

SECTION 5B1

FRONT DISC BRAKES

CAUTION: When servicing brake parts, do not create dust by grinding, sanding brake linings, or by cleaning brake parts with a dry brush or compressed air. Many brake parts contain asbestos fibers which can become airborne if dust is created during servicing. Breathing dust containing asbestos fibers may cause serious bodily harm. A water dampened cloth or water based solution should be used to remove any dust on brake parts. Equipment is commercially available to perform this washing function. These wet methods will prevent asbestos fibers from becoming airborne.

CAUTION: Brake fluid may irritate eyes and skin. In case of contact, take the following actions:

- Eye contact – rinse thoroughly with water.
- Skin contact – wash with soap and water.

NOTICE: Avoid spilling brake fluid on any of the vehicle's painted surfaces, wiring cables or electrical connectors. Brake fluid will damage paint and electrical connections. If any fluid is spilled on the vehicle, flush the area with water to lessen damage.

NOTICE: When fasteners are removed, always reinstall them at the same location from which they were removed. If a fastener needs to be replaced, use the correct part number fastener for that application. If the correct part number fastener is not available, a fastener of equal size and strength (or stronger) may be used. Fasteners that are not reused, and those requiring thread locking compound will be called out. The correct torque value must be used when installing fasteners that require it. If the above conditions are not followed, parts or system damage could result.

CONTENTS

General Description	5B1-1	Front Brake Rotor Assembly	5B1-7
Front Brake Rotor Assembly	5B1-1	Unit Repair	5B1-7
Front Brake Caliper Assembly	5B1-1	Refinishing Front Brake Rotor	
Diagnosis	5B1-2	Assemblies	5B1-7
Front Disc Brake Inner and Outer		On-Vehicle Procedure	5B1-7
Pad Assemblies Inspection	5B1-2	Off-Vehicle Procedure	5B1-7
Front Brake Rotor Assembly Inspection	5B1-2	Non-Directional Finishing	5B1-8
Front Brake Rotor Assembly		Burnishing Front Brake Rotor	
Tolerance and Surface Finish	5B1-2	Assemblies	5B1-8
Thickness Variation Check	5B1-2	Front Brake Caliper Assembly	5B1-8
Lateral Runout Check	5B1-2	Specifications	5B1-10
Front Brake Caliper Assembly Inspection	5B1-4	General Specifications	5B1-10
On-Vehicle Service	5B1-4	Rotor Refinishing Specifications	5B1-10
Front Brake Caliper Assembly	5B1-4	Fastener Tightening Specifications	5B1-10
Front Disc Brake Inner and Outer		Special Tools	5B1-10
Pad Assemblies	5B1-5		

GENERAL DESCRIPTION

FRONT BRAKE ROTOR ASSEMBLY

The rotor assembly is a highly machined, cast iron finned type. It is mounted on top of an integral hub bearing unit.

FRONT BRAKE CALIPER ASSEMBLY

The caliper assembly has a single bore and is mounted to the steering knuckle assembly with two bolts/screws.

When the brakes are applied, fluid pressure behind the piston increases. Pressure is exerted equally against the bottom of the piston and also against the bottom of the caliper housing bore. The pressure applied to the piston is transmitted to the inner pad assembly forcing the lining against the inner rotor surface. The pressure applied to the bottom of the caliper housing bore forces the caliper to slide on the caliper bolts/screws toward the center of the vehicle. This movement causes the outer section of the caliper to apply pressure against the back of the outer pad assembly, forcing the lining against the outer rotor assembly surface. As line pressure builds, the inner and outer

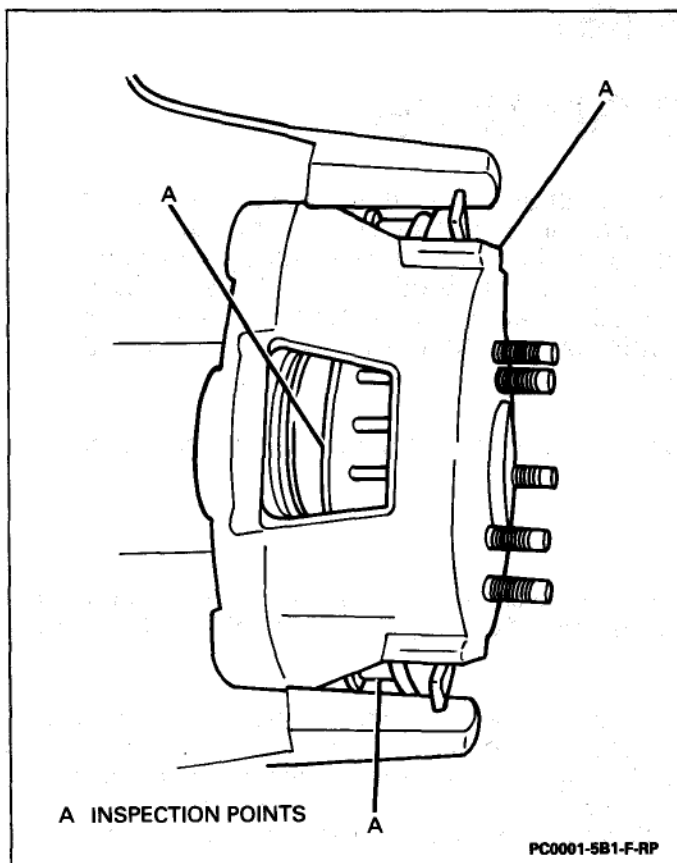


Figure 1 – Front Disc Brake Inner and Outer Pad Assemblies Inspection

pad assemblies are pressed against the rotor assembly surfaces with increased force, bringing the vehicle to a stop.

When the brake pedal assembly is released, line pressure is released and the piston seal and groove cause the piston to be slightly retracted, resulting in less drag on the rotor assembly by the inner and outer pad assemblies.

Outward movement of the piston and inward movement of the caliper assembly automatically compensate for lining wear. As the linings wear, the increased area behind the piston is filled with brake fluid from the brake master cylinder reservoir.

DIAGNOSIS

FRONT DISC BRAKE INNER AND OUTER PAD ASSEMBLIES INSPECTION

Figure 1

Inspect

- Inner and outer pad assemblies at least twice a year when the wheels are removed (tire rotation, etc.). When inspecting front disc brakes, check both ends of the outer pad assembly by looking in at each end of the caliper assembly. These are the points at which the highest rate of wear normally occurs. Also, check the lining thickness of the inner pad assembly to make sure that it has not worn prematurely. Look through the hole in the top of the caliper assembly to view the inner pad assembly. Inner and

outer pad assemblies should be replaced when the thickness of any lining is worn to within 0.76 mm (0.030 inch) of the shoe. All inner and outer pad assemblies should be replaced in axle sets.

All front disc brakes have a wear indicator that makes a noise when the linings wear to a degree where replacement is required. The wear indicator is an integral part of the outer pad assembly. When the lining is worn, the clip indicator contacts the rotor assembly and produces a warning noise.

Measure

- Flatness of inner and outer pad assembly linings. Place inner and outer pad assembly surfaces together and check for gap between surfaces. If more than 0.13 mm (0.005 inch) gap is measured midway between attaching lugs, inner and outer pad assemblies must be replaced.

FRONT BRAKE ROTOR ASSEMBLY INSPECTION

Front Brake Rotor Assembly Tolerance and Surface Finish

In manufacturing the rotor assembly, tolerances of the braking surfaces for flatness, thickness variation and lateral runout are very closely held. The maintenance of close tolerances on the shape of the braking surfaces is necessary to prevent brake roughness.

In addition to these tolerances, the surface finish must be held to a specified range of 60 R_a roughness or less. A new rotor assembly falls into this surface range, as will a rotor assembly that is refinished exactly as directed in "Refinishing Front Brake Rotor Assemblies" in this section. The control of the braking surface finish is necessary to avoid problems of hard pedal-apply, excessive brake fade, pulls and erratic performance and to extend lining life.

Light scoring of the rotor assembly surfaces not exceeding 1.5 mm (0.06 inch) in depth, which may result from normal use, will not affect brake operation.

Thickness Variation Check

Thickness variation can be checked by measuring the thickness of the front brake rotor assembly at four or more points around its circumference. All measurements must be made at the same distance in from the edge of the rotor assembly. A rotor assembly that varies by more than 0.013 mm (0.0005 inch) can cause brake pedal assembly pulsation and/or front end vibration during brake applications. A rotor assembly that does not meet these specifications should be refinished to specifications or replaced.

Lateral Runout Check

Figure 2

Tool Required:

J 8001 Dial Indicator Set

1. Clean surface of rotor assembly (1).
2. Install wheel nuts (13).

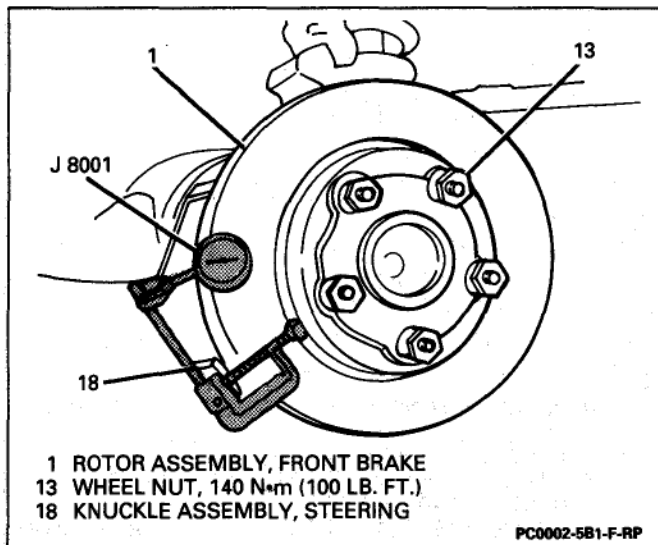


Figure 2 - Lateral Runout Check



Tighten

- Wheel nuts (13) in a star pattern to 140 N•m (100 lb. ft.).
3. Fasten J 8001 to steering knuckle assembly (18) so that indicator button contacts rotor assembly surface about 13 mm (0.5 inch) from rotor edge.
 4. Set J 8001 to zero.

5. Move rotor assembly (1) one complete revolution, and observe total indicated runout (TIR).

- Total indicated runout (TIR) should not be more than 0.15 mm (0.006 inch).
- In some cases, excessive lateral runout of rotor assembly (1) can be improved by indexing rotor assembly (1) on hub one or two bolt positions from original position. Indexing the rotor assembly (1) requires removal and installation of the front brake caliper assembly. Refer to "Front Brake Caliper Assembly" under "On-Vehicle Service" in this section. If lateral runout cannot be corrected by indexing rotor assembly (1), check hub and front wheel bearing assembly for excessive lateral runout or looseness. If hub and bearing assembly lateral runout exceeds 0.040 mm (0.0015 inch) then replace hub and bearing assembly. If lateral runout of the hub and bearing assembly is within specifications then refinish or replace rotor assembly (1) as necessary.

NOTICE: Whenever the rotor assembly has been separated from the wheel bearing flange, clean any rust or foreign material from the mating surface of the wheel bearing flange and front brake rotor assembly. Failure to do this may result in increased lateral runout of the rotor assembly and brake pulsation.

- A rotor assembly that does not meet the lateral runout specification should be resurfaced or replaced as necessary.

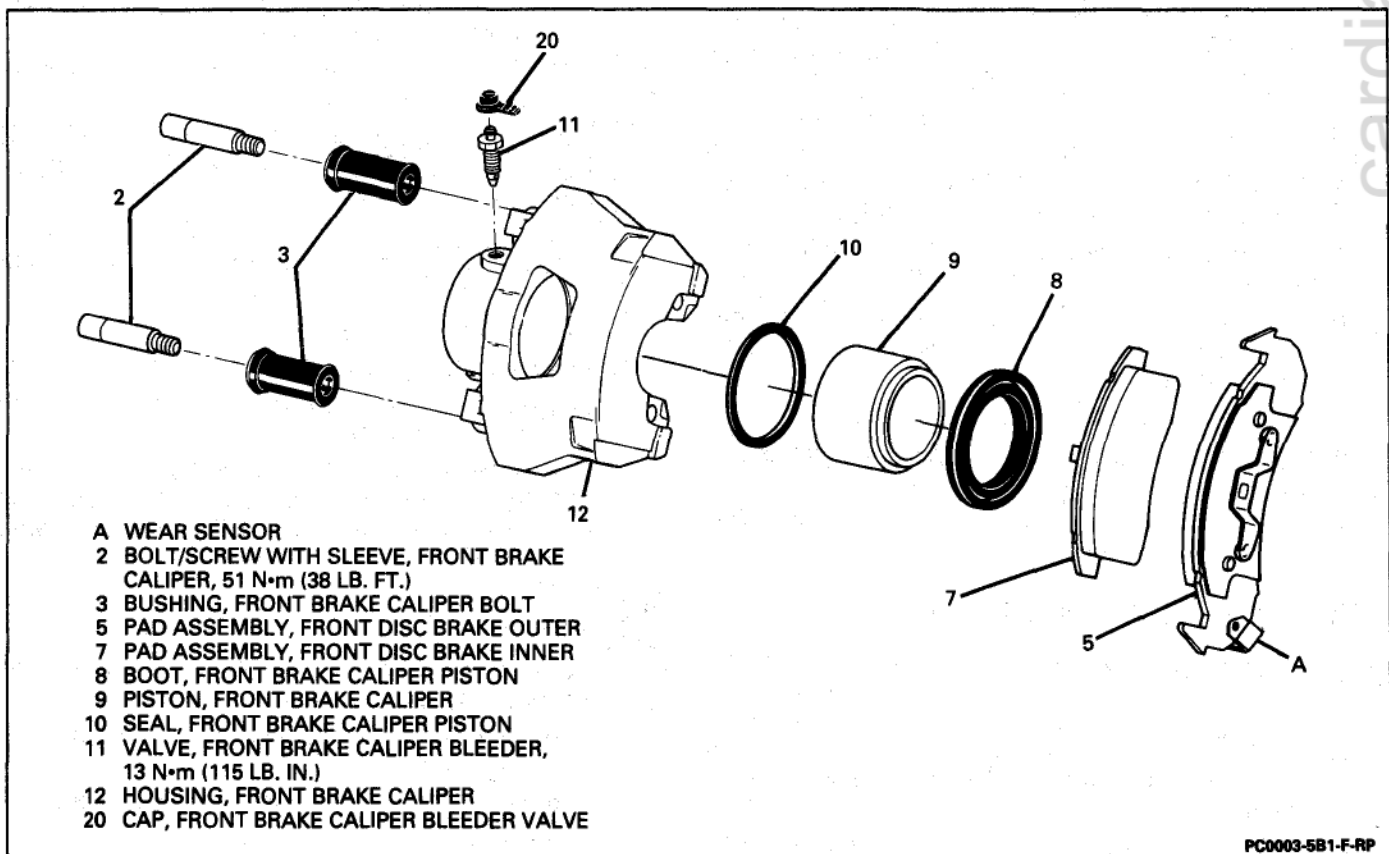


Figure 3 - Front Brake Caliper Assembly

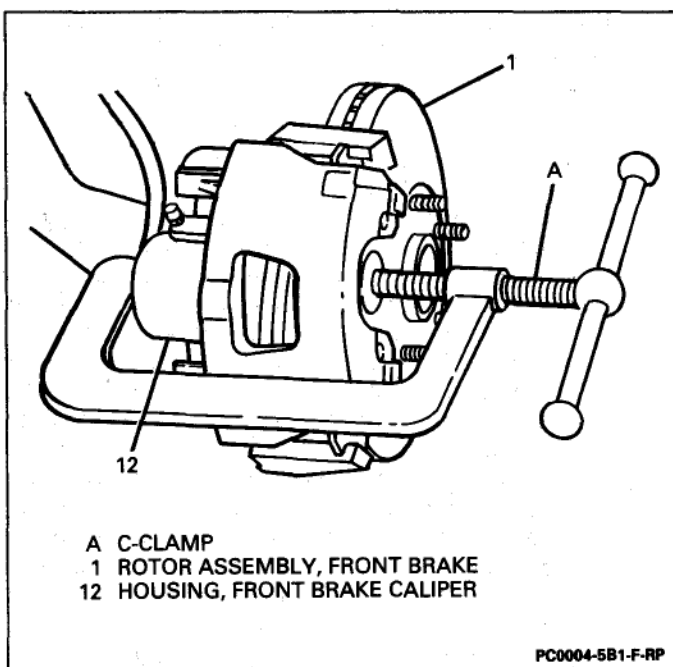


Figure 4 – Compressing Front Brake Caliper Piston

FRONT BRAKE CALIPER ASSEMBLY INSPECTION

The front brake caliper assembly must be disassembled for inspection. Refer to "Front Brake Caliper Assembly" under "Unit Repair" in this section.

ON-VEHICLE SERVICE

NOTICE: Do not use lubricated shop air on brake parts as damage to rubber components may result.



Important

- Replace all components included in repair kits used to service this front brake caliper assembly.
- Lubricate rubber parts with clean brake fluid to ease assembly.
- If any hydraulic component is removed or disconnected, it may be necessary to bleed all or part of the brake system.
- Replace shoe and linings in axle sets only.
- The torque values specified are for dry, unlubricated fasteners.
- Perform service operations on a clean bench free from all mineral oil materials.

FRONT BRAKE CALIPER ASSEMBLY

Figures 3 through 7



Remove or Disconnect

1. Two-thirds of brake fluid from master cylinder assembly.
2. Raise and suitably support vehicle. Refer to SECTION 0A.
3. Tire and wheel assembly. Refer to SECTION 3E.

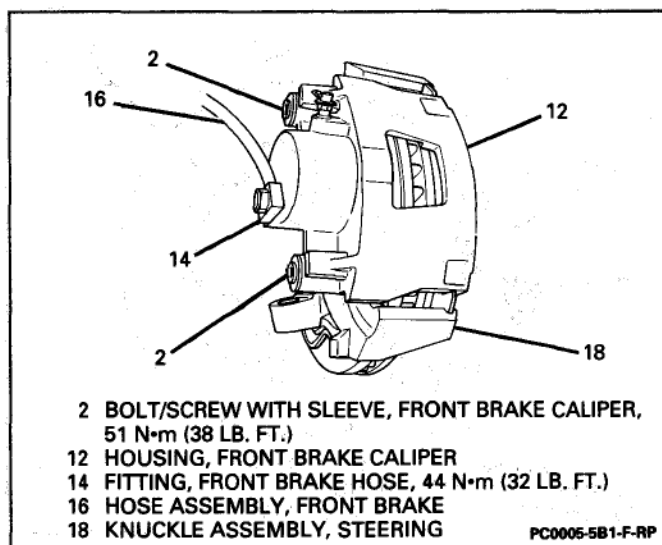


Figure 5 – Front Brake Caliper Assembly Attachment

4. Reinstall wheel nuts to retain rotor assembly (1).
5. Push piston (9) into caliper housing bore to provide clearance between inner and outer pad assemblies (7 and 5) and rotor assembly (1).
 - A. Position C-clamp on housing (12) and against outer pad assembly (5).
 - B. Tighten clamp slowly to press piston (9) into caliper housing bore.



Important

- If removing caliper assembly only to access other brake parts, skip step 6.
- If fitting (14) is disconnected, caliper assembly must be bled during installation.

6. Fitting (14), two copper gaskets, hose assembly (16) from housing (12), if removing caliper assembly entirely from vehicle.
 - A. Plug openings in hose assembly (16) and housing (12) to prevent brake fluid loss and contamination.
 - B. Discard copper gaskets.
7. Front brake caliper bolts/screws with sleeves (2).
8. Caliper assembly from rotor assembly (1) and knuckle assembly (18).
 - If caliper assembly is not being removed from vehicle for unit repair, suspend it from front suspension using a locally fabricated wire hook.



Inspect

1. Bolts/screws with sleeves (2) for corrosion and bushings (3) for cuts and nicks.
 - If damage is found, use new parts, when installing caliper assembly.
 - Do not attempt to polish away corrosion.
2. Fitting (14).
 - If through-hole in fitting (14) is blocked, remove blockage or replace fitting (14).

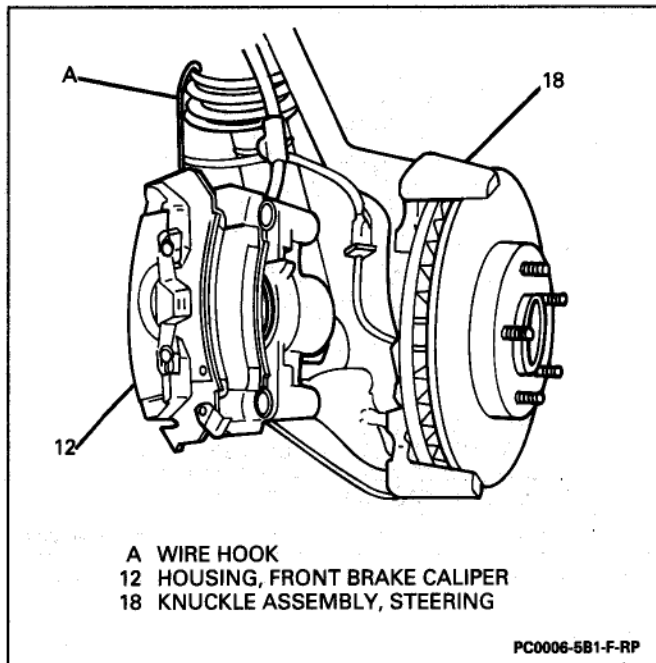


Figure 6 – Suspending Front Brake Caliper Assembly

Install or Connect

NOTICE: See “Notice” on page 5B1-1 of this section.

1. Lubricate inner diameters of bushings (3) with silicone grease GM P/N 1052863 or equivalent.
2. Bolts/screws with sleeves (2).

Inspect

- A. Bolt/screw with sleeve (2) should slide through bushing (3) using only hand pressure.
 - If greater force is required or mechanical assistance is needed, remove bolt/screw with sleeve (2) along with bushing (3).
- B. Mounting bores for corrosion.
 - a. If mounting bores show signs of corrosion, remove corrosion using a 1-inch wheel cylinder housing brush.
 - b. Clean mounting bores with clean denatured alcohol.
- C. Replace bushings. Refer to “Front Brake Caliper Assembly” under “Unit Repair” in this section.

Tighten

- Bolts/screws with sleeves (2) to 51 N•m (38 lb. ft.).
3. Caliper assembly onto rotor assembly (1) and knuckle assembly (18).
 4. Fitting (14), two new copper gaskets, and hose assembly (16) to housing (12), if removed.

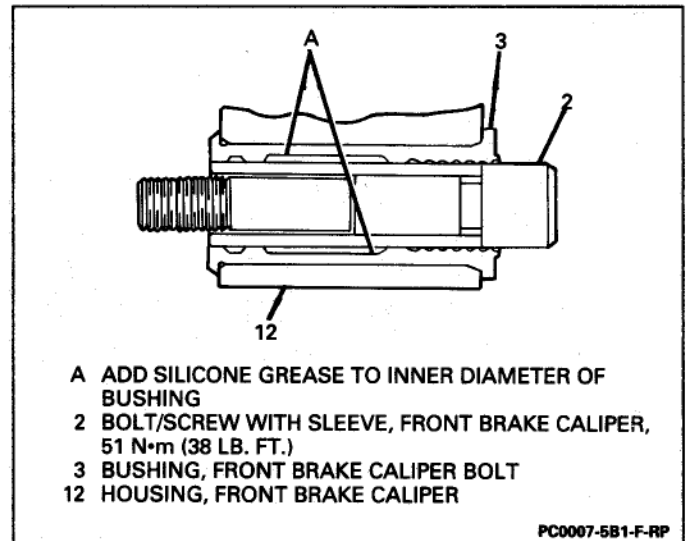


Figure 7 – Lubricating Front Brake Caliper Bolt Sleeve and Bushing

Tighten

- Fitting (14) to 44 N•m (32 lb. ft.).
5. Wheel nuts securing rotor assembly to steering knuckle assembly flange.
 6. Tire and wheel assembly. Refer to SECTION 3E.
 7. Lower vehicle.
 8. Fill master cylinder to proper level. Refer to SECTION 5A.
 9. If hose assembly (16) was removed, bleed caliper assembly. Refer to SECTION 5E1.

FRONT DISC BRAKE INNER AND OUTER PAD ASSEMBLIES

Figures 3, 6 and 8 through 12

Remove or Disconnect

1. Front brake caliper assembly. Refer to “Front Brake Caliper Assembly” under “On-Vehicle Service” in this section.
2. Outer pad assembly (5). Use screwdriver to disengage buttons on shoe from holes in caliper housing.
3. Inner pad assembly (7).

Clean

- Wipe outside surface of boot (8).
 - Use denatured alcohol.

Important

1. Bottom piston (9) into caliper housing bore.
 - A. Use a large C-clamp positioned on housing (12) and inside piston well.
 - B. Tighten clamp slowly to press piston (9) into caliper housing bore.
2. With piston (9) bottomed in caliper housing bore, lift inner edge of boot (8) next to piston (9) and press out any trapped air.

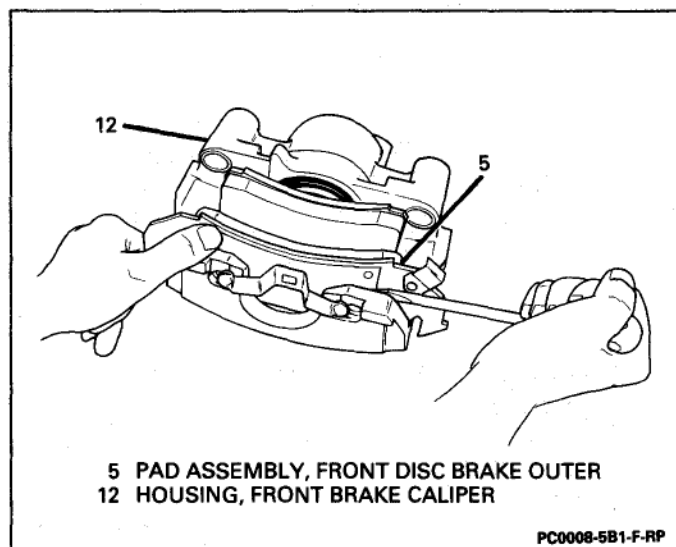


Figure 8 – Removing Outer Pad Assembly

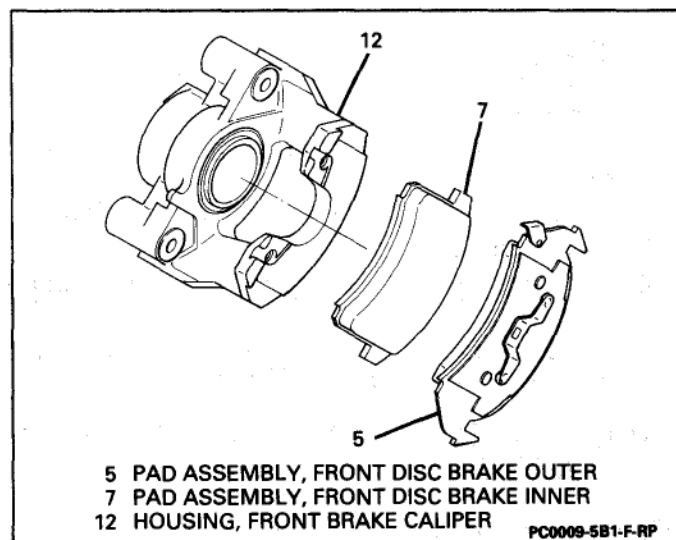


Figure 9 – Front Disc Brake Inner and Outer Pad Assemblies

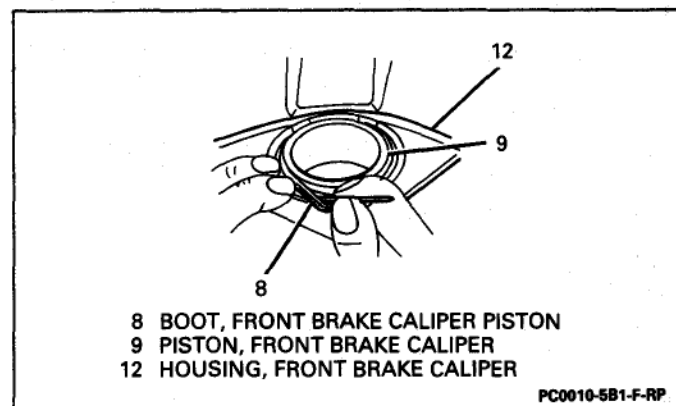


Figure 10 – Lifting Front Brake Caliper Piston Boot

- Boot (8) must lay flat.

Install or Connect

Important

- Do not use 1993 brake pad assemblies on 1994 vehicles. They are not interchangeable. This is

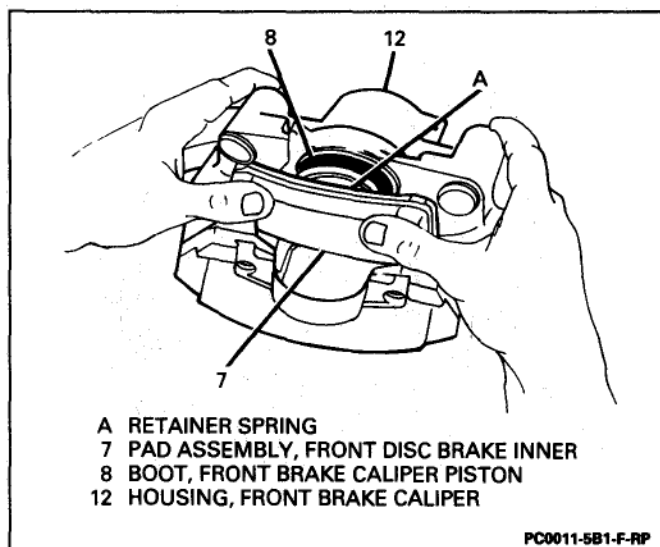


Figure 11 – Installing Front Disc Brake Inner Pad Assembly

due to a design change that was made to the front disc brake calipers for 1994.

1. Inner pad assembly (7).
 - A. Inner pad retainer spring into piston (9). The retainer spring is staked to the inner pad assembly (7).
 - B. Inner pad assembly (7) must lay flat against piston (9).
 - C. Check that boot (8) and inner pad assembly (7) are not touching. If there is contact, remove inner pad assembly (7) and reseal or re-position boot (8).
2. Outer pad assembly (5).
 - Back of outer pad assembly (5) must lay flat against housing (12).
 - Wear sensor should be at trailing lower edge of outer pad assembly (5) during forward wheel rotation. If not, outer pad assembly (5) is on wrong side.
3. Front brake caliper assembly. Refer to "Front Brake Caliper Assembly" under "On-Vehicle Service" in this section.
4. Apply approximately 778 N (175 pounds) of force to brake pedal assembly three times to seat linings.

Important

- GM replacement brake lining material is recommended for all GM vehicles to maintain the balance between front and rear brake performance. GM replacement brake parts have been carefully selected to provide the proper brake balance for purposes of both stopping distance and controllability over the full range of operating conditions. Installation of front or rear brake lining material with performance different from that of the GM replacement parts recommended for this vehicle can change the intended brake balance of this vehicle.

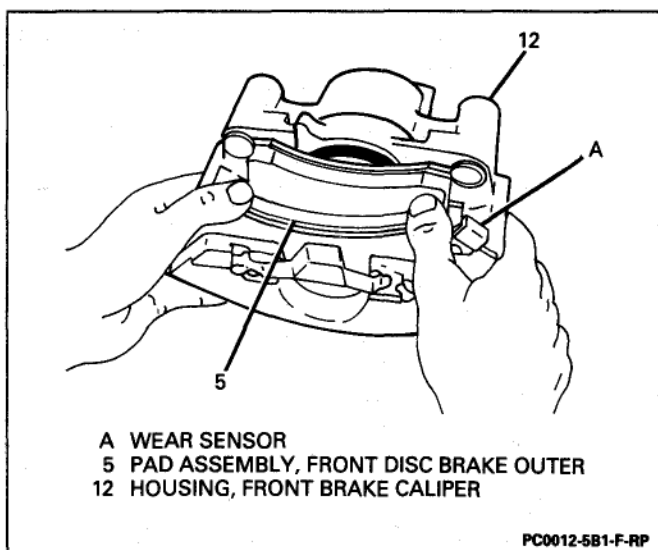


Figure 12 – Installing Front Disc Brake Outer Pad Assembly

FRONT BRAKE ROTOR ASSEMBLY

The rotor assembly is an integral part of the hub assembly. For removal procedure, refer to SECTION 3C.

UNIT REPAIR

REFINISHING FRONT BRAKE ROTOR ASSEMBLIES

Important

- **DO NOT** refinish rotor assemblies when performing routine brake maintenance such as replacing worn front disc brake inner and outer pad assemblies. Refinish a rotor assembly **ONLY** under the following circumstances:
 - There is a complaint of brake pulsation.
 - There is scoring greater than 1.5 mm (0.06 inch).

All rotor assemblies have a minimum thickness dimension cast into them. This dimension is the minimum wear dimension and not a refinish dimension. The minimum refinish dimension is greater than the discard dimension. Do not use a rotor assembly that will not meet specifications. Replace with a new rotor assembly. Refer to "Specifications" in this section.

Since accurate control of the rotor assembly tolerances is necessary for proper performance of the front disc brakes, the rotor assembly should be machined only with precision equipment. Equipment should be serviced on a regular basis following the manufacturer's recommended maintenance procedure.

When refinishing rotor assemblies, the attaching adapters, tool holders, vibration dampeners and tool bits must be in good condition. Always use sharp cutting tools or bits and use only replacement cutting bits recommended by the equipment manufacturer. Dull or worn tools leave a poor surface finish which will affect braking performance. Vibration dampening attachments should always be used when refinishing braking surfaces. These

attachments eliminate tool chatter and will result in better surface finish. Make sure these adapters are clean and free of nicks.

On-Vehicle Procedure

Tool Required:

On-Vehicle Brake Lathe, such as Kent-Moore J 37704 On Disc Brake Lathe

In the cases where rotors are being refinished to correct a problem with brake pulsation, it is recommended that an on-vehicle brake lathe be used to achieve best results. Follow the equipment manufacturer's recommended specifications and procedure.

Off-Vehicle Procedure

Important

- Remove rust and scale from rotor assembly and steering knuckle spindle assembly mating surfaces. Failure to do so may introduce excessive lateral run-out when the rotor assembly is mounted on the brake lathe, or when the rotor assembly is reinstalled on the steering knuckle spindle assembly.

Following are two recommended procedures that achieve adequate results using two different off-vehicle drum/disc brake lathes. (If any other lathe is used, follow that lathe's instructions and recommendations.)

Ammco Brake Lathe (Two-cut refinishing procedure)

	ROUGH CUT	FINISH CUT
Spindle Speed	150 rpm	150 rpm
Depth of Cut (per side)	0.15 mm to 0.64 mm (0.006 inch to 0.025 inch)	0.10 mm to 0.15 mm (0.004 inch to 0.006 inch)
Tool Cross Feed (per rev.)	0.25 mm (0.010 inch)	0.05 mm (0.002 inch)
Vibration Dampener	Yes	Yes
Sand Front Brake Rotor Assembly (Swirl Pattern)	No	Yes

Accuturn Brake Lathe, GM Dealer Equipment (One-cut refinishing procedure)

Locate the deepest score and turn the rotor micrometer knob until the tool bit bottoms out at the deepest point of the score. Zero the scale and back out the tool bit (repeat for opposite side of rotor). Advance the cutter handwheel until the bits have cleared the inner edges of the rotor face. Adjust the micrometer knobs for approximately 0.13 mm (0.005 inch) more than the first reading. This will ensure resurfacing the rotor in one cut.

Spindle Speed	105 rpm
Depth of Cut	As necessary
Tool Cross Feed (per revolution)	0.08 mm (0.003 inch)
Tool Bit Nose Radius	1/64
Vibration Dampener	Yes

Non-Directional Finishing

It is very important that the rotor surface be made non-directional by dressing the rotor surfaces with a sanding disc tool such as Ammco 8750 Safe Swirl Disc Rotor Grinder, Accuturn 433179 Non-Directional Swirl Finisher, or equivalent, using 120 grit aluminum oxide sandpaper. Sand each rotor surface with moderate pressure for a minimum of 60 seconds. If the brake lathe is not equipped with an adequate non-directional finishing tool, an alternate method is to use a sanding block with 150 grit aluminum oxide sandpaper. With the rotor turning at the equipment manufacturer's highest recommended cutting speed, sand each rotor surface for a minimum of 60 seconds using moderate pressure. **After the rotor has been sanded, clean each surface with denatured alcohol or a suitable brake cleaner.**

The finished rotor assembly surface should be as close to that of a new front brake rotor assembly as possible. Failure to obtain the best possible finish may affect braking performance.

Important

- Front brake rotor assemblies should always be replaced if turning will result in a front brake rotor assembly that does not meet manufacturer specifications for minimum thickness. When installing new brake rotor assemblies, do not refinish the surfaces of these parts. New brake rotor assemblies have the correct level of surface finish.

Burnishing Front Brake Rotor Assemblies

After front brake pad assemblies have been replaced, it is very important that the new braking surface be broken in, or burnished. In addition, light corrosion on the rotors can be removed by burnishing the new braking surface. This can be accomplished by making 20 stops from 48 km/h (30 mph), using medium to firm brake pedal assembly pressure. Take care to avoid overheating the brakes.

FRONT BRAKE CALIPER ASSEMBLY

Figures 13 through 17

Tool Required:

J 26267 Dust Boot Seal Installer

Disassemble

NOTICE: Use clean shop towels to pad interior of caliper housing during piston removal.

1. Remove caliper assembly from vehicle. Refer to "Front Brake Caliper Assembly" under "On-Vehicle Service" in this section.
2. Bushings (3).

Inspect

- A. Bushings (3) for nicks or cuts. Replace if damaged.
- B. Mounting bores for corrosion.

- a. If mounting bores show signs of corrosion, remove corrosion using a 1-inch wheel cylinder honing brush.
- b. Clean mounting bores with clean denatured alcohol.

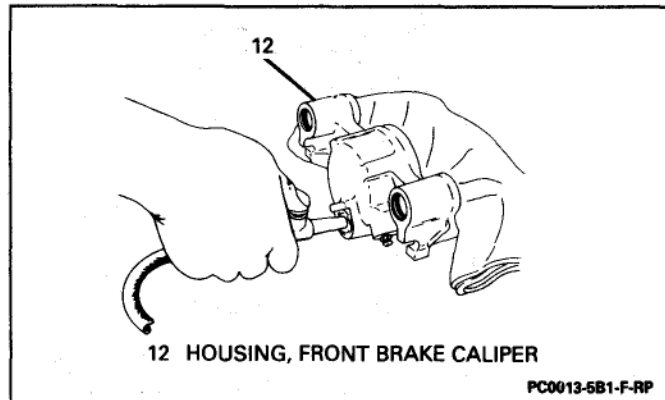


Figure 13 – Removing Front Brake Caliper Piston

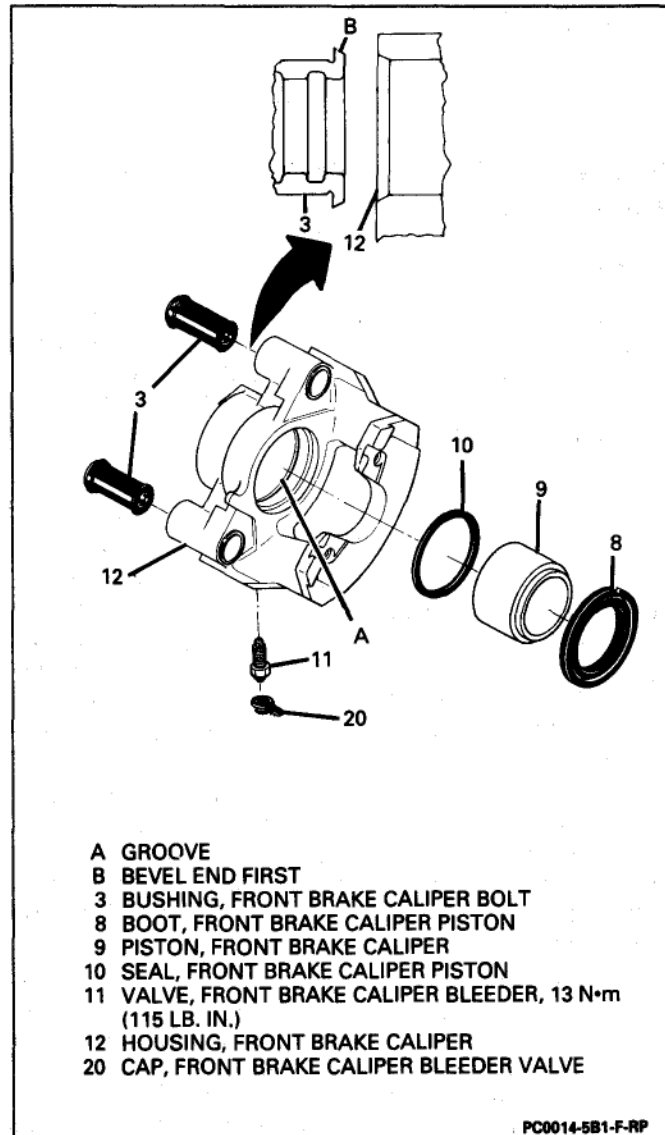


Figure 14 – Front Brake Caliper Assembly Components

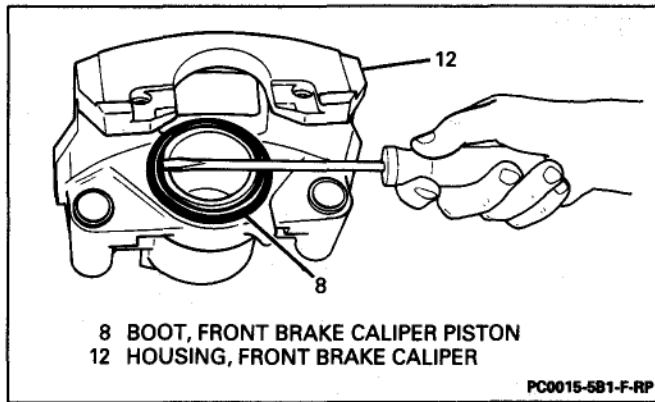


Figure 15 – Removing Front Brake Caliper Piston Boot

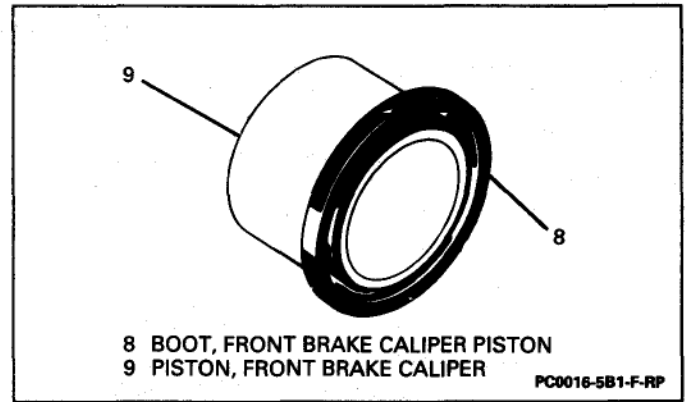


Figure 16 – Installing Front Brake Caliper Piston Boot

CAUTION: Do not place fingers in front of the piston in an attempt to catch or protect it when applying compressed air. This could result in serious injury.

3. Piston (9) from housing (12).
 - Apply compressed air to housing inlet hole.

Inspect

- Piston (9) for scoring, nicks, corrosion, and worn or damaged chrome plating.
 - Replace piston if any of above are found.
- 4. Boot (8) from housing (12).

NOTICE: Do not use a metal tool to remove piston seal from housing bore. Using a metal tool may damage caliper bore or seal groove.

5. Piston seal (10) from housing (12).

Inspect

- Caliper bore and seal groove for scoring, nicks, corrosion, and wear.
 - A. Use crocus cloth to polish out light corrosion.
 - B. Replace housing (12) if corrosion in and around seal groove will not clean up with crocus cloth.
- 6. Bleeder valve cap (20) and bleeder valve (11) from housing (12).

Assemble

NOTICE: See “Notice” on page 5B1-1 of this section.

Clean

- A. All parts in clean denatured alcohol.
- B. Dry with unlubricated compressed air.
- C. Blow out all passages in housing (12) and bleeder valve (11).
1. Lubricate all rubber parts with clean brake fluid.
2. Bleeder valve (11) into housing (12).

Tighten

- Bleeder valve (11) to 13 N•m (115 lb. in.).
- 3. Replace bleeder valve cap (20).
- 4. Piston seal (10) into bore groove of housing (12).
 - Make sure piston seal (10) is not twisted.
- 5. Boot (8) onto piston (9).
- 6. Piston (9) with assembled boot (8) into bore of housing (12).
 - Push piston (9) to bottom of housing bore.
- 7. Seat boot (8) into counterbore of housing (12) using J 26267.
- 8. Bushings (3).
 - A. Lubricate beveled end of bushing (3) with GM P/N 1052863 or equivalent.
 - B. Pinch bushing (3) and install bevel end first.
 - C. Push bushing (3) through housing mounting bore.
- 9. Install caliper assembly. Refer to “Front Brake Caliper Assembly” under “On-Vehicle Service” in this section.

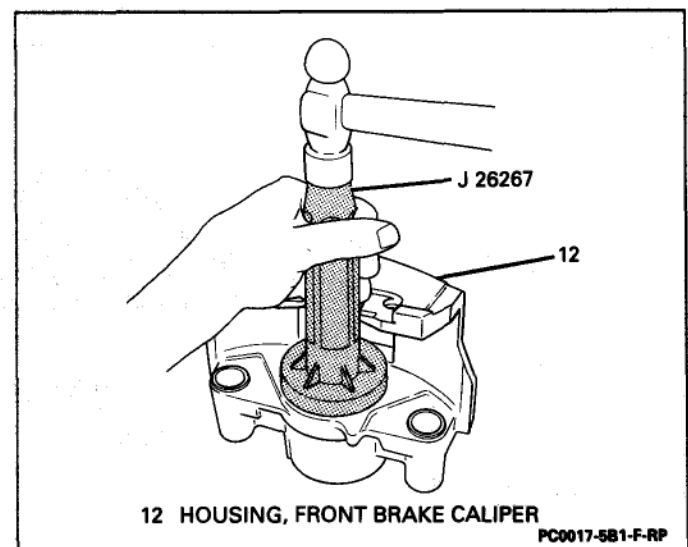


Figure 17 – Seating Front Brake Caliper Piston Boot

SPECIFICATIONS

GENERAL SPECIFICATIONS

Front Brake Caliper Assembly	
Front Brake Caliper Housing Bore Diameter	63.50 mm (2.500")
Front Brake Rotor Assembly	
Rotor Diameter (Nominal)	278.00 mm (10.945")
Lateral Runout	0.13 mm (0.005")
Thickness Variation	0.013 mm (0.0005")
Rotor Thickness (Maximum)	32.00 mm (1.260")
Minimum Thickness After Refinish	31.74 mm (1.250")
Discard Thickness	30.70 mm (1.209")

All front brake rotor assemblies have a discard dimension cast into them. This is a wear dimension and not a refinish dimension. Any front brake rotor assembly which does not meet the specifications should be replaced.

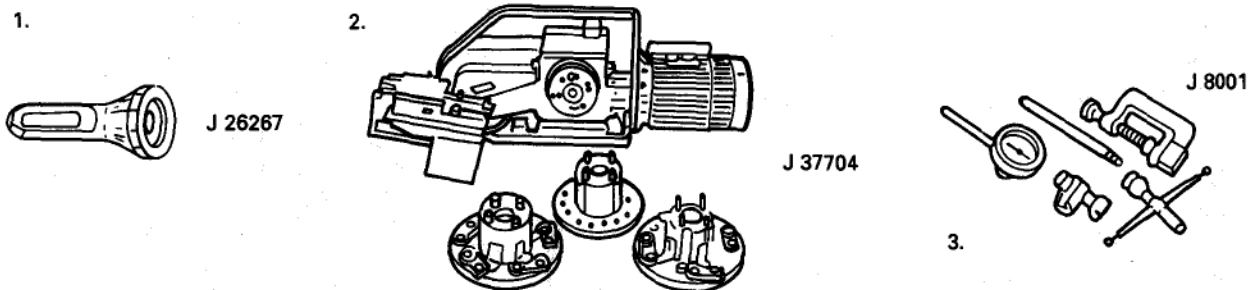
ROTOR REFINISHING SPECIFICATIONS

Ammco Brake Lathe	
Rough Cut	
Spindle Speed	150 rpm
Depth of Cut (Per Side)	0.15 mm to 0.64 mm (0.006" to 0.025")
Tool Cross Feed (Per Revolution)	0.25 mm (0.010")
Vibration Dampener	Yes
Sand Front Brake Rotor Assembly (Swirl Pattern)	No
Finish Cut	
Spindle Speed	150 rpm
Depth of Cut (Per Side)	0.10 mm to 0.15 mm (0.004" to 0.006")
Tool Cross Feed (Per Revolution)	0.05 mm (0.002")
Vibration Dampener	Yes
Sand Front Brake Rotor Assembly (Swirl Pattern)	Yes
Accuturn Brake Lathe	
Spindle Speed	105 rpm
Depth of Cut	As necessary
Tool Cross Feed (Per Revolution)	0.08 mm (0.003")
Vibration Dampener	Yes

FASTENER TIGHTENING SPECIFICATIONS

Front Brake Caliper Bleeder Valve	13 N•m (115 lb. in.)
Front Brake Caliper Bolt/Screw With Sleeve	51 N•m (38 lb. ft.)
Front Brake Hose Fitting	44 N•m (32 lb. ft.)
Wheel Nut	140 N•m (100 lb. ft.)

SPECIAL TOOLS



1. DUST BOOT SEAL INSTALLER
2. ON DISC BRAKE LATHE
3. DIAL INDICATOR SET