

BOOSTED MASTER CYLINDER (Power Assist Section) Service Instructions

MASTER CYLINDER SECTION - Automotive Brake Fluid

POWER ASSIST SECTION - Mineral Base Hydraulic Oil

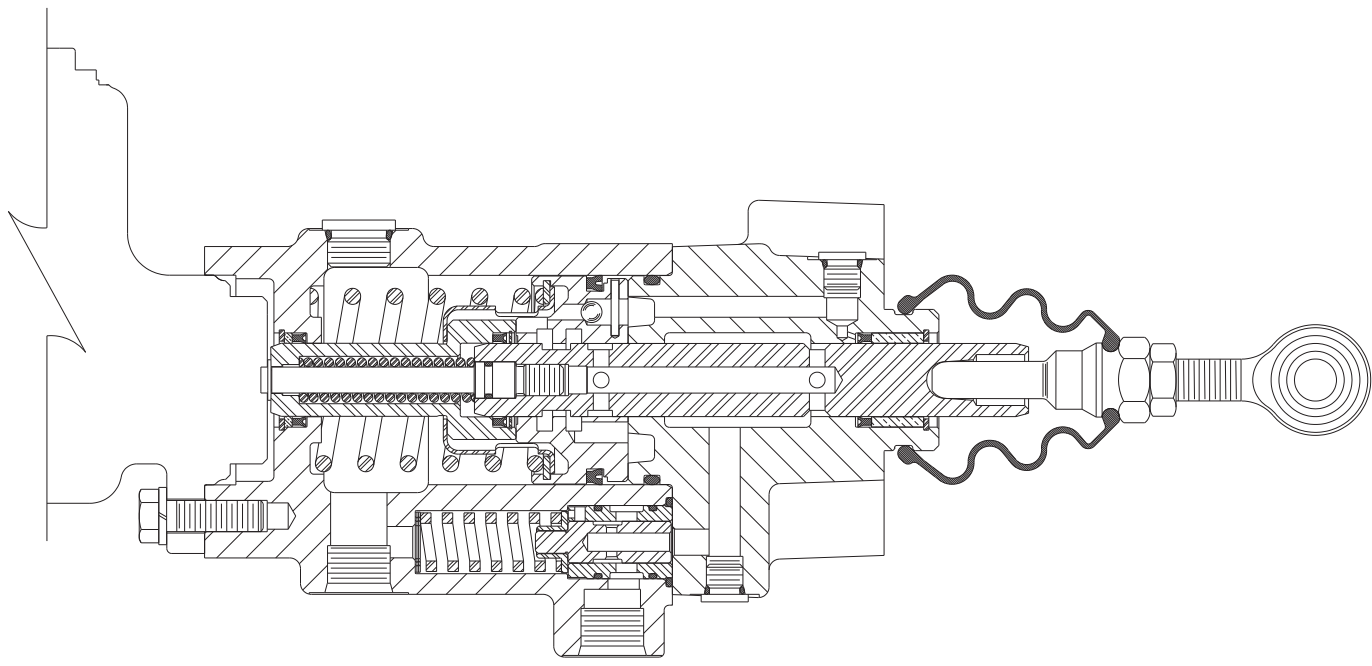


FIGURE 1

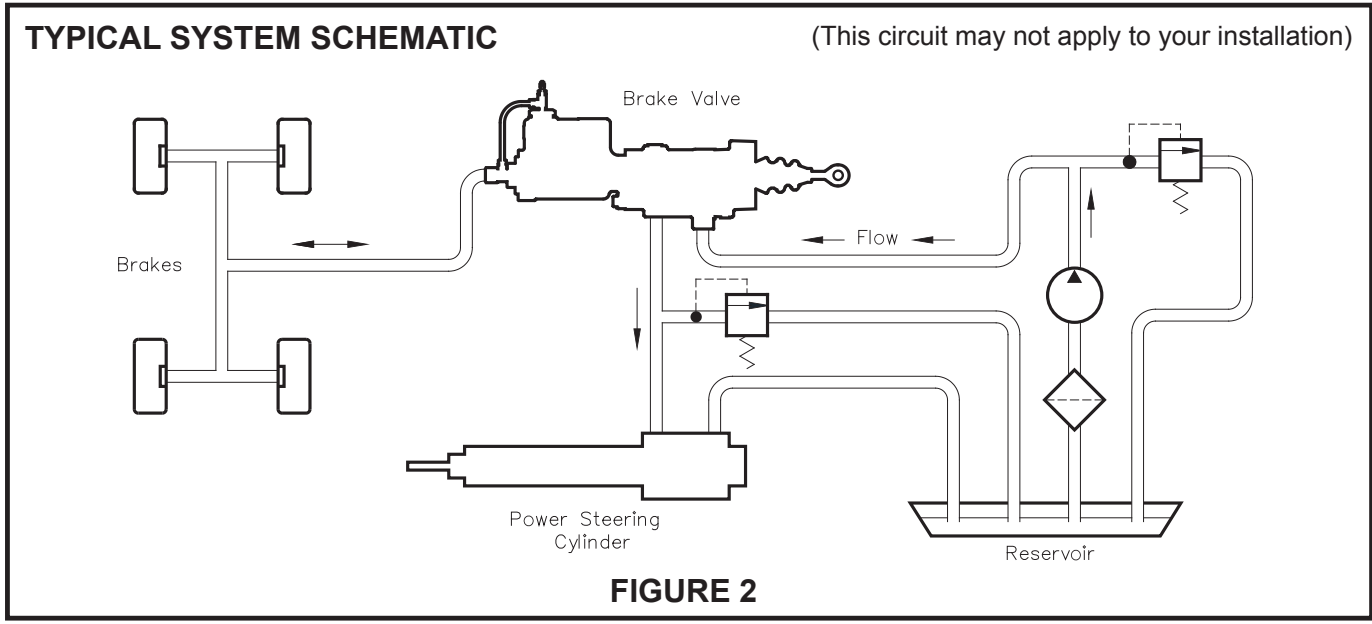
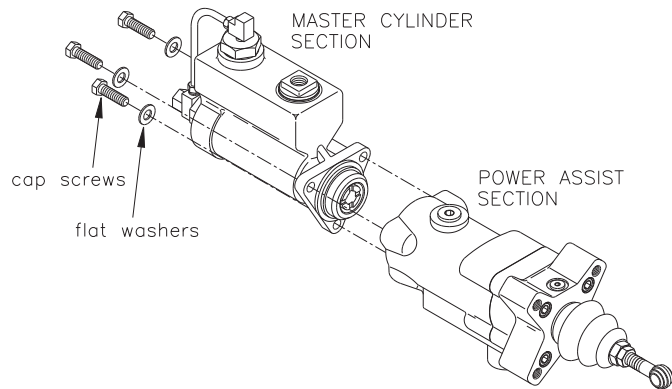


FIGURE 2

REMOVING MASTER CYLINDER FROM THE MACHINE AND SEPARATING SECTIONS

(Refer to Figures 1 and 3)

1. Remove the master cylinder assembly from the machine by disconnecting the necessary fluid lines, disconnecting the push rod, and removing the mounting bolts. Drain the fluid from the assembly.
2. Separate the master cylinder section from the power assist section by removing three cap screws and three flat washers.



CONNECTING SECTIONS AND MOUNTING MASTER CYLINDER ON THE MACHINE

(Refer to Figures 1 and 3)

1. Attach the master cylinder section to the power assist section with three cap screws and three flat washers. Torque cap screws 29.8-36.6 N·m (22-27 lb·ft).
2. Install the master cylinder assembly on the machine. Connect the push rod. Connect the fluid lines. Fill the reservoir and bleed the system of air.

FIGURE 3

Tighten fittings if leaks occur. Make several applications to be sure the master cylinder is working properly.

NOTE: All fittings must be inspected for leaks and tightened if leaks occur.

DISASSEMBLY

(Refer to Figures 1 and 4)

1. Drain fluid from the unit before disassembling.
2. Remove push rod (2) and boot (3) from the power assist section.
3. Evenly loosen and remove four cap screws (1).

⚠ CAUTION

Housings (7 & 21) are under tension of spring (20).

4. Separate housing (7) from housing (21).
5. Remove internal parts assembly (9) and spring (20) from the large bore end of housing (21).
6. Remove o-ring (25), sleeve (27), spring (31), and shim(s) (32) from housing (21). Note the number of shim(s) removed for reassembly purposes.
7. Remove o-rings (26 & 28), piston (29), and retainer (30) from sleeve (27).
8. Remove retaining ring (24), spacer (23), and cup (22) from the small bore end of housing (21). **NOTE: Be careful not to scratch or mar housing bore.**
9. Remove o-ring (8) from housing (7).
10. Remove retaining ring (4), spacer (5), and cup (6) from the push rod end of housing (7). **NOTE: Be careful not to scratch or mar housing bore.**
11. Separate piston (12) from rod and piston assembly (10) by removing retaining ring (19) and retainer (18).
12. Remove cup (11) from piston (12).
13. Remove piston (16) from rod and piston assembly (10) by depressing piston (16) and removing retaining ring (17).

⚠ CAUTION

Piston (16) is under tension of spring (13).

14. Carefully remove retaining ring (14), spring (13), and cup (15) from piston (16). **NOTE: Be careful not to scratch or mar housing bore.**

ASSEMBLY

(Refer to Figures 1 and 4)

Use only mineral base hydraulic oil in power assist section.

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

1. Clean all parts thoroughly before assembling.
2. Install spring (13), new cup (15), and retaining ring (14) in piston (16). Note direction of cup (15). **NOTE: Be careful not to scratch or mar housing bore.**
3. Install piston (16) on rod and piston assembly (10). Depress piston (16) and install new retaining ring (17).
4. Install new cup (11) on piston (12). Note direction of cup (11).
5. Install piston (12) on rod and piston assembly (10). Note direction of piston (12). **NOTE: Be careful not to scratch or mar housing bore.**
6. Install retainer (18) and retaining ring (19) on piston (12).
7. Install new cup (6), spacer (5), and new retaining ring (4) in housing (7). Note direction of cup (6). **NOTE: Be careful not to scratch or mar housing bore.**
8. Install new o-ring (8) on housing (7).
9. Install new cup (22), spacer (23), and new retaining ring (24) in housing (21). Note direction of cup (22). **NOTE: Be careful not to scratch or mar housing bore.**
10. Install new o-rings (26 & 28) on sleeve (27).
11. Install retainer (30) on piston (29). Install piston (29) in sleeve (27).
12. Install shim(s) (32), spring (31), and sleeve assembly (27) in housing (21). Be sure to install the same number of shim(s) (32) as were removed.
13. Install new o-ring (25) in o-ring pocket on housing (21).
14. Install spring (20) and internal parts assembly (9) in housing (21).
15. Assemble housings (7 & 21) using four cap screws (1). Evenly tighten screws (1) and torque 54.2-61.0 N·m (40-45 lb·ft).
16. Install new boot (3) on housing (7). Install push rod (2) in boot.
17. To continue with assembly refer to CONNECTING SECTIONS AND MOUNTING MASTER CYLINDER ON THE MACHINE on the top of this page.

● Items included in Repair Kit

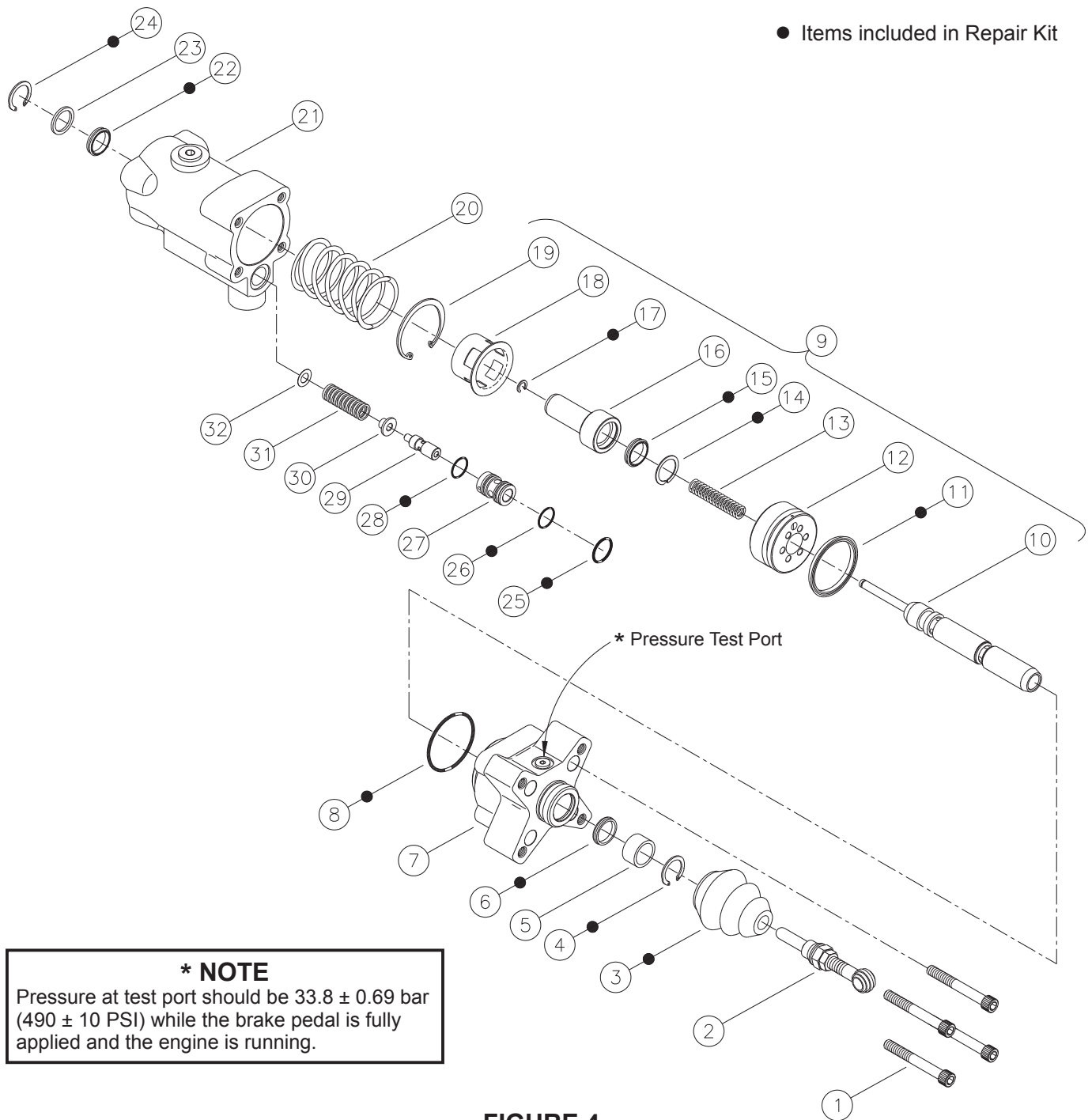


FIGURE 4

BLEEDING PROCEDURES

NOTE

Use only proper fluid specified by machine manufacture. Never reuse fluid that has been drained from the system. Be sure that you maintain a high level of fluid in the reservoir during and after the entire bleeding process.

PRESSURE BLEEDING INSTRUCTIONS

1. Master cylinder must be mounted to power assist section.
2. Fill reservoir with proper fluid.
3. Be certain all fittings are tight to avoid leaking.
4. DO NOT DEPRESS PEDAL.
5. Connect the pressure bleeder to the reservoir adapter. Recommended bleeding pressure is 2.07 bar (30 PSI) maximum. **NOTE: Make sure to use correct pressure bleeder for the type fluid used in the system.**
6. Open bleeder screw closest to the master cylinder outlet. Most of the air contained in the system will escape by this route. Close the bleeder screw.
7. Continue to the next bleeder screw and so on. At each point when air bubbles disappear close bleeder screw.
8. Remove the pressure bleeder.
9. Open the bleeder screw at master cylinder. Actuate the master cylinder to remove any residual air. Tighten the bleeder screw before allowing the pedal to return.
10. Depress the pedal several times. If the pedal is spongy, check for system leaks and repeat bleeding process.
11. Fill the reservoir to within 12.7 mm (0.50 in) of the top. Install the filler cap and torque 33.9-40.7 N·m (25-30 lb·ft).

BENCH BLEEDING INSTRUCTIONS

(Refer to Figure 5)

1. This process can be done in a bench vise or on the machine with master cylinder mounted to power assist section.
2. Remove the master cylinder filler cap.
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 the reservoir fluid to within 12.7 mm (0.50 in) of the top.
4. Actuate the 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 34.9-38.1 mm (1.38-1.50 in). Repeat until air bubbles in reservoir have ceased.
5. Remove the tubing. This should be done quickly so the loss of fluid will be minimized.
6. If the master cylinder was bench bled in a vise, it must now be attached securely to the power assist section and mounted on the machine. Complete all plumbing connections before continuing to step 7.
7. Bleed remaining air from the system by applying the brake pedal and opening bleeder screw closest to the master cylinder. Close bleeder screw before the brake pedal is released. Continue to next bleeder screw. In all cases the bleeder screw must be closed before the brake pedal is released or air will be pulled in through the bleeder and ingest unwanted air into the system.
8. Fill the reservoir to within 12.7 mm (0.50 in) of the top. Install the filler cap and torque 33.9-40.7 N·m (25-30 lb·ft).
9. Be sure all fittings are tight to avoid any leaking.
10. Depress the pedal several times. If the brake pedal feels spongy, check for system leaks and repeat the bleeding process.

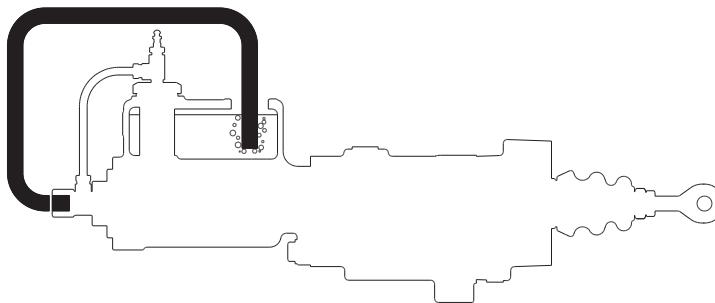


FIGURE 5