OPEL

All Models

DESCRIPTION

Brake system is hydraulically operated using tandem master cylinder and a vacuum power brake unit. Front brakes are dual piston, fixed caliper disc; rear are leading/trailing drum. A warning light is incorporated in brake system to indicate pressure variance between front and rear brake systems. Parking brake is cable actuated on rear drums.

ADJUSTMENT

PEDAL HEIGHT

Turn brake pedal push rod until pedal height is approximately 6¾" (171 mm). Adjust stop light switch so brake pedal free play is eliminated. Tighten lock nuts.

DISC BRAKES

Disc brakes are self-adjusting; therefore, no adjustment in service is required.

DRUM BRAKES

1) Rear drum brakes are self-adjusting and require adjustment only if brake shoes have been replaced. To adjust, raise and support vehicle on safety stands; remove tire, wheel and drum.

2) Measure inside diameter of drum with brake tool (J-21177). Transfer measurement to brake shoes and adjust shoes until linings just contact tool. Replace brake drum, wheel and tire; lower car and check for proper brake action.

PARKING BRAKE

Adjustment is required when parking brake lever can be pulled more than 10 ratchet clicks with heavy pressure. To adjust, release parking brake and check cable for free movement. Take up cable slack by turning adjusting nut at yoke connection. Rear wheels should lock when lever is pulled 8-10 notches.

HYDRAULIC SYSTEM BLEEDING

NOTE – *To avoid damage to push rod seal, engine must be running during bleeding operation.*

Attach a bleeder tube to bleeder screw and immerse opposite end of tube in a container partially filled with brake fluid. Open bleeder screw and allow pedal to be pushed through its full travel. Close bleeder screw and let pedal return to normal height. Continue procedure until all air is expelled from cylinder. Repeat bleeding procedure at remaining wheels.

REMOVAL & INSTALLATION

FRONT DISC BRAKE PADS

Removal – Raise and support vehicle on safety stands; remove tire and wheel. Remove spring clips, mounting pins, damper ("M") spring, pad shims and pads.

NOTE – *All pads must be replaced in axle sets.*

Installation – 1) Apply P.B.C. grease or equivalent to rear metal portion of pad linings. Open bleeder screw and seat pistons in bores. Tighten bleed screw when pistons have bottomed in bores. Install shims to pads with arrow facing direction of forward disc rotation.

2) Install pads and shims in caliper. Install damper ("M") spring, mounting pins and spring clips. Pads must be replaced if worn beyond .067" (1.7 mm).

FRONT DISC BRAKE CALIPER

Removal – Raise and suitably support vehicle. Remove wheel. Disconnect and plug caliper brake line. Remove mounting bolts and lift off caliper.

Installation – To install caliper assembly, reverse removal procedure. Bleed hydraulic system.

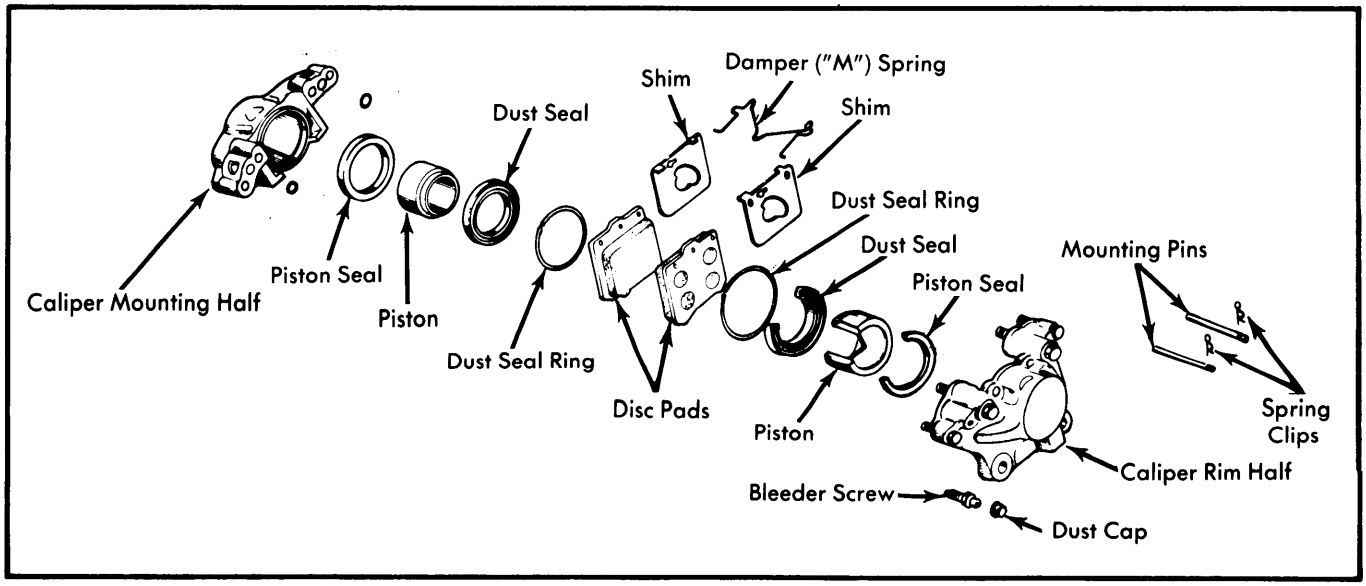

Fig. 1 Exploded View of Opel Front Disc Brake Assembly

OPEL (Cont.)

FRONT DISC BRAKE ROTOR

Removal – Raise and suitably support vehicle. Remove wheel. Remove caliper without disconnecting brake fluid line. Suspend caliper from upper control arm using a wire hanger. Remove grease cap and take out the outer wheel bearing assembly. Pull hub and rotor assembly from spindle. Remove bolts mounting rotor to hub and index mark before separating.

Installation – To install, reverse removal procedure and note the following. Make sure wheel bearings are properly tightened. *See Wheel Bearing Adjustment in WHEEL ALIGNMENT Section.* Measure brake rotor runout. If runout exceeds .006" (.15 mm), resurface or replace rotor.

REAR BRAKE SHOES

Removal – Raise and suitably support vehicle on safety stands. Remove wheel and drum. Remove return springs, shoe hold down pins, retainers and springs. Fully expand adjuster mechanism and disconnect strut. Remove primary shoe. Disconnect parking brake lever from cable; then remove secondary shoe. Separate adjuster assembly components from brake shoes. Remove parking brake cable lever.

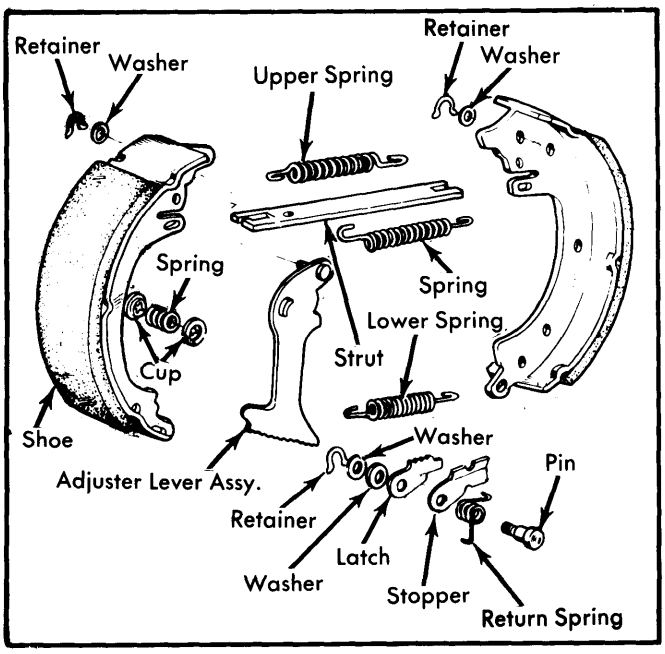

Fig. 2 Exploded View of Rear Brake Assembly

Installation – Reverse removal procedure and note the following: Do not allow brake shoes to scratch wheel cylinder boots. Automatic adjuster assemblies, parking brake cable lever and strut return spring are not interchangeable between right and left sides. Install drum, tire and wheel; adjust and bleed brakes.

WHEEL CYLINDER

Removal – With drum and shoes removed, disconnect hydraulic line from wheel cylinder and plug openings. Remove mounting bolts and wheel cylinder.

Installation – To install, reverse removal procedure, adjust and bleed brake system.

MASTER CYLINDER

Removal – Disconnect front and rear brake lines from master cylinder. Take off nuts mounting cylinder to power brake unit support bracket. Separate brake fluid reservoir bracket and lift off master cylinder assembly complete with fluid reservoir and hoses.

Installation – To install, reverse removal procedure and bleed hydraulic system.

POWER BRAKE UNIT

Removal – Remove master cylinder as previously outlined. Disconnect vacuum hose from check valve. Remove clevis pin and brake pedal arm. Remove nuts mounting power brake unit to fire wall spacer and lift unit from vehicle.

Installation – To install, reverse removal procedure and note the following: Adjust push rod length to .733" (18.6 mm). Adjust brake pedal height as previously outlined.

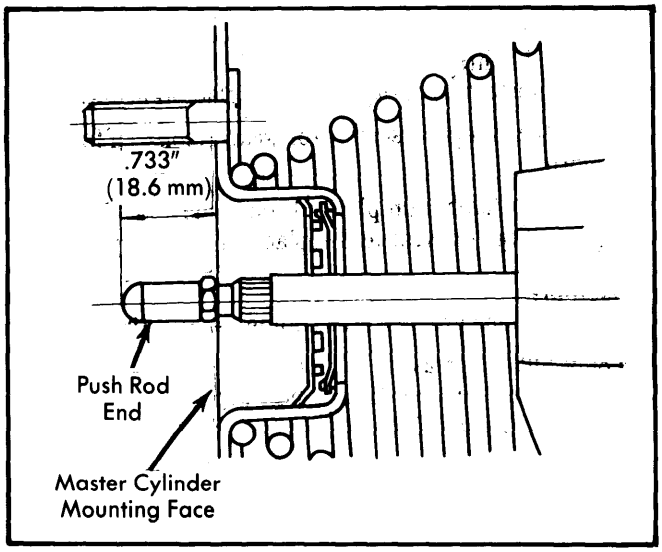

Fig. 3 Power Brake Unit Push Rod Measurement Points for Adjustment

OVERHAUL

FRONT DISC BRAKE CALIPER

Disassembly – Remove each piston dust seal ring, then take out dust seal. Fit clamp J-2242 (or equivalent) to caliper mounting half piston, then force air pressure into fluid inlet to push rim half piston from caliper bore. Repeat procedure on opposite side to remove other piston. Remove seals from grooves in piston bores.

NOTE – *DO NOT remove caliper bridge bolts. If brake fluid leak is detected, replace complete assembly.*

Cleaning & Inspection – Clean all parts in clean brake fluid. Check caliper assembly for distortion or cracks; replace if defective. Inspect cylinder bores and pistons for wear, scoring or corrosion; replace if necessary.

CAUTION – *Use only those lubricants supplied with repair kit.*

OPEL (Cont.)

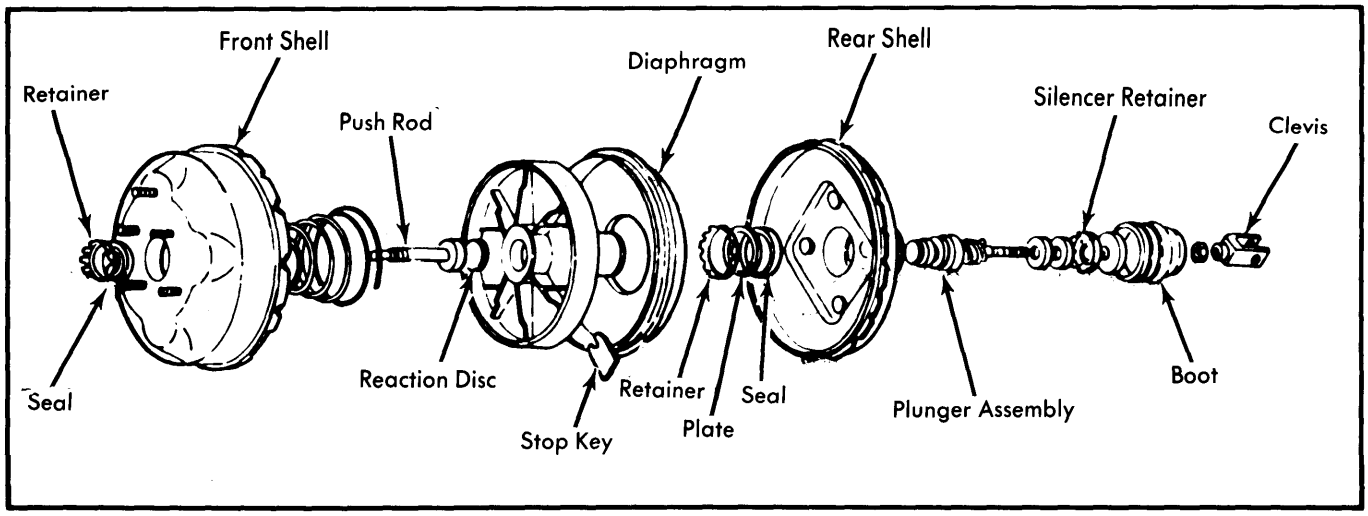

Fig. 4 Exploded View of Power Brake Assembly

Installation – Lightly coat seals and cylinder bore walls with suitable grease. Fit new seals to grooves in caliper bore. Insert one piston and push to bottom of caliper bore. Install dust seal and seal ring. Repeat procedures on opposite side piston.

REAR WHEEL CYLINDER

Disassembly – Pull off rubber dust boots. Push from one side until pistons, cups, and return spring are forced from cylinder.

Cleaning & Inspection – Clean all parts in clean brake fluid. Check cylinder and pistons for wear, scoring or rust; replace if defective. Check cylinder bore-to-pistons clearance; if clearance exceeds .006" (.15 mm), replace complete assembly. Replace piston cups and boots during overhaul.

Reassembly – Coat sliding parts with brake fluid and reverse disassembly procedure. Flat portion of piston cups must face outward.

MASTER CYLINDER

Disassembly – Empty excess brake fluid from master cylinder reservoir. Separate reservoir from cylinder body. Remove brake line connectors and take out check valves, springs and retainers. Insert screwdriver and push in primary piston enough to remove secondary stop bolt and snap ring. Withdraw both piston assemblies and separate remaining components.

Cleaning & Inspection – Clean all parts in clean brake fluid and dry with compressed air. Inspect cylinder bore and pistons for wear, damage or rusting; replace defective parts. Check master cylinder bore-to-pistons clearance; if clearance exceeds .006" (.15 mm), replace master cylinder assembly. Replace piston cups during overhaul.

NOTE – *DO NOT disassemble primary or secondary piston assemblies; if defective, replace as assemblies.*

Reassembly – To reassemble, reverse disassembly procedure and note the following: Coat all components with clean brake fluid. Check valve with holes around outer edge must be installed first. Install secondary piston assembly then insert primary piston. Install snap ring. Press primary piston into position with screwdriver and install stop bolt.

POWER BRAKE UNIT

Disassembly – 1) Index mark shell halves. Remove nuts and spacer from rear shell. Remove clevis. Use tool J-22805-01 (or equivalent) and clamp front shell in vise. Use tool J-9504-01 (or equivalent) and turn rear shell counterclockwise to remove. Take off rear shell and diaphragm retaining spring.

NOTE – *Separate shells carefully; diaphragm is under spring pressure.*

2) Remove boot, then remove diaphragm plate. Remove retainer from rear shell, then take out plate and seal. Slip off diaphragm and silencer retainer, then pull out stop key. Remove plunger assembly and reaction disc. Pull push rod, retainer and seal from front shell.

Cleaning & Inspection – Clean all parts in denatured alcohol and dry with compressed air. Check diaphragm, diaphragm plate, check valve, boot, seal and reaction disc for damage, distortion or weakening. Check plunger assembly for wear. Replace defective parts.

Reassembly – 1) Apply silicone grease to all component sliding surfaces. Install plate, seal and retainer. Install plunger assembly with filter and silencer attached. Be sure poppet valve is not projected beyond retainer. With plunger depressed, install stopper key. Install diaphragm plate. Fit retainer and diaphragm on diaphragm plate. Position diaphragm assembly on rear shell and install boot and clevis.

2) Install seal assembly to front shell. Install retainer and push rod. Install holding tool to front shell and mount assembly in vise. Install diaphragm spring between shell halves, then force in and rotate rear shell clockwise until fully seated and aligned with index marks.

OPEL (Cont.)

TIGHTENING SPECIFICATIONS

Application	Ft. Lbs. (mkg)
Master Cylinder	
Retaining Nuts	10 (1.4)
Brake Line Connector	47 (6.5)
Stop Bolt	14 (1.9)
Hydraulic Lines	12 (1.6)
Wheel Cylinder Mounting Bolts	7 (.97)
Caliper Mounting Bolts	36 (4.9)
Hub-to-Rotor Bolts	36 (4.9)

BRAKE SYSTEM SPECIFICATIONS

Application	Drum Diam. In. (mm)	Wheel Cylinder Diameter		Master Cylinder
		Front In. (mm)	Rear In. (mm)	Diameter In. (mm)
All Models	9.00 (229)	①	.812 (20.6)	.875 (22.2)

① — Front disc brakes.

BRAKE DRUM SPECIFICATIONS

Application	Drum Diameter In. (mm)	Original Diameter In. (mm)	Maximum Refinish Diameter In. (mm)	Discard Diameter In. (mm)
All Models	9.00 (229)	9.000 (228.6)	9.040 (229.6)	9.060 (230.1)