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BRAKE SYSTEM

Article Text

1984 Mazda RX7

For iluvmyrx7.com

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Saturday, June 08, 2002 10:26PM

ARTICLE BEGINNING

1984 BRAKES
Mazda

Pickups, RX7

DESCRIPTION

Brake system is hydraulically-operated, using a tandem master cylinder and power brake unit. Front brakes are floating caliper disc. Rear brakes on most models are leading/trailing drums.

Floating caliper rear disc brakes are available on RX7 as an option. Proportioning valves are used on most models to prevent premature lockup of rear wheels.

ADJUSTMENTS

REAR DRUM BRAKE SHOES

RX7 & Pickups

1) Raise and support rear of vehicle. Release parking brake. Remove rear wheel and star wheel adjusting plug from backing plate. Insert a flat-tipped screwdriver, and rotate star wheel until wheel is locked. See Fig. 1.

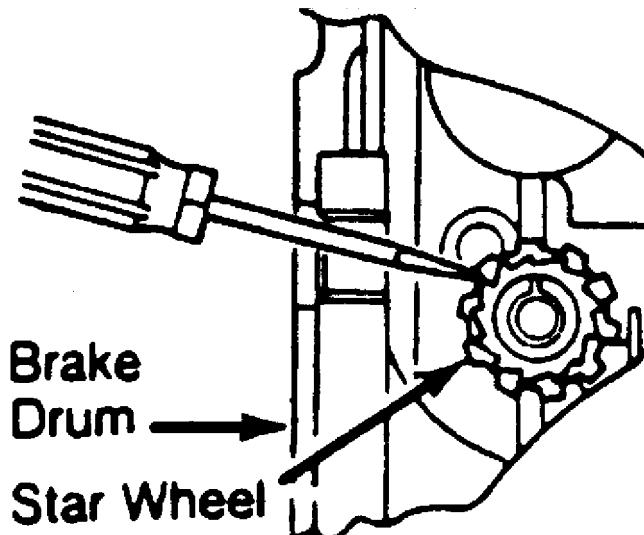


Fig. 1: Adjusting Rear Brake Shoe-to-Drum Position

2) Remove pawl lever hole plug. Insert a flat-tipped screwdriver through hole. Push on pawl lever self-adjuster and back off star wheel adjuster 3 to 4 notches, so wheel turns freely.

3) Repeat procedure for opposite side. Adjust parking brake and install plugs in adjusting holes.

PEDAL HEIGHT, FREE PLAY & STOP LIGHT SWITCH

1) Pedal height is measured from firewall to pedal pad center.

2) On other models, loosen lock nut on stop light switch and turn switch until correct pedal height is obtained. Tighten

lock nut and connect electrical connector.

3) Pedal free play should be .28-.35" (7-9 mm). On GLC, adjust light switch, tighten lock nut, and reconnect electrical connector. On all other models, loosen lock nut on operating rod. Turn rod until correct free play is obtained, and tighten lock nut.

BRAKE PEDAL HEIGHT ADJUSTMENT

Application	In. (mm)
RX7	7.5-7.7 (190-195)
B2000 & B2200	8.1-8.3 (205-211)

PARKING BRAKE

1) With service brakes properly adjusted, raise and support rear of vehicle. Remove parking brake lever boot or console, if necessary. Release brake lever. Turn adjusting screw or nut to obtain specified clearance. On Pickups, turn adjusting nut at equalizer under vehicle.

2) Lever should be pulled with a force of 22 lbs. (10 kg) to obtain a stroke of 5-9 notches on GLC, 6-8 notches on RX7, 7-9 notches on 626, and 5-10 notches on Pickups.

3) Reinstall brake lever boot or console. Remove supports and lower vehicle. On all models, operate parking brake several times and make sure rear wheels rotate freely.

NOTE: Ensure that rear brakes do not drag, and parking brake warning light is activated when lever is pulled 1 notch.

BRAKE WARNING LIGHT

Pickup & RX7 (If Equipped)

1) Light indicates parking brake is engaged and also warns of low fluid level. With engine running, light should glow when parking brake lever is pulled 1 notch and go off when lever is fully released.

2) To check warning light operation with engine running, release parking brake lever and ensure that light is off. Raise master cylinder reservoir cap and light should glow. If not, check switch and wire connector.

REMOVAL & INSTALLATION

FRONT DISC BRAKE PADS

Removal

1) Raise and support the front of vehicle. Remove wheels and detach brake hose attachment from shock absorber, if necessary.

2) On RX7, remove lower caliper guide pin and pivot caliper body up out of way. On Pickups, remove locking clips and stopper plates.

3) Remove caliper and hang from frame with wire. Do not disconnect brake hose. On all models, remove anti-rattle springs (clips), pads, and shims, if equipped.

Installation

1) To install, reverse removal procedure. Before mounting caliper, loosen bleed screw, and seat piston. Tighten bleed screw.

2) After pad installation, depress brake pedal several times.

to seat pads. Bleed hydraulic system, if required.

NOTE: Grease pad mounting support, caliper contact area, and shims with special grease (NLGI No. 2 or equivalent).

REAR DISC BRAKE PADS

Removal (RX7)

1) Raise and support rear of vehicle. Remove wheel.

Disconnect parking brake cable from caliper. Remove lower caliper attaching bolt.

2) Lift lower side of caliper. Remove anti-rattle spring.

Remove disc brake pads and shims.

Installation

1) Using Brake Piston Wrench (49 FA18 602), turn piston clockwise until piston is inserted into caliper fully.

2) Position piston so that dowel on pad will seat in piston stopper groove. To complete installation, reverse removal procedure.

FRONT DISC BRAKE CALIPER

Removal

1) Raise and support front of vehicle. Remove wheel and disconnect brake hose. On RX7, remove lower caliper bolt, lift caliper body, and remove by sliding toward inside of vehicle.

2) On Pickups, remove locking clips, stopper plates, and anti-rattle spring. Lift off caliper. Remove disc pads as previously described.

Installation

To install, reverse removal procedure and bleed hydraulic system.

REAR BRAKE CALIPER

Removal (RX7)

1) Raise and support rear of vehicle. Remove wheel and disconnect parking brake cable from caliper.

2) Remove caliper attaching bolt (lower side). Lift up caliper. Slide caliper toward inside of vehicle and remove caliper. Disconnect brake hose from caliper.

Installation

To install caliper, reverse removal procedure and bleed hydraulic system.

FRONT DISC BRAKE ROTOR

Removal (Pickups & RX7)

1) With caliper assembly removed, remove wheel hub grease cap, cotter pin, lock plate and ring adjusting lock nut.

2) Remove thrust washer and outer bearing from hub. Slide hub and rotor assembly from spindle. On Pickups, place wheel in a soft-jawed vise, scribe match marks, remove bolts attaching rotor to hub, and separate rotor from hub.

Installation

To install, reverse removal procedure, and tighten bolts attaching rotor to hub evenly. Adjust wheel bearings. See WHEEL BEARING ADJUSTMENT in SUSPENSION section.

REAR BRAKE DRUM

Removal (Pickups & RX7)

Raise and support rear of vehicle. Release parking brake. Remove wheel and brake drum retaining screws. On Pickups, thread retaining screws into tapped holes in brake drum to force brake drum off flange.

Installation (Pickup & RX7)

To install, reverse removal procedure. Tighten retaining screws evenly (if equipped).

REAR BRAKE SHOES

Removal (Pickup & RX7)

1) With brake drum removed, remove brake shoe return springs, retaining springs and guide pins. Remove brake shoes.
2) Remove parking brake strut and disconnect parking brake cable from operating lever of secondary shoe.

Installation

1) Lubricate adjusting screw threads and shoe contact points on backing plate with brake grease. Install parking brake operating lever to secondary shoe and secure with clip. Engage operating lever with parking brake cable.
2) Position operating strut between slots of shoes. Mount assembly to backing plate so slots in shoes are toward adjusting screws. Install return springs and retainer springs.

MASTER CYLINDER

Removal

1) Disconnect fluid level sensor coupler, if equipped. Disconnect and plug hydraulic lines at master cylinder to prevent entry of dirt and loss of fluid.
2) Remove nuts attaching master cylinder to firewall or power brake unit and remove master cylinder from vehicle. On RX7, remove proportioning valve by-pass bolt.

Installation

To install, reverse removal procedure and bleed hydraulic system.

POWER BRAKE UNIT

Removal

1) Remove master cylinder from power brake unit before removing power brake unit. Disconnect vacuum line at power brake unit.
2) From inside vehicle, remove cotter pin and clevis pin attaching push rod to brake pedal, and separate.
3) Remove nuts retaining power unit to firewall. Remove power brake unit and master cylinder as an assembly. Separate master cylinder from power brake unit.

Installation

To install, reverse removal procedure and bleed hydraulic system.

OVERHAUL

Disassembly

- 1) Thoroughly clean exterior of caliper and remove retainer and dust boot. Place a piece of wood in front of piston.
- 2) Apply compressed air to fluid inlet and remove piston. Tap caliper with plastic hammer, if required. Remove piston seal without damaging caliper bore.

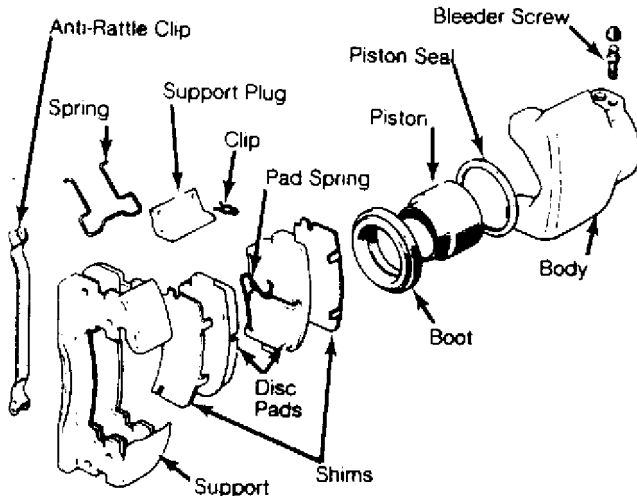


Fig. 2: Exploded View of Pickup Front Disc Brake Caliper

Inspection

- 1) Wash all parts in alcohol or brake fluid and air dry. Inspect cylinder bore and piston for scoring, scratches or rust. Replace defective parts.
- 2) Minor damage may be removed with crocus cloth. Always replace dust boot and piston seal when caliper is disassembled.

Reassembly

- 1) Apply clean brake fluid to cylinder bore, piston and piston seal. Seat piston seal in caliper bore.
- 2) Install piston carefully into cylinder bore and install dust boot and retainer.

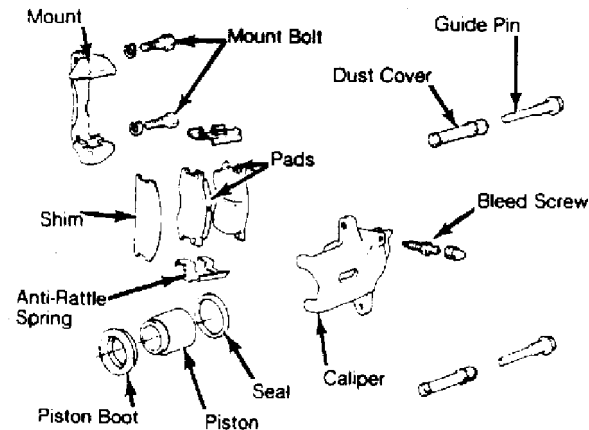


Fig. 3: Exploded View of Typical Front Brake Caliper

REAR DISC BRAKE CALIPER

1) Remove dust boot retainer and boot. Turn piston counterclockwise with Disc Brake Piston Wrench (49 FA18 602), and screw out piston. Remove piston seal.

2) Remove boot retainer. Slip off boot. Remove snap ring. Compress conical spring in caliper with Spring Compressor (49 FA18 601), Valve Spring Lifter Arm (49 0636 100A), and Removing Plate (49 E301 144).

3) Remove parking brake crank, torsion spring and strut. Remove adjusting bolt and conical spring assembly. Press out needle roller bearings.

Inspection

1) Clean all parts in brake fluid or alcohol. Air dry parts. Inspect caliper bore for scratches, scoring or rust. Remove minor damage by polishing with crocus cloth.

CAUTION: Never use gasoline or kerosene when cleaning caliper parts.

2) Inspect needle roller bearing, strut, adjusting bolt, and parking brake crank for corrosion, wear or damage. Check torsion spring and conical spring for corrosion, weakness or damage.

3) Check piston and sleeve nut for excessive play. It should be within .012-.020" (.3-.5 mm).

Reassembly

1) Assemble caliper in reverse order of disassembly. Use new piston and dust seals. Three kinds of grease contained in seal kit must be used.

2) Use White grease on caliper slide and mounting bolts. Use Orange grease on bearings, adjusting bolt, strut and piston boot. Use Pink grease on piston seal.

3) Lubricate piston and caliper bore with clean brake fluid. Press in needle roller bearing so that arrow on bearing faces outward.

4) Assemble conical spring and adjusting bolt. See Fig. 4. Install adjusting bolt assembly, strut and torsion spring in caliper.

5) Install piston using Disc Brake Piston Wrench (49 FA18 602). Turn piston clockwise until piston is fully seated in caliper. Position piston after seating to ensure that dowel on brake pad fits in piston stopper groove.

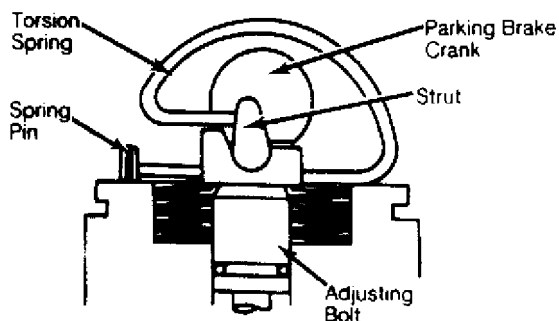


Fig. 4: Installing Conical Spring and Adjusting Bolt on RX7 Rear Caliper

Apply Orange grease, supplied in seal kit, to adjusting bolt.

WHEEL CYLINDERS

Disassembly

Remove dust boots. Remove pistons by pressing on cylinder cup to force out filling blocks and return spring.

Inspection

- 1) Clean all parts in alcohol or brake fluid. Check cylinder bore and pistons for scores, roughness or wear.
- 2) Check clearance between cylinder bore and pistons. Replace if clearance exceeds .006" (.15 mm). Check cups for deformation. Replace as necessary.

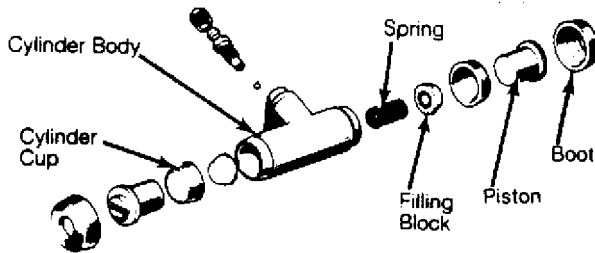


Fig. 5: Exploded View of Wheel Cylinder
Flat side of cylinder cups face outward.

Reassembly

Reverse disassembly procedure. Coat all parts with clean brake fluid before reassembly. Ensure that flat side of cylinder cups face outward.

MASTER CYLINDER

Disassembly

- 1) Thoroughly clean outside of master cylinder, and pour out any remaining brake fluid. If equipped, remove reservoir and dust boot. Depress primary piston assembly. See Fig. 6.
- 2) From rear of cylinder bore, remove retaining ring, washer, primary piston assembly, and return spring. Remove stopper bolt and secondary piston by blowing compressed air through outlet port. See Fig. 7.
- 3) Carefully remove the secondary piston assembly and return spring. Remove fittings, check valves and springs.

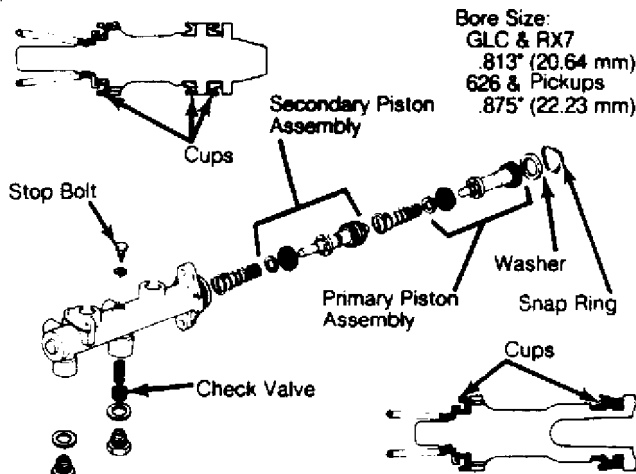


Fig. 6: Exploded View of Typical Master Cylinder
Some models may vary slightly.

Inspection

- 1) Clean all parts in alcohol or brake fluid. Check all parts for scoring, roughness or wear. Check clearance between pistons and cylinder wall.

2) If clearance exceeds .006" (.15 mm), replace parts as necessary. Remove all foreign matter from internal passages and recesses with compressed air.

3) Check cylinder cups for deformation and replace as required.

Reassembly

1) Reverse disassembly procedure. Coat all parts with clean brake fluid before reassembly. Use new gaskets, where needed, on hydraulic connections.

2) When assembled, make sure piston cups do not cover compensating ports. Insure that valve with hole in center, faces front side outlet hole.

POWER BRAKE UNIT

NOTE: Power brake units vary slightly between model applications. The following general overhaul procedures can be used if attention is paid to specific order of components.

Disassembly

1) Remove master cylinder and check valve from power unit. Place power unit in a vise with push rod up.

2) Scribe alignment marks on front and rear shells to assure reassembly in original position. Remove clevis, lock nut, and dust boot from rear shell.

CAUTION: Separate front and rear shells carefully. Spring tension may cause rear shell to release quickly.

3) Attach suitable bar-type tool to rear shell mounting studs. Press down on tool while rotating it clockwise to unlock rear shell.

4) Lift rear shell assembly from power unit, remove air silencer retainer, and separate diaphragm from power piston assembly. Remove valve rod with plunger assembly from rear shell.

5) Remove lock plate and press valve rod in to remove valve retainer key. Remove valve rod and plunger assembly. Remove air silencer and filter.

NOTE: Service valve rod plungers as an assembly.

6) Remove retainer and bearing. Never remove rear seal from rear shell unless seal is defective and a new one is available. Remove push rod, front seal, and support plate.

Inspection

1) Clean all parts and blow dry with compressed air. Inspect all rubber parts for cuts, nicks, deterioration or other damage.

2) Check power piston for cracks, distortion, chipping, and damaged seats. Inspect front and rear shells for scratches, scores, pits, dents or other damage. Replace any defective parts.

Reassembly

1) Reverse disassembly procedure. Apply silicone grease to parts before reassembly. When assembling rear shell to front shell, make sure index marks are aligned.

2) Before installing master cylinder to power unit, measure clearance between primary piston and power unit push rod. Clearance on RX7 should be .004-.012" (.1-.3 mm). Clearance on GLC and Pickups should be .004-.020" (.1-.5 mm).

3) On 626, clearance between push rod and piston should be

.016-.024" (.4-.6 mm), with no vacuum applied to power brake unit. With vacuum applied to power brake unit, clearance should be 0-.010" (0-.3 mm) . If clearance is not to specifications, correct by adjusting push rod length.

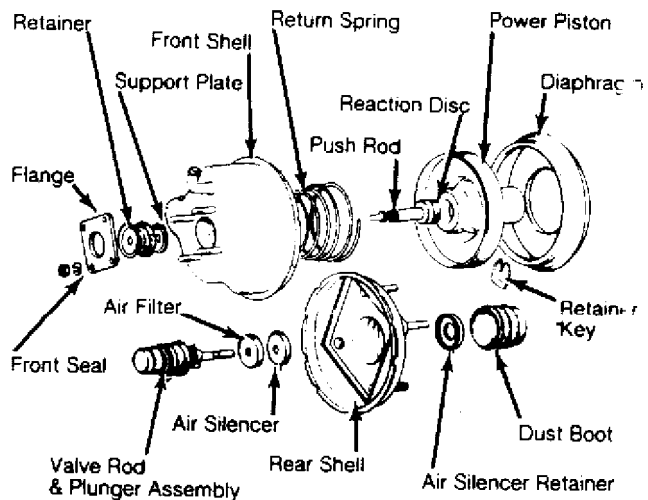


Fig. 7: Exploded View of Typical Power Brake Unit
Some models may vary slightly.

TORQUE SPECIFICATIONS

TORQUE SPECIFICATIONS TABLE

Application	Ft. Lbs. (N.m)
Caliper Mounting Bracket	
Pickups	40-47 (55-65)
Caliper Guide Pin	33-40 (45-55)
RX7 Rear Caliper	22-30 (30-42)

DISC BRAKE SPECIFICATIONS

DISC BRAKE ROTOR SPECIFICATIONS TABLE

Application	
RX7	
Disc Diameter	
Front In. (mm)	
Rear In. (mm)	
Lateral Runout	
Front In. (mm) .....	.004 (.10)
Rear In. (mm) .....	.004 (.10)
Parallelism	
Front In. (mm)	
Rear In. (mm)	
Original Thickness	
Front In. (mm) .....	.709 (18)
Rear In. (mm) .....	.394 (10)
Min. Refinish Thickness	
Front In. (mm)	
Rear In. (mm)	

Discard Thickness		
Front In. (mm)	.....	.669 (17)
Rear In. (mm)	.....	.354 (9)

B2000

Disc. Diameter In. (mm)	.....	10.08 (256)
Lateral Runout In. (mm)	.....	.004 (.10)
Parallelism In. (mm)	.....
Original Thickness In. (mm)	.....	.472 (12)
Min. Refinish Thickness In. (mm)	.....
Discard Thickness In. (mm)	.....	.433 (11)

B2200

Disc. Diameter In. (mm)	.....	10.08 (256)
Lateral Runout In. (mm)	.....	.004 (.10)
Parallelism In. (mm)	.....
Original Thickness In. (mm)	.....	.787 (20)
Min. Refinish Thickness In. (mm)	.....
Discard Thickness In. (mm)	.....	.748 (19)

DRUM BRAKE SPECIFICATIONS

DRUM BRAKE SPECIFICATIONS TABLE

Application

Mazda

RX7

Drum Diameter in. (mm)	.....	7.87 (200)
Drum Width in. (mm)	.....
Max. Drum Refinish Diam. in. (mm) (1)	.....	7.91 (201)
Wheel Cyl. Diameter in. (mm)	.....	.750 (19.0)
Master Cyl. Diameter in. (mm)	.....	.8125 (20.6)

B2000 & B2200

Drum Diameter in. (mm)	.....	10.23 (260)
Drum Width in. (mm)	.....
Max. Drum Refinish Diam. in. (mm) (1)	.....	10.27 (261)
Wheel Cyl. Diameter in. (mm)	.....	.875 (22.2)
Master Cyl. Diameter in. (mm)	.....	.875 (22.2)

END OF ARTICLE

BRAKE SYSTEM BLEEDING

Article Text

1984 Mazda RX7

For iluvmyrx7.com

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Saturday, June 08, 2002 10:28PM

ARTICLE BEGINNING

1984 BRAKE SERVICING
HYDRAULIC BRAKE BLEEDING

DESCRIPTION

Hydraulic system bleeding is necessary any time air has been introduced into the system. Bleed brakes at all 4 wheels if master cylinder lines have been disconnected or master cylinder has run dry.

Bleeding may be done either by using pressure bleeding equipment or by manually pumping brake pedal and using bleeder tubes.

MANUAL BLEEDING

1) On Isuzu and Jaguar models, start engine and run at idle. On all other models, exhaust all vacuum from power unit by depressing brake pedal several times.

2) Fill master cylinder, then install clear vinyl bleeder hose onto first bleeder valve to be serviced. See BRAKE LINE BLEEDING SEQUENCE table. Place other end of hose in clear glass jar.

3) Partially fill jar with clean brake fluid, so end of hose is submerged in fluid. Open bleeder valve 1-2 turns. Depress brake pedal slowly through its full travel.

4) Close bleeder valve, then release pedal. Pump pedal several times to push air toward wheel cylinders. Repeat procedure until flow of brake fluid is clear, and shows no signs of air bubbles. Proceed to next bleeder valves.

NOTE: Check fluid level in master cylinder frequently during the bleeding sequence.

PRESSURE TANK BLEEDING

1) On Isuzu and Jaguar models, start engine and run at idle. On all other models, exhaust all vacuum from power unit by depressing brake pedal several times.

2) Clean the master cylinder cap and surrounding area, then remove cap. With pressure tank at least 1/3 full, connect tank to master cylinder using proper fitting adapter(s).

3) Attach bleeder hose to first bleeder valve to be serviced. See BRAKE LINE BLEEDING SEQUENCE table. Place other end of hose in a clean glass jar. Partially fill jar with clean brake fluid, until end of hose is submerged in fluid.

4) Open release valve on pressure bleeder. Unscrew bleeder valve 1-2 turns, noting fluid flow. When fluid flow into container is clear, and free of bubbles close bleeder valve securely.

5) Bleed remaining cylinders in correct sequence and in the same manner. Remove pressure tank from master cylinder and check fluid level of master cylinder reservoir.

BLEEDING PRESSURES (1)

Application	psi (kg/cm ²)
BMW	
733i	56 (3.9)
All Others	28 (2.0)
Porsche	32 (2.3)

Renault 30 (2.1)
 Volvo 50-60 (3.5-4.2)

(1) - For models not listed, refer to pressure tank manufacturer's specifications.

BLEEDING SEQUENCE

See BRAKE LINE BLEEDING SEQUENCE table for proper bleeding sequence.

BRAKE LINE BLEEDING SEQUENCE

Application	Sequence
Audi & Volkswagon (1)	RR, LR, RF, LF
BMW (2)	Longest Line First
Chrysler Corp. Imports	
Colt & Colt Vista	LR, RF, RR, LF
All Others (3)	RR, LR, RF, LF
General Motors Imports	
Chevrolet Sprint	LR, RF, RR, LF
Honda	LF, RR, RF, LR
Isuzu	
I-Mark, P'UP & Trooper II (4) ..	Longest Line First
Impulse	RR, LR, RF, LF
Jaguar (4)	LR, RR, Front
Mazda	Longest Line First
Mercedez-Benz	Longest Line First
Mitsubishi	
Cordia, Tredia	LR, RF, RR, LF
All Others	RR, LR, RF, LF
Nissan	
Maxima	RR, LR, RF, LF
Pickup	Master Cyl., Comb Valve, Longest Line First
Pulsar & Sentra	RR, LF, LR, RF
200SX & 300ZX	LR, RR, RF, LF
All Others	Master Cyl., Longest Line First
Peugeot (5)	Longest Line First
Porsche (6)	LR, RR, RF, LF
Renault	Longest Line First
Saab	LR, RF, RR, LF
Subaru	Master Cylinder, FR, RF, RR, LF
Toyota	Longest Line First
Volvo (7)	RR, LR, RF, LF

- (1) - Before bleeding rear brakes, push brake pressure regulator in direction of rear axle.
- (2) - If equipped with 3 bleeder valves on each front caliper, bleed lower inboard valve first, then other 2 simultaneously.
- (3) - Pickup models do not require bleeding of RR
- (4) - Engine running at idle speed
- (5) - If pressure tank is used, bleed all wheels simultaneously.
- (6) - If equipped with inner and outer caliper bleeder valves, bleed outer valves first, then inner valves.
- (7) - Raise rear wheels a few inches higher than front wheels. Front calipers have 3 bleeder valves.

Bleed all 3 valves simultaneously.

END OF ARTICLE