Service Instructions

HYDRAULIC BRAKE VALVE

Master Cylinder Section

Service Instructions

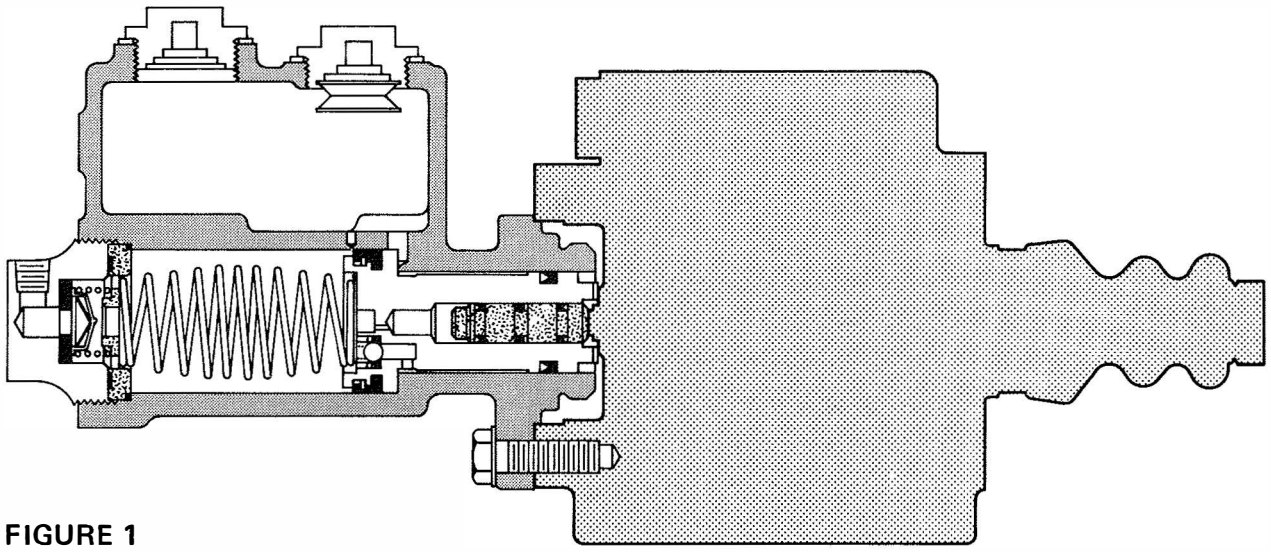


FIGURE 1

This instruction sheet services the Master Cylinder Sections for these model numbers:

02-460-260

TYPICAL SYSTEM SCHEMATIC

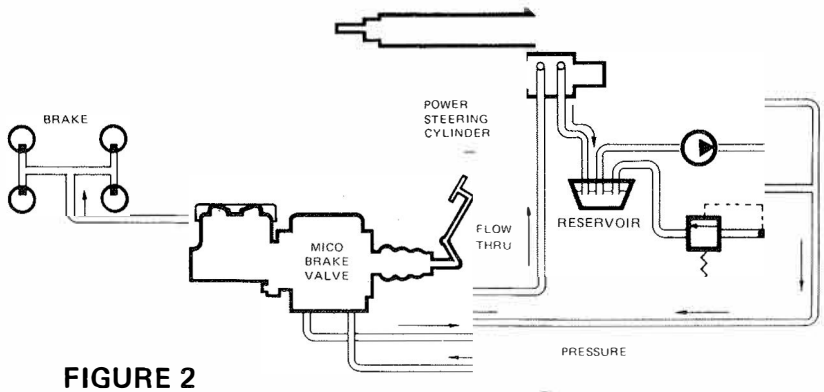


FIGURE 2

(This circuit may not apply to your installation)

REMOVING BRAKE VALVE FROM VEHICLE AND SEPARATING SECTIONS

(Refer to Figures 1 and 3)

1. Remove Brake Valve from vehicle by disconnecting necessary fluid lines, disconnecting push rod, and removing mounting bolts. Drain fluid from assembly.
2. Separate Master Cylinder Section from Power Assist Section by removing three cap screws and three lockwashers.

NOTE: Earlier models have a spacer between sections.

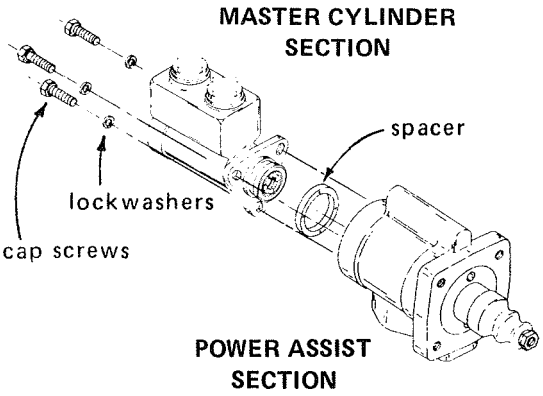


FIGURE 3

MASTER CYLINDER DISASSEMBLY

(Refer to Figures 1 and 4)

1. Drain fluid from unit before disassembling.
2. Remove end plug (item 1) with a large wrench.

   CAUTION: End plug is under tension of spring (item 9).

3. Remove seat (item 2), check valve (item 3) and spring (item 4) from housing (item 20).
4. Remove retainer assembly (item 8) from housing. Then remove seal (item 5) and o-ring (item 7) from retainer (item 6).
5. Remove spring (item 9) from housing.
6. Remove assemblies (items 18 & 19) from housing by pushing on piston with a wood dowel from the small diameter end of housing.
7. Remove cups (items 15 & 17) from piston (item 16).
8. Remove retainer (item 10), tapered spring (item 11), ball (item 12), cage (item 13) and o-ring (item 14) from piston (item 16).
9. Remove piston assembly (item 19) from piston (item 16).
10. Remove filler plugs (items 22 & 24) and gaskets (items 21 & 23) from housing.

MASTER CYLINDER ASSEMBLY

(Refer to Figures 1 and 4) Use only brake fluid in Master Cylinder Section.

LUBRICATE ALL RUBBER COMPONENTS FROM REPAIR KIT WITH TYPE FLUID USED IN THE SYSTEM.

1. Clean all parts thoroughly before assembling.
2. Install new cups (items 15 & 17) on piston (item 16). Note direction of cups.
3. Gently insert new piston assembly (item 19) into slotted end of piston (item 16).
4. Install new o-ring (item 14), new cage (item 13), new ball (item 12) and new tapered spring (item 11) in piston (item 16). NOTE: Tapered end of spring should be towards ball.
5. Install new retainer (item 10) into piston (item 16).
6. Insert piston assemblies (items 18 & 19) into housing.
7. Install new seal (item 5) on retainer (item 6). Then install new o-ring (item 7) into housing bore (item 20).
8. Install spring (item 9) into housing with spring end in piston (item 16).
9. Install retainer (item 6) into housing with spring end in retainer.
10. Install new spring (item 4) and new check valve (item 3) in housing.
11. Install new seat (item 2) in end plug (item 1). Now install end plug in housing. Pressure must be exerted against spring (item 9) while installing end plug.
12. Install new gaskets (items 21 & 23) and filler plugs (items 22 & 24) on housing.

● Items included in Repair Kit 02-400-093

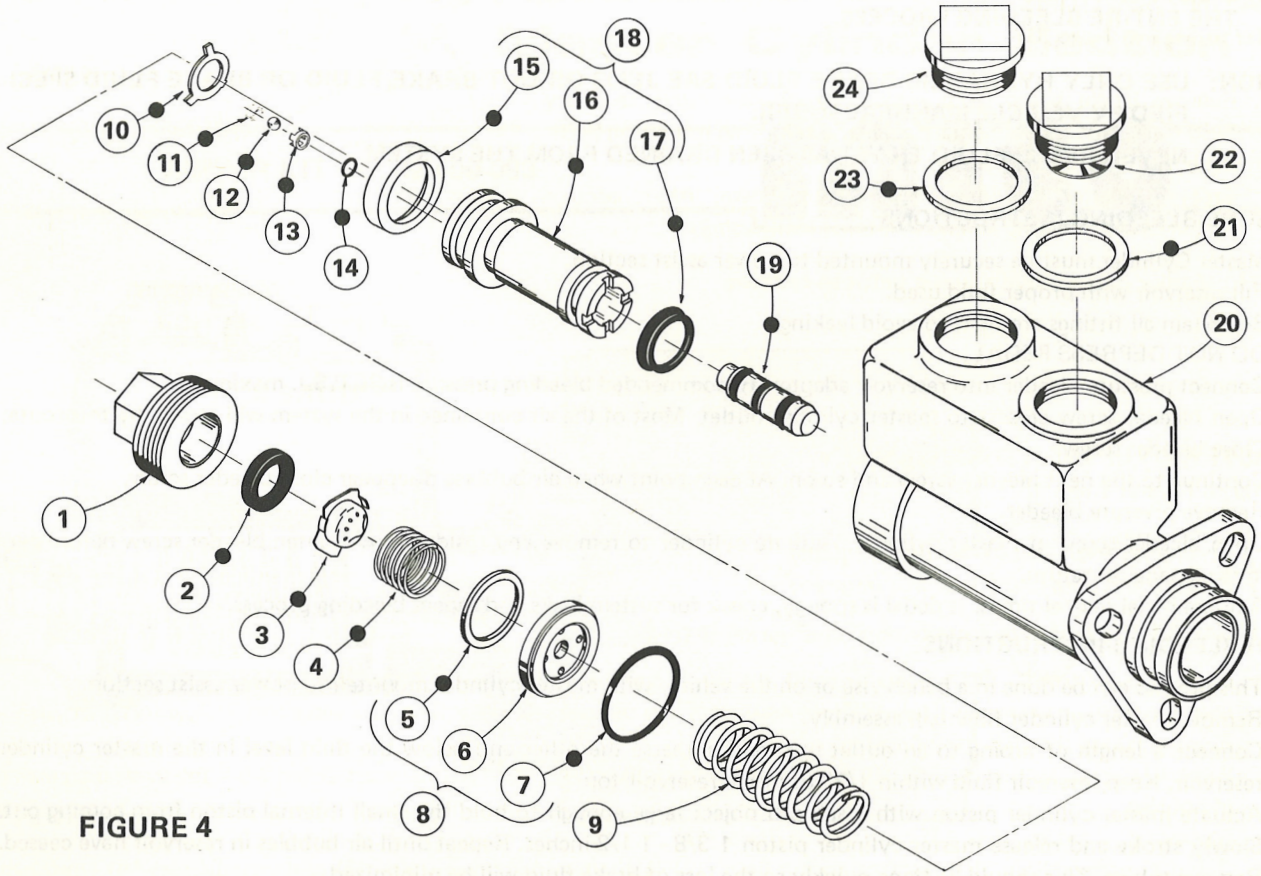
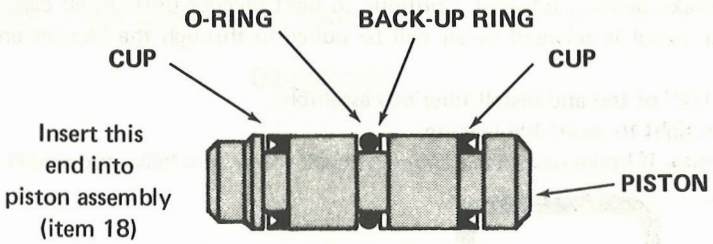


FIGURE 4



CROSS SECTION OF PISTON ASSEMBLY 19

CONNECTING SECTIONS AND MOUNTING BRAKE VALVE ON VEHICLE

(Refer to Figures 1 and 3)

1. Install spacer between the two sections (only if your model has one).
2. Attach Master Cylinder Section to Power Assist Section with three cap screws and three lockwashers. Torque 22 - 27 ft. lbs.
3. Install unit on vehicle. Connect push rod. Connect fluid lines. Bleed system of air. Tighten fittings if leaks should occur. Make several applications to be sure Brake Valve is working properly.

BLEEDING PROCEDURES

NOTE: BE SURE THAT YOU MAINTAIN A HIGH LEVEL OF FLUID IN THE RESERVOIR DURING AND AFTER THE ENTIRE BLEEDING PROCESS.

CAUTION: USE ONLY HYDRAULIC BRAKE FLUID SAE J1703 OR DOT BRAKE FLUID OR BRAKE FLUID SPECIFIED BY VEHICLE MANUFACTURER.

NEVER REUSE FLUID THAT HAS BEEN DRAINED FROM THE SYSTEM.

PRESSURE BLEEDING INSTRUCTIONS

1. Master Cylinder must be securely mounted to power assist section.
2. Fill reservoir with proper fluid used.
3. Be certain all fittings are tight to avoid leaking.
4. DO NOT DEPRESS PEDAL.
5. Connect pressure bleeder into reservoir adapter. Recommended bleeding pressure is 30 P.S.I. maximum.
6. Open bleeder screw closest to master cylinder outlet. Most of the air contained in the system will escape by this route. Close bleeder screw.
7. Continue to the next bleeder screw and so on. At each point when air bubbles disappear close bleeder screw.
8. Remove pressure bleeder.
9. Open bleeder screw at master cylinder. Actuate cylinder to remove any residual air. Tighten bleeder screw before permitting pedal to return.
10. Actuate pedal several times. If pedal is spongy, check for system leaks and repeat bleeding process.

BENCH BLEEDING INSTRUCTIONS

1. This process can be done in a bench vise or on the vehicle with master cylinder mounted to power assist section.
2. Remove master cylinder filler cap assembly.
3. Connect a length of tubing to an outlet port and immerse the other end below the fluid level in the master cylinder reservoir. Keep reservoir fluid within 1/2" of inside reservoir top.
4. Actuate master cylinder piston with a smooth object large enough to hold the small internal piston from coming out. Slowly stroke and release master cylinder piston 1 3/8 - 1 1/2 inches. Repeat until air bubbles in reservoir have ceased.
5. Remove tubing. This should be done quickly so the loss of brake fluid will be minimized.
6. If cylinder was bench bled in a vise, it must now be attached securely to the power assist section and mounted on vehicle. Finish all plumbing connections before continuing to step 7.
7. Bleed remaining air from system by depressing brake pedal and opening bleeder fitting closest to master cylinder. Close bleeder fitting before brake pedal is released. Continue to next bleeder port. In all cases the bleeder fittings must be closed before the brake pedal is released or air will be pulled in through the bleeder and ingest unwanted air in the system.
8. Fill reservoir to within 1/2" of top and install filler cap assembly.
9. Be certain all fittings are tight to avoid any leaking.
10. Actuate pedal several times. If brake pedal feels spongy, check for system leaks and repeat bleeding process.

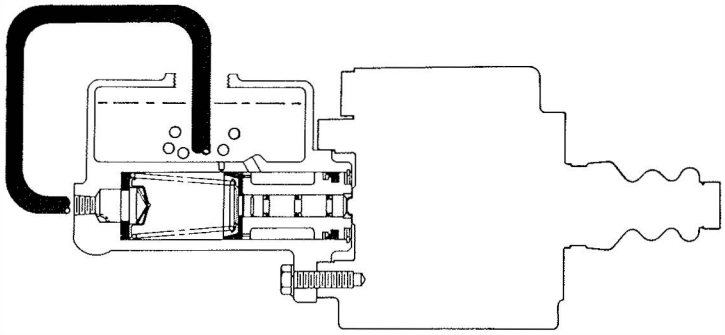


FIGURE 5

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