

AMERICAN MOTORS & FORD SINGLE PISTON DISC

**American Motors
Ford Motor Co.**

NOTE — All American Motors models use Bendix disc brake calipers. Ford Motor Co. models use Bendix, Kelsey-Hayes and Teves disc brake calipers.

DESCRIPTION

The disc brake assembly consists of a rotor, single piston caliper assembly, two shoe and lining assemblies, a splash shield and an anchor plate. All American Motors models and Pinto, Bobcat, Granada, Monarch and Versailles models use a sliding type caliper assembly. On this system the caliper assembly is positioned in and slides on machined surfaces on the leading and trailing edges of the caliper anchor plate. All other models use a pin slider type caliper assembly. On this system the caliper slides on two locating pins which also act as attaching bolts between caliper and combination anchor plate and spindle.

The cast iron rotor has integrally cast cooling fins between the two braking surfaces. Brake linings are riveted to the brake shoes and insulator gaskets are bonded to the back of each brake shoe. On Ford Motor Co. vehicles, equipped with four wheel disc brakes, a parking brake mechanism is incorporated into the rear calipers and is cable actuated.

NOTE — Front wheel disc brakes are standard on all vehicles. Rear wheel disc brakes are used on Ford Motor Co. Versailles models only.

ADJUSTMENT

SERVICE BRAKES

Disc brakes are self-adjusting. Caliper piston seals are designed to retract pistons just enough to allow brake lining to lightly brush rotor without any drag.

PARKING BRAKE (REAR DISC BRAKES)

Piston Adjustment — Parking brake is self-adjusting. An automatic adjuster in the piston moves on thrust screw to compensate for lining wear and maintain proper clearance in parking brake mechanism.

Cable Adjustment — 1) Raise and support vehicle. Back off parking brake cable adjusting nut until cables are loose, then tighten adjusting nut until one or both parking brake actuating levers (on caliper) begin to move.

2) Adjustment is correct when a $\frac{1}{4}$ " diameter pin will fit into both caliper parking brake alignment holes without contacting parking brake levers, and applying 10 lbs. to parking brake levers produces no rearward movement of the lever.

3) Remove pin from alignment hole. Apply and release parking brake several times and make sure that levers on caliper return to full stop position by attempting to pull them rearward. If levers move rearward, cable adjustment is too tight. Repeat adjustment procedure if necessary.

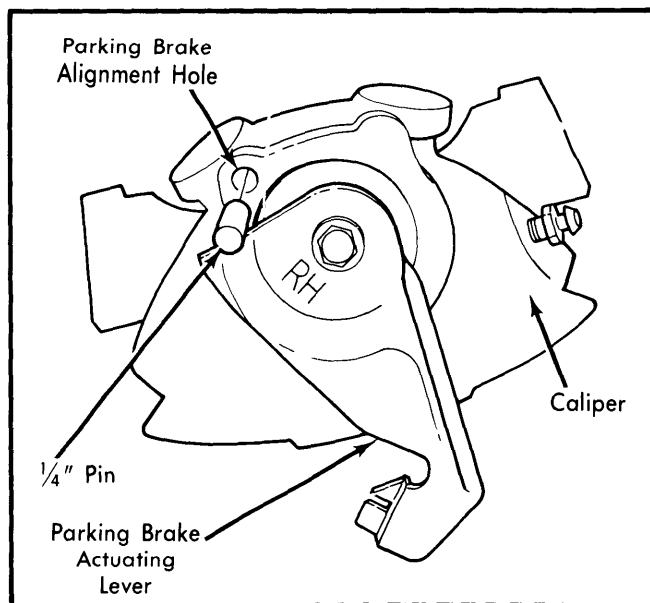


Fig. 1 Rear Disc Brake Parking Brake Adjustment (Versailles Models Only)

SERVICING

BLEEDING SYSTEM

See *Hydraulic Brake Bleeding* in this section.

SHOE & LINING INSPECTION

Inspect condition of lining any time wheel and tire is removed. On American Motors vehicles, replace lining when it is worn to within $\frac{1}{32}$ " of rivet heads. On Ford Motor Co. vehicles, replace lining if worn to less than $\frac{1}{8}$ " thick.

SHOE & LINING REPLACEMENT

NOTE — If necessary to replace the shoes and lining on one wheel, they must be replaced on both wheels to maintain equal braking action.

Removal (Front) — 1) Remove sufficient brake fluid from master cylinder to prevent over spill when piston is pushed back into caliper. Raise and support front of vehicle and remove front wheels.

2) On American Motors models, press caliper piston to bottom of piston bore using a screwdriver, or "C" clamp if necessary.

3) On models equipped with a sliding type caliper, remove support key retaining screw using a suitable Allen wrench. Using a soft punch and hammer, remove support key and support spring from anchor plate. Lift caliper assembly out of anchor plate and off rotor.

4) On models equipped with a pin slider type caliper, remove caliper locating pins. Lift caliper assembly from integral spindle/anchor plate and rotor.

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5) On all models, support caliper assembly with a wire hook to prevent damaging or stretching brake hose. Remove inner shoe from anchor plate and outer shoe from caliper. On sliding caliper models, note installation position of anti-rattle spring on inner shoe for assembly reference, then remove spring from shoe.

6) On pin slider caliper models, remove and discard locating pin insulators and the plastic sleeves inside the insulators. These parts **must not** be reused.

Installation (Front) – 1) To install, reverse removal procedure and note the following special instructions:

2) On models with pin slider type caliper:

- Seat piston in caliper bore before shoe installation.
- Install new locating pin insulators and plastic sleeves.
- Make sure plastic sleeve flanges straddle caliper housing hole.
- Anti-rattle spring must be installed on inner shoe before shoe is installed in caliper.
- Make sure inner and outer shoes are installed correctly. Shoes are marked for left side (LH) or right side (RH) use.
- Outer shoes have wear indicators which are installed toward front of vehicle.

CAUTION – Make sure that two round torque buttons are seated solidly in the two holes of outer caliper leg and that the shoe is held tightly against housing by spring clip. If buttons are not seated, a temporary loss of brakes may occur.

3) On models with sliding type caliper:

- Seat piston in caliper bore before shoe installation.
- Lubricate caliper and anchor plate sliding surfaces.
- Make sure anti-rattle spring is installed properly on inner shoe; looped section of spring away from rotor and tab section in slot of shoe.

4) On all vehicles:

- Make sure master cylinder is full of brake fluid. Fill if necessary.
- Depress brake pedal several times to position caliper and brake shoe on rotor.

Removal (Rear) – 1) Raise and support vehicle, and remove rear wheels. Disconnect parking brake cable from lever on caliper. Remove support key retaining screw, and using a soft metal punch and hammer, remove support key and spring. Lift caliper assembly from anchor plate and rotor.

2) If rotor wear or scoring prevents caliper removal, it will be necessary to bottom piston in caliper bore. To bottom piston, remove parking brake lever from caliper and loosen caliper end retainer a maximum of one-half turn.

CAUTION – If end retainer is loosened more than one-half turn, the seal between thrust screw and housing may be broken, allowing brake fluid to leak into parking brake chamber. If this happens, the end retainer must be removed and the internal parts cleaned and lubricated.

3) Force piston back into its bore. Move caliper back and forth to center the rotor, then remove caliper.

4) Remove inner shoe from anchor plate. If anti-rattle spring is displaced from anchor plate during inner shoe removal, reposition it on plate with loop to inside of anchor plate. Tap lightly on outer shoe to free it from caliper. Support caliper assembly to eliminate strain on brake hose.

Installation (Rear) – 1) If caliper end retainer has been loosened, install caliper assembly (less brake shoes) on anchor plate and tighten end retainer to specifications. Install parking brake lever on caliper and tighten retainer screw.
NOTE – Lever arm must point down and to the rear. Remove caliper assembly from anchor plate and rotor.

2) If caliper end retainer was not loosened, it will be necessary to screw piston back into bore. To bottom piston, remove rotor and install caliper assembly (less brake shoes) on anchor plate. Using suitable tool (T75P-2588-B), screw piston into bore until it is fully bottomed. **NOTE** – Piston will continue to turn even after it is fully bottomed. Remove caliper from anchor plate and install rotor.

3) Install new brake shoes (if required) and all related parts in reverse order of removal procedures, noting the following: Lubricate caliper and anchor plate sliding surfaces with a suitable lubricant. With caliper and shoe assemblies installed over rotor, but not secured to anchor plate, pull caliper outward until inner shoe is firmly seated against rotor.

4) Measure clearance between outer shoe and rotor. Clearance must be $\frac{1}{16}$ " or less. If clearance is greater than specified, remove caliper and readjust piston outward to narrow the gap.

CAUTION – A clearance greater than $\frac{1}{16}$ " may allow adjuster to be pulled out of piston when service brake is applied. This will cause parking brake mechanism to fail to adjust, making it necessary to replace piston/adjuster assembly.

5) Fill master cylinder to correct fluid level and depress brake pedal several times to position caliper and shoe assemblies on rotor. Check parking brake cable adjustment and adjust as necessary.

ROTOR SERVICING

Lateral Runout – 1) On all models except Eagle, tighten wheel bearing adjusting nut until all end play is removed. On Eagle models, use at least 2 lug nuts to retain rotor.

2) Mount a dial indicator on a pedestal-type stand or on axle splindle with indicator pointer contacting braking surface one inch from edge of rotor.

3) Turn rotor through one complete revolution, checking indicator reading as rotor moves. If runout exceeds specifications, replace or refinish rotor as necessary.

Parallelism – Measure thickness of rotor at four or more points around rotor. Make all measurements at same distance from edge of rotor. If rotor does not meet specifications, replace or refinish rotor as necessary.

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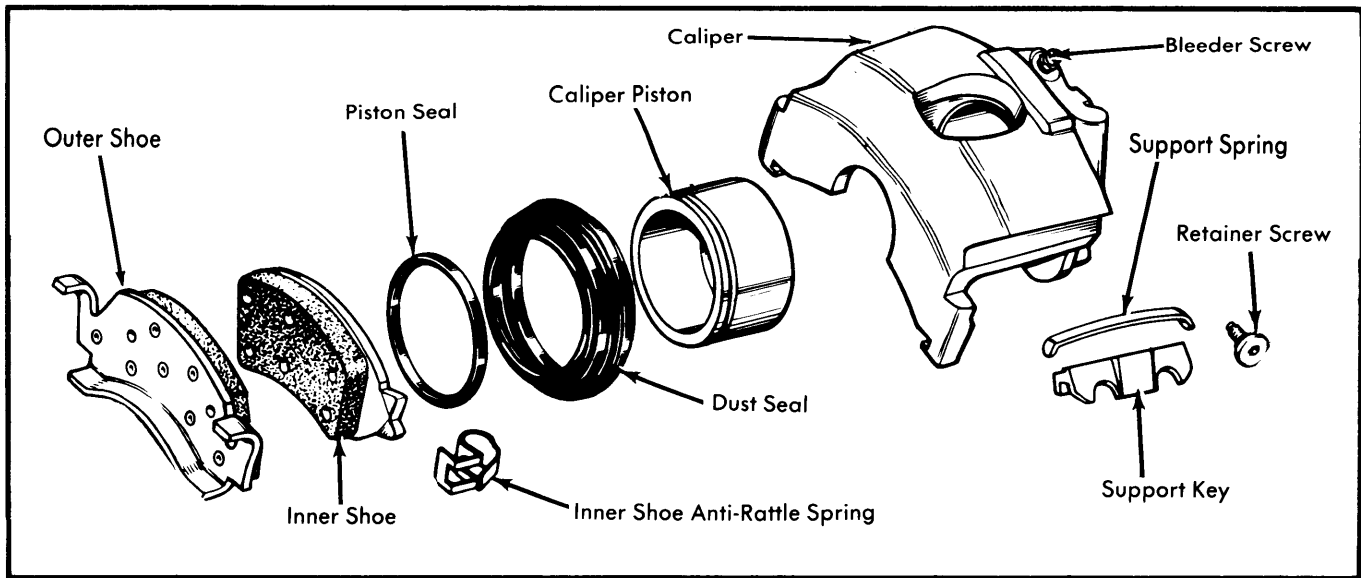


Fig. 2 Exploded View of Front Sliding Caliper Assembly (American Motors Shown)

REMOVAL & INSTALLATION

BRAKE CALIPER

Caliper removal and installation procedures are same as for brake shoe assembly replacement, except it will be necessary to disconnect brake hose. See *Shoe & Lining Replacement*.

HUB & ROTOR

Removal (Front) — 1) Raise and support front of vehicle and remove front wheel. Remove caliper assembly and support out of way to avoid damaging or stretching brake hose.

2) On all models except Eagle, remove grease cap from hub, then remove cotter key, nut lock, adjusting nut and thrust washer from spindle. Remove outer wheel bearing, then pull hub and rotor from spindle.

3) On Eagle models, rotor can be pulled from spindle after caliper has been removed.

Installation (Front) — To install, reverse removal procedure and adjust wheel bearings. See *Wheel Bearing Adjustment in WHEEL ALIGNMENT* Section.

Removal (Rear) — Raise and support vehicle, and remove wheel. Remove caliper assembly and support out of way to avoid putting a strain on brake hose. Remove retainer nuts and remove rotor from axle shaft.

NOTE — If both rotors are to be removed, mark to distinguish right from left, as they are not interchangeable.

Installation (Rear) — To install, reverse removal procedure and ensure that vanes on outer edge of rotor are pointing in direction of forward rotation.

NOTE — Rear rotors have a blue dot on outside of rotor hat section indicating the heavy side of the rotor. When installed on axle shaft, this blue dot should be located as close as possible to hole in axle shaft flange.

OVERHAUL

BRAKE CALIPER

Disassembly (Front) — With caliper assembly removed from vehicle, pad interior of caliper with shop cloths. Apply compressed air to fluid inlet port of caliper to remove piston. Remove dust boot from caliper. Using a plastic or wooden tool to prevent scratching caliper bore, remove piston seal from groove in caliper.

NOTE — If piston is seized and cannot be forced from caliper, lightly tap around piston while applying air pressure. Be careful not to scratch piston bore when removing seal.

Cleaning & Inspection (Front) — Clean all parts with denatured alcohol or clean brake fluid and dry with compressed air. Clean out and dry all grooves and passages with compressed air. Inspect piston and caliper bore for wear, pitting, scoring, nicks or corrosion. Replace components as necessary.

NOTE — On American Motors vehicles, rust and corrosion may be removed from abutment surfaces of caliper and anchor plate using a wire brush and crocus cloth.

Reassembly (Front) — Apply a film of clean brake fluid to new piston seal and dust boot and install into caliper bore. Coat piston with clean brake fluid and install into caliper bore. **NOTE** — Spread dust boot over piston as it is installed. Seat dust boot in piston groove.

Disassembly (Rear) — 1) With caliper removed from vehicle, remove caliper end retainer. Lift out operating shaft, thrust bearing and balls. Remove thrust screw anti-rotation pin with a magnet or tweezers. If anti-rotation pin cannot be removed with magnet or tweezers, adjust piston out from caliper housing at least one inch using a suitable adjusting

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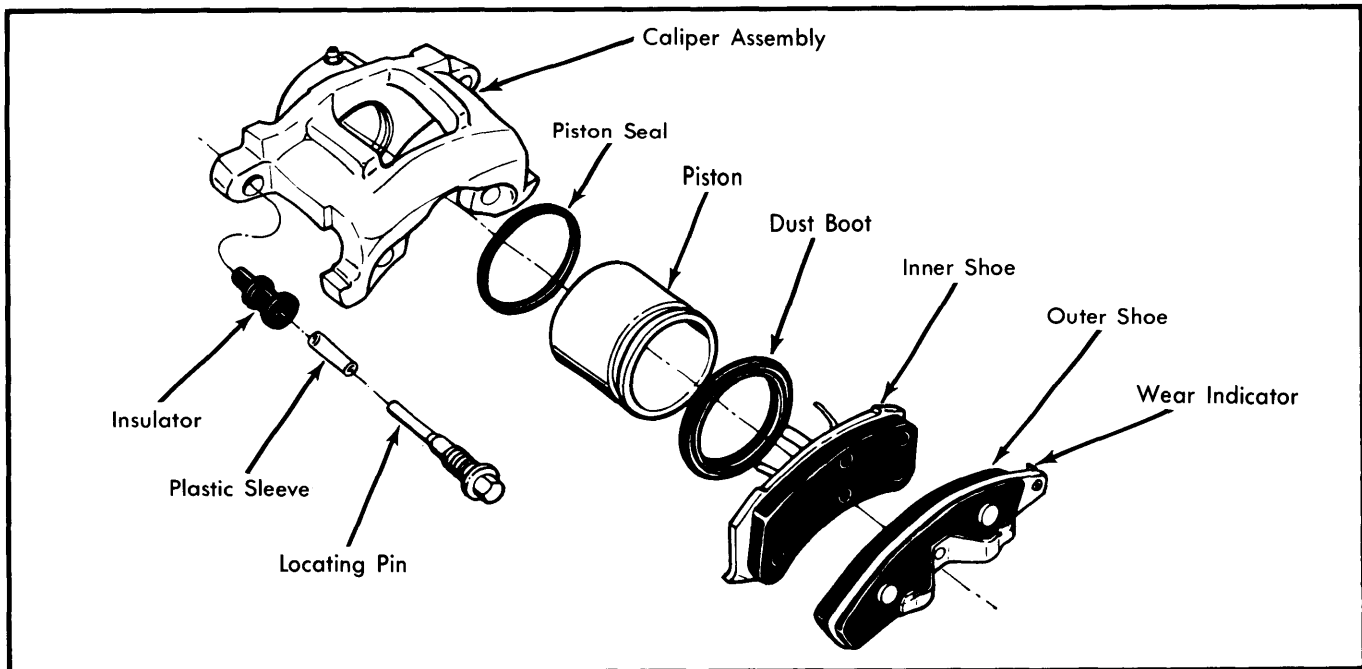


Fig. 3 Exploded View of Front Pin Slider Caliper Assembly (Ford Motor Co. Only)

tool (T75P-2588-B). Push piston back into housing with adjusting tool, hold adjusting tool shaft in place and rotate tool handle counterclockwise until thrust screw clears anti-rotation pin. Remove thrust screw and anti-rotation pin.

2) Remove piston adjuster assembly by installing removal tool (T75P-2588-A) through back of caliper housing and pushing piston out. Remove and discard piston seal, boot, thrust screw "O" ring seal, end retainer "O" ring seal and end retainer lip seal.

NOTE — Use care not to damage polished surface in thrust screw bore.

Cleaning & Inspection — **1)** Clean all metal parts in denatured alcohol or clean brake fluid and dry with compressed air. Inspect all parts for wear or damage and replace as necessary. Check operation of adjuster by assembling thrust screw into piston/adjuster assembly, pulling the two pieces apart by hand approximately $\frac{1}{4}$ " and then releasing them.

2) When pulling on the two pieces, brass drive ring must remain stationary, causing nut to rotate. When releasing the two pieces, nut must remain stationary and drive ring must rotate. If action of components does not follow this pattern, replace piston adjuster assembly.

Reassembly (Rear) — **1)** Apply a coat of clean brake fluid to new piston seal and install seal in caliper cylinder bore, making sure seal is not twisted and is seated in groove.

2) Install new dust boot by seating flange squarely in outer groove of caliper bore. Coat piston/adjuster assembly with clean brake fluid, then install it into caliper while spreading dust boot. Seat dust boot in piston groove.

3) Position caliper in a vise and fill piston/adjuster assembly with clean brake fluid to bottom edge of thrust screw bore. Coat new thrust screw "O" ring with brake fluid and install it in groove in thrust screw.

4) Using a $\frac{1}{4}$ " Allen wrench install thrust screw into piston/adjuster assembly until top surface of screw is flush with bottom of threaded bore. Use care to avoid cutting "O" ring. Align notch in thrust screw with notch in caliper housing, then install anti-rotation pin.

NOTE — Thrust screw and operating shaft are not interchangeable from side to side. For identification purposes, pocket surface of shaft and screw are stamped with the proper letter (R or L).

5) Place a ball in each of the three pockets of thrust screw and apply a liberal amount of silicone grease on all parking brake mechanism components. Install operating shaft on balls, then coat thrust bearing with silicone grease and install it on operating shaft.

6) Install new lip seal and "O" ring on caliper end retainer, then coat them with a light film of silicone grease and install retainer in caliper. Hold operating shaft firmly seated against internal mechanism while installing retainer to prevent mislocation of balls.

7) Install parking brake lever on its keyed spline with lever arm pointing down and rearward. Tighten lever retaining screw to specifications and make sure that lever rotates freely after tightening.

8) With caliper in a vise, bottom piston in caliper bore using tool T75P-2588-B or equivalent. Refer to Rear Caliper Disassembly procedures for tool operation.

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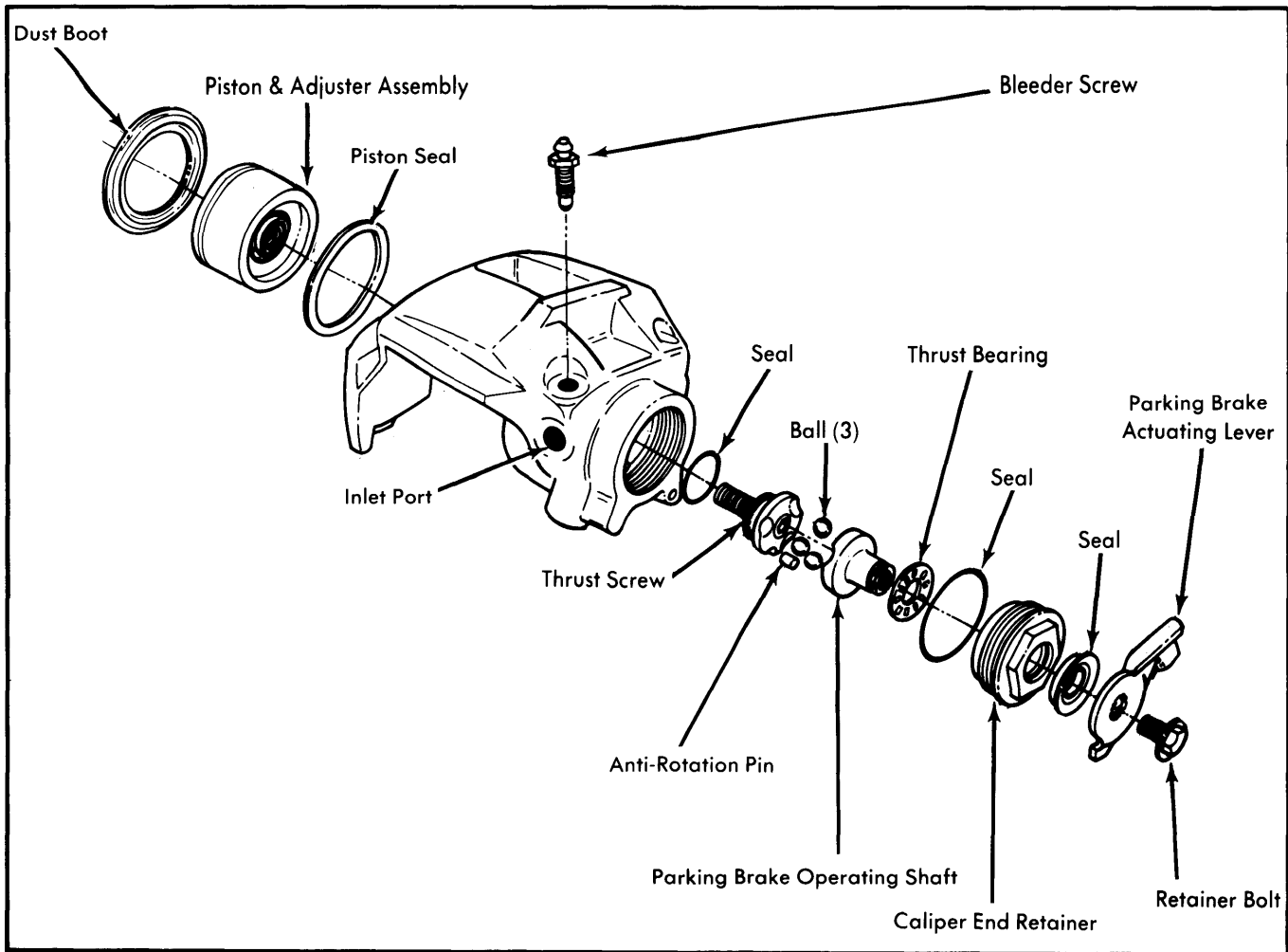


Fig. 4 Exploded View of Rear Caliper Assembly (Versailles Only)

DISC BRAKE ROTOR SPECIFICATIONS						
Application	Disc Diameter	Lateral Runout	Parallelism	Original Thickness	Minimum Refinish Thickness	Discard Thickness
American Motors						
Concord & Spirit	10.27"	.003"	.0005"	.880"	.....	.810"
AMX	10.80"	.003"	.0005"	.880"	.....	.810"
Eagle	11.02"	.004"	.0005"	.880"	.....	.810"
Ford Motor Co. (Front)						
Bobcat & Pinto	9.30"	.003"	.0005"	.870"	.....	.810"
Capri & Mustang	9.30"	.003"	.0005"	.870"	.....	.810"
Fairmont & Zephyr	10.08"	.003"	.0005"	.870"	.....	.810"
Cougar & Thunderbird	10.08"	.003"	.0005"	.870"	.....	.810"
Granada, Monarch, & Versailles	11.03"	.003"	.0005"	.870"	.....	.810"
Ford & Mercury	11.08"	.003"	.0005"	1.03"	.....	.972"
Continental & Mark VI	11.08"	.003"	.0005"	1.03"972"
Ford Motor Co. (Rear)						
Versailles	10.66"	.004"	.0005"	.945"895"

Brake Systems

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TIGHTENING SPECIFICATIONS

Application	Ft. Lbs.
American Motors	
Anchor Plate Mounting Bolts	80
Adapter Bracket Bolts	55
Caliper Retainer Key Screws	15
Brake Hose-to-Caliper	
Pacer	100 INCH Lbs.
All Others	25
Wheel Attaching Nuts	75
Ford Motor Co.	
Anchor Plate Mounting Bolts ^①	
Front ^②	
Upper	90-120
Lower	55-75
Rear (Versailles Only)	90-120
Splash Shield Mounting Bolts	9-14
Caliper Retainer Key Screws	12-16
Caliper Locating Pins	30-40
Brake Hose-to-Caliper	
Front Caliper	12-20
Rear Caliper	17-25
Caliper End Retainer	75-95
Parking Brake Lever Retainer Screw	16-22
Wheel Attaching Nuts	80-105

① — Applies to Bobcat, Pinto, Granada, Monarch and Versailles only. On all other models anchor plate is integral with spindle.

② — Upper bolts must be tightened first.