DELCO-MORAINE AUTOMATIC ADJUSTER

Buick
Cadillac
Chevrolet
Oldsmobile
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 the 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 & Pontiac – Remove adjusting hole cover. Install a tool through adjusting hole to move self adjuster lever off adjusting screw. Use tool to turn screw and expand brakes until wheel can just be turned by hand. Make sure drag is equal on both wheels. Back off adjusting screw 30 notches. Wheel should not drag after 12 notches. If drag is noticed at this point, check parking brake cable. If brakes still drag lightly after 30 notches, back off 1 or 2 more notches.

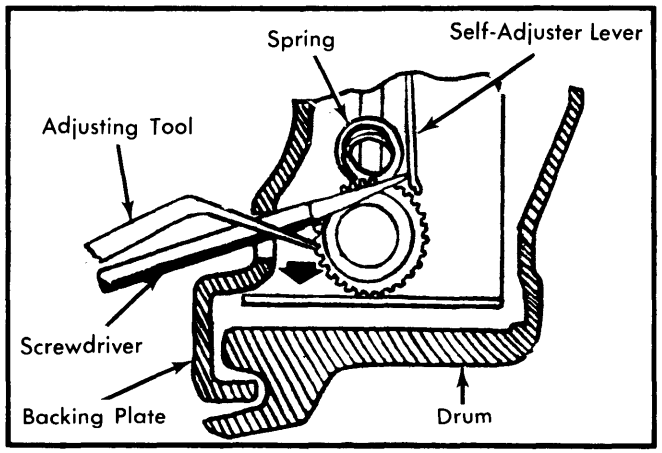

Fig. 1 Adjusting Brake Shoe Clearance (Through Backing Plate)

Oldsmobile, Cadillac & Chevrolet – Remove wheels and drums. Make sure parking brake cable and linkage are free. Measure drum inside diameter using suitable tool (J-21177). Adjust shoes to fit opposite side of measuring tool. *See Fig. 2.* Install drums and wheels. Drive vehicle alternately backwards and forwards, applying brakes moderately.

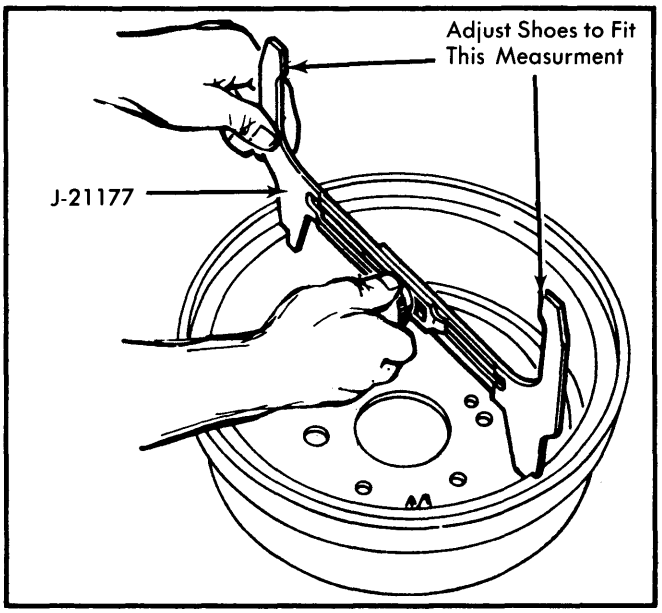

Fig. 2 Measuring Drum Inside Diameter for Brake Shoe Clearance

PARKING BRAKE ADJUSTMENT

NOTE – *Always check parking brake adjustment after adjusting rear brakes.*

Cadillac & Chevrolet – Lubricate parking brake linkage at equalizer and cable stud, and ensure free movement of cables. Depress parking brake pedal to approximately 1½" from fully released position. Raise rear wheels. Hold brake cable from turning and tighten equalizer nut one turn at a time. Check for brake drag after each turn by turning wheel forward. When light drag is felt on both wheels, 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.

All Other Models – Apply parking brake pedal one notch on Impala and Caprice models. On all other models, apply brake 2 notches. Raise and support vehicle. Tighten the adjusting nut on parking brake cable equalizer until left rear wheel can just be rotated rearward. Wheel should not rotate forward. Release parking brake and check that no drag is felt on either side. Lubricate parking brake cable if adjustment does not remove drag.

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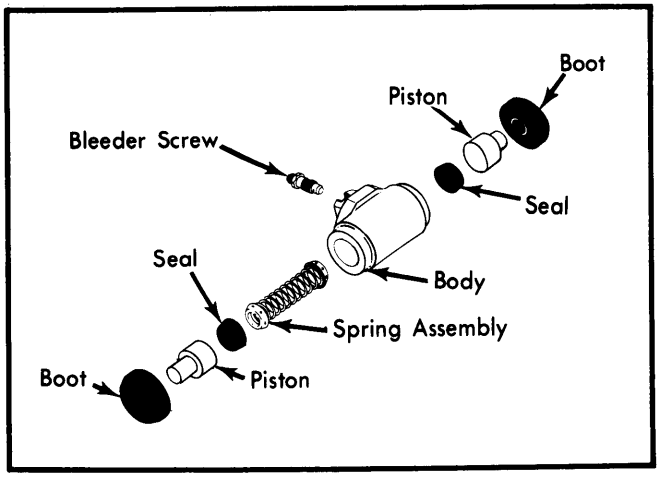

Fig. 3 Wheel Cylinder Assembly

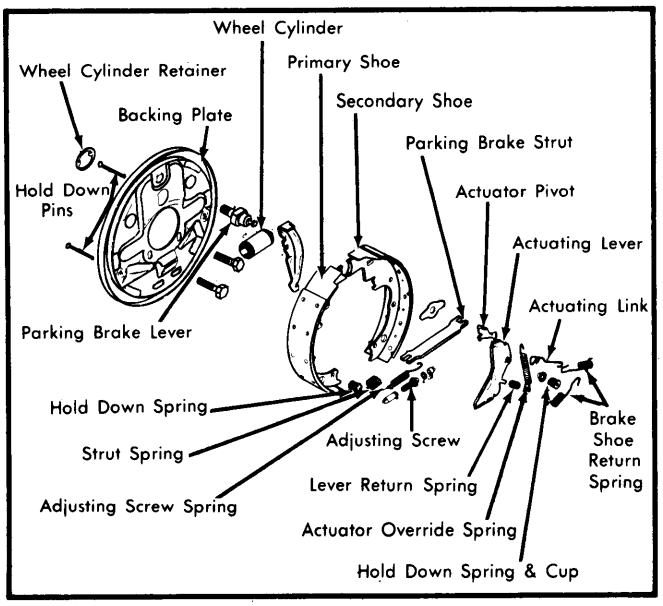

Fig. 4 Exploded View of Rear Drum Brake Assembly (Century, Cutlass, El Camino, Grand Prix, LeMans, Malibu & Monte Carlo)

SERVICING

SHOE & LINING REPLACEMENT

NOTE – *Mark position of springs and star adjusters as they are removed, for installation in original position.*

Removal – 1) Release parking brake and loosen parking brake cable at equalizer. If necessary, back off brake adjustment before removing brake drums. Remove return springs. Remove brake shoe hold down springs and cups. Lift up on parking brake actuator lever and remove actuator link. Remove actuator lever and return spring.

2) Separate brake shoes from wheel cylinder connecting links. Remove parking brake strut and spring. Disconnect parking brake cable. Remove brake shoes, spring and adjusting screw from backing plate. Detach spring and screw from brake shoes. Remove parking brake lever from secondary shoe.

Installation – 1) Lubricate fulcrum end of parking brake lever and attach to secondary shoe. Connect adjusting screw spring, then place screw in position. Ensure that star is aligned with adjusting hole. Lubricate surfaces where shoe and parking brake cable contact backing plate. Position shoes and insert into wheel cylinder links.

2) Connect cable to parking brake lever and install strut and spring between lever and primary shoe. Install actuator, actuator return spring and actuating link. Replace brake drums and wheels. Adjust parking brake and brake shoes. Check for proper operation of brakes before moving vehicle.

WHEEL CYLINDER REPLACEMENT

Removal (Century, Cutlass, El Camino, Grand Prix, LeMans & Monte Carlo) – Remove dirt and foreign material from around wheel cylinder and pilot. Disconnect inlet tube line. Remove wheel cylinder retainer using 2 awls or pins of 1/8" diameter or less. Insert awls or pins into access slots between wheel cylinder pilot and retaining lock tabs. Bend both tabs away simultaneously until wheel cylinder is released.

Installation – To install, hold cylinder on backing plate by inserting a wood block between wheel cylinder and axle flange. Install a new retaining spring over wheel cylinder, lining up

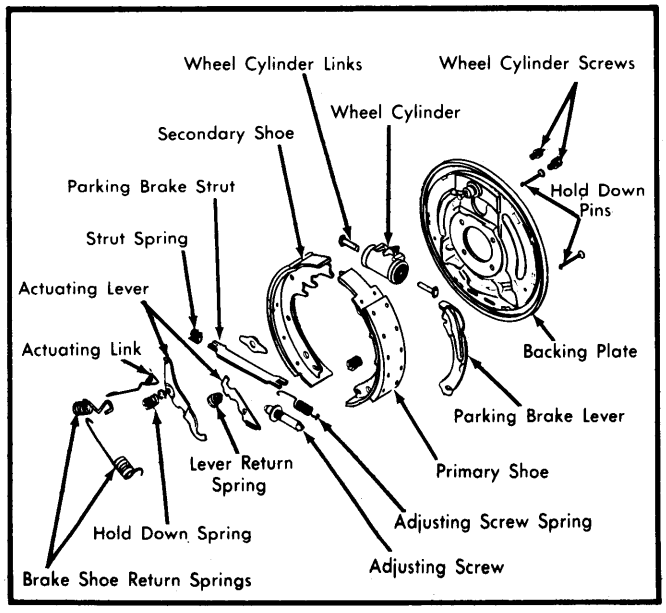

Fig. 5 Exploded View of Rear Drum Brake Assembly (All Other Models)

DELCO-MORAINE AUTOMATIC ADJUSTER (Cont.)

retainer tabs with cylinder tab grooves. Drive retainer into position using a 1⅛" socket and a 10" extension. Retainer is in position when tabs are snapped under retainer abutment.

Removal (All Other Models) – Disconnect inlet tube line and remove 2 screws holding wheel cylinder to backing plate. Remove wheel cylinder.

Installation – To install, replace wheel cylinder in position and install screws. Connect inlet tube line.

BLEEDING SYSTEM

See Hydraulic Brake Bleeding in this section.

OVERHAUL

WHEEL CYLINDER

Disassembly – With wheel cylinder removed from vehicle, remove rubber boots from ends of cylinder. Remove piston, piston return spring, cups and bleeder screw. Inspect cylinder bore for scoring or corrosion. Replace wheel cylinder if corrosion cannot be removed with crocus cloth or if bore is scored. Rinse with brake fluid.

Reassembly – Install bleeder screw. Lubricate cylinder bore with brake fluid and install piston cup in one end of cylinder with lip toward center and install piston with flat side toward cup. Install rubber boot into end of cylinder. Install spring and expander assembly into opposite end. Install remaining cup, piston and rubber boot.

TIGHTENING SPECIFICATIONS

WHEEL LUG NUTS

Application	Ft. Lbs.
Buick	
Riviera	100
Skylark	103
½" Studs	100
Century Aluminum Wheels	90
All Others	80
Cadillac	100
Chevrolet	
Chevette	70
Citation	103
Camaro Aluminum Wheels	90
Impala & Caprice Wagon	100
All Others	80
Oldsmobile	
Cutlass Aluminum Wheels	90
88 Wagon, 98 & Toronado	100
Omega	103
All Others	80
Pontiac	
Phoenix	103
Aluminum Wheels	90
All Others	80

BRAKE LINING SPECIFICATIONS

Application	Drum Dia.	Width		Length		Thickness	
		Front	Rear	Primary	Secondary	Primary	Secondary
Buick							
Century, Regal & Riviera	9.5"	①	2.0"	7.50"	9.90"	.19"	.27"
Electra & Est. Wagon	11.0"	①	2.0"	8.93"	11.58"	.23"	.27"
LeSabre	9.5"	①	2.0"	7.63"	9.91"	.21"	.28"
LeSabre Est. Wagon	7.87"	①	2.0"	8.93"	11.58"	.23"	.28"
Skylark	7.97"	①	1.73"	6.34"	7.64"	.24"	.28"
Cadillac							
Brougham & DeVille	11.0"	①	2.0"	8.95"	11.59"	.25"	.29"
All Others	12.0"	①	2.5"	10.98"	12.36"	.33"	.26"
Chevrolet							
Camaro	7.87"	①	2.0"	7.30"	9.46"	.23"	.23"
Chevette	7.88"	①	1.73"	6.60"	8.00"	.15"	.19"
Chevrolet Police & Station Wagon	11.0"	①	2.0"	8.86"	11.5"	.22"	.26"
Citation	7.87"	①	1.73"	6.60"	8.00"	.15"	.19"
Malibu, Monte Carlo & El Camino	9.5"	①	2.0"	7.58"	9.38"	.196"	.226"
All Others	9.5"	①	2.0"	7.58"	9.83"	.196"	.265"
Oldsmobile							
Cutlass	9.5"	①	2.0"	6.99"	7.75"	.275"	.305"
99 & 88 Wagon	11.0"	①	2.0"	8.93"	11.58"	.23"	.27"
Omega	7.87"	①	1.73"	6.34"	7.64"	.24"	.28"
Toronado	9.5"	①	2.0"	7.51"	9.9"	.19"	.27"
All Others	9.5"	①	.....	7.63"	9.9"	.194"	.27"
Pontiac							
Catalina & Bonneville Station Wagon	11.0"	①	2.0"	8.93"	11.60"	.231"	.271"
Firebird	9.5"	①	2.0"	7.30"	9.46"	.23"	.23"
Phoenix	7.87"	①	1.73"	6.34"	7.64"	.24"	.28"
All Others	9.5"	①	2.0"	7.30"	9.39"	.216"	.23"

① – Equipped with front disc brakes.

DELCO-MORAINE AUTOMATIC ADJUSTER (Cont.)

BRAKE SYSTEM SPECIFICATIONS

Application	Drum Diam.	Wheel Cylinder Diameter		Master Cylinder Diameter
		Front	Rear	
Buick				
Century & Regal	9.5"	2.43"①	.750"	.945"
Electra & Estate Wagon	11.0"	2.94"①	.938"③	1.125"
LeSabre	9.5"	2.94"①	.938"	1.125"
LeSabre Est. Wagon	11.0"	2.94"①	938"	1.125"
Riviera	9.5"	2.50"①	.750"	.945"
Skylark	7.87"	2.24"①	.689"	.874"
Cadillac				
Brougham & DeVille	11.0"	2.94"①	1.00"	1.125"
Seville & Eldorado	②	2.50"②	2.125"②	1.00"
All Others	12.0"	2.94"①	.940"	1.125"
Chevrolet				
Camaro	9.5"	2.94"①	.938"	.940"④
Chevette	7.88"	1.88"①	.750"	.750"
Chevrolet	9.5"	2.94"①	.875"	.940"
Chevrolet Wagon & Police	11.0"	2.94"①	.938"	1.125"
Citation	7.87"	2.94"①	.670"	.870"
Malibu & Monte Carlo	9.5"	2.50"①	.750"	.940"
Oldsmobile				
Cutlass	9.5"	2.50"①	.750"	.813"
88	9.5"	2.94"①	.875"	1.125"
98 & 88 Wagon	11.0"	2.94"①	.938"	1.125"
Omega	7.87"	2.29"①	.689"	.874"
Toronado	9.5"	2.94"①	.938"②	1.00"
Pontiac				
Catalina & Bonneville Coupe & Sedan	9.5"	2.94"①	.938"	1.125"
Station Wagon	11.0"	2.94"①	1.00"	1.125"
Firebird	9.5"	2.94"①	.938"	1.00"⑤
LeMans & Grand Prix	9.5"	2.50"①	.750"	.866"⑥
Phoenix	7.87"	2.24"①	.689"	.750"⑦

① — Equipped with front disc brakes.
② — Equipped with 4 wheel disc brakes.
③ — Electra Estate Wagon 1.0".
④ — With power brakes: 1.125" master cylinder.
⑤ — With power brakes: 1.125" master cylinder.
⑥ — With power brakes: .945" master cylinder.
⑦ — With power brakes: .866" master cylinder.

BRAKE DRUM SPECIFICATIONS

Application	Drum Diameter	Original Diameter	Maximum Refinish Diameter	Discard Diameter
General Motors				
All Models	7.87"	7.879"	7.899"	7.929"
	9.5"	9.500"	9.560"	9.590"
	11.0"	11.000"	11.060"	11.090"
	12.0"	12.000"	12.060"	12.090"