BENDIX/DELCO-MORAINE DUAL PISTON MASTER CYLINDER

Chevrolet
Dodge
GMC
International Harvester
Jeep
Plymouth

NOTE – *Some models may use other units; see Brake Systems Index.*

DESCRIPTION

Bendix and Delco-Moraine tandem dual piston master cylinders are single casting type with front and rear pistons and a separate reservoir and outlet for each piston. Rear piston is operated by push rod connected to brake pedal. Front piston is operated by rear piston. In a combination drum and disc brake system, reservoir which feeds disc brakes is larger to correspond with larger size of disc brake caliper cylinder. Disc brake outlet has no residual valve since disc brakes must not have any residual pressure. Master cylinder outlet which feeds drum brakes has a residual valve under tube seats. Failure in either front or rear system does not result in failure of entire system.

ADJUSTMENT

BRAKE PEDAL

NOTE – *Adjustment for vehicles equipped with power boosters is accomplished at power booster. See Power Brake Units in this Section.*

All Models – Vehicles without power assisted brakes incorporate a non-adjustable push rod. Brake pedal push rod length is preset by manufacturer.

REMOVAL & INSTALLATION

MASTER CYLINDER

Removal – Disconnect front and rear hydraulic brake lines at master cylinder, and cover ends to prevent entry of foreign matter. On vehicles without power assist units, disconnect brake pedal push rod at brake pedal. Remove master cylinder attaching bolts, and remove cylinder assembly from vehicle.

Installation – Position master cylinder on vehicle and install cylinder attaching bolts. Connect front and rear hydraulic brake lines to cylinder. Connect brake pedal push rod, if removed. Fill reservoir with clean brake fluid, and bleed hydraulic system. *See Hydraulic Brake Bleeding in this Section.*

OVERHAUL

MASTER CYLINDER

Disassembly – 1) Remove master cylinder cover and diaphragm, and drain fluid from reservoir. Pump piston by hand to remove any remaining fluid. On manual brake models, remove rubber boot from push rod. Depress piston and remove stop bolt. Remove snap ring from groove in bore.

2) Remove both piston assemblies. Remove any internal parts remaining in piston bore. On Jeep CJ models, remove push rod from primary piston. Remove and discard all rubber parts from piston assemblies.

3) On General Motors and Jeep CJ models, enlarge holes in tube seats using a $^{13}/_{64}$" drill. Place a large flat washer over outlets and thread a $^{1}/_{4}$" x 20 x $^{3}/_{4}$" screw into seat. Tighten until seat is loosened. Remove seat, screw and washer. On all other Jeep models, thread a 6 x 32 x $^{5}/_{8}$" self-tapping screw into tube seat. Push upward with 2 screwdrivers to remove seat.

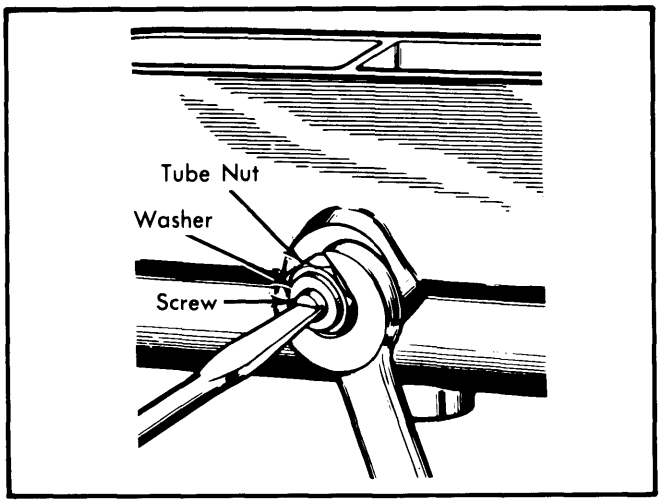

Fig. 1 Removing Tube Seat from Master Cylinder

Inspection – Inspect cylinder bore for scoring or corrosion. Staining which has not pitted or roughened surface of cylinder bore may be removed with crocus cloth. If cylinder bore is scored, pitted, or corroded, General Motors and Jeep recommend replacing cylinder assembly. Chrysler Corp. permits honing bore, providing bore diameter is not increased more than .002". IHC allows honing, if piston-to-bore clearance does not exceed .005" after honing.

Reassembly – 1) Install replacement tube seats by threading a spare brake line tube nut into hole and turning nut in until tube seat bottoms. Do not cock tube seat in hole. Remove nut and check for burrs which may have been loosened by nut.

2) Install piston cups on secondary piston, with cup lips facing away from each other. Install seal protector, piston seal, spring retainer and return spring on secondary piston. Install seal so lip faces interior of master cylinder when installed.

3) Lubricate cylinder bore with clean brake fluid and install secondary piston assembly. Lubricate primary piston seals and install primary piston assembly in bore. Hold primary piston down in bore and install snap ring in groove in bore.

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4) Position master cylinder in a vise, attaching bleeder tubes to cylinder, and fill reservoirs with fluid so that ends of tubes are covered. See *Fig.* 2. Tubes attached to disc brake outlet must have residual valve placed on end of tube to prevent fluid from siphoning.

5) Stroke piston in bore several times until no air bubbles appear at ends of tubes. Remove bleeding tubes and plug outlets to prevent fluid from draining.

6) Install master cylinder cover and new diaphragm. On vehicles with manual brakes, assemble brake pedal push rod through retainer. if used, and push retainer over end of master cylinder. Install rubber boot over push rod.

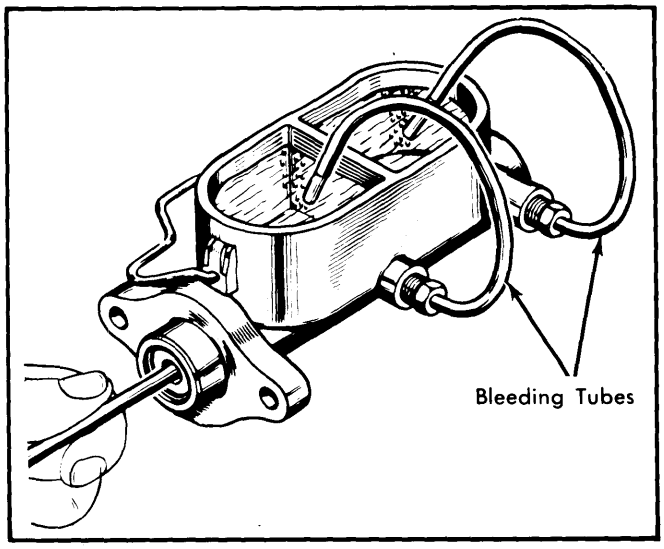

Fig. 2 Master Cylinder Bleeding Procedure

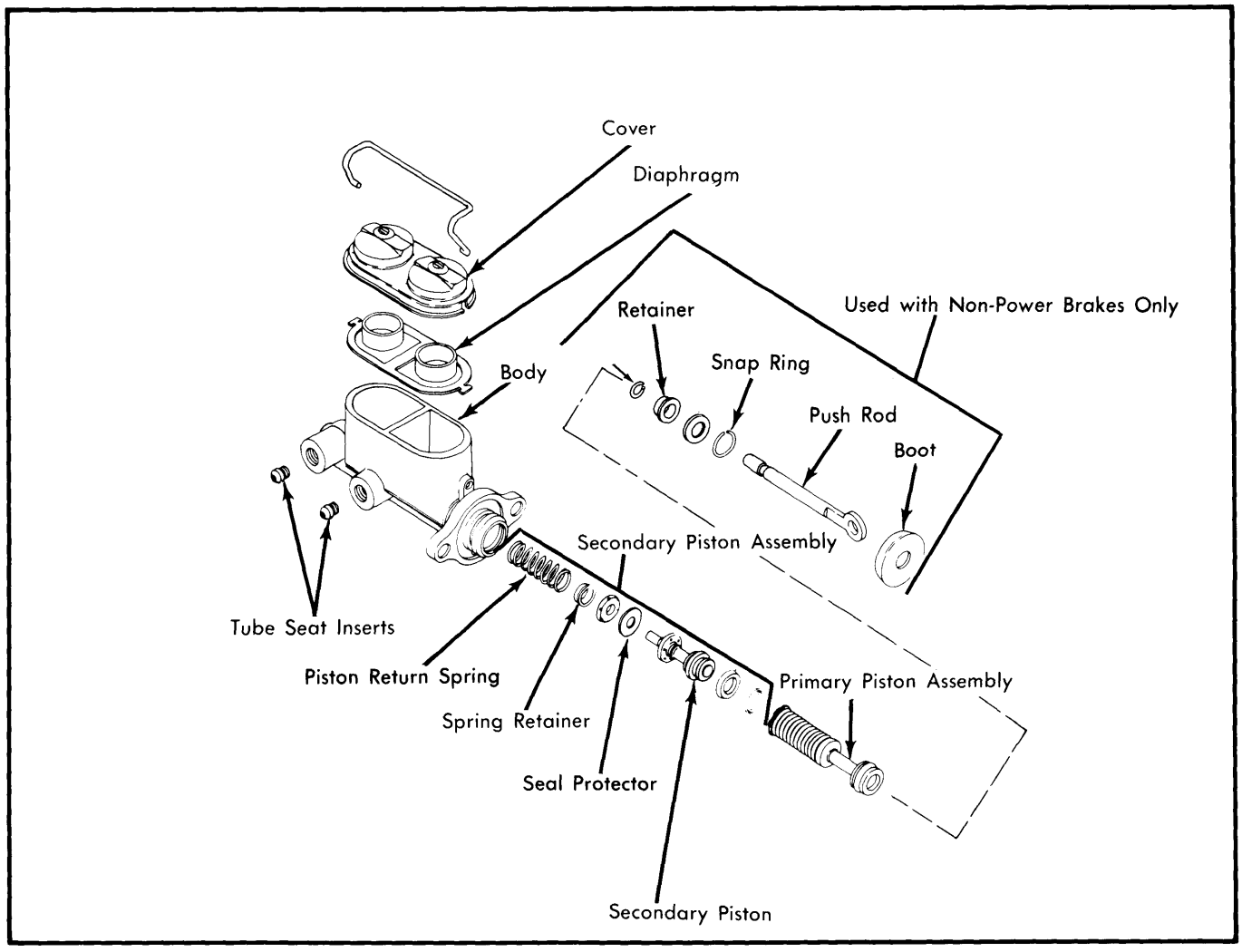

Fig. 3 Exploded View of Delco-Moraine Master Cylinder (Typical)

BENDIX/DELCO-MORAINE DUAL PISTON MASTER CYLINDER (Cont.)

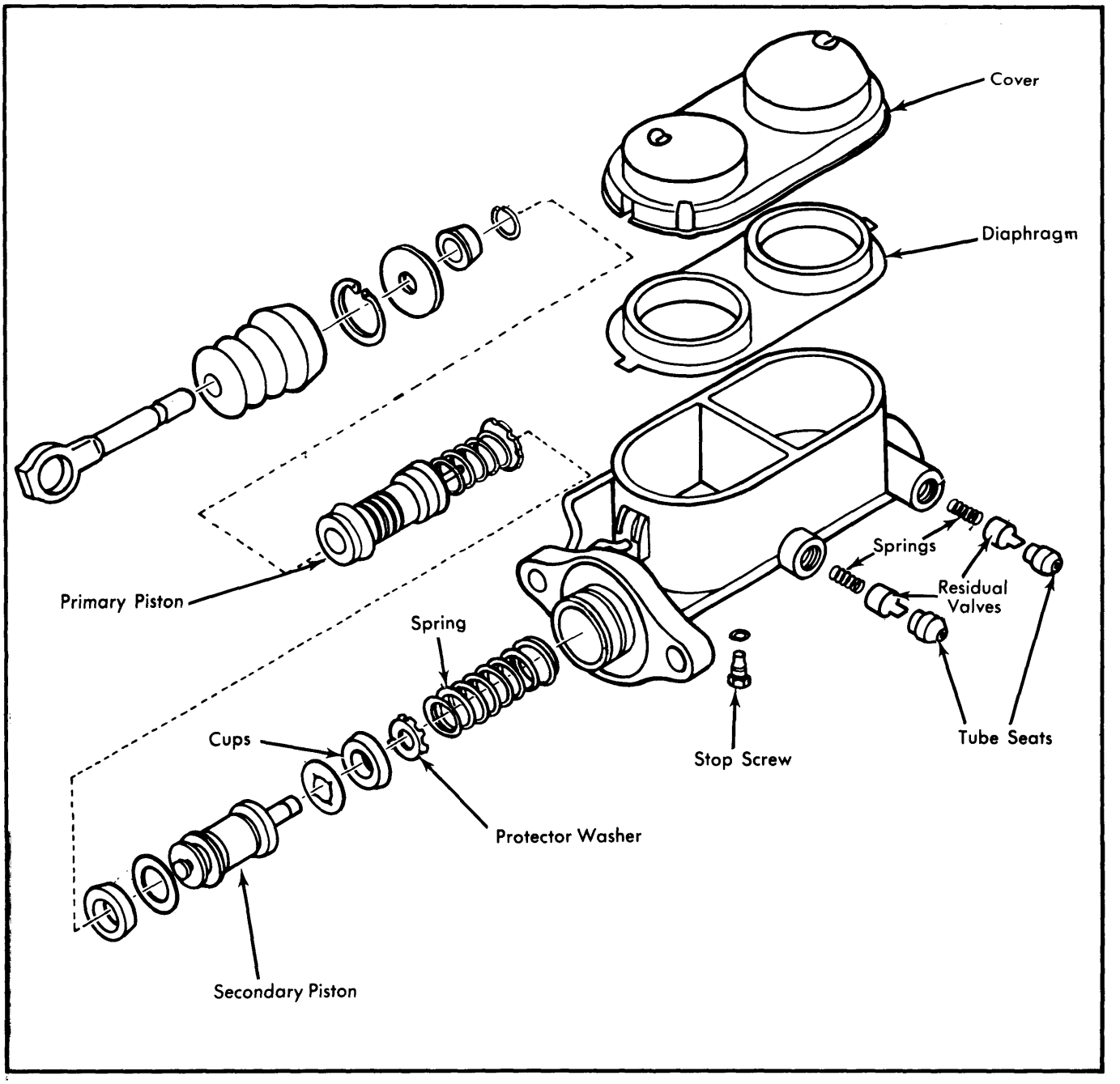

Fig. 4 Exploded View of Bendix Master Cylinder (Typical)