

tube. Connect the brake tube to the hose and torque the fitting nut to 10-15 ft-lbs.

14. Connect the parking brake cable to the lever on the caliper.
15. Bleed the brake system. Then, with the engine running, pump the service brake lightly about 40 times. Allow at least one (1) second between pedal applications. As an alternative, with the engine off, pump the service brake lightly (approximately 17 lb. pedal effort) about 10 times, to discharge the accumulator. Then pump firmly about 30 times. Now check the parking brake for excessive travel or very light effort. In either case, repeat pumping the service brake, or if necessary, check the parking brake cable for proper tension. The caliper levers must return to the OFF position when the parking brake is released (See Part 12-70).
16. Install the wheel and tire assembly. Torque the wheel lug nuts to 70-115 ft-lbs. Install the wheel cover. Remove the safety stands and lower the car.
17. Be sure a firm brake pedal application is obtained, and then road test for proper brake operation, including parking brakes.

DISC BRAKE SHOE AND LININGS—REAR

Removal

1. Follow the procedure given in Rear Disc Brake Caliper Assembly Removal. Omit Step 3, as it is not necessary to disconnect the flexible hose from the caliper in this operation. **Support the caliper with a wire hook or other means, so that the flexible hose is not stretched or twisted.** Inspect the brake shoes for wear. If either lining is worn to within 1/8 inch of the shoe, both shoe and lining assemblies must be replaced. Also, if necessary to replace the shoe and lining assemblies on one wheel, they must be replaced on both wheels in order to maintain equal brake action.

Installation

1. Follow the procedure given in Rear Disc Brake Caliper Assembly Installation. Review Steps 12 thru 15 to be sure of proper parking brake adjustment.

ROTOR—REAR

Removal

1. Remove the caliper assembly from the anchor plate. If no repair is necessary to the caliper assembly, it is not necessary to disconnect the flexible brake hose. The caliper can be temporarily secured to the frame. **Do not remove the anchor plate. Be careful not to stretch or twist the flexible brake hose.**
2. If corrosion makes identification difficult, mark the hat sections of the rotors to distinguish right from left before they are removed. On Versailles, mark the rotor orientation on the axle shaft prior to removal so that rotor can be installed in original position.
3. Remove the two (2) retainer nuts and remove the rotor from the axle shaft.

Installation

1. If the rotor is being replaced, remove the protective coating from the new rotor with carburetor degreaser.
2. Properly identify right and left rotors before installation. RIGHT and LEFT are cast into the inner surfaces of the rotor hat-sections. Install the right and left rotors on their corresponding axle shaft flanges. Versailles vehicles have a blue dot on the outside of the rotor hat section indicating the heavy side of the rotor. When the rotor is installed on the axle shaft, this blue dot should be located as close as possible to the hole in the axle shaft flange. Install the two (2) retainer nuts securely. **CAUTION: The vanes on the outer edge of the rotors must point in the direction of forward rotation (Fig. 5).**
3. Mount the caliper assembly on the anchor plate slides. Refer to the procedure given in Rear Disc Brake Caliper Assembly Installation.

ANCHOR PLATE—REAR

Removal

1. **NOTE: Do not remove the anchor plate unless it is being replaced.**
2. Refer to Rear Disc Brake Caliper Assembly Removal and remove the caliper assembly. Omit Step 3 of the Removal procedure, as it is not necessary to disconnect the flexible hose. Secure the caliper to the frame.
3. Remove the splash shield by removing the two bolts that attach the shield to the axle adapter.
4. Remove and DISCARD both the upper and lower anchor plate-to-axle adapter mounting bolts. Remove the anchor plate.

Installation

1. Clean all foreign material and locking compound residue from the mating surfaces of the axle adapter and anchor plate.
2. Position the anchor plate on the axle adapter and install new upper and lower mounting bolts finger-tight.
NOTE: Anchor plates are not interchangeable from right to left.
3. Tighten both bolts to 90-120 ft-lbs. (The tightening order is not important.)
4. Install the splash shield. Refer to Rear Disc Brake Rotor Splash Shield Installation for procedure.
5. Install the caliper assembly. Refer to Rear Disc Brake Caliper Assembly Installation for procedure.

DISC BRAKE ROTOR SPLASH SHIELD—REAR

Removal

1. Remove the two bolts that attach the splash shield to the axle adapter (Fig. 6).
2. Remove the splash shield.

Installation

1. If the shield is bent, straighten it before installation.
2. Position the shield to the axle adapter, install the mounting screws and torque them to 9-14 ft-lbs.
NOTE: Left and right side shields are interchangeable on the Lincoln Continental,

Ford, Mercury and Granada-Monarch-Versailles car lines. On Continental Mark V, the left and right shields are unique and cannot be interchanged.

DUAL MASTER CYLINDER

Refer to Part 12-01 for Removal, Installation and Overhaul of Dual Master Cylinder.

PRESSURE DIFFERENTIAL, METERING, AND PROPORTIONING VALVES

Refer to Part 12-01 for Removal and Installation of Pressure Differential, Metering, and Proportioning Valves.

BRAKE BOOSTER

Refer to Part 12-50 or 12-51 for Removal and Installation of Brake Booster.

OVERHAUL

After any service work, pump the brake pedal to obtain a firm brake pedal before moving the vehicle. Riding the brake pedal (common on left-foot application) must be avoided when driving the vehicle.

DISC BRAKE CALIPER—FRONT

Disassembly

1. Remove the caliper assembly from the vehicle as outlined in Caliper Removal. Place a cloth over the piston before applying air pressure to prevent damage to the piston.
2. Apply air pressure to the fluid port in the caliper with a rubber-tipped nozzle (Tool 7000-DD) as shown in Fig. 18 to remove the piston. If the piston is seized and cannot be forced from the caliper, tap lightly around the piston while applying air pressure. **Use care because the piston can develop considerable force from pressure build-up.**
3. Remove the dust boot from the caliper assembly.
4. Remove the rubber piston seal from the cylinder and discard it.

Cleaning And Inspection

Clean all metal parts with isopropyl alcohol. Then, clean out and dry the grooves and passageways with

compressed air. Make sure that caliper bore and component parts are thoroughly clean.

Check the cylinder bore and piston for damage or excessive wear. Replace the piston if it is pitted, scored, or the chrome plating is worn off.

Assembly

1. Apply a film of clean brake fluid to the new caliper piston seal and install it in the cylinder bore. Be sure the seal does not become twisted and that it is firmly seated in the groove.
2. Install a new dust boot by setting the flange squarely in the outer groove of the caliper bore.
3. Coat the piston with brake fluid and install the piston in the cylinder bore. Spread the dust boot over the piston as it is installed. Seat the dust boot in the piston groove.
4. Install the caliper over the rotor as outlined under Disc Brake Caliper Assembly.

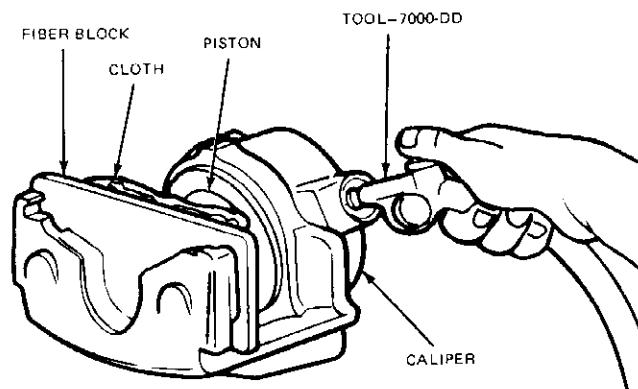
DISC BRAKE CALIPER—REAR

Disassembly (Refer to Figs. 19 and 20)

1. Remove the caliper assembly from the vehicle as outlined in Rear Disc Brake Caliper Assembly Removal.
2. Remove the caliper end retainer.
3. Lift out the operating shaft, thrust bearing, and balls.
4. Remove the thrust screw anti-rotation pin with a magnet or tweezers.

NOTE: Some anti-rotation pins may be difficult to remove with a magnet or tweezers. In that case, use the following procedure:

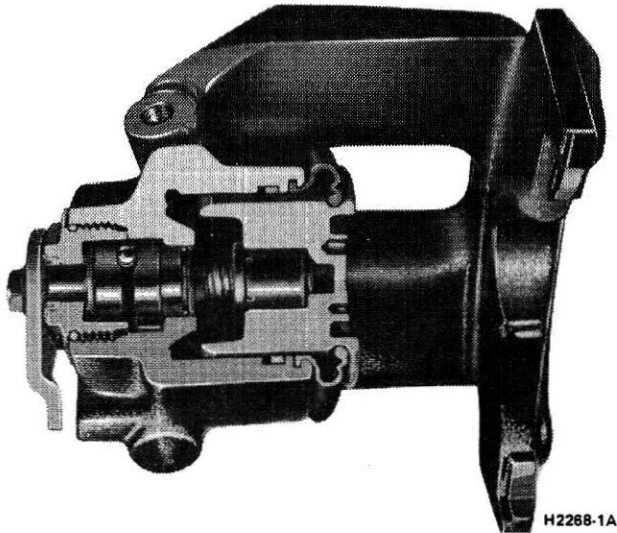
- a. Adjust the piston out from the caliper bore using Piston Adjusting Tool T75P-2588-B. The piston should protrude from the housing at least one inch.
 - b. Push the piston back into the caliper housing with the adjusting tool. With the tool in position on the caliper, hold the tool shaft in place and rotate the handle counterclockwise until the thrust screw clears the anti-rotation pin. Remove the thrust screw and the anti-rotation pin.
5. Remove the thrust screw by rotating it counterclockwise with a 1/4 inch Allen wrench.



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FIG. 18 Removing Piston From Caliper—Typical

6. Remove the piston/adjuster assembly by installing Tool T75P-2588-A through the back of the caliper housing and pushing the piston out.



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FIG. 19 Rear Disc Brake Caliper Housing—Sectional View

CAUTION: Use care not to damage the polished surface in the thrust screw bore and do not press or attempt to move the adjuster can. It is a press fit in the piston.

7. Remove and discard the piston seal, boot, thrust screw O-ring seal, end retainer, O-ring seal, and the end retainer lip seal.

Cleaning and Inspection

1. Clean all metal parts with isopropyl alcohol. Use clean, dry, compressed air to clean out and dry the grooves and passages. Be sure the caliper bore and component parts are completely free of any foreign material.
2. Inspect the caliper bores for damage or excessive wear. The thrust screw bore must be smooth and free of pits. If the piston is pitted, scored, or the chrome plating is worn off, replace the piston/adjuster assembly.
3. The adjuster can must be bottomed in the piston to be properly seated and provide consistent brake function. If the adjuster can is loose in the piston, appears high in the piston, or is damaged, or if brake adjustment is regularly too tight, too loose or nonfunctioning, replace the piston/adjuster assembly.

NOTE: Do not attempt to service the adjuster at any time: when repair is necessary, replace the piston/adjuster assembly.

4. Check adjuster operation by first assembling the thrust screw into the piston/adjuster assembly, pulling the two pieces apart by hand approximately 1/4 inch and then releasing them (Fig. 21). When pulling on the two pieces, the brass drive ring must

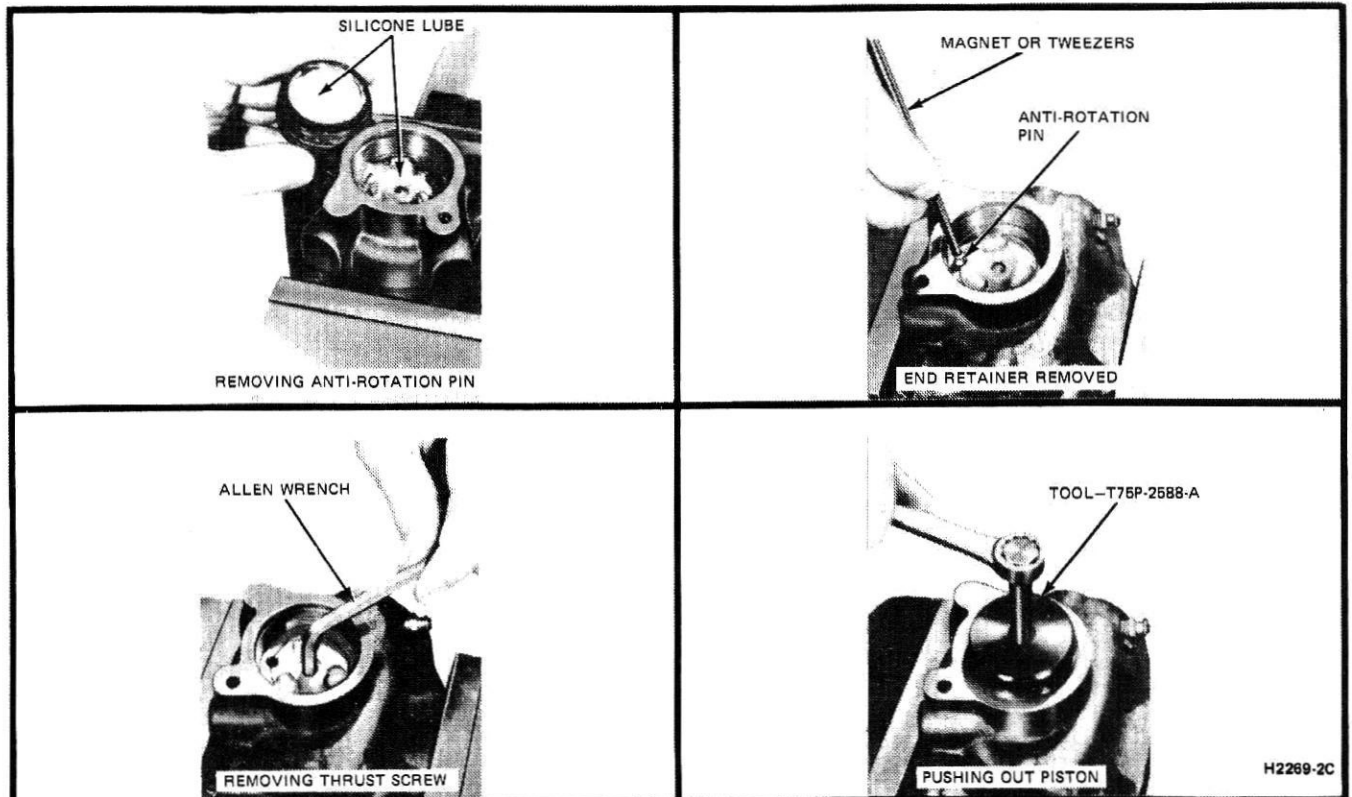


FIG. 20 Disassembling Rear Disc Brake Caliper Housing

remain stationary, causing the nut to rotate. When releasing the two parts, the nut must remain stationary and the drive ring must rotate. If the action of the components does not follow this pattern, replace the piston/adjuster assembly.

5. Inspect ball pockets, threads, grooves, and bearing surfaces of the thrust screw and operating shaft for wear, pitting, or brinnelling. Inspect balls and anti-rotation pin for wear, brinnelling or pitting. Replace operating shaft, balls, thrust screw and anti-rotation pin if any of these parts are worn or damaged. A polished appearance on the ball paths is acceptable if there is no sign of wear into the surface.
6. Inspect the thrust bearing for corrosion, pitting or wear. Replace if necessary.
7. Inspect the bearing surface of the end plug for wear or brinnelling. Replace if necessary. A polished appearance on the bearing surface is acceptable if there is no sign of wear into the surface.
8. Inspect the lever for damage. Replace if necessary.

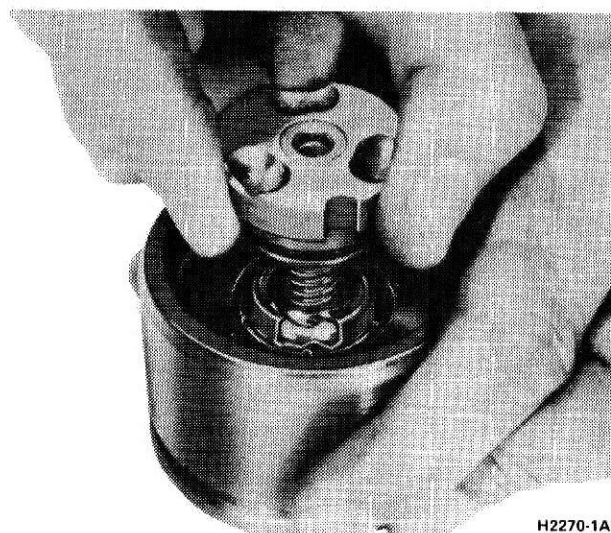
Assembly

1. Apply a coat of clean brake fluid to the new caliper piston seal and install it in the cylinder bore. Be sure that the seal is not twisted and that it is seated fully in the groove.
2. Install a new dust boot by seating the flange squarely in the outer groove of the caliper bore.
3. Coat the piston/adjuster assembly with clean brake fluid and install it in the cylinder bore. Spread the dust boot over the piston as it is installed. Seat the dust boot in the piston groove.
4. Install the caliper in a vise as shown in Fig. 22 and fill the piston/adjuster assembly with clean brake fluid to the bottom edge of the thrust screw bore.
5. Coat a new thrust screw O-ring seal with clean brake fluid and install it in the groove in the thrust screw.
6. Install the thrust screw by turning it into the piston/adjuster assembly with a 1/4 inch Allen wrench until the top surface of the thrust screw is flush with the bottom of the threaded bore. Use care to avoid cutting the O-ring seal. Index the thrust screw so that the notches on the thrust screw and caliper housing are aligned. Then install the anti-rotation pin.

NOTE: The thrust screw and operating shaft are not interchangeable from side to side, due to the ramp direction in the ball pockets. The pocket surface of the operating shaft and the thrust screw are stamped with the proper letter (R or L), indicating part usage.

7. Place a ball in each of the three (3) pockets of the thrust screw and apply a liberal amount of silicone grease (ESEM1C 171-A) D7AZ-19A331-A or equivalent on all components in the parking brake mechanism.
8. Install the operating shaft on the balls.
9. Coat the thrust bearing with silicone grease (ESEM1C 171-A) D7AZ-19A331-A or equivalent and install it on the operating shaft.
10. Install a new lip seal and O-ring on the end retainer.

11. Coat the O-ring seal and lip seal with a light film of silicone grease and install the end retainer in the caliper. Hold the operating shaft firmly seated against the internal mechanism while installing the end retainer to prevent mislocation of the balls. If the lip seal is pushed out of position, re-seat the seal. Torque the end retainer to 75-95 ft-lbs.
12. Install the parking brake lever on its keyed spline. The lever arm must point down and rearward. The parking brake cable will then pass freely under the axle. Torque the lever retaining screw to 16-22 ft-lbs. The parking brake lever must rotate freely after torquing.
13. Arrange the caliper in a vise as shown in Fig. 23 and bottom the piston with Tool T75P-2588-B.
14. Install the caliper on the vehicle as detailed in Rear Disc Brake Caliper Assembly Installation.



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FIG. 21 Checking Parking Brake Adjuster Operation

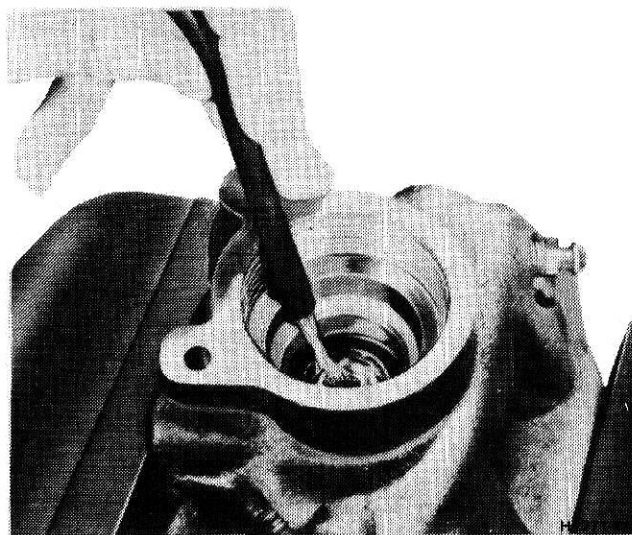


FIG. 22 Filling Piston/Adjuster Assembly