DELCO-MORAINE SINGLE DIAPHRAGM

Buick
Chevrolet
Oldsmobile
Pontiac

DESCRIPTION

A combined vacuum-hydraulic unit which uses a combination of intake manifold vacuum and atmospheric pressure to provide power assist. Reserve vacuum supply and vacuum check valve allow several brake applications, with vacuum assist, after engine has stopped. Unit is composed of two main sections: vacuum power cylinder and dual master cylinder. Vacuum power cylinder contains power piston assembly, which houses control valve, reaction mechanism, and power piston return spring.

REMOVAL & INSTALLATION

POWER BRAKE UNIT

Disconnect master cylinder from power brake booster and position it away from booster. Do not disconnect hydraulic lines; be careful not to bend or kink lines. Disconnect vacuum hose from vacuum check valve on front housing of booster. Detach power booster push rod from brake pedal assembly. Remove attaching nuts and remove power booster from vehicle. To install, reverse removal procedure.

OVERHAUL

POWER BRAKE UNIT

Disassembly – 1) Scribe marks on housings for reassembly reference and remove boot, front housing seal, vacuum check valve and grommet.

2) Attach power unit front housing to holding fixture base (J-22805-1) and clamp base in vise with power section up.

3) Place a spanner wrench (J-9504) on studs of rear housing. Press down and turn counterclockwise to unlock housings.

NOTE – *Do not put pressure on plastic power piston extension.*

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

CAUTION – *Use care not to damage power piston assembly when removing reaction disc. Reaction disc must be replaced.*

5) Use awl, ice pick or similar tool to remove reaction disc. Remove reaction piston.

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

NOTE – *Do not disassemble power pushrod assembly.*

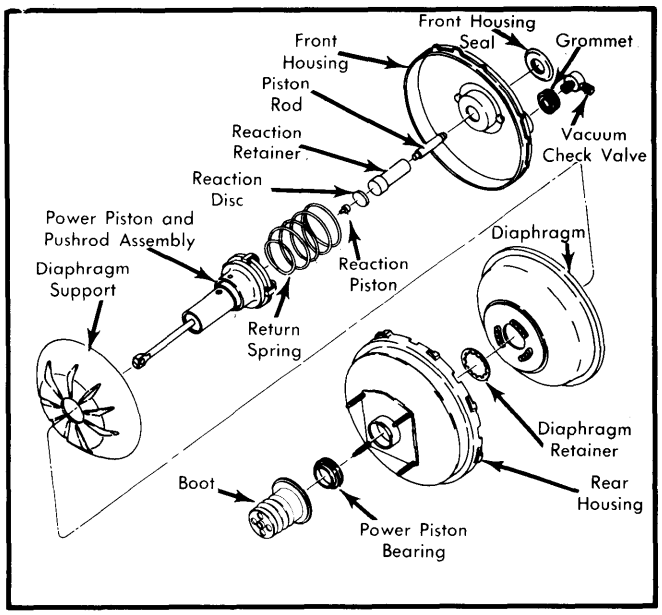

Fig. 1 Exploded View of Typical Delco-Moraine Single Diaphragm Power Brake Unit

Cleaning & Inspection – Clean all metal, plastic, and rubber parts in denatured alcohol. Blow out all passages, orifices, and valve holes with clean, dry air. Air dry all parts. Slight rust on inside of housings can be polished with crocus or emery cloth. There should be no nicks, cuts, or abnormalities of any rubber part. If in doubt about its condition, replace the part.

Reassembly – 1) Lubricate inside diameter of diaphragm lip with silicon lubricant and fit in diaphragm support.

2) Install diaphragm and support over power piston and pushrod assembly, support side first. Install new diaphragm retainer and seat using seating tool (J-28458) and a plastic hammer.

3) Install reaction piston, new reaction disc, reaction retainer and piston rod.

4) Attach holding fixture to front housing and place in vise. Install power piston return spring with white end to front housing.

5) Insert power piston assembly pushrod end through rear housing and place on front housing and return spring.

6) Align scribe marks with spanner on studs of rear housing. Press down and turn clockwise to lock 2 housings.

NOTE – *Assembly can be aided by connecting a vacuum source to booster.*

DELCO-MORAINE SINGLE DIAPHRAGM (Cont.)

7) Stake 2 housing tabs into sockets with screwdriver. Stake at 2 tabs 180° apart.

8) Lubricate inside and outside diameters of grommet and front housing seal and install seal, grommet, vacuum check valve and boot.

PUSH ROD ADJUSTMENT

1) Place suitable push rod gauge (J-22647) over push rod in position which will allow gauge to be moved from side to side without touching studs. Push rod must touch longer section of gauge. Rod should never touch shorter section.

2) If any variation from this check exists, obtain service adjustable push rod (with adjustable screw on end). Regulate push rod to match proper adjustment. Variation beyond these limits can cause primary cup to overlap the compensation port of master cylinder, trapping fluid and causing brake drag.

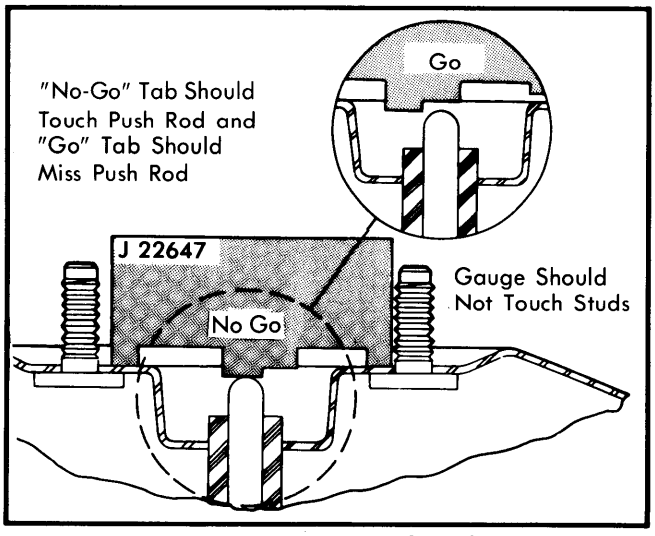

Fig. 2 Using "Go/No-Go" Push Rod Gauge to Measure Height of Push Rod