# SUBARU

**1600**
**Brat**

## DESCRIPTION

Service brake system is a diagonally split dual hydraulic circuit with a tandem master cylinder and vacuum suspended type power brake unit. Front disc brakes on all models are Bendix type, automatic adjusting, and rear brakes are leading-trailing drum type. Parking brake operates on front brakes and is mechanically actuated.

## ADJUSTMENT

### PEDAL HEIGHT

Adjust pedal height to 2.76" (70 mm) depressed and no less than 1.97" (50 mm), by disconnecting wiring from stop light switch and turning switch. Proper pedal free postion is 7.09-7.48" (180-190 mm).

### PEDAL FREE PLAY

Adjust pedal free play to .20-.43" (5-11 mm) by disconnecting wiring from stop light switch and turning switch.

### FRONT DISC BRAKE PADS

Self-adjusting, no adjustment required.

### REAR DRUM BRAKE SHOES

Raise vehicle and loosen lock nut. Turn adjusting wedge until wheel locks, then back-off to clearance of .0004-.0006" (.1-.15 mm).

### PARKING BRAKE

With service brake system fully adjusted, engage parking brake lever several times, then loosen cable lock nut and adjust cable length for lever ratchet travel of 6-9 notches under normal application.

### BRAKE WARNING LIGHT

A dual warning light is mounted on all models. Light should glow when hand brake is applied and ignition on. A sensor is also located in master cylinder reservoir to indicate low fluid level. To test, remove cap allowing float to drop. With ignition on and hand brake fully released, bulb should light.

### HYDRAULIC SYSTEM BLEEDING

Begin bleeding with wheel furthest from master cylinder and end with wheel nearest master cylinder. With pressure on pedal, open bleed fitting and push pedal its full travel. When pedal is fully depressed, close fitting and let pedal return to fully released position. Repeat procedure until all air is bled from system.

## REMOVAL & INSTALLATION

### FRONT DISC BRAKE PADS

**Removal** – Disconnect handbrake cable. Remove pin and stop plug. Force caliper body from brake pad and lift-off pad.

NOTE – *It is not necessary to disconnect brake line to change pads.*

**Installation** – Return piston to bottom of caliper bore by turning it clockwise with a screwdriver or suitable tool (925370000). Place new disc pad in position then reinstall stop plug (coated on both sides with high temperature grease), pin and connect handbrake cable.

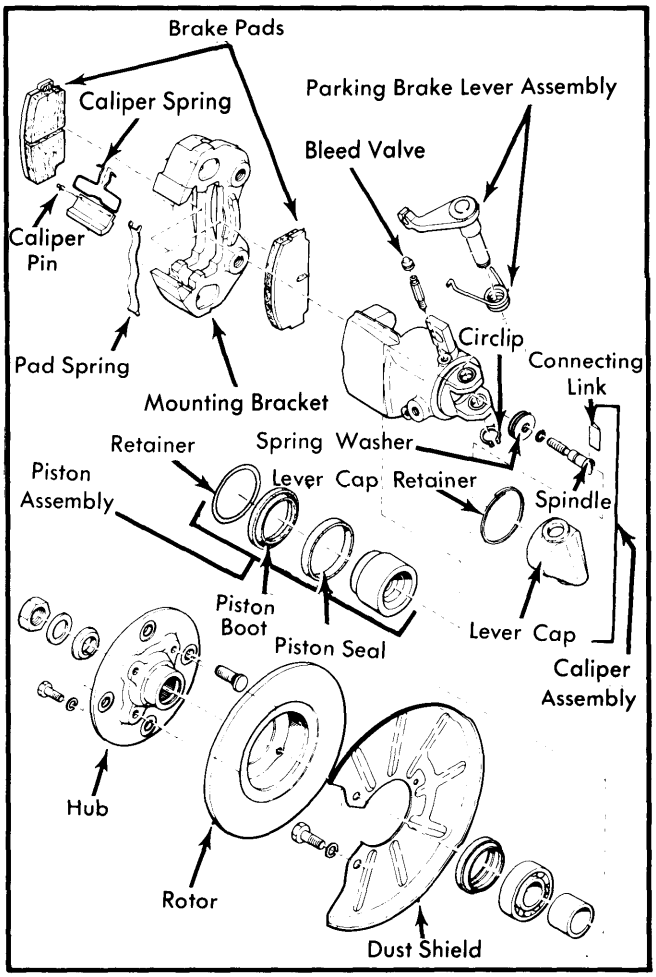


***Fig. 1 Exploded View of Front Disc Brake Assembly***

### FRONT DISC BRAKE CALIPER

**Removal & Installation** – Raise and support vehicle on safety stands; remove wheel assembly. Remove brake line and pads from caliper assembly. Remove parking brake cable and mounting bracket bolts. Remove caliper assembly. To install, reverse removal procedure and set caliper-to-rotor clearance at 1.5" (39 mm). Bleed hydraulic system.

### FRONT DISC BRAKE ROTOR

**Removal & Installation** – With wheel, caliper assembly, hand brake cable and stoppers removed, remove caliper bracket bolts and bracket. Pull rotor from axle using suitable tool (925200000). Remove hub-to-rotor bolts and separate assembly. To install, reverse removal procedure and tighten hub-to-rotor bolts evenly.

NOTE – *Replace mounting bracket when rotor is replaced.*

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### REAR BRAKE DRUM

**Removal & Installation** – Remove wheel cap and loosen wheel nuts. Raise and support vehicle on safety stands, remove wheel. On two wheel drive vehicles only, remove cap bolts, washer, cap and gasket. Remove cotter pin (if equipped) and mounting hardware. Use puller (925240000) to pull drum if necessary. To install, reverse removal procedure and adjust wheel bearings. *See Wheel Bearing Adjustment in WHEEL ALIGNMENT Section.*

### REAR BRAKE SHOES

**Removal** – With brake drum removed, remove and plug hydraulic line from wheel cylinder. Remove backing plate bolts and remove complete assembly. Separate shoes from backing plate by removing hold down springs then disconnect lower end first and then remove upper end from wheel cylinder. Separate return springs from shoes.

**Installation** – To install, reverse removal procedure and note the following: Return springs are installed with coils on inside of shoe assemblies (next to backing plate). Return springs are not interchangeable; lower spring is thicker diameter. Adjust brakes and bleed hydraulic system.

### REAR BRAKE WHEEL CYLINDER

**Removal** – With rear drum and brake shoes removed, disconnect hydraulic line from wheel cylinder at rear of backing plate, remove cylinder attaching bolts, and remove wheel cylinder.

**Installation** – Reverse removal procedure and bleed hydraulic system.

### MASTER CYLINDER

**Removal & Installation** – Siphon brake fluid from reservoir. Disconnect warning light electrical connection. Remove hydraulic lines. Remove retaining nuts and remove master cylinder from power brake unit. To install, reverse removal procedure and bleed hydraulic system.

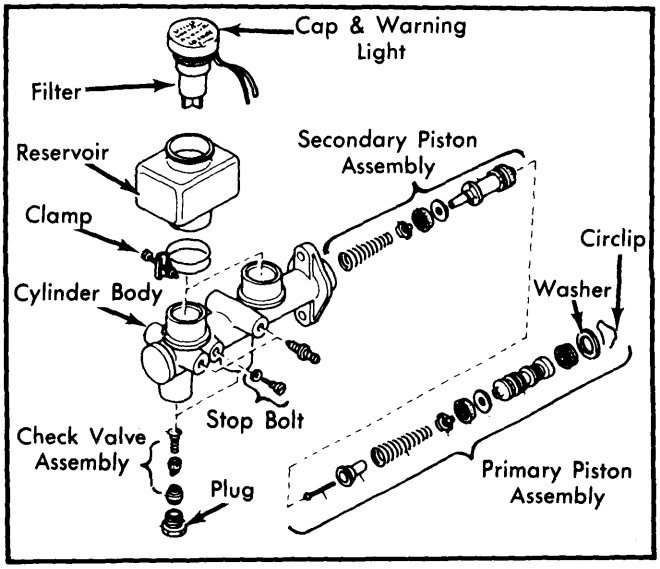


*Fig. 2 Exploded View of Master Cylinder*

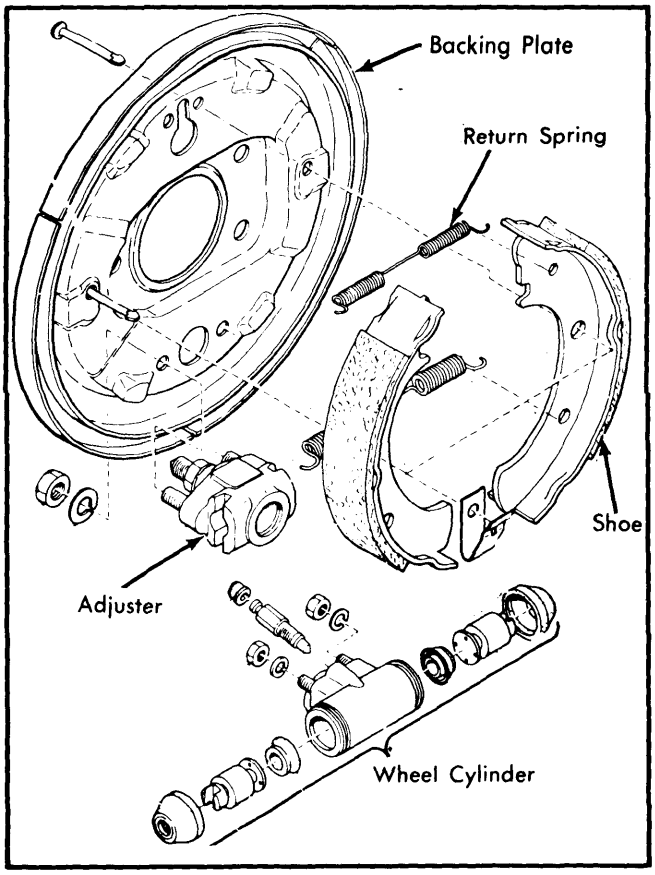


*Fig. 3 Exploded View of Rear Drum Brake Assembly*

### POWER BRAKE UNIT

**Removal & Installation** – From inside vehicle, remove cotter pin and disconnect push rod from brake pedal. Remove power brake retaining nuts from firewall. In engine compartment, remove master cylinder retaining nuts. Disconnect vacuum hose at power brake unit and wiring harness from master cylinder. Position master cylinder to one side without damaging hydraulic lines. Remove power brake unit. To install, reverse removal procedure and bleed hydraulic system.

## OVERHAUL

### FRONT DISC BRAKE CALIPER

**Disassembly** – 1) Thoroughly clean exterior of caliper with clean brake fluid or alcohol. Remove bleed valve, retainer and dust boot. Apply compressed air or liquid to fluid inlet and gradually remove piston.

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2) Carefully remove piston seal, lever cap retainer and lever cap, then remove circlip from spindle. Using suitable puller tool (925470000) release spring washer load, remove connecting link, spindle and parking brake lever assembly.

**Cleaning & Inspection** – Clean all components with brake fluid and ensure that inner cylinder wall is not scratched or corroded. Replace any damaged parts.

**Reassembly** – 1) Coat piston seal with silicone grease and insert into cylinder by hand. Coat piston, piston boots and cylinder wall with brake fluid; hand insert piston. Install boot and retainer.

2) Lightly coat spindle and "O" ring with silicone grease. Insert spindle and install spring washers with suitable tool (925470000). Lubricate and install connecting link (thick side in slot). Install parking brake lever assembly, circlip, lever cap and retainer.

### REAR WHEEL CYLINDER

**Disassembly** – Remove boot and take out wheel cylinder piston with cup. DO NOT separate cup unless replacement is to be made.

**Cleaning & Inspection** – Clean all components in brake fluid. Inspect piston-to-cylinder bore for .001-.004" (.025-.102 mm) clearance. If cylinder is out of round or burred, replace, DO NOT hone.

**Reassembly** – To reassemble, reverse disassembly procedure, making certain cup is not installed in reverse.

### MASTER CYLINDER

**Disassembly** – Remove boot from cylinder, then remove stop ring and plate. Remove stopper pin and gasket, pull out primary and secondary piston assembly. Remove return spring, screw, retainer and secondary cup.

**Cleaning & Inspection** – Clean all components in brake fluid. Inspect cylinder bore for smoothness and roundness. Replace cylinder if scored or out of round. DO NOT hone cylinder. Inspect piston-to-cylinder clearance and replace if worn.

**Reassembly** – To reassemble master cylinder, reverse disassembly procedure.

### POWER BRAKE UNIT

Manufacturer does not recommend disassembly of this unit. Replace as complete assembly.

**TIGHTENING SPECIFICATIONS**

| Application | Ft. Lbs. (mkg) |
|---|---|
| Front Brake Mounting Bolt | 36-51 (5.0-7.0) |
| Backing Plate Mounting Bolts | 22-35 (3.0-4.8) |
| Brake Lines | 11-14 (1.5-2.0) |
| Wheel Bearing Nut | 174 (24.0) |
| Power Cylinder-to-Firewall | 5-9 (0.7-1.2) |
| Master Cylinder-to-Power Cylinder | 5-9 (0.7-1.2) |

**DISC BRAKE ROTOR SPECIFICATIONS**

| Application | Disc Diameter | Lateral Runout | Parallelism | Original Thickness | Minimum Refinish Thickness | Discard Thickness |
|---|---|---|---|---|---|---|
| All Models | 7.2 (184) | .006 (.15) | ..... | .39 (10) | .33 (8.5) | ..... |

**BRAKE DRUM SPECIFICATIONS**

| Application | Drum Diameter In. (mm) | Original Diameter In. (mm) | Maximum Refinish Diameter In. (mm) | Discard Diameter In. (mm) |
|---|---|---|---|---|
| All Models | 7.09① (180) | 7.09 (180) | 7.17 (182) | ..... |

① – All models use front disc brakes.

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**BRAKE LINING SPECIFICATION**

| Application | Drum Dia. In. (mm) | Width | | Length | | Thickness | |
|---|---|---|---|---|---|---|---|
| | | Front In. (mm) | Rear In. (mm) | Primary In. (mm) | Secondary In. (mm) | Primary In. (mm) | Secondary In. (mm) |
| All Models | 7.09 (180) | ① | 1.18 (30) | 5.55 (141) | 5.55 (141) | .20 (5) | .20 (5) |

① — All models use front disc brakes.

**BRAKE SYSTEM SPECIFICATIONS**

| Application | Drum Diam. In. (mm) | Wheel Cylinder Diameter | | Master Cylinder Diameter In. (mm) |
|---|---|---|---|---|
| | | Front In. (mm) | Rear In. (mm) | |
| All Models | 7.09 (180) | 2.125 (53.9) | .625① (15.9) | .750 (19.0) |

① — Station Wagon and 4-Wheel Drive Wagon .687" (17.46 mm), BRAT models use .750" (19.05 mm).