adjusted correctly.	Adjust the parking brake.
The power springs in the air chamber are weak or broken.		Replace the air chamber.	
<b>Parking brake is dragging.</b>	There is grease or other contamination on the brake linings.	Replace the brake linings.	
	There is not enough air pressure to hold the spring.	Repair the air system.	
	The air lines are connected to the wrong ports.	Connect lines to the correct ports.	
	There are leaks in the air lines.	Repair or replace the air lines.	
	There are leaks in the spring brake assembly.	Repair or replace the spring brake.	
	The drum has too much runout.	Repair or replace the drums.	
	The shoe return spring is weak, damaged or missing.	Replace the shoe return spring.	
	The camshaft is damaged.	Remove and replace the camshaft.	
	The rollers are damaged.	Remove and replace the rollers.	



## 7 Lubrication

### 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.

During lubrication procedures, if grease flows from the seal near the camshaft head, replace the seal. Remove all grease or oil from the camshaft head, rollers and brake linings. Always replace linings contaminated with grease or oil, which can increase stopping distances. Serious personal injury and damage to components can result.

## Lubrication

### Camshaft Bushings

#### Specification

Multi-purpose chassis grease, 6% 12-hydroxy lithium stearate grease, NLGI Grade 1, Meritor specification O-617-A or equivalent

Multi-purpose chassis grease, 8% 12-hydroxy lithium stearate grease, NLGI Grade 2, Meritor specification O-617-B or equivalent

#### Schedule

Lubricate the camshaft bushings every 50,000 miles (80 000 km) or when necessary.

#### Procedure

Lubricate the camshaft bushings through the fittings in the differential carrier and the fitting in the drive pinion bearing cage. Figure 7.1.

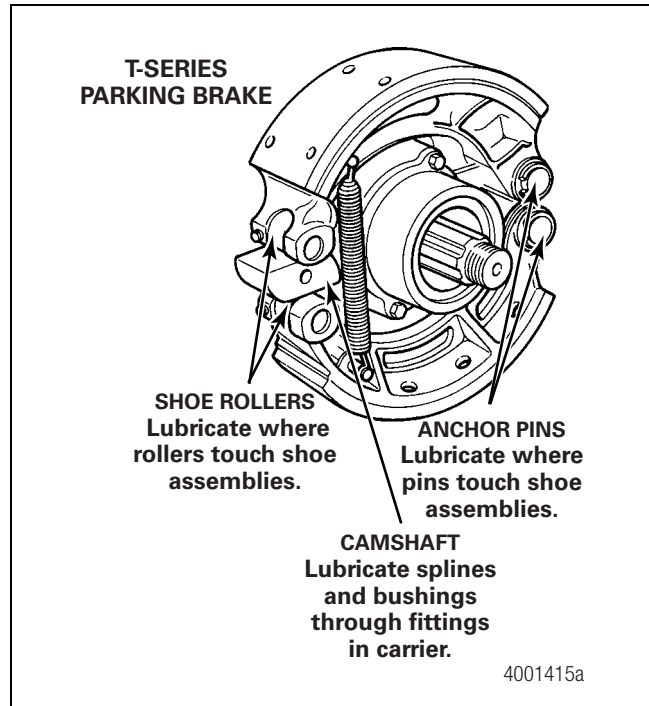


Figure 7.1

### Camshaft Splines

#### Specification

Metallic-base, temperature resistant anti-seize compound, Meritor specification O-637 or equivalent

#### Schedule

Lubricate the camshaft splines when necessary or when the brake is disassembled.

#### Procedure

Apply the lubricant to the camshaft splines. Figure 7.1.

### Anchor Pins

#### Specification

Anchor pin grease, non-melting grease with Bentone thickeners, NLGI Grade 2, Meritor specification O-616 or equivalent

#### Schedule

Lubricate the anchor pins when necessary or when the brake is disassembled.

## Procedure

Apply the lubricant to the anchor pins where the pins touch the brake shoes. Figure 7.1.

## Shoe Rollers

### Specification

Multi-purpose chassis grease, 6% 12-hydroxy lithium stearate grease, NLGI Grade 1, Meritor specification O-617-A or equivalent

Multi-purpose chassis grease, 8% 12-hydroxy lithium stearate grease, NLGI Grade 2, Meritor specification O-617-B or equivalent

### Schedule

Lubricate the shoe rollers when necessary or when the brake is disassembled.

## Procedure

Apply the lubricant to the roller pins where the pins touch the brake shoes. DO NOT put the lubricant on the part of the roller that touches the cam head. Figure 7.1.

## Axle

**Table C: Oil Specifications**

	<b>Gear Oil Type</b>	<b>A.P.I. Specification</b>	<b>SAE Grade</b>	<b>Meritor Specification</b>	<b>Military/SAE Specification</b>	<b>Outside Temperature</b>	
<b>Non-Extended Drain Lubricants</b>	Petroleum with EP Additives	GL-5	85W/140	O-76A	MIL-PRF-2105E and SAE J2360	Above +10°F (–12°C)	
			80W/140	O-76B		Above –15°F (–26°C)	
			80W/90	O-76D		Above –15°F (–26°C)	
			75W/90	O-76E		Above –40°F (–40°C)	
			75W	O-76J		From –40°F (–40°C) to 35°F (2°C)	
			75W/140	O-76L		Above –40°F (–40°C)	
<b>Extended Drain Lubricants*</b>	Petroleum with Extended Drain Additives	GL-5	80W/90	—	MIL-PRF-2105E and SAE J2360	Above –15°F (–26°C)	
			Semi-Synthetic	80W/90		—	Above –15°F (–26°C)
			Full Synthetic	75W/140		O-76M	Above –40°F (–40°C)
			Full Synthetic	75W/90		O-76N	Above –40°F (–40°C)

\*Refer to technical bulletin TP-9539, Approved Rear Drive Axle Lubricants, for a list of approved, extended drain lubricants. To obtain this publication, refer to the Service Notes page on the front inside cover of this manual.

## 7 Lubrication

**Table D: Lubricant Schedule**

Type of Service	Check Oil Level	Oil Change Interval
Bus and Coach City Service	Every 3,000 miles (4828 km)	Petroleum-based oil Less than 60,000 miles (96 558 km) a year: Change two times per year More than 60,000 miles (96 558 km) a year: Change every 25,000-30,000 miles (40 233-48 279 km)
Coach Highway Operation (Inter-city)	Every 3,000 miles (4828 km)	Synthetic-based oil* No initial drop required Change every 100,000 miles (160 930 km) or two years, whichever is first. Petroleum-based oil Initial drop at 1,000 miles (1609 km) Change every 100,000 miles (160 930 km) or once per year, whichever is first Synthetic-based oil* No initial drop required Change every 250,000 miles (402 325 km)

\*Refer to technical bulletin TP-9539, Approved Rear Drive Axle Lubricants, for a list of approved, extended drain lubricants. To obtain this publication, refer to the Service Notes page on the front inside cover of this manual.

**NOTE:** Use of extended drain oils is not allowed on RC-26-633/634, RC-26/27-720 and MC26710 axle models.


**Table E: Lubricant Capacities**

Axle Model	U.S. Pints *	Liters *
59722	30.5	14.4
59723	30.5	14.4
59732	30.5	14.4
59733	30.5	14.4
59752	30.5	14.4
59753	30.5	14.4
59842	30.5	14.4
59843	30.5	14.4
61042	41.0	19.4
61043	41.0	19.4
61052	41.0	19.4
61053	41.0	19.4
61063	44.0	20.8
61142	41.0	19.4
61143	41.0	19.4

Axle Model	U.S. Pints *	Liters *
61152	41.0	19.4
61153	41.0	19.4
61163	44.0	20.8
71063/79063	40.0-44.0	18.8-20.8
71163/79163	40.0-44.0	18.8-20.8
RC-23-160	41.0	19.4

\*These quantities are approximate only and do not include any wheel end oil quantities. Fill the housing with oil up to the bottom of the oil fill hole in the housing cover in vehicle position. If the wheel ends have been disassembled, oil must be provided to the wheel ends before the vehicle is placed back into service.

### Recommended Hub Fill Procedure for Drive Axles Equipped With Hub or Axle Shaft Fill Plugs

1. Rotate the hub until the fill plugs are at the top.
2. Remove the oil fill plugs. Fill each hub cavity with two pints (1 L) of rear axle lubricant.
3. Install and tighten the fill plugs to 10 lb-ft (13.8 N•m) minimum. 

- Road test the vehicle after the initial hub fill in an unloaded condition for one to two miles at safe speeds, but no higher than 25 mph (40 km/h). During the road test, make at least four full left turns and four full right turns with some articulation each time between left and right sides.
- Wait approximately ten minutes after completing the road test for the oil to settle. Remove the oil fill plug in the axle housing and check the axle oil level.
- If necessary, add oil so the oil level is at the bottom of the fill plug.
- Install and tighten the axle fill plug. Refer to Section 8 for the correct torque values.

### Recommended Hub Fill Procedures for Drive Axles Without Hub or Axle Shaft Fill Plugs

#### Option A

#### **⚠ WARNING**

**Verify the vehicle is unloaded before you raise the end of an axle. A loaded vehicle can change an axle's center of gravity and safe allowable tilt angle. If the axle of a loaded vehicle is raised, the vehicle can tip over. Serious personal injury and damage to components can result.**

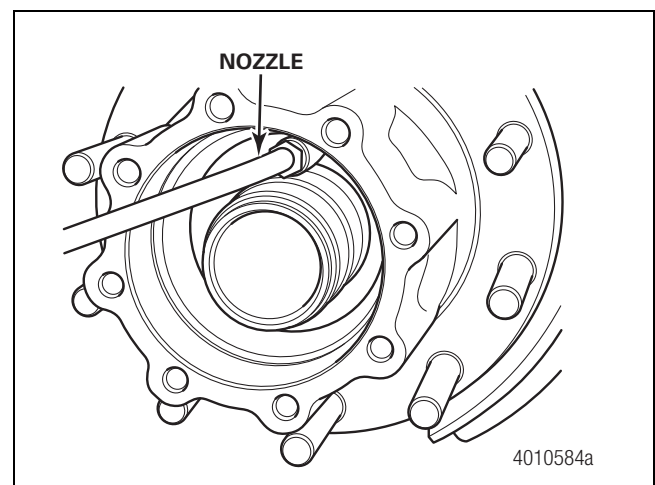
**Ensure the tilt angle of the vehicle does not exceed the maximum allowable angle when the end of the axle is raised. A vehicle tilted beyond the maximum allowable angle can lose stability and cause the vehicle to tip over. Serious personal injury and damage to components can result.**

- Verify the vehicle is unloaded. Ensure the tilt of the vehicle does not exceed the maximum allowable angle. Raise one end of an axle 11-12-inches (28-31 cm). Hold the axle in that position for at least 15 minutes to allow the oil to flow out to the wheel hub. Repeat the procedure on the other end of the axle.
- Check the oil level in the axle housing and refill to the bottom of the fill plug. Install and tighten the axle fill plug. Refer to Section 8 for the correct torque values.
- Road test the vehicle after the initial hub fill in an unloaded condition for one to two miles at safe speeds, but no higher than 25 mph (40 km/h). During the road test, make at least four full left turns and four full right turns with some articulation each time between left and right sides.
- Wait approximately ten minutes after completing the road test for the oil to settle. Remove the oil fill plug in the axle housing and check the axle oil level.

- If necessary, add oil so the oil level is at the bottom of the fill plug.
- Install and tighten the axle fill plug. Refer to Section 8 for the correct torque values.
- Road test the vehicle in an unloaded condition for one to two miles (1.6-3.2 km) at speeds not more than 25 mph (40 km/h). Recheck the lubricant levels and all of the fasteners. Adjust as necessary.

#### Option B

- Remove the axle shaft fasteners and slide the axle shaft out of the drive axle assembly.
- Remove the wheel end nuts and lock washers.
- Remove the outer bearing cone.
- Insert a filling nozzle into the hub cavity and fill with approximately 6-9 oz. (177-266 ml) of axle lubricant. Figure 7.2.



**Figure 7.2**

- Place a drain pan under the hub. Continue to fill until you observe fluid beginning to flow out of the hub cavity down the face of the hub. Some fluid loss is to be expected.
- Install the outer bearing cone, wheel end nuts and lock washers. Refer to Maintenance Manual MM-0409 for the correct procedures for your specific wheel-end retention hardware and bearing end play setting requirements.
- Thoroughly clean the hub so it is free of any lubricant or debris. Reinstall the axle shaft gasket and axle shaft.

## 7 Lubrication

- Road test the vehicle in an unloaded condition for one to two miles (1.6-3.2 km) at speeds not more than 25 mph (40 km/h). Recheck the lubricant levels and all of the fasteners. Adjust as necessary.

### T Series Parking Brake

**Table F: Lubricant Specifications**

<b>Description</b>	<b>Lubricant Specification</b>
Camshaft Bushings	Multi-purpose chassis grease, 6% 12-hydroxy lithium stearate grease, NLGI Grade 1, Meritor specification O-617-A, or equivalent
Shoe Rollers	Multi-purpose chassis grease, 8% 12-hydroxy lithium stearate grease, NLGI Grade 2, Meritor specification O-617-B, or equivalent
Anchor Pin	Anchor pin grease, non-melting grease with Bentone thickeners, Meritor specification O-616, or equivalent
Camshaft Splines	Metallic-base, temperature resistant anti-seize compound, Meritor specification O-637, or equivalent

### Grease-Lubricated Wheel Ends

**Table G: Lubricant Specifications**

<b>Description</b>	<b>Lubricant Specifications</b>
Hub Cavity	Multi-purpose chassis grease, 6% 12-hydroxy lithium stearate grease, NLGI Grade 1, Meritor specification O-617-A, or equivalent
Bearing Cones	Multi-purpose chassis grease, 8% 12-hydroxy lithium stearate grease, NLGI Grade 2, Meritor specification O-617-B, or equivalent

## Torque Specifications

Table H: 59000 Series Rear Axle and Parking Brake

Description	Size	Torque Range*	
		Lb-ft	N•m
Axle Shaft-to-Flange Capscrew	0.312"-24	18-24	24-33
	0.50"-13	85-115	115-156
Axle Shaft-to-Flange Nut	0.438"-20	50-75	68-102
Plain Nut	0.50"-20	75-115	102-156
	0.562"-18	110-165	149-224
	0.625"-18	150-230	203-312
Axle Shaft-to-Flange Nut	0.438"-20	40-65	54-88
Locknut	0.50"-20	65-100	88-136
	0.562"-18	100-145	136-197
	0.625"-18	130-190	176-258
Breather Non-Pressurized	0.375"-18	20-24	27-32.5
Breather Pressurized	0.375"-18	12-18	16.5-24.5
Drain Plug	0.75"-14	35 Min.	47 Min.
Carrier-to-Housing Nut	0.375"-16	35-50	48-68
	0.438"-14	60-75	81-102
	0.50"-13	85-115	115-156
	0.562"-12	130-165	176-224
	0.625"-11	180-230	244-312
Carrier-to-Housing Capscrew	0.50"-13	75-100	102-136
	0.50"-20	85-115	115-156
	0.625"-11	150-190	203-258
	0.625"-18	180-230	244-312
Cage-to-Carrier Nut	0.375"-16	30-50	41-68
	0.438"-14	50-75	68-102
	0.50"-13	75-115	102-156
	0.438"-12	110-165	149-224
	0.625"-11	150-230	203-312
Drum-to-Yoke Flange Nut	0.50"-20	85-115	115-156

## 8 Specifications

Description	Size	Torque Range*	
		Lb-ft	N•m
Drive Pinion Nut	0.875"-20	200-275	271-373
	1.00"-20	300-400	407-542
	1.25"-12	700-900	949-1220
	1.25"-18	700-900	949-1220
	1.50"-12	800-1100	1085-1491
	1.50"-18	800-1100	1085-1491
	1.75"-12	900-1200	1220-1627
Brake Spider-to-Housing	0.625"-18	180-230	244-312
Wheel Stud-to-Hub	0.875"-14	175-250	237-339
Axle Shaft Oil Fill Plug		10 Min.	13.5 Min.

\*Target the middle torque value in the range shown.

**Table I: 61000, 71000, 79000, RC-23-160 and RC-26-700 Series Rear Axle**

Description	Size	Torque Range*	
		Lb-ft	N•m
Axle Shaft-to-Flange Nut	0.438"-20	50-75	68-102
Plain Nut	0.50"-20	75-115	102-156
	0.562"-18	110-165	149-224
	0.625"-18	150-230	203-312
Axle Shaft-to-Flange Nut	0.438"-20	40-65	54-88
Locknut	0.50"-20	65-100	88-136
	0.562"-18	100-145	136-197
	0.625"-18	130-190	176-258
Hubcap Nuts	0.5625"-18	20-28	27-38
	0.625"-18	20-28	27-38
Breather Non-Pressurized	0.375"-18	20-24	27-32.5
Breather Pressurized	0.375"-18	12-18	16.5-24.5
Drain Plug	0.75"-14	35 Min.	47 Min.
	M24x1.5	25 Min.	35 Min.
Carrier-to-Housing Nut	0.625"-11	180-230	244-312
Carrier-to-Housing Capscrew	0.625"-11	150-190	203-258
	0.625"-18	180-230	244-312
	M16x2	180-230	244-312

Description	Size	Torque Range*	
		Lb-ft	N•m
Drive Pinion Nut	M45 x 1.5	1000-1230	1360-1670
Brake Spider-to-Housing	0.625"-18	180-230	244-312
	M16x2	180-230	244-312
Wheel Stud-to-Hub	0.875"-14	175-250	237-339
Axle Shaft Oil Fill Plug		10 Min.	13.5 Min.
Brake Rotor-to-Hub Capscrew	0.625"-18	180-230	244-312
Torque Rod Bracket Capscrew	M20x2.5	340-400	460-540
ABS Sensor Mount Block Capscrew	M6x1	8-12	11-16

\*Target the middle torque value in the range shown.



**Meritor Heavy Vehicle Systems, LLC**

2135 West Maple Road

Troy, MI 48084 USA

866-OnTrac1 (668-7221)

meritor.com

Copyright 2014  
Meritor, Inc.

Printed in USA

Revised 04-14  
Maintenance Manual 23A (16579)

