

DELCO-MORAINE AUTOMATIC ADJUSTER

Buick
Cadillac (W/O Rear Disc Opt.)
Chevrolet (Exc. Corvette & Chevette)
Oldsmobile (Exc. Starfire)
Pontiac

DESCRIPTION

Brakes are hydraulic single anchor and use Bendix type shoes. Anchor pins for brake shoes are fixed to backing plate and are non-adjustable. Automatic system is made up of a link, actuating lever, pawl and pawl spring. Pawl spring is mounted on secondary brake shoe. System uses an override pivot plate and spring to protect against binding linkage. **NOTE** — Some models use an adjuster pawl with a separate blade to contact star wheel. This system does not use the override spring.

OPERATION

Automatic adjusters operate only when brakes are applied as car is moving in reverse. The link, which holds top of actuating lever stationary, forces lever to pivot on secondary shoe. This pivoting action forces pawl downward against tooth on adjuster screw. If lining-to-drum clearance is correct the downward movement will stop before adjusting screw is turned. If clearance is too wide, secondary shoe will move outward. This allows pawl to move down enough to turn adjuster screw one notch. This brings lining-to-drum clearance back to correct specifications. If adjuster screw is frozen or clearance is too great, an override device will prevent adjuster movement. This will prevent binding of automatic adjuster linkage.

ADJUSTMENT

BRAKE SHOE ADJUSTMENT

Adjustment should be required only after relining or replacing shoes, or if length of adjusting screw is changed.

Buick — Remove adjusting hole cover. Install a tool through hole to move self-adjuster lever off of adjusting screw. Use adjusting tool to turn adjusting screw and expand brakes. Expand brakes until wheel can just be turned by hand. Make sure drag is equal on both wheels. Back off adjusting screw 30 notches. If shoes still drag, back screw off one or two more notches. Brakes should not drag after 12 notches. If heavy drag is felt, check for a tight parking brake cable.

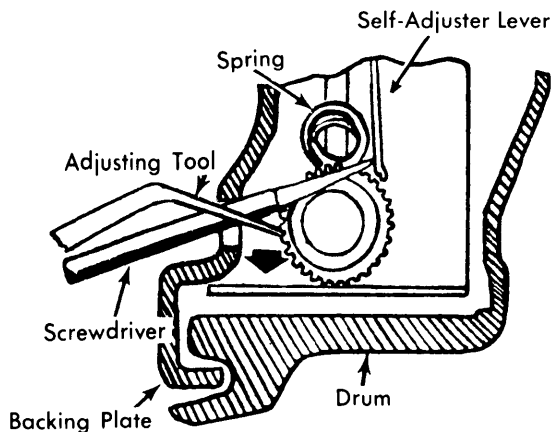


Fig. 1 Adjusting Brakes (Through Backing Plate)

Cadillac & Oldsmobile (Exc. Starfire) — Remove wheels and drums. Make sure parking brake cable and linkage is free. Measure drum inside diameter using a suitable tool (J-21177). Adjust shoes to fit opposite side of measuring tool (see Fig. 2). Install drums and wheels. Drive vehicle alternately backward and forward, applying brakes moderately until pedal travel is adequate ($2\frac{1}{16}$ " maximum).

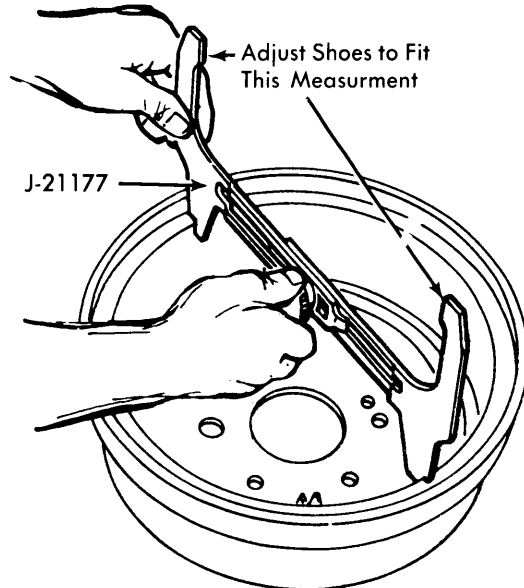


Fig. 2 Measuring Drum Inside Diameter

Chevrolet (Exc. Vega & Monza) — Use same procedure as described for Cadillac and Oldsmobile. If tool is not available, disengage adjusting lever from star wheel and turn star wheel until drum slides over shoes with a slight drag. Then turn star wheel $1\frac{1}{4}$ turns so that shoes are retracted. Install drums and drive vehicle alternately backward and forward, making firm braking stops, until brake pedal travel is satisfactory.

Chevrolet Vega & Monza — Use same procedure as described in Buick brake shoe adjustment.

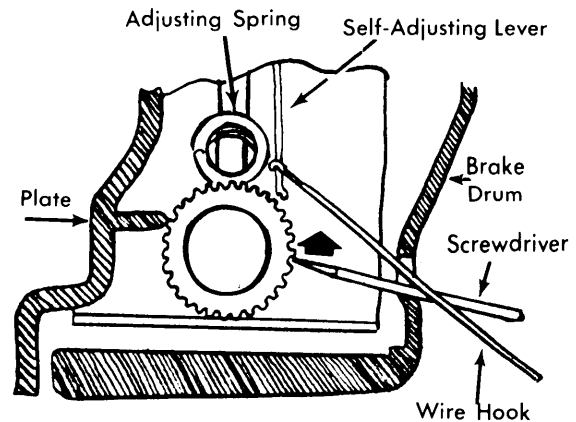


Fig. 3 Adjusting Brakes (Through Drum)

Brake Systems

DELCO-MORAINE AUTOMATIC ADJUSTER (Cont.)

Pontiac — Remove drum. Remove ridge at open end of drum with #40 grit sand paper. Adjust suitable measuring tool (J-22364) to measure inside diameter of drum (see Fig. 2), then adjust shoes to fit opposite side of measuring tool. Replace drum and then drive vehicle alternately forward and backward, braking moderately until pedal travel is adequate. As an alternate method, use procedure as described for Buick. Adjust the star wheel to the following specifications: Catalina and Bonneville, back off 30 notches; all other models, back off 20 notches.

PARKING BRAKE ADJUSTMENT

Buick — Depress parking brake one ratchet click on LeSabre, Riviera, Electra and Estate Wagons, and two ratchet clicks on all other models. Loosen jam nut at rear of equalizer adjusting nut. Tighten adjusting nut until rear wheels can just be turned rearward with two hands, but will lock if turned forward. Tighten jam nut against adjusting nut. With parking brake disengaged, rear wheels should turn freely in either direction with no drag.

Cadillac — Lubricate parking brake linkage at equalizer and cable stud, and ensure free movement of cables. Depress parking brake pedal to approximately $1\frac{1}{2}$ " from fully released position. Raise rear wheels. Hold brake cable stud from turning, and tighten equalizer nut, one turn at a time (checking for brake drag after each turn), until light drag is felt on either wheel (turning forward). Release parking brake. No drag should be present at either wheel. After adjustment, parking brake pedal should travel 5.25-6.75" with a pedal force of 125 lbs.

Chevrolet (Exc. Vega & Monza) — Apply parking brake two notches from fully released position. Loosen equalizer check nut, and tighten or loosen front jam nut until a light-to-moderate drag is felt when rear wheels are rotated forward. Tighten nuts securely. With parking brake fully released, no drag should be felt at rear wheels.

Chevrolet Vega & Monza — Raise vehicle on a hoist. Apply parking brake one notch from fully released position. Remove propeller shaft from vehicle. Loosen check nut. Tighten adjusting nut until a light drag is felt while rotating rear wheels. Tighten check nut. Release parking brake, there should be no drag when wheels are rotated. Replace propeller shaft.

Oldsmobile — Depress parking brake pedal three ratchet clicks on Cutlass & Toronado, two clicks on Omega, and one click on 88 & 98. Tighten adjusting nut until rear wheels can just be turned rearward, using two hands, but are locked when forward rotation is attempted. With mechanism fully released, no drag should be present.

Pontiac — Depress parking brake pedal one notch on Catalina, Bonneville and Grand Safari models, or eight notches on all other models. Loosen lock nut and then turn adjusting nut. On Catalina, Bonneville and Grand Safari models, turn adjusting nut until rear wheels can just be turned forward and lock when turned rearward. On all other models, tighten adjuster nut until a slight-to-moderate drag is felt while rotating rear wheels. Tighten lock nut. No drag should be felt with parking brake released.

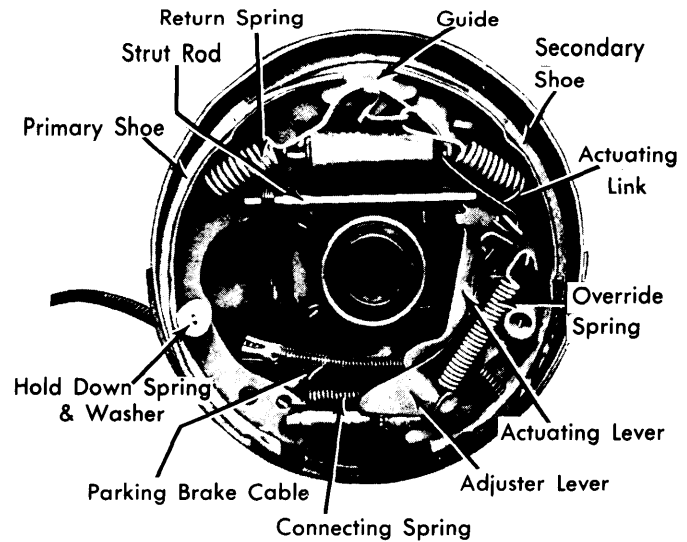


Fig. 4 Brake Assembly (Typical, Exc. Cadillac)

SERVICING

SHOE & LINING REPLACEMENT

Removal — **NOTE** — Mark position of springs and star adjusters as they are removed, for reinstallation in original position. Loosen parking brake cable at equalizer. If necessary, back off brake adjustment before removing drum. Unhook return springs. Remove hold down springs and cups. Lift actuator and unhook actuating link from anchor pin. Separate shoes from wheel cylinder connecting links, remove parking brake strut and spring, disconnect cable from parking brake lever, and remove shoes. Detach adjuster screw and spring from shoes. Remove parking brake lever.

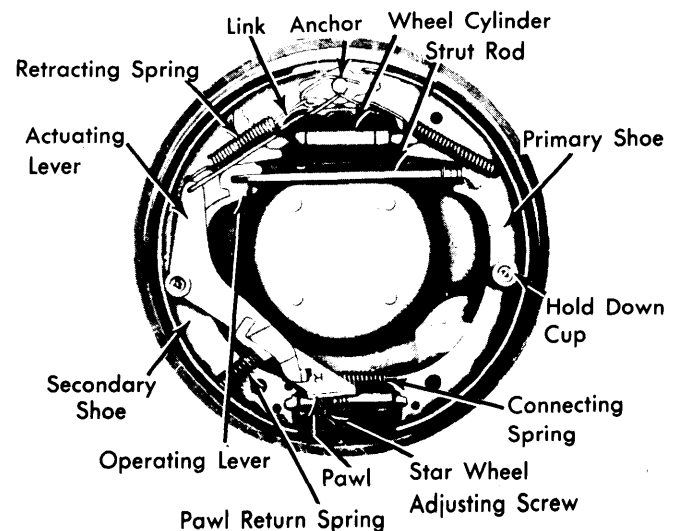


Fig. 5 Brake Assembly — Cadillac (Typical)

Installation — Lubricate fulcrum end of parking brake lever, then attach to secondary shoe. Connect adjusting screw spring, then place screw in position (align star with adjusting hole). **NOTE** — Ensure adjuster screws are installed in original positions. Lubricate shoe and cable contact surfaces on backing plate. Position shoes and insert into wheel cylinder links.

DELCO-MORAINE AUTOMATIC ADJUSTER (Cont.)

Connect cable to parking brake strut and spring, between lever and primary shoe. Install actuator, actuator return spring, and actuating link. Replace hold down springs and return springs. Adjust brake shoe clearance as previously described.

BLEEDING SYSTEM

See *Hydraulic Brake Bleeding* in this section.

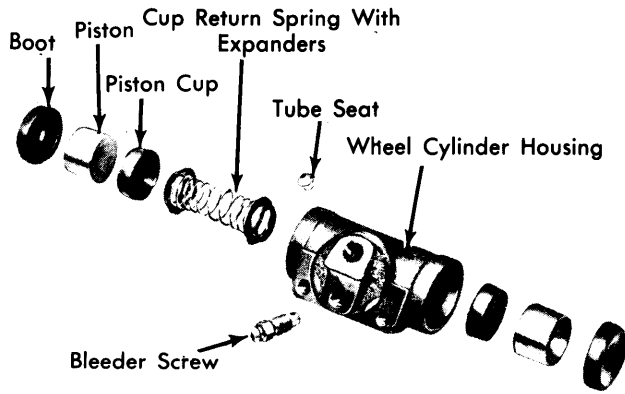


Fig. 6 Disassembled View of Wheel Cylinder

TIGHTENING SPECIFICATIONS	
Application	Ft. Lbs.
Wheel Attaching Nuts	
Buick	
Century, Skylark & Skyhawk	80
All Others	100
Cadillac	
All Models	100
Chevrolet	
Chevrolet Models	80-100
All Others	60-80
Oldsmobile	
Omega & Cutlass	80
88 & 98	100
Toronado	130
Pontiac	
Catalina & Bonneville	75
All Others	70

BRAKE LINING SPECIFICATION							
Application	Drum Dia.	Width		Length		Thickness	
		Front	Rear	Primary	Secondary	Primary	Secondary
Buick							
Skyhawk	9.5"	①	1.2"	9.18"	9.18"	.19"	.27"
Skylark	9.5"	①	2.0"	7.63"②	9.91"	.19"	.27"
Century, Regal	11"	①	2.0"	8.93"	11.58"	.196"	.265"
LeSabre, Electra, Riviera	11"	①	2.0"	8.93"	11.58"	.232"	.275"
Estate Wagon	12"	①	2.0"	9.90"	12.85"	.236"	.296"
Cadillac							
DeVille	11"	①	2.0"	8.95"	11.59"	.25"	.29"
Limousine, Commerical Chassis	12"	①	2.5"	11.00"	12.36"	.23"	.26"
Chevrolet							
Vega, Monza	9.5"	①	2.0"	9.01"	9.75"	.20"	.20"
Camaro, Nova	9.5"	①	2.0"	9.01"	9.75"	.20"	.20"
Chevelle, Monte Carlo	11"	①	2.0"	8.95"	11.59"	.25"	.29"
Chevrolet (Exc. Sta. Wgn.)	11"	①	2.0"	8.95"	11.59"	.25"	.29"
Chevrolet Sta. Wgn.	12"	①	2.0"	9.83"	12.77"	.22"	.32"
Oldsmobile							
Omega, ③	9.5"	①	2.0"	7.63"	9.91"	.19"	.27"
Cutlass④	11"	①	2.0"	9.00"	11.5"	.22"	.26"
88, 98	11"	①	2.0"	9.00"	11.5"	.22"	.26"
Custom Cruiser Sta. Wgn.	12"	①	2.0"	10.0"	13.0"	.22"	.284"
Pontiac							
Astre, Sunbird	9.5"	①	1.08"	9.12"	9.87"	.23"	.30"
Ventura③, Firebird	9.5"	①	2.0"	9.12"	9.87"	.23"	.23"
LeMans, Grand Prix, ④	11"	①	2.0"	8.93"	11.58"	.23"	.27"
Catalina, Bonneville, Grand Safari	11"	①	2.0"	8.93"	11.58"	⑤.23"	⑤.23"

- ① - Front disc brake equipped.
- ② - Power brakes use 9.91".
- ③ - Except models with a 5-speed transmission.

- ④ - And all models with a 5-speed transmission.
- ⑤ - Lining thickness on models with a 5" wheel nut attaching pattern is .232" on primary and .272" on secondary.

Brake Systems

DELCO-MORAINE AUTOMATIC ADJUSTER (Cont.)

BRAKE SYSTEM SPECIFICATIONS				
Application	Drum Diam.	Wheel Cylinder Diameter		Master Cylinder
		Front ^①	Rear	Diameter
Buick				
Skyhawk	9.5"	1.875"	.813"	.750"
Skylark	9.5"	2.938"	.875"	1.125"
Century	11"	2.938"	.938"	.9375" ^②
LeSabre, Riviera, Electra	11"	2.938"	1.00"	.9375" ^②
Estate Wagon	12"	2.938"	1.00"	.9375" ^②
Cadillac				
DeVille	11"	2.938"	.938"	1.125"
Commercial Chassis, Limousine	12"	2.938"	.938"	1.125"
Chevrolet				
Vega, Monza	9.5"	.....	.688"	.75" ^③
Camaro, Nova	9.5"	.....	.938"	1.00" ^②
Chevelle, Monte Carlo	11"	.....	.938"	1.00" ^②
Chevrolet (Exc. Sta. Wgn.)	11"	.....	.938"	1.125"
Chevrolet Sta. Wgn.	12"	.....	1.00"	1.125"
Oldsmobile				
Omega ^④	9.5"	2.938"	.938"	1.00"
Cutlass ^⑤	11"	2.938"	.938" ^⑥	.938"
88, 98	11"	2.938"	1.00"	1.125"
Toronado	11"	2.938"	.938"	1.125"
Custom Cruiser Sta. Wgn.	12"	2.938"	1.00"	1.125"
Pontiac				
Astre	9.5"	.....	.687"	.750"
Sunbird	9.5"	.....	.687"	.875"
Ventura ^④ , Firebird	9.5"	.....	.938"	1.00" ^②
LeMans, Grand Prix, ^⑤	11"	.....	.937"	.937" ^②
Catalina, Bonneville	11"	.....	⑦	1.125"
Grand Safari	11"	.....	⑦	1.125"

① — Disc brake caliper piston diameter.

② — Power brakes use a 1.125" master cylinder.

③ — .875" used on Monza.

④ — Except models with a 5-speed transmission.

⑤ — And all models with a 5-speed transmission.

⑥ — 1.00" used with manual brakes.

⑦ — .875" used on models with wheel attaching nut pattern of 4.75". .937" used on models with wheel attaching nut pattern of 5".

BRAKE DRUM SPECIFICATIONS				
Application	Drum Diameter	Original Diameter	Maximum Refinish Diameter	Discard Diameter
General Motors				
All Models	9½"	9.500"	9.560"	9.590"
	11"	11.000"	11.060"	11.090"
	12"	12.000"	12.060"	12.090"