

DELCO-MORAINE TANDEM DIAPHRAGM

**Buick
Cadillac
Chevrolet
Oldsmobile
Pontiac**

DESCRIPTION

Unit is mounted on firewall and connected directly to brake pedal. A combination of vacuum and atmospheric pressure is used to provide power assist. Power cylinder houses power piston assembly, which contains primary and secondary diaphragms, pistons, floating control valve, reaction piston and disc.

REMOVAL & INSTALLATION

POWER BRAKE UNIT

Removal — 1) Without disconnecting hydraulic lines, remove master cylinder from power unit and position to one side. On models equipped with pipe distribution and switch mounting bolt, remove bolt before moving master cylinder away from power unit.

CAUTION — Do not bend or kink hydraulic lines.

2) Disconnect vacuum hose from check valve on front of power unit. Disconnect push rod from brake pedal.

CAUTION — Do not force push rod to the side when disconnecting.

3) Remove nuts mounting power unit to firewall and remove power unit.

Installation — Reverse removal procedure and check stop light and cruise control (if equipped) switch adjustments.

OVERHAUL

POWER BRAKE UNIT

Disassembly — 1) Remove pushrod boot, silencer, front housing seal, grommet and vacuum check valve.

2) Scribe a mark on front and rear housings for reassembly reference. Attach front housing to suitable holding fixture. (Cadillac J-23456, all others J-22805-01).

3) On Cadillac, press down on tool J-23456 and turn counterclockwise to unlock housings. On all others, place spanner J-9504 over rear housing studs, press down and turn counterclockwise to unlock housings.

4) Remove power piston group, power piston return spring, and power piston bearing. Remove piston rod, reaction retainer and power head silencer.

5) Grasp assembly at outside edge of divider and diaphragms. Hold with pushrod down against a hard surface. Use a slight force or impact to dislodge diaphragm retainer.

6) Remove primary diaphragm, primary support plate, secondary power piston bearing, housing divider, secondary support plate and diaphragm and power piston assembly.

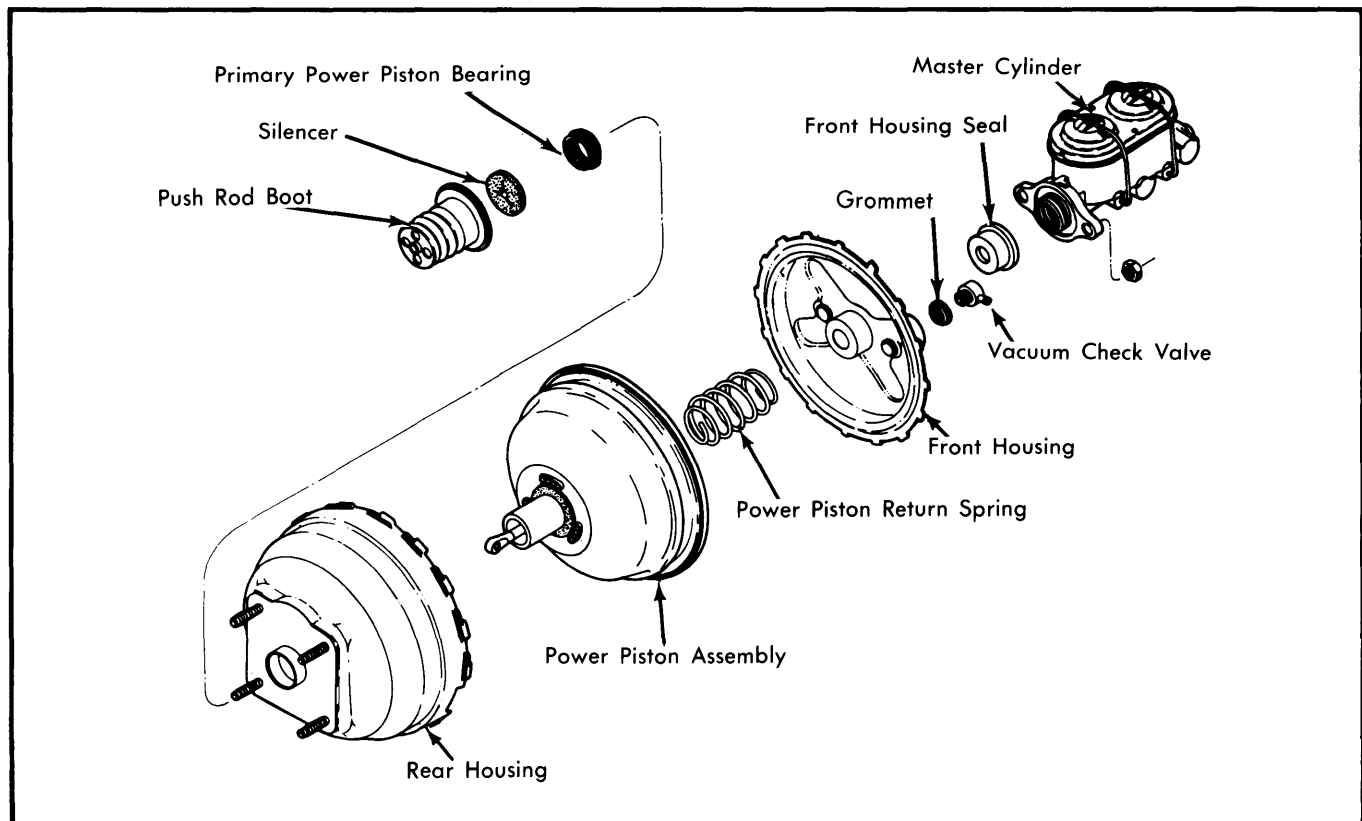


Fig. 1 Exploded View of Delco-Moraine Tandem Power Cylinder

DELCO-MORAINE TANDEM DIAPHRAGM (Cont.)

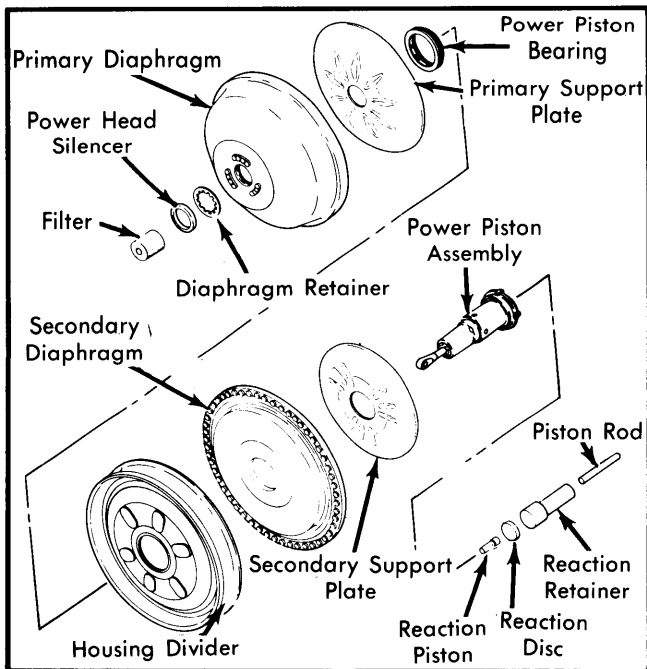


Fig. 2 Exploded View of Delco-Moraine Tandem Power Piston Group

Cleaning & Inspection — Clean all plastic, metal and rubber parts in denatured alcohol. Blow out all passages, orifices and valve holes. Air dry all parts. Slight rust on housing may be cleaned with crocus or emery cloth. Do not reinstall any rubber parts with cuts, nicks or distortion. If in doubt, replace the part.

NOTE — Prior to installation of rubber, plastic, and metal friction parts, lubricate with suitable silicone lube (5459912).

Reassembly — 1) Place power piston on bench with push rod end up. Install assembly cone J-28458 over push rod end of piston. Lubricate inside diameter of secondary diaphragm with silicon lubricant and fit in secondary support plate.

2) Install secondary diaphragm and support plate over power piston and push down until it bottoms. See Fig. 3. Lubricate inside diameter of secondary power piston bearing and install in housing divider with flat surface of bearing on the same side as 6 raised lugs on divider.

3) Hold divider so that formed over flange faces up. Press divider down over assembly cone and onto power piston to rest against secondary diaphragm. Lubricate inside diameter of primary diaphragm and install in primary support plate. Remove assembly cone from power piston, place primary support plate and diaphragm assembly over power piston and push down until it bottoms.

4) Place diaphragm retainer over power piston and onto diaphragm. Install assembly cone J-28458 over power piston onto diaphragm retainer and strike with hammer until retainer is locked on neck of power piston. Remove assembly cone.

5) Install reaction retainer, piston rod and power head silencer. Place primary power piston bearing in rear housing center hole. Lubricate with silicon lubricant on inner diameter. Attach front housing to holding fixture and place fixture in vise. Install power piston assembly to rear housing.

6) Install power piston return spring over reaction retainer and lower rear housing onto front housing. Align scribe marks and press down with holding fixture handle (Cadillac) or spanner (all others) and turn clockwise to lock 2 housings. Stake 2 housing tabs into sockets at 2 new locations 180° apart.

7) Lubricate inside and outside diameters of grommet and front housing seal. Install seal, grommet, vacuum check valve, silencer and push rod boot.

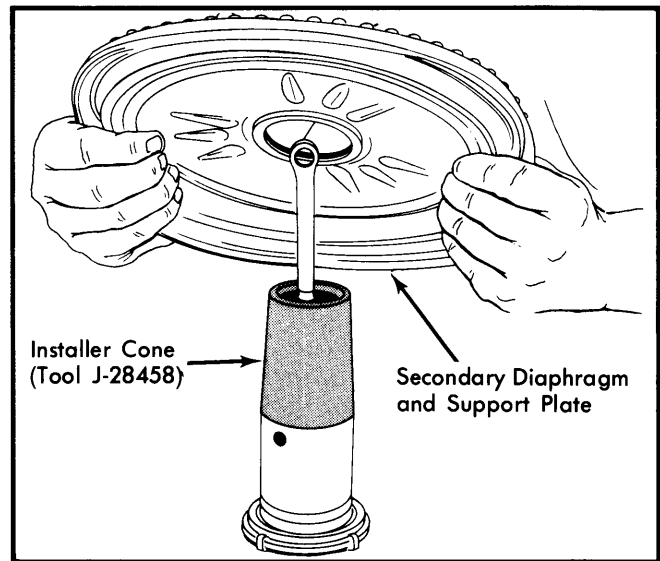


Fig. 3 Installing Secondary Diaphragm and Support Plate

PISTON ROD ADJUSTMENT

1) Place power unit in padded vise with front housing up. Do not clamp tight. Insert master cylinder piston rod, flat end first, into piston rod retainer. Ensure rod is properly seated. Remove front housing seal to assure no vacuum is in unit.

2) Place suitable gauge (J-22647) over piston rod, in a position which will allow gauge to be moved right or left without contacting studs. Piston rod should contact longer section of gauge. Rod is non-adjustable, and if out of limits, must be replaced with adjustable service rod. With service rod, adjust self-locking screw to meet gauging specifications.

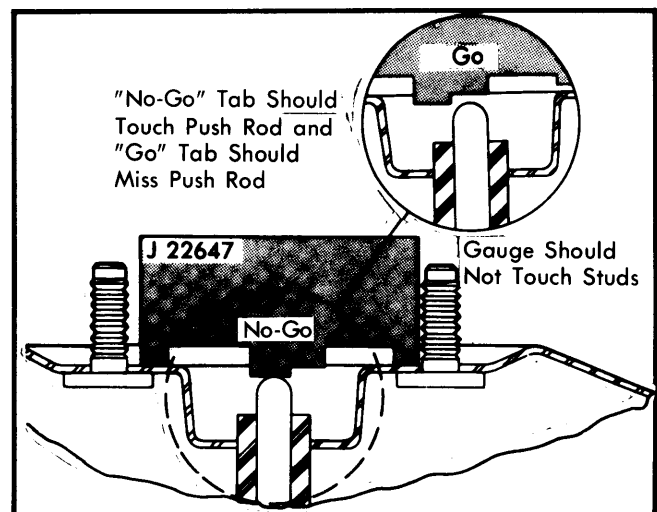


Fig. 4 Gauging Push Rod with Special Gauge