

Brake Systems

DELCO-MORAINE SINGLE PISTON DISC – FRONT

Buick
Cadillac
Chevrolet (Exc. Corvette & Chevette)
Oldsmobile
Pontiac

DESCRIPTION

Caliper is a single casting with one large piston inboard of disc rotor. It is mounted on the steering knuckle or a support bracket attached to front suspension. Brake rotors are cast iron with ventilation fins separating the two braking surfaces. Some models use a groove machined in the braking surfaces to help control brake noise.

Shoes are stamped steel with riveted linings. Most models use a wear sensor, a piece of spring steel riveted to the rear edge of inner brake shoe. The sensor produces a high pitched squeal when lining needs replacement.

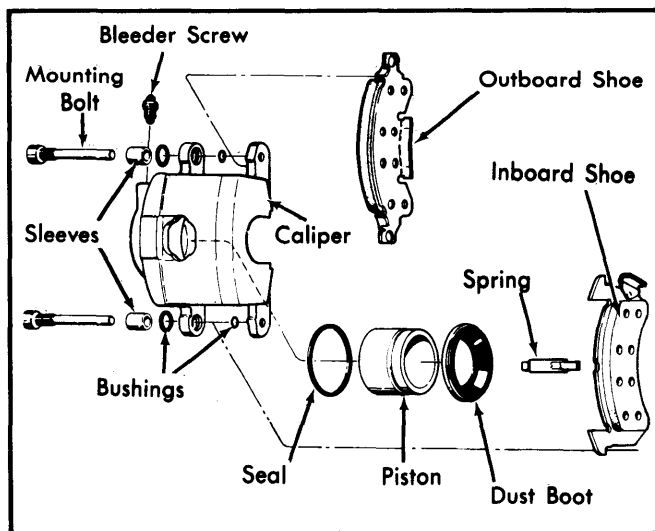


Fig. 1 Exploded View of Caliper Assembly

ADJUSTMENT

Disc brakes are self-adjusting. Caliper piston seals are designed to retract pistons just enough to allow brake lining to lightly brush disc without any drag. Sliding caliper design compensates for any lining wear.

SERVICING

BLEEDING

See *Hydraulic Brake Bleeding* in this section.

SHOE & LINING INSPECTION

Inspect linings every 6,000 miles or 12 months, or whenever wheels are removed. Check both ends of inboard and outboard linings for wear. Replace all linings if any are worn to within .030" of rivets on Buick, Chevrolet and Pontiac, or to thickness of shoe on Cadillac and Oldsmobile.

SHOE & LINING REPLACEMENT

NOTE — Relining should be done in complete sets only.

Removal — 1) Remove and discard 2/3 of brake fluid in master cylinder reservoir to prevent overflow during servicing.

NOTE — Do not remove all fluid or disconnect brake line or it will be necessary to bleed system.

2) Raise vehicle and remove front wheels. Position a "C" clamp on caliper. Place solid side of clamp against inside of caliper and screw end of clamp against outboard shoe.

3) Tighten clamp until caliper moves away from vehicle. When caliper moves enough, push piston to bottom of its bore. This will allow shoes to back off from rotor surface.

4) Remove "C" clamp. On Monza, Skyhawk, Starfire and Sunbird models, remove retainer rings and pins. On all other models, unbolt caliper from steering knuckle or support bracket.

5) Lift caliper off rotor and support with a wire so brake hose will not be damaged. Remove shoes and shoe support spring from cavity in piston. Remove sleeves from inboard ears of caliper and rubber bushings from all caliper ears.

Installation — 1) Using silicone lubricant, coat and install new sleeves and rubber bushings in caliper ears. Attach shoe support spring to inboard shoe. Ensure that shoe is installed in caliper with wear indicator to rear of vehicle.

2) Position outboard shoe in caliper. Engage tab at bottom of shoe with caliper cutout and shoe ears with caliper ears at top of shoe. Place caliper over rotor, aligning caliper ears with mounting holes.

3) Start bolts or pins through inboard caliper ears and mounting bracket. Make sure bolts or pins pass under retaining ears of inboard shoe.

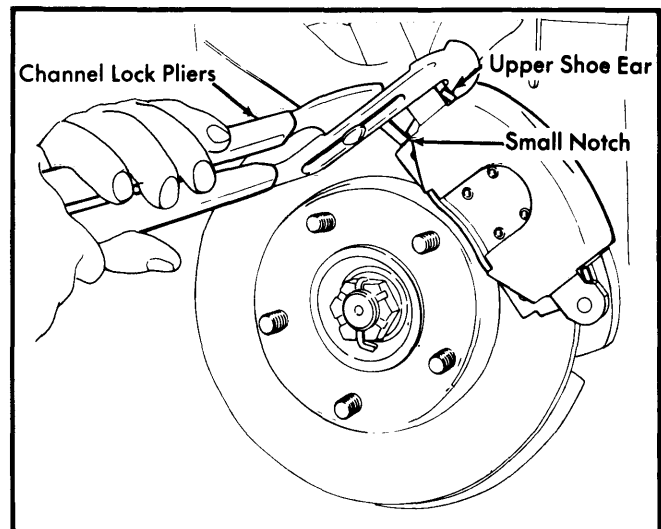


Fig. 2 Clinching Tabs on Outboard Shoe (Except Monza, Skyhawk, Starfire and Sunbird)

DELCO-MORAINÉ SINGLE PISTON DISC – FRONT (Cont.)

4) Push bolts or pins through caliper to engage holes in outboard shoe and ears of caliper. Install retainer rings or pins on Monza, Skyhawk, Starfire and Sunbird models. Thread bolts into mounting bracket and tighten on all other models.

5) Add brake fluid to fill master cylinder to within $\frac{1}{8}$ " of top. Pump brake pedal to seat shoes against rotor.

6) Use pliers to clinch upper ears of outboard shoe against caliper on all models except Monza, Skyhawk, Starfire and Sunbird. Make sure ears are flat against caliper with no clearance.

ROTOR SERVICING

Lateral Runout – Adjust wheel bearings until all endplay is eliminated. Attach a dial indicator to front suspension so that pointer contacts face of rotor approximately one inch from rotor edge. Set gauge to zero, then turn rotor through one complete revolution noting gauge. See Rotor Specifications for maximum allowable runout.

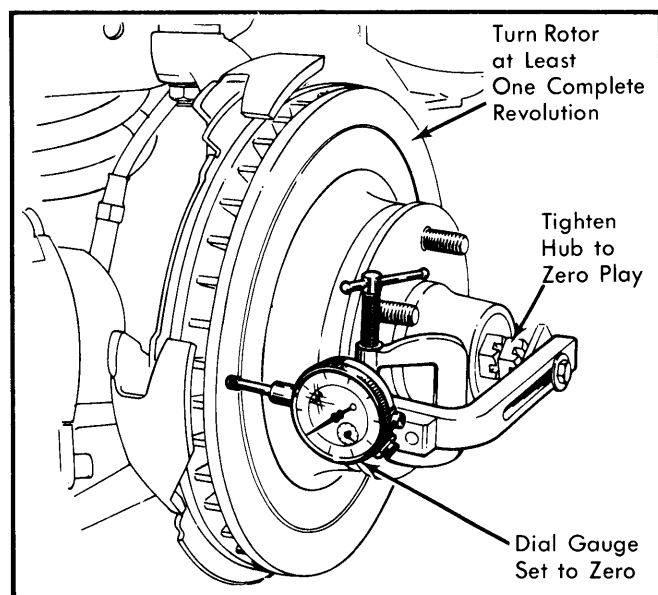


Fig. 3 Checking Rotor Lateral Runout

Parallelism – Check thickness of rotor at four or more points around circumference of rotor. Make all measurements at same distance from edge of rotor. If thickness varies more than specified (see specifications), refinish or replace rotor as necessary.

REMOVAL & INSTALLATION

BRAKE CALIPER

Removal of caliper requires the same procedure as for lining replacement, except it will be necessary to remove and plug brake line to caliper. After installation of caliper, bleed hydraulic system.

BRAKE ROTOR

Removal & Installation (Eldorado, Riviera & Toronado) – Raise and support vehicle. Remove front wheel and reinstall one wheel nut to retain rotor during caliper removal. Remove cotter pin and nut securing brake hose to upper control arm.

Remove caliper and wire up out of way. Mark rotor and hub for reassembly and remove rotor. To install, reverse removal procedure.

Removal & Installation (All Other Models) – Raise and support vehicle. Remove wheel, then remove and support caliper. Remove grease cup, cotter pin and nut, then remove rotor. To install brake rotor, reverse removal procedure.

OVERHAUL

BRAKE CALIPER

Disassembly – 1) Clean exterior of caliper with denatured alcohol and place on a clean work surface. Remove brake hose and discard copper gasket. Drain fluid from caliper.

2) Using clean shop towels to pad interior of caliper, apply just enough clean compressed air to caliper inlet so piston will ease out of bore.

3) Using a screwdriver, pry boot out of caliper. Pry piston seal from caliper using a piece of wood or plastic. DO NOT use a metal tool as bore may be damaged, requiring caliper replacement. Remove bleeder valve from caliper.

Cleaning & Inspection – 1) Replace boot, piston seal, rubber bushings and sleeves each time caliper is overhauled.

2) Clean all parts in denatured alcohol. Dry parts using clean dry compressed air. Lubricated shop air will ruin rubber parts upon contact at reassembly.

3) Check mounting bolts for corrosion, breaks in plating or other damage. Replace bolts if damaged in any way, DO NOT attempt to wire brush or clean them.

4) Check outside diameter of piston for scoring, nicks, corrosion, or worn and damaged plating. If surface defects are visible, replace piston. DO NOT attempt to refinish with abrasives.

5) Check piston bore in caliper for scratches or other damage. Minor scratches or corrosion may be polished clean with crocus or emery cloth. Thoroughly clean bore after polishing. Replace caliper if corrosion is not easily cleaned.

Reassembly – 1) Lubricate bore in caliper and new piston seal with clean brake fluid. Position seal in caliper bore groove. Lubricate piston with clean brake fluid. Assemble new boot into groove in piston with fold facing open end of piston.

2) Insert piston into caliper bore using care not to unseat seal. Do not force piston to bottom of bore. Position outer diameter of boot in caliper counterbore. Seat boot using suitable tool.

- Use tool J-26267 on Regal, Riviera, Skyhawk, Eldorado, Malibu, Monte Carlo, Monza, Cutlass, Toronado, Grand Prix, LeMans and Sunbird models.
- Use tool BT 6808 on Omega, 88 and 98 models.
- Use tool J-22904 on all other vehicles.

3) Check boot installation to make sure retaining ring moulded into boot is not bent and that boot is installed completely below caliper face. Install brake hose, using a new copper gasket. **NOTE** – After caliper has been overhauled and installed, it must be bled.

Brake Systems

DELCO-MORAINE SINGLE PISTON DISC – FRONT (Cont.)

TIGHTENING SPECIFICATIONS

Application	Ft. Lbs.	Application	Ft. Lbs.
Brake Hose-to-Caliper		Wheel Lug Nuts	
Buick		Buick	
LeSabre, Electra	21	Riviera	100
All Other Models	32	1/2" Studs	100
Cadillac, All Models	30	All Others	80
Chevrolet, All Models	32	Cadillac, All Models	100
Oldsmobile		Chevrolet	
88 and 98 Models	21	Monza Aluminum Wheels	90
All Other Models	32	Camaro Aluminum Wheels	120
Pontiac		Impala and Caprice Wagon	100
Catalina, Bonneville	21	All Others	80
All Other Models	32	Oldsmobile	
Caliper-to-Mounting Bracket		Cutlass Aluminum Wheels	90
Buick, Chevrolet, Pontiac, Oldsmobile	35	88 Wagon, 98, Toronado	100
Cadillac	30	All Others	80
		Pontiac	
		Aluminum Wheels	90
		All Others	80

DISC BRAKE ROTOR SPECIFICATIONS

Application	Disc Diameter	Lateral Runout	Parallelism	Original Thickness	Minimum Refinish Thickness	Discard Thickness
Buick						
Skyhawk	9.88"	.005"	.0005"	.880"	.830"	.815"
Riviera	10.50"	.005"	.0005"	1.040"	1.020"
Electra, Estate Wagon	12.00"	.005"	.0005"	1.040"	.980"	.965"
All Others	11.00"	.005"	.0005"	1.040"	.980"	.965"
Cadillac						
Eldorado	10.50"	.005"	.0005"	1.040"	1.020"
Limousine, Commercial	11.74"	.005"	.0005"	1.285"	1.220"	1.215"
All Others	11.74"	.005"	.0005"	1.040"	.980"	.965"
Chevrolet						
Monza	9.74"	.004"	.0005"	.880"	.830"	.815"
Malibu, Monte Carlo	10.50"	.004"	.0005"	1.030"	.980"	.965"
Wagon and Police	11.86"	.004"	.0005"	1.030"	.980"	.965"
All Others	11.00"	.004"	.0005"	1.030"	.980"	.965"
Oldsmobile						
Starfire	9.88"	.005"	.0005"	.880"	.830"	.815"
Toronado	10.50"	.005"	.0005"	1.040"	1.020"
88 Wagon, 88 with 403"						
All 98	11.88"	.005"	.0005"	1.040"	.980"	.965"
All Others	11.00"	.005"	.0005"	1.040"	.980"	.965"
Pontiac						
Phoenix	9.74"	.004"	.0005"	.880"	.830"	.815"
LeMans, Grand Prix	10.50"	.004"	.0005"	1.040"	.980"	.965"
All Others	11.00"	.004"	.0005"	1.040"	.980"	.965"