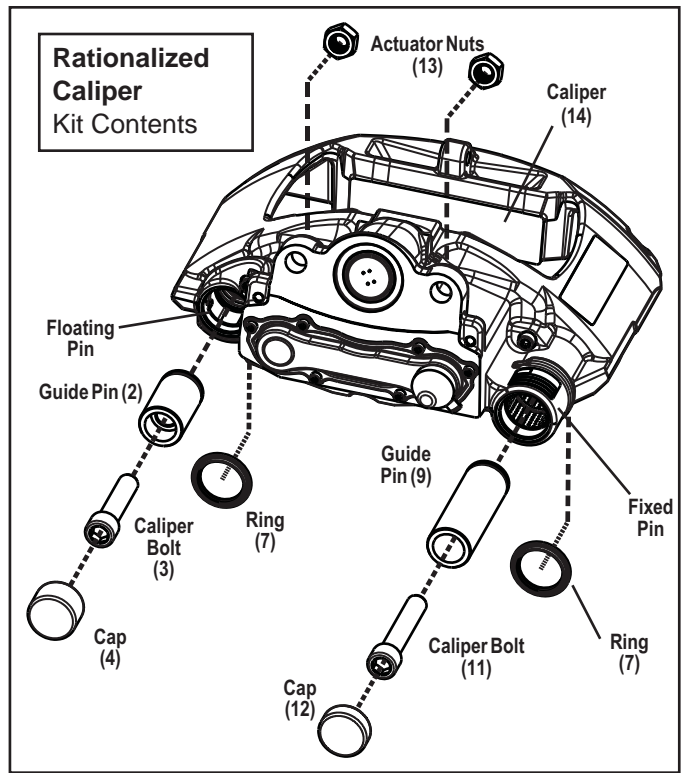
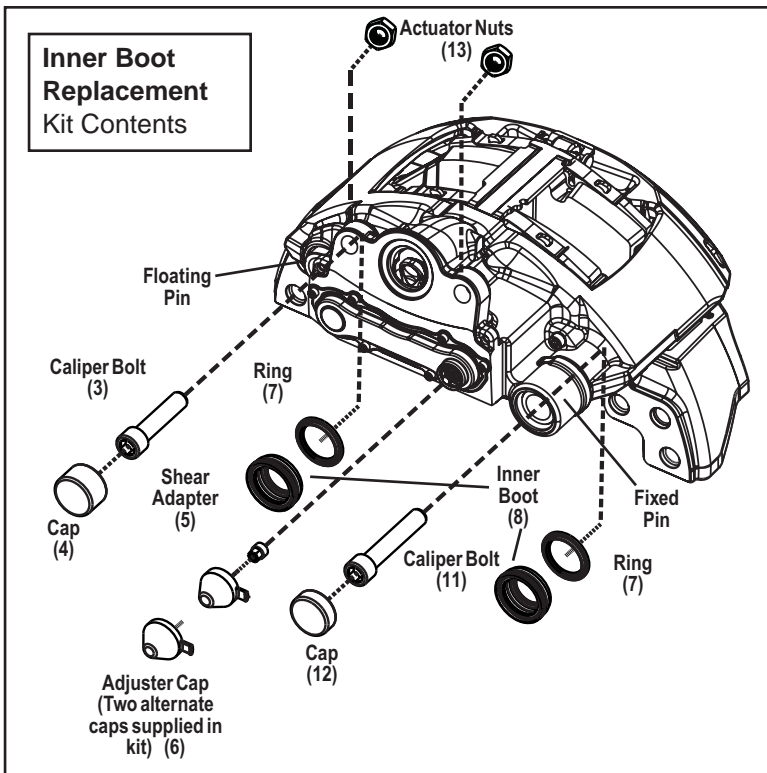
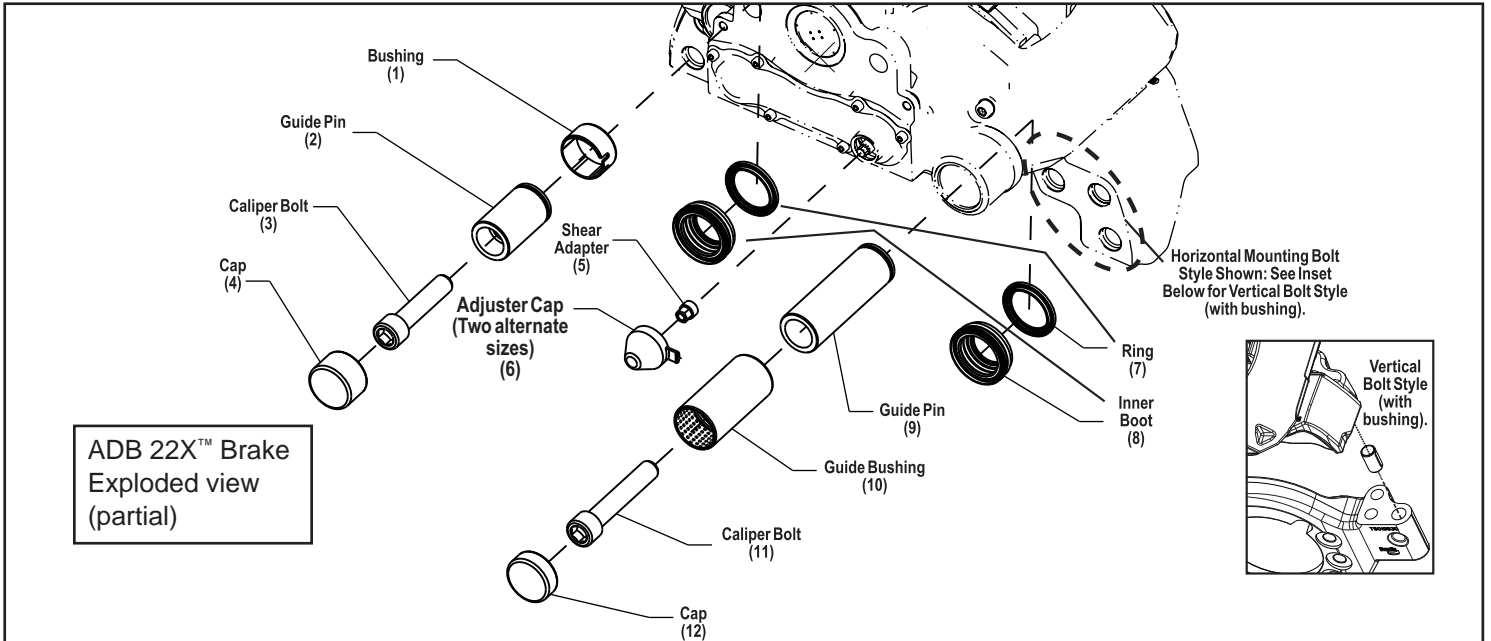




Installation Instructions

BENDIX® ADB 22X™ AIR DISC BRAKE KITS



KIT CONTENTS

Item	Description	Inner Boot Replacement	Rationalized Caliper Replacement
2	Guide Pin (Short)	-	1
3	Caliper Bolt (Short)	1	1
4	Cap (large)	1	1
5	Shear Adapter	1	-
6	Adjuster Cap (two alternate sizes supplied)	2	-
7	Ring	2	2
8	Inner Boot	2	-
9	Guide Pin (Long)	-	1
11	Caliper Bolt (Long)	1	1
12	Cap (small)	1	1
13	Actuator Nuts	2	2
14	Caliper Assembly	-	1

(White grease also supplied - not shown)

A DVD is available that shows this installation procedure. Go to the Literature Center on www.bendix.com to order BW7355 (ADB 22X™ Guide Pins).

FIGURE 1 - KITS EXPLODED VIEWS

SAFE MAINTENANCE PRACTICES

WARNING! PLEASE READ AND FOLLOW THESE INSTRUCTIONS TO AVOID PERSONAL INJURY OR DEATH:

When working on or around a vehicle, the following general precautions should be observed at all times:

1. Park the vehicle on a level surface, apply the parking brakes, and always block the wheels. Always wear safety glasses. Where specifically directed, the parking brakes may have to be released, and/or spring brakes caged, and this will require that the vehicle be prevented from moving by other means for the duration of these tests/procedures.
2. Stop the engine and remove ignition key when working under or around the vehicle. When working in the engine compartment, the engine should be shut off and the ignition key should be removed. Where circumstances require that the engine be in operation, EXTREME CAUTION should be used to prevent personal injury resulting from contact with moving, rotating, leaking, heated or electrically charged components.
3. Do not attempt to install, remove, disassemble or assemble a component until you have read and thoroughly understand the recommended procedures. Use only the proper tools and observe all precautions pertaining to use of those tools.
4. If the work is being performed on the vehicle's air brake system, or any auxiliary pressurized air systems, make certain to drain the air pressure from all reservoirs before beginning ANY work on the vehicle. If the vehicle is equipped with an AD-IS® air dryer system or a dryer reservoir module, be sure to drain the purge reservoir.
5. Following the vehicle manufacturer's recommended procedures, deactivate the electrical system in a manner that safely removes all electrical power from the vehicle.
6. Never exceed manufacturer's recommended pressures.
7. Never connect or disconnect a hose or line containing pressure; it may whip. Never remove a component or plug unless you are certain all system pressure has been depleted.
8. Use only genuine Bendix® replacement parts, components and kits. Replacement hardware, tubing, hose, fittings, etc. must be of equivalent size, type and strength as original equipment and be designed specifically for such applications and systems.
9. Components with stripped threads or damaged parts should be replaced rather than repaired. Do not attempt repairs requiring machining or welding unless specifically stated and approved by the vehicle and component manufacturer.

10. Prior to returning the vehicle to service, make certain all components and systems are restored to their proper operating condition.
11. For vehicles with Antilock Traction Control (ATC), the ATC function must be disabled (ATC indicator lamp should be ON) prior to performing any vehicle maintenance where one or more wheels on a drive axle are lifted off the ground and moving.

WARNING: Not all wheels and valve stems are compatible with Bendix® Air Disc Brakes. Use only wheels and valve stems approved by the vehicle manufacturer to avoid the risk of valve stem shear and other compatibility issues.

WARNING: ALWAYS AVOID CREATING DUST DURING REMOVAL OR INSTALLATION DUE TO POSSIBLE CANCER AND LUNG DISEASE HAZARD.

While Bendix Spicer Foundation Brake LLC does not offer asbestos-containing brake linings or disc pads, the long-term effects of certain non-asbestos fibers have not been determined. Current OSHA Regulations cover exposure levels to some, but not all, components of non-asbestos linings and pads. The following precautions should be used when handling these materials:

- Avoid creating dust. Compressed air or dry brushing must never be used to clean brake assemblies or the work area.
- Brake workers must take steps to minimize their exposure to airborne brake lining particles. Procedures to reduce exposure include: working in a well-ventilated area, segregating areas where brake work is performed, using local filtered ventilation systems or enclosed cells with filtered vacuums for all brake work. Respirators approved by the Mine Safety and Health Administration (MSHA) or National Institute for Occupational Safety and Health (NIOSH) should be worn at all times during brake servicing.
- Workers must wash before eating or drinking, should not use tobacco products in any form, shower after working, and not wear work clothes home. Work clothes should be vacuumed using a high efficiency particulate filter (HEPA) vacuum and laundered separately without shaking.
- OSHA Regulations regarding testing, disposal of waste and methods of reducing exposure for asbestos are set forth in 29 Code of Federal Regulations §1910.001. These Regulations provide valuable information which can be utilized to reduce exposure to airborne particles.
- Material Safety Data Sheets on this product, as required by OSHA, are available from Bendix Spicer Foundation Brake LLC. Call 1-800-AIR-BRAKE.

These instructions cover the removal of Bendix air disc brake pads, and installation of replacement guide pins and brake pads. For vehicles with wear sensors and/or electronic wear diagnostic equipment, consult the Service Data Sheet SD-23-7541.

Follow all standard safety procedures including, but not limited to, those on page 2 of these instructions. Also, read the vehicle manufacturer's recommendations. When working on foundation brakes, be sure that the vehicle is on level ground, that the vehicle is parked by other means than the foundation brakes, and that the wheels are chocked. When installing pads, where appropriate, use heavy duty gloves and always keep fingers away from potential pinch hazard areas.

As noted earlier, Bendix Air Disc Brakes are precision-engineered braking mechanisms. The "friction couple" braking characteristics have been carefully optimized and the rotor design and materials have been matched with special formulation brake pads for optimal performance.

FOR ADDITIONAL INFORMATION SEE SERVICE DATA SHEET SD-23-7541.

NOTE: FOR INNER BOOT REPLACEMENT KIT INSTALLERS

When replacing damaged or worn inner boots (4) there is a potential to find internal damage to the guide pin bearing. A useful preliminary check is to conduct the following Guide Pin Bearing inspection shown below. Damaged, worn, or corroded guide pins and/or bushings require a different guide pin replacement kit for servicing the bearings.

GUIDE PIN BEARING INSPECTION:

CALIPER MOVEMENT TEST USING MAGNETIC DIAL GAUGE

Use the following procedure to check caliper movement along the guide pins:

Remove the Pads.

Clean dirt, road grime, etc. from the guide pin or cover.

Using hand pressure only (no tools), the Caliper should slide freely along the whole length of the Guide Pin arrangement. With the pads removed, this movement should be at least 0.8 inch (20mm). If the movement is less than this amount, perform a full guide pin service, or replace the caliper/carrier assembly.

To measure the floating guide pin clearance from the guide sleeve (6c) to the guide pin:

See Figure 2. Remove the wheel. Remove the pad retainer, but leave the pads in position. Attach a magnetic dial-gauge holder to the carrier on the short bearing side of the caliper. Release the parking brake (if applicable).

Use the measuring point on the caliper - see the arrow in Figure 2. Press the caliper in the direction of carrier and set the dial-gauge to zero.

Place a suitable tool (e.g. screwdriver) between Carrier and Caliper forcing them in opposite directions, and read the maximum value on the dial-gauge.

If the value is greater than 0.039 in. (1.0 mm), a full guide pin service is required, or the caliper/carrier assembly must be replaced.

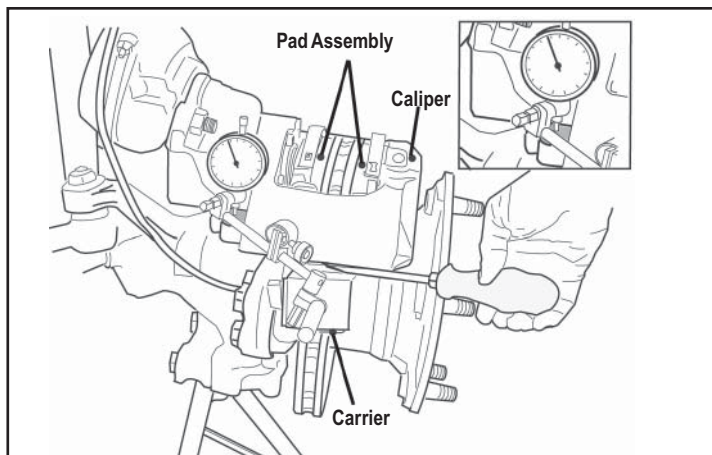


FIGURE 2 - MAGNETIC DIAL-GAUGE

Cap Removal

Refer to Figure 1. Note: If removed from the vehicle, place the brake on a workbench and, using a vice, secure it by the carrier.

Using a small chisel or punch, tap a hole in the center of the guide pin cap (12), taking care not to insert the chisel too far. Using the hole just made, pry the cap off and discard. Release the second cap (4) by using a small chisel and hammer to apply light blows to the cap, with the chisel aimed away from the casting. Discard the cap (4).

CALIPER BOLT, GUIDE PIN AND INNER BOOT REMOVAL

Note: The guide pins are retained for re-use.

Using a 14 mm hex bit socket, remove and discard the two caliper bolts (3) and (11). Retract both guide pins slightly and remove the caliper from the carrier.

Remove the boot retaining rings (7) and the guide pins (2) and (9). Use a screwdriver to pry out the inner boots (8).

INNER BOOT (8) INSTALLATION

Both inner boots are identical.

See Figures 3 and 4. Clean the area where the inner boots will be installed and inspect for corrosion. If the sealing surface of the caliper is damaged, replace the caliper. Place a boot into the installer tool, making sure that the inner bellows are arranged close to the side walls of the tool and will not be damaged during installation. Using 70 in. lbs. (8 N•m) of torque maximum, tighten bolt (T10) to install the inner boot. Repeat for the second inner boot. Check that the boots are held securely in place and that no damage occurred during installation.

GUIDE PIN INSTALLATION

Note: The guide pins are retained for re-use, however they must be inspected for damage, wear, and corrosion, and must be replaced as necessary.

Lubricate both guide pins with the white grease supplied. Insert the guide pins into their respective bores with the grooved end towards the bellows. Fit the lip in the end of the inner boots (8) into the groove of the guide pins (See Figure 4). Push on each ring (7) ensuring that the boot (8) is engaged onto the end of the guide pins (2 or 9).

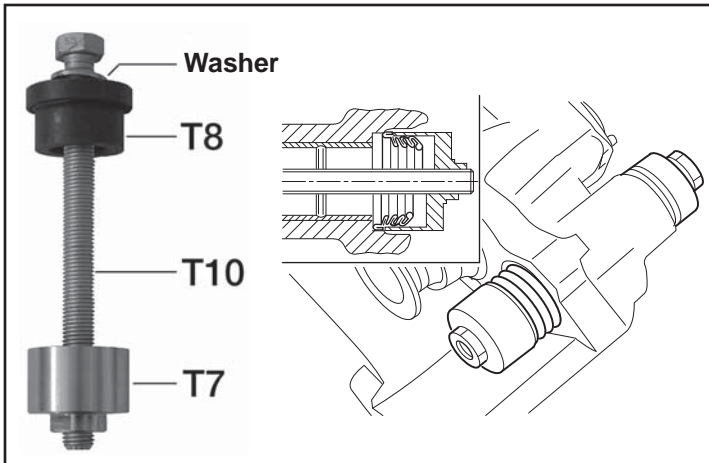


FIGURE 3 - INNER BOOT INSTALLATION

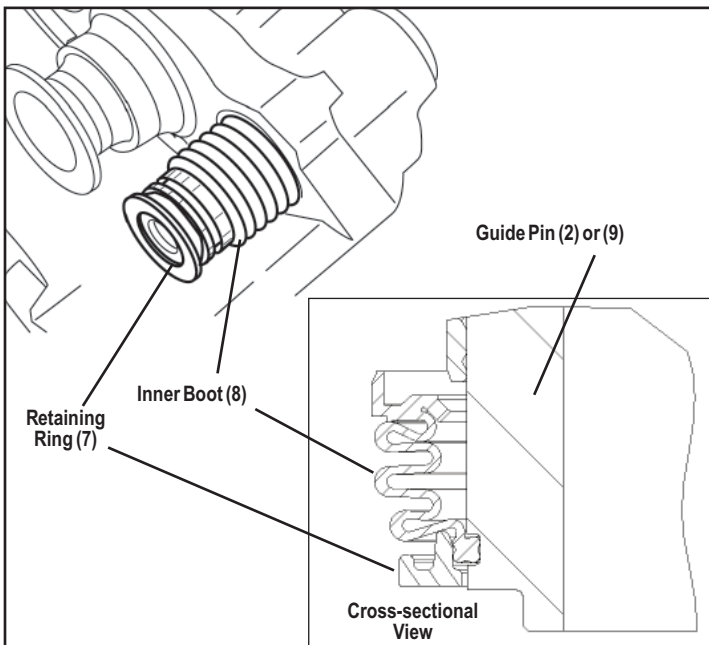


FIGURE 4 - GUIDE PIN INSTALLATION

CARRIER INSTALLATION

With the caliper resting on a bench, or on the vehicle where access allows, slide the carrier into place with a slight rocking motion, taking care that as you do so, the inner boots and guide pins are seated in their proper place on the carrier. Identify the two caliper bolts (3) and (11). With the shorter bolt positioned in the floating pin bushing (2), and the longer bolt positioned in the fixed pin bushing (9), attach the bushings to the carrier using 133 ft. lbs. (180 N•m), and then tighten an additional 90° (ninety degrees).

INSTALLING THE TWO GUIDE PIN CAPS

With the caliper resting on a bench, or on the vehicle where access allows, position the caliper/carrier assembly so that the inner boots are fully compressed, check that the bores are clean and dry (i.e. free from lubrication). Note: It is important that the inner boots are fully compressed during this procedure to ensure that the least amount of air is retained within the guide pin channel. If too much air is trapped, the bellows can potentially be damaged during the operation of the brake.

Clean the two caps, and check that the caliper surfaces where the caps will be installed are clean and have no signs of damage.

Select one cap, and with the correct press-in tool. The smaller cap (12) uses tool (T26), and the larger cap (4) uses tool (T27). Position the cap in position, using the machined channel in the caliper to assist in centering the tool. Use a hammer to tap them into position. See Figure 6. Note that the tool needs to remain perpendicular to the channel to prevent damage during installation. Note that, after installation, the smaller cap (12) extends 0.08 in. (2 mm.), and the larger cap (4) extends 0.61 in. (15.5 mm.) - see Figures 7 and 8.

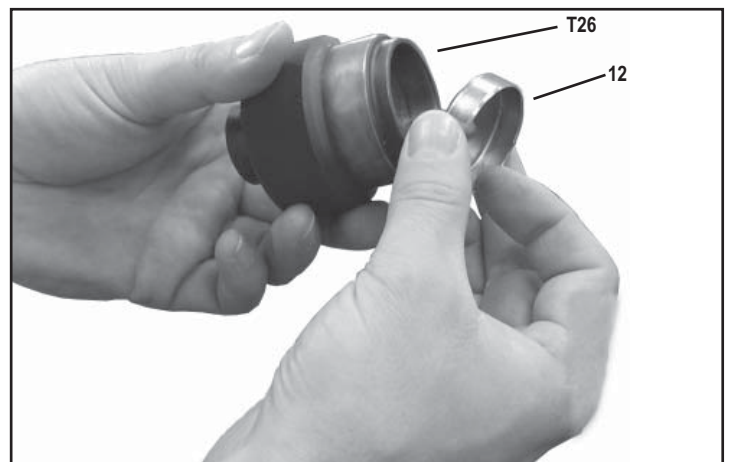


FIGURE 5 - GUIDE CAP INSTALLATION

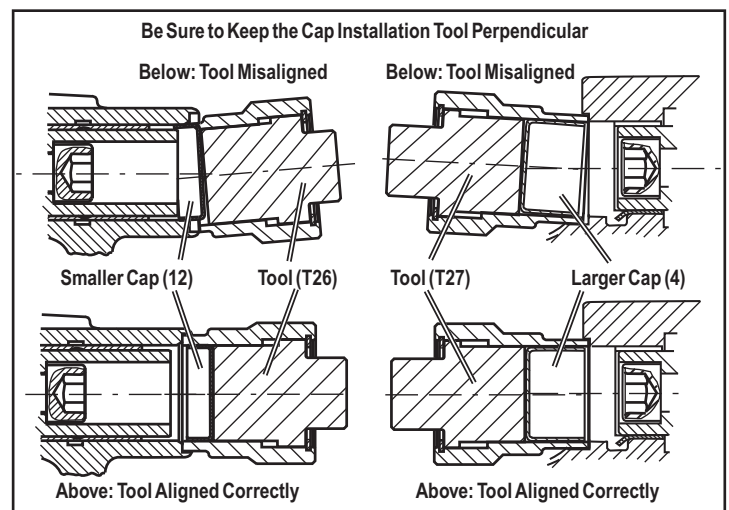


FIGURE 6 - GUIDE CAP INSTALLATION

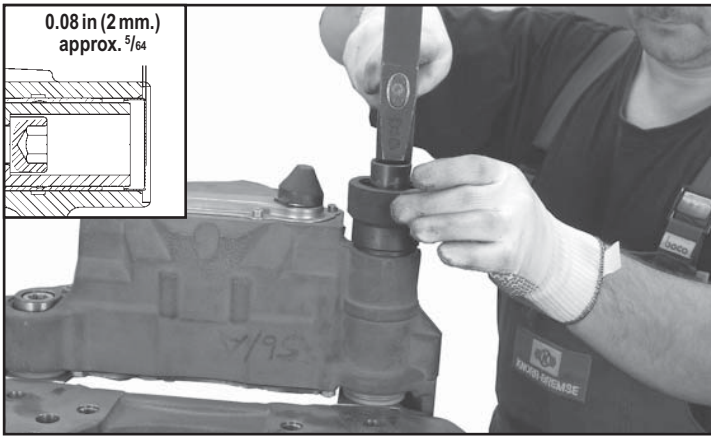


FIGURE 7 - GUIDE CAP (12) INSTALLATION

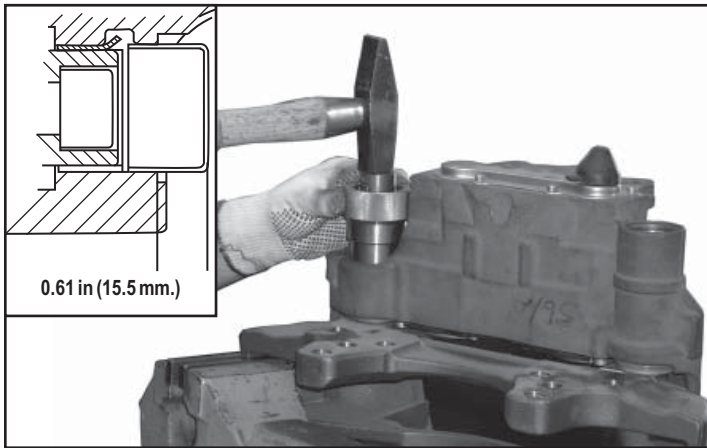


FIGURE 8 - GUIDE CAP (4) INSTALLATION

INSPECTION

Check that the guide pins move freely when the carrier is moved laterally, and that air is not trapped within the inner boots, and that the boots (8) and ring (7) are in the proper position before continuing with the installation.

Place the caliper onto the anchor plate and start the bolt into the hole with the alignment bushing. On the opposite mounting pad, pull the brake assembly against the "mounting shelf" and install the (3) mounting bolts.

With the brake assembly against the "mounting shelf" tighten the mounting bolts to 50 ft-lbs.

Install the remaining bolts and torque to 50 ft-lbs.

Tighten all the bolts to a final torque of 180 - 200 ft-lbs.

Once installed, verify the caliper slides freely.

Reconnect/reinstall the brake chamber as necessary.

Air Disc Brake Running Clearance Inspection.

Follow all industry safety guidelines, including those listed on page 2. On level ground, with the wheels chocked and the parking brake temporarily released, check for movement of the brake caliper. This small movement, less than 0.80" (2 mm) - approximately the thickness of a nickel - in the inboard/outboard direction indicates that the brake is moving properly on its guide pins. If the caliper has no movement or appears to move greater than the distances above, a full wheel-removed inspection will be necessary. See Service Data Sheet SD-23-7541.

