BENDIX SINGLE DIAPHRAGM

American Motors
Chevrolet
Chrysler Corp.
Ford Motor Co.

DESCRIPTION

Vacuum suspended, self-contained, vacuum-hydraulic unit which utilizes engine manifold vacuum and atmospheric pressure to provide its power. Vacuum power unit contains power piston assembly, which houses control valve, reaction mechanism, and return spring. Control valve consists of air valve, floating control valve assembly, and push rod. Reaction mechanism consists of reaction plate and levers. A vacuum check valve is mounted in front housing for connection to vacuum source.

REMOVAL & INSTALLATION

Removal – 1) Disconnect vacuum line from power brake unit.

2) On Chevrolet models, disconnect hydraulic lines from master cylinder.

3) On all models, disconnect master cylinder from power unit and set to one side.

4) Disconnect brake push rod from brake pedal.

5) On Ford models, disconnect stop light switch and remove hairpin retainer.

6) Slide stop light switch from pedal just enough for outer hole to clear pin, remove switch.

7) On all vehicles, disconnect power unit from dash panel.

8) On Dodge and Plymouth models, with linkage type power unit, remove lower pivot bolt.

Installation – 1) Reverse removal procedure and note the following:

- Check push rod length.
- Adjust push rod length if necessary.
- Check hydraulic lines for proper installation.
- Check for hydraulic leaks.
- Bleed hydraulic system if necessary.

OVERHAUL

NOTE – *American Motors, Chrysler Corp., and Ford Motor Co. do not recommend overhaul of this power brake unit.*

Disassembly – Disconnect master cylinder from power unit and power unit from vehicle. Scribe power unit housings for reassembly reference. Continue disassembly in following order:

- Remove front housing seal and piston rod.
- Attach power unit to a holding fixture (Chevrolet No. J-22805).

CAUTION – *Ensure proper tool alignment to avoid damage to check valve in front housing.*

- Remove lock nut and push rod clevis.
- Remove dust boot retainer, boot and silencer.
- Partially straighten the four deepest tabs on rear housing.
- Place a spanner wrench (Chevrolet No. J-9504) onto studs of rear housing.
- Press down and turn spanner counterclockwise.
- Carefully remove rear housing.

CAUTION – *Housings are under internal spring pressure.*

- Remove air filter from plate extension.
- Remove diaphragm from plate. Do not damage diaphragm.
- Hold diaphragm plate horizontal.
- Depress and rotate rod until air valve lock falls out.
- Remove reaction disc.

CAUTION – *Do not chip diaphragm plate.*

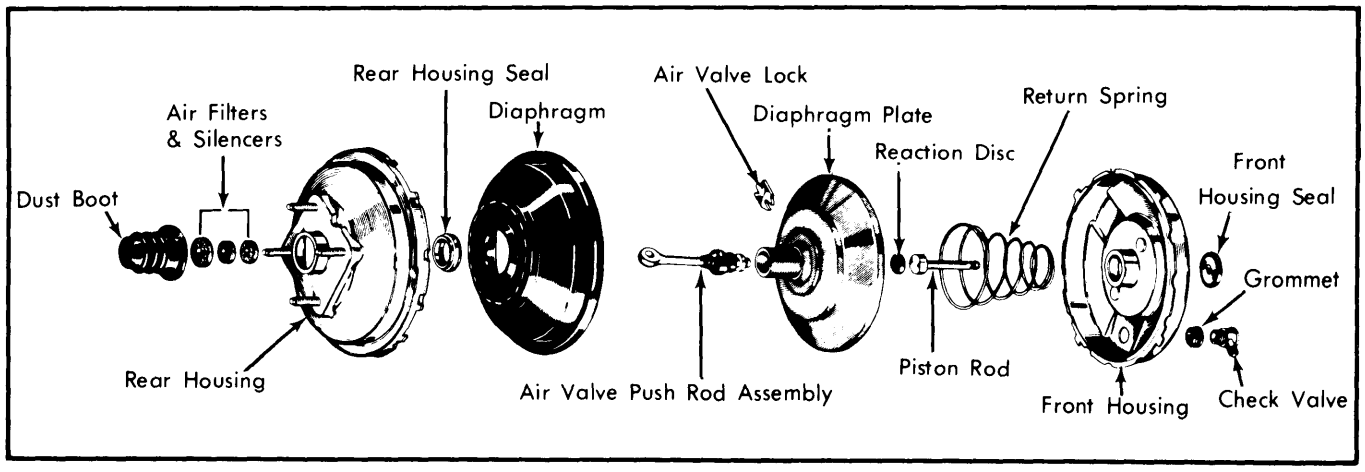

Fig. 1 Exploded View of a Bendix Single Diaphragm Assembly

BENDIX SINGLE DIAPHRAGM (Cont.)

CAUTION – *Remove seal only if new one is available. Do not reuse old seal once it has been removed.*

- Remove rear housing bearing seal.
- Remove vacuum check valve and grommet.

Cleaning & Inspection – Clean and inspect as follows:

- Use only denatured alcohol or clean brake fluid to clean parts.
- Use clean dry air to blow out all passages, orifices, and valve holes.
- Blow dry all parts.
- Polish any areas with slight rust, on inside of housing, with crocus cloth.
- Replace any rubber parts that are cut, nicked, or distorted.

Reassembly – **1)** Install vacuum check valve grommet (beveled edge on inside) by dipping part in denatured alcohol.

2) Install front housing on a holding fixture (Chevrolet No. J-22805), and clamp fixture in a vise.

3) Install new rear housing seal using seal installer tool (Chevrolet No. J-22677, tool bottoms on housing when seal is in place).

4) Assemble diaphragm plate assembly as follows:

- Lubricate outer diameter of diaphragm plate, extension, valve, plunger bearing surfaces and edge of poppet valve.
- Install valve and rod into diaphragm plate extension.
- Depress pushrod and install lock.
- Install rolling diaphragm in diaphragm plate groove.
- Lubricate and install reaction disc.
- Use master cylinder push rod to seat disc in diaphragm bore.

NOTE – *If disc is not fully seated, push rod height will be incorrect.*

- Lubricate inside of bearing seal and diaphragm contact surface of rear shell.
- Install diaphragm plate assembly in rear housing.
- Install air filter and retainer into diaphragm plate extension.
- Place spanner wrench on rear housing.
- Press wrench down and turn clockwise to lock housings together. Make sure scribe marks align.
- Bend tabs back into place so housings will not come apart.
- If any tabs are broken, replace housing.
- Install air silencers, push rod boot and retainer.
- On clevis type push rods, install lock nut and clevis.
- Lubricate piston rod (except rounded end).
- Install rod into center bore until seated against reaction disc.
- Install front housing seal in same manner as rear seal.
- Install master cylinder and bleed system if necessary.

PUSH ROD ADJUSTMENT

1) Push rod height check or adjustment is necessary if:

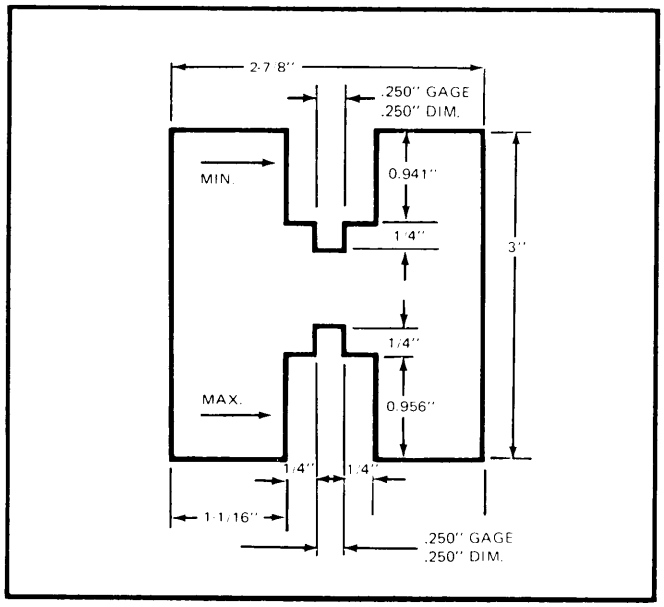

Fig. 2 Ford Brake Push Rod Gauge Showing Gauge Dimensions and Specifications

- Master cylinder and power unit were separated.
- Push rod is replaced with a new one.
- Push rod is transferred from one unit to another.
- If push rod misadjustment is diagnosed as braking problem.

NOTE – *American Motors, Chrysler Corp. and Ford Motor Co. (Fairmont & Zephyr models only) use non-adjustable or factory adjusted push rods. Do not attempt to adjust this type of push rod.*

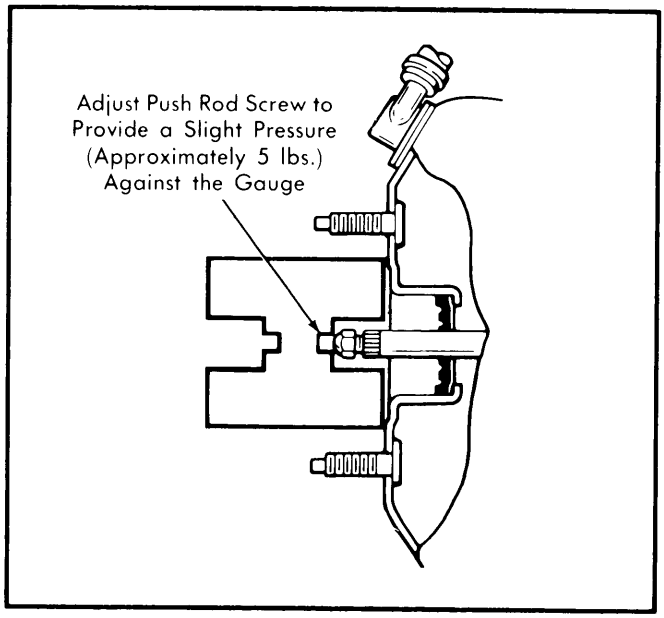

Fig. 3 Measuring Brake Push Rod Height (Ford Motor Co.)

BENDIX SINGLE DIAPHRAGM (Cont.)

2) Ford Motor Co. push rod gauge may be made according to the dimensions shown in *Fig. 2*.

3) Place gauge over push rod and adjust push rod nut to provide a slight tension (approximately five pounds) against gauge.

4) Chevrolet push rod height checking must be made with a special "GO-NO GO" gauge (J-22647).

5) Place power unit in a vise with push rod up. Remove housing seal.

6) Depress push rod with a 40-50 pound force to make sure it is seated.

7) Place gauge over push rod. Make sure gauge does not contact studs.

8) "GO" or short tab on gauge should just clear push rod while "NO GO" or long tab on gauge should hit.

9) If push rod is too long or too short, an adjustable push rod must be used. Adjust new push rod to correct height using "GO-NO GO" gauge.

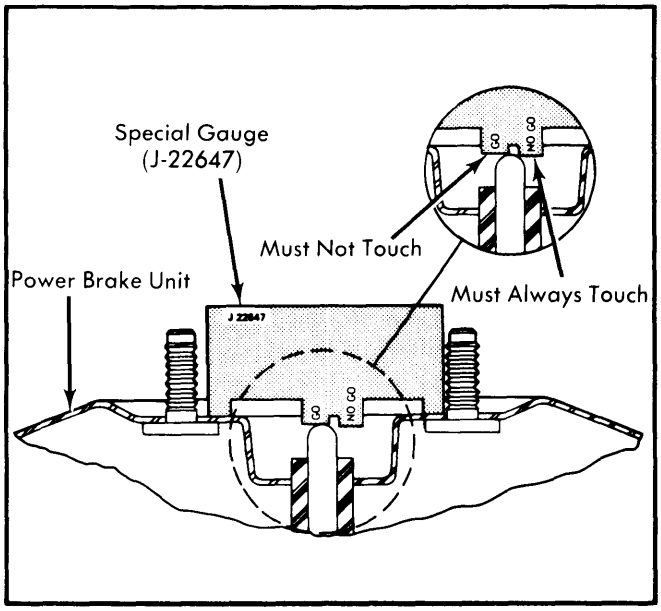

Fig. 4 Chevrolet Push Rod Gauging Method with "GO-NO GO" Gauge J-22647