LUV

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DESCRIPTION

Brake system is hydraulically operated using a tandem master cylinder and vacuum power brake unit. Front brakes are single piston, floating disc; rear brakes are duo-servo drum. A combination valve is used in all brake systems and is equipped with a fail indicator switch. If hydraulic pressure varies between front and rear systems; warning light on instrument panel will light. Warning light will glow until defect has been repaired. Parking brake is cable actuated on rear drums.

ADJUSTMENT

PEDAL HEIGHT

Pedal height (measured from pedal pad center to floorboard) should be 5.9-6.3" (150-160 mm). To adjust, disconnect negative battery cable and stop lamp switch electrical lead. Remove stop lamp switch from bracket. Rotate push rod to obtain correct height. Install stop lamp switch and adjust clearance at switch housing (not actuating pin) and brake pedal tab to .02-.04" (0.5-1.0 mm). Tighten lock nut and install electrical lead.

FRONT DISC BRAKE PADS

Disc brakes self-adjust on forward and reverse brake applications. No in-service adjustment is required.

REAR BRAKE SHOES

Rear brakes self-adjust on reverse brake applications. No in-service adjustment is required. Initial adjustment must be made after changing brake linings or adjuster setting has been changed. To adjust, place vehicle on safety stands and follow one of the below methods:

Preferred Method – Remove brake drum. Measure drum diameter with drum-to-brake shoe gauge (J-21177); transfer gauge to brake shoes. Adjust star wheel until gauge just slides over linings. Install drum; lower car. Make final adjustment by making alternate forward and reverse brake applications until pedal height remains constant.

Alternate Method – Remove adjuster access plugs. Rotate star wheel until drum rotates with slight drag. Back off star wheel 1¼ turns; install access plugs. Lower vehicle and make final adjustment by making alternate forward and reverse brake applications until pedal height is constant.

PARKING BRAKE

NOTE – *Service brake must be properly adjusted prior to parking brake adjustment.*

Apply parking brake two notches from fully released position. Loosen equalizer check nut and adjust front jam nut until a light to moderate drag is felt when rear wheels are rotated forward. Tighten nuts securely, release parking brake lever, and ensure no drag is present.

HYDRAULIC SYSTEM BLEEDING

NOTE – *Make sure engine is running while bleeding brakes. This will prevent damage to push rod.*

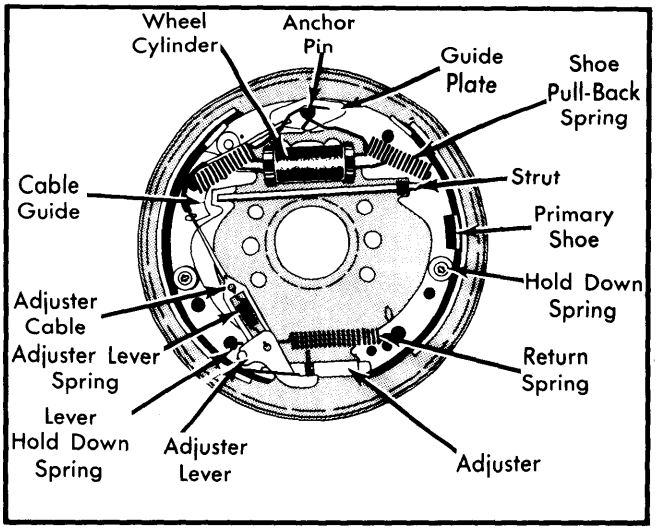

Fig. 1 Rear Brake Drum Assembly

Attach a bleed tube to wheel cylinder bleeder screw and immerse opposite end of tube in a container partially filled with brake fluid. Open bleeder screw ¾ turn, depress pedal, close bleeder screw before bottom of pedal stroke, and allow pedal to return slowly. Continue operation until no air bubbles are seen in discharged fluid. Bleed wheel cylinder closest to master cylinder first, then repeat procedure at remaining cylinders, ending with cylinder furthest from master cylinder.

REMOVAL & INSTALLATION

FRONT DISC BRAKE PADS

Removal – 1) Raise and support vehicle on safety stands; remove tire and wheel. Remove caliper stop spring pins and stops. Remove caliper from support and remove stop plates from caliper. Suspend caliper from frame with wire. DO NOT damage flex hose.

2) Remove pads and shims (mark pads if they are to be reused). Remove anti-rattle springs from support. Replace pads if they have less than .039" (1 mm) of lining left. Always replace pads in axle sets.

Installation – Reverse removal procedure and note the following: Original pads must be installed in original position. Install pads to supports with wear indicators facing LOWER SIDE. Apply brake lubricant to shims, stop plates and caliper sliding surfaces.

NOTE – *Manufacturer recommends replacing stop plates and pins.*

FRONT DISC BRAKE CALIPER

Removal – Raise and support vehicle on safety stands; remove tire and wheel. Remove caliper stop spring pins and stops. Disconnect hydraulic flex hose from brake line and plug openings. Remove caliper from support. Remove stop plates from caliper. Remove support mounting bolts and support assembly.

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Installation – Reverse removal procedure and note the following: Apply brake grease to stop plates and caliper sliding surfaces. Flex hose identification stripe must follow a straight line with no binding. Install new stop plates and pins. Bleed hydraulic system.

FRONT DISC BRAKE ROTOR

Removal – With caliper removed, remove caliper support bolts and support. Remove grease cap, cotter pin, spindle nut retainer and nut. Remove hub and rotor assembly without dropping wheel bearings. Separate only if replacing either component.

Installation – Reverse removal procedure and adjust wheel bearings. *See Wheel Bearing Adjustment in WHEEL ALIGNMENT Section.* Tighten caliper support bolts evenly and bleed hydraulic system if necessary.

REAR BRAKE DRUM

Removal – Raise and support vehicle on safety stands; remove tire and wheel. Remove retaining screws and brake drum (neutralize shoes if necessary). Mark drum for reassembly.

Installation – Reverse removal procedure to install drums (in orginal postion) and adjust brakes.

REAR BRAKE SHOES

Removal – 1) With drum removed, remove shoe pull-back springs, hold down springs, pins and retainers. Remove adjuster lever spring, adjuster cable and guide plate.

2) Remove adjuster lever and lever hold down spring. Remove brake shoes as an assembly. Separate primary and secondary shoes, adjuster, return spring and strut.

3) Separate parking brake lever and rear cable. Remove clip and washer and separate brake lever from secondary shoe.

Installation – Install parking brake lever to secondary shoe and rear cable to lever. Connect brake shoes together with return spring, and place adjuster screw into position, making sure star wheel is nearest secondary shoe. Install parking brake strut with spring on primary shoe end, then fit shoes to wheel cylinder push rods. Install hold-down springs, self-adjuster assembly and return springs. Install drum and adjust and bleed brakes.

WHEEL CYLINDER

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

Installation – Reverse removal procedure and bleed hydraulic system.

MASTER CYLINDER

Removal – Disconnect battery ground cable. Disconnect hydraulic lines at master cylinder and cover ends to prevent entry of dirt. Remove bracket bolt at front end of cylinder, and nuts retaining cylinder to power unit, then remove master cylinder and gasket from power unit.

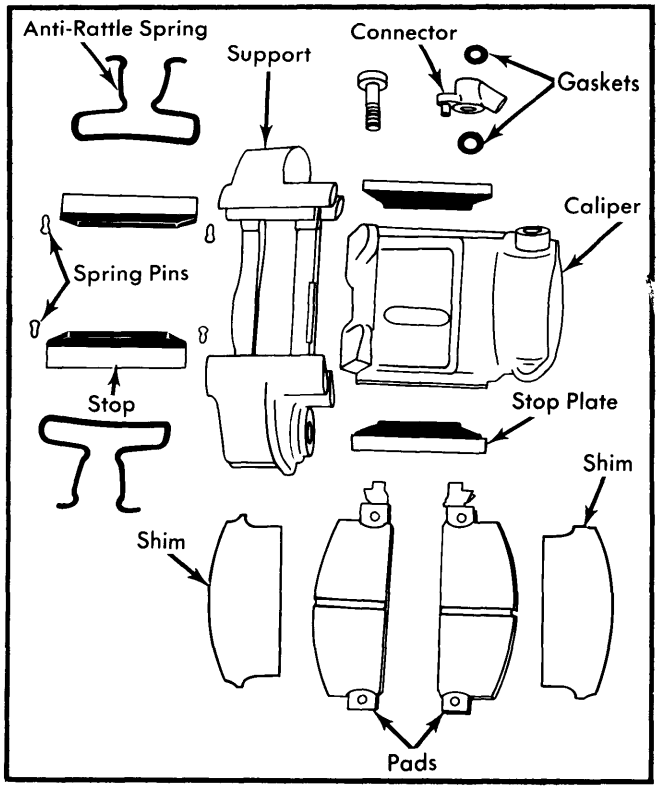

Fig. 2 Exploded View of Front Disc Brake Assy.

Installation – Reverse removal procedure, bleed hydraulic system and adjust pedal height if necessary.

POWER BRAKE UNIT

Removal – Disconnect battery ground cable. Disconnect hydraulic lines at master cylinder and cover ends to prevent entry of dirt. Remove bolts attaching bracket to master cylinder and fender and remove bracket. Disconnect vacuum line at power unit and place out of way. Disconnect brake pedal return spring and push rod. Remove nuts attaching power unit to firewall, and remove power unit and master cylinder as an assembly.

Installation – Reverse removal procedure, bleed hydraulic system and adjust pedal height if necessary.

OVERHAUL

FRONT DISC BRAKE CALIPER

Disassembly – Remove flex hose from caliper. Using pointed, but blunt instrument, remove seal from caliper. Place a block of wood between piston and caliper cavity wall, then apply enough compressed air pressure to force piston from cylinder. Remove and discard piston ring seal.

Cleaning & Inspection – Clean all parts in clean brake fluid and dry with filtered, dry, compressed air. Check cylinder bore and piston for wear, scuffing or corrosion; replace if defective.

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Minor imperfections can be removed from caliper bore with crocus cloth. Replace dust seal and piston seal during overhaul.

NOTE – *DO NOT polish piston outer surfaces with abrasive.*

Reassembly – Lubricate piston seal and insert into caliper bore. Carefully insert piston into caliper assembly. Install dust seal on piston and caliper. Fit seal ring into dust seal.

WHEEL CYLINDER

Disassembly – Remove boots from cylinder ends. Remove pistons and cups. Remove expander springs, if equipped.

Cleaning & Inspection – Clean all parts in clean brake fluid. Inspect cylinder bore and pistons for rust, corrosion or other damage; replace defective part. Check wheel cylinder bore-to-pistion clearance; if clearance exceeds .006" (.15 mm), replace wheel cylinder assembly.

Reassembly – Lubricate cylinder bore with clean brake fluid. Install spring expander into bore, then install new cups with flat surfaces toward outside. Install new pistons into cylinder with flat surfaces toward center. DO NOT lubricate pistons, cups or boots prior to installation. Press new boots onto cylinder.

MASTER CYLINDER

Disassembly – Remove reservoir caps, plates and strainers and drain brake fluid. Place cylinder in a vise and remove reservoirs. Remove connector bolt, connector and gaskets from rear outlet, then withdraw end plug, gasket, check valve, return spring and spring seat. Remove check valve assembly from front outlet. Push in on primary piston, remove stop bolt and snap ring, and remove primary and secondary piston assemblies.

NOTE – *DO NOT remove reservoirs unless they are to be replaced.*

Cleaning & Inspection – Wash all parts in clean brake fluid and dry using compressed air. Blow out all passages, orifices and valve holes. If slight rust is found, polish clean with crocus cloth or emery paper. Inspect cylinder bore for scoring, pitting or other damage. Check cylinder bore-to-piston clearance; if clearance exceeds .006" (.15 mm), replace master cylinder. Replace all rubber parts and gaskets during overhaul.

Reassembly – Lubricate cylinder bore and all parts with clean brake fluid, reverse disassembly procedure, and note the following: Use all new gaskets and seals when reassembling. When reassembly is complete, bench bleed master cylinder as follows: Install plugs in all outlet ports of cylinder, fill reservoirs with clean brake fluid, and press in and out on primary piston until air bubbles are no longer seen in fluid.

POWER BRAKE UNIT

Disassembly – 1) Remove master cylinder reservoir and drain remaining brake fluid from cylinder. Scribe alignment marks on front and rear shells to assure reassembly in original position. Clamp flange of master cylinder in a vise with power unit up. Loosen push rod clevis lock nut and remove clevis and lock nut, then remove push rod boot.

2) Place suitable wrench (J-9504) over rear shell mounting studs. Press down on wrench while rotating counterclockwise and remove rear shell, piston rod, power piston, return spring and spring retainer. Remove nuts and lock washers and separate master cylinder and power unit front shell, then remove and discard gasket.

NOTE – *Power brake unit removal tool (J-9504) must be modified to fit brake unit.*

3) Pry retainer off power piston and remove air silencer and filter, then remove rubber diaphragm from piston. Rotate power piston until push rod retainer slot is down, then press in on rod, allowing retainer to fall out of power piston. Remove push rod assembly and reaction disc.

NOTE – *DO NOT disassemble push rod assembly; if defective, replace complete assembly.*

4) If rear shell is defective, pry out seal retainer and remove spacer and seal assembly. If front seal is defective, pry out retainer and remove seal. If vacuum check valve is defective, remove using a twisting motion, then remove grommet.

Cleaning & Inspection – Clean all parts in denatured alcohol and blow dry with compressed air. Inspect inner surface of both shells for wear or damage; slight rust can be removed with fine emery cloth or crocus cloth. Inspect all parts for cracks, nicks, distortion or other damage; replace parts as necessary.

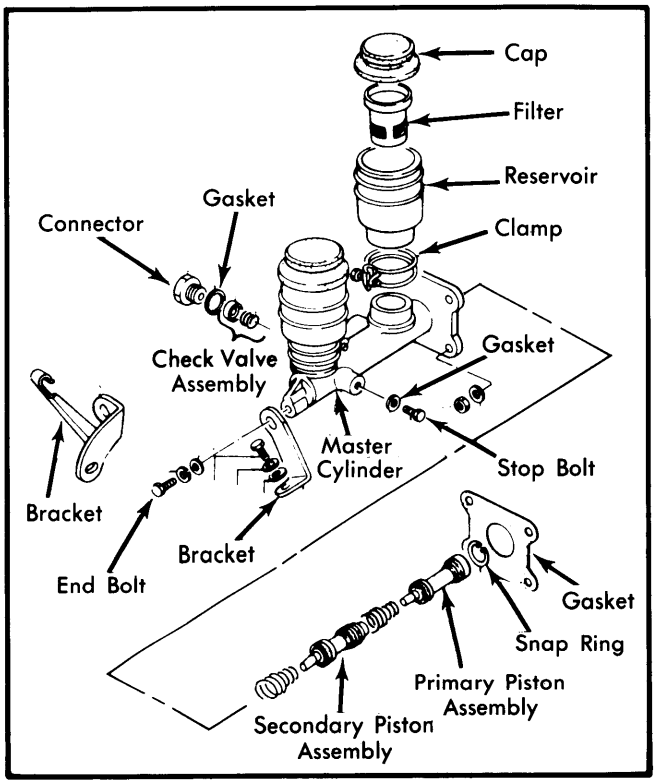

Fig. 3 Master Cylinder Assembly

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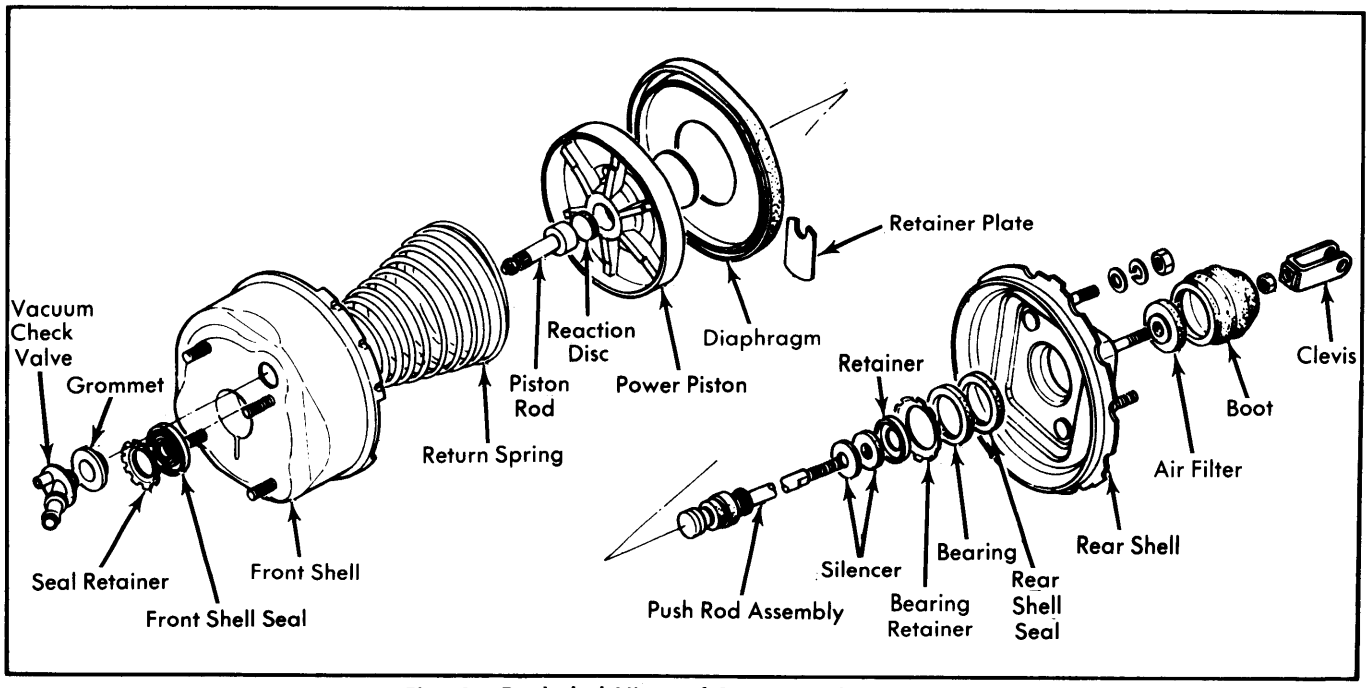

Fig. 4 Exploded View of Power Brake Assembly

NOTE – *Do not clean parts with a mineral based solvent.*

Reassembly – Reverse disassembly procedure and note the following: Apply a coat of silicone grease to parts before installation. When assembling front shell to rear shell, ensure marks made at disassembly are aligned. When reassembly is completed, remove master cylinder from power unit. Place suitable gauge (J-24568) over piston rod so that legs rest on master cylinder mounting surface. Piston rod should touch cut-out portion of gauge. If rod must be adjusted, hold rod at serrated portion and turn threaded end.

NOTE – *Push rod must be bottomed in power unit before making adjustment.*

TIGHTENING SPECIFICATIONS

Application	Ft. Lbs. (mkg)
Backing Plate-to-Axle Housing	55 (7.7)
Wheel Cylinder	10 (1.4)
Master Cylinder	
End Plug	47 (6.5)
Stopper Bolt	14 (1.9)
Mounting Nuts	10 (1.4)
Power Brake Unit Mounting Nuts	10 (1.4)
Rotor-to-Hub	36 (5.0)
Flex Hose-to-Caliper	29 (4.0)
Support-to-Adapter	64 (9.0)
Adapter-to-Knuckle	
Large Bolt	55 (7.6)
Small Bolt	35 (4.8)
Bleeder Screw-to-Caliper	
4 x 2 Model	7.0 (1.0)
4 x 4 Model	5.4 (.75)

DISC BRAKE ROTOR SPECIFICATIONS

Application	Disc Diameter In. (mm)	Lateral Runout In. (mm)	Parallelism In. (mm)	Original Thickness In. (mm)	Minimum Refinish Thickness In. (mm)	Discard Thickness In. (mm)
LUV	.....	.005① (.13)	.0005 (.013)	.709 (18.0)	.668 (16.97)	.653 (16.6)

① – Max. rate of change must not exceed .001" (.03 mm) in 30°.

LUV (Cont.)

BRAKE SYSTEM SPECIFICATIONS				
Application	Drum Diam. In. (mm)	Wheel Cylinder Diameter		Master Cylinder
		Front In. (mm)	Rear In. (mm)	Diameter In. (mm)
LUV	10 (254)	1.06 (26.9)	.750 (19.0)	.875 (22.2)

① — Equipped with front disc brakes.

BRAKE DRUM SPECIFICATIONS				
Application	Drum Diameter In. (mm)	Original Diameter In. (mm)	Maximum Refinish Diameter In. (mm)	Discard Diameter In. (mm)
LUV	10 (254)	10.000 (254)	10.059 (255)	10.079 (256)