# PRESSURE MODULATING VALVE

## Service Instructions

**TABLE 1** (Specifications)

| Model Number | Repair Kit Number | Maximum Brake Pressure Setting | | Push Rod Force at Maximum Pressure | | Pedal Angle | Approximate Pedal Force at Maximum Pressure | | Total Pedal Travel |
|---|---|---|---|---|---|---|---|---|---|
| | | bar | (PSI) | kgf | (lb) | | kgf | (lb) | |
| * 06-460-308 | 06-400-018 | 66 ± 1.7 | (950 ± 25) | 420 | (925) | n/a | n/a | | n/a |
| * 06-460-312 | 06-400-018 | 22 ± 1.7 | (325 ± 25) | 163 | (360) | n/a | n/a | | n/a |
| * 06-460-316 | 06-400-018 | 43 ± 1.7 | (625 ± 25) | 304 | (650) | n/a | n/a | | n/a |
| * 06-460-348 | 06-400-018 | 31 ± 1.7 | (450 ± 25) | 225 | (495) | n/a | n/a | | n/a |
| * 06-460-358 | 06-400-018 | 24 ± 1.5 | (350 ± 20) | 171 | (376) | n/a | n/a | | n/a |
| 06-460-378 | 06-400-018 | 24 ± 1.5 | (350 ± 20) | n/a | | 50° | 30 | (67) | 14° |
| 06-460-384 | 06-400-018 | 34 ± 1.7 | (500 ± 25) | n/a | | 50° | 35 | (77) | 14° |
| 06-460-390 | 06-400-018 | 26 ± 1.7 | (375 ± 25) | n/a | | 50° | 36 | (80) | 14° |
| 06-460-392 | 06-400-018 | 50 ± 3.5 | (725 ± 50) | n/a | | 50° | 47 | (103) | 18.5° |
| ** 06-462-364 | 06-400-122 | 22 ± 1.7 | (325 ± 25) | n/a | | 45° | 27 | (60) | n/a |

* Valve only, no pedal and base assembly.
** Uses two valves.
**NOTE: If your product number is not listed, contact ZF Off-Highway Solutions Minnesota Inc. for information.**

**Brake valve displacement is a variable specification with all Modulating Hydraulic Power Brake Valves. The determining factors include brake volume, accumulator capacity as it relates to brake pressure, the number of "off-power" stops and brake response time required.**

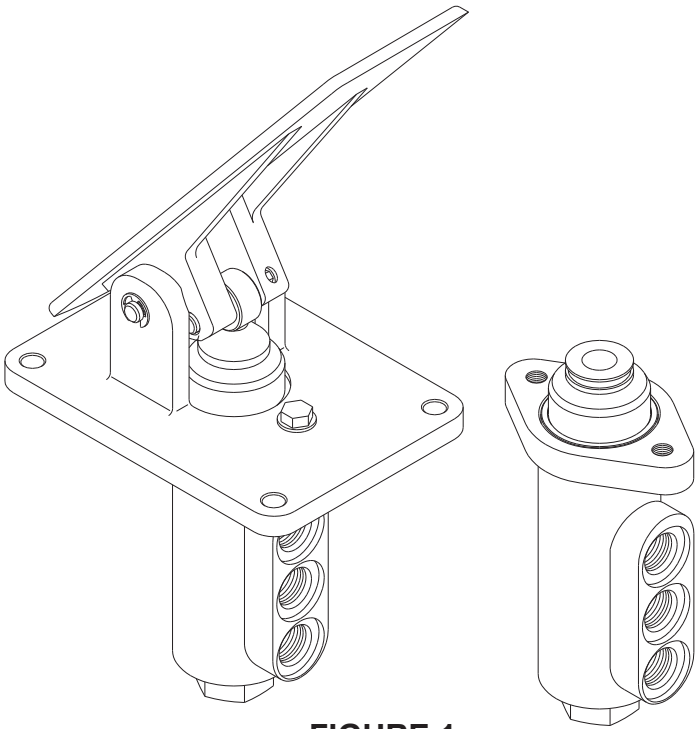

**FIGURE 1**

## DISASSEMBLY

(Refer to Figure 2)

1. Separate pedal and base assembly (3) from valve by removing cap screws (1) and lock washers (2).
2. Remove ring (4) and boot (5) from housing (16).
3. Remove input piston (6), shim(s) (7), spring (8) and spring (9) from housing bore. Note number of shim(s) removed for reassembly purposes. **NOTE: Not all models use spring (9). Piston (6) shown in Figure 2 may appear different than the piston removed from your valve.**
4. Remove o-ring (10) from housing bore. **NOTE: Be careful not to scratch housing bore.**
5. Remove retaining ring (11) from housing bore. **NOTE: Be careful not to scratch housing bore.**
6. Remove cupped washer (12) and piston (13) from housing bore. **NOTE: Some models use a flat washer in place of cupped washer (12).**
7. Remove spring (15) and cup (14) from piston (13). Note direction of cup (14).
8. Remove plug (26) from housing (16).
9. Remove o-ring (25), cup (23), and back-up ring (24) from plug (26).
10. Remove washer (22), spring (21), guide (20), and spacer (19) from housing bore.
11. Remove ball valve assembly (18) from housing bore.
12. Remove o-ring (17) from valve assembly (18).
13. Disassembly of pedal and base assembly (3) is not necessary unless it is not working properly. Be sure cam is in good working order and moves freely.

## ASSEMBLY

(Refer to Figure 2)

CLEAN AND INSPECT ALL PARTS FOR WEAR. LUBRICATE ALL RUBBER COMPONENTS FROM REPAIR KIT WITH CLEAN SYSTEM FLUID.

1. Install new o-ring (17) on ball valve assembly (18) and insert into housing bore. Note direction of valve assembly. **NOTE: Be sure valve assembly seat is fully seated into housing.**
2. Install new spacer (19) into housing bore.
3. Install new o-ring (25) on plug (26).
4. Insert new back-up ring (24) and new cup (23) inside of plug (26). Note direction and order of back-up ring and cup.
5. Install guide (20), spring (21) and washer (22) in plug (26). Install plug (26) in housing bore and torque 54.2-67.8 N·m (40-50 lb·ft).
6. Install new cup (14) and spring (15) on piston (13). Note direction of cup (14).
7. Install piston (13) in housing bore. Note direction of piston (13).
8. Install cupped washer (12) in housing bore. **NOTE: Some models use a flat washer in place of cupped washer (12).**
9. Install retaining ring (11) in housing bore. **NOTE: Be careful not to scratch housing bore.**
10. Install new o-ring (10) in housing bore.
11. Install spring (9), spring (8), shim(s) (7), and input piston (6) in housing bore. Be sure to install the same number of shim(s) as were removed during disassembly. **NOTE: Not all models use spring (9). Input piston (6) shown in Figure 2 may appear different than the piston removed from your valve.**
12. Install new boot (5) and new ring (4) on housing (16).
13. Attach pedal and base assembly (3) to valve using cap screws (1) and lock washers (2). Torque cap screws 29.8-36.6 N·m (22-27 lb·ft).

● Items included in Repair Kit
✻ Not used in all models

**NOTE: Not all models include pedal and base assembly.**

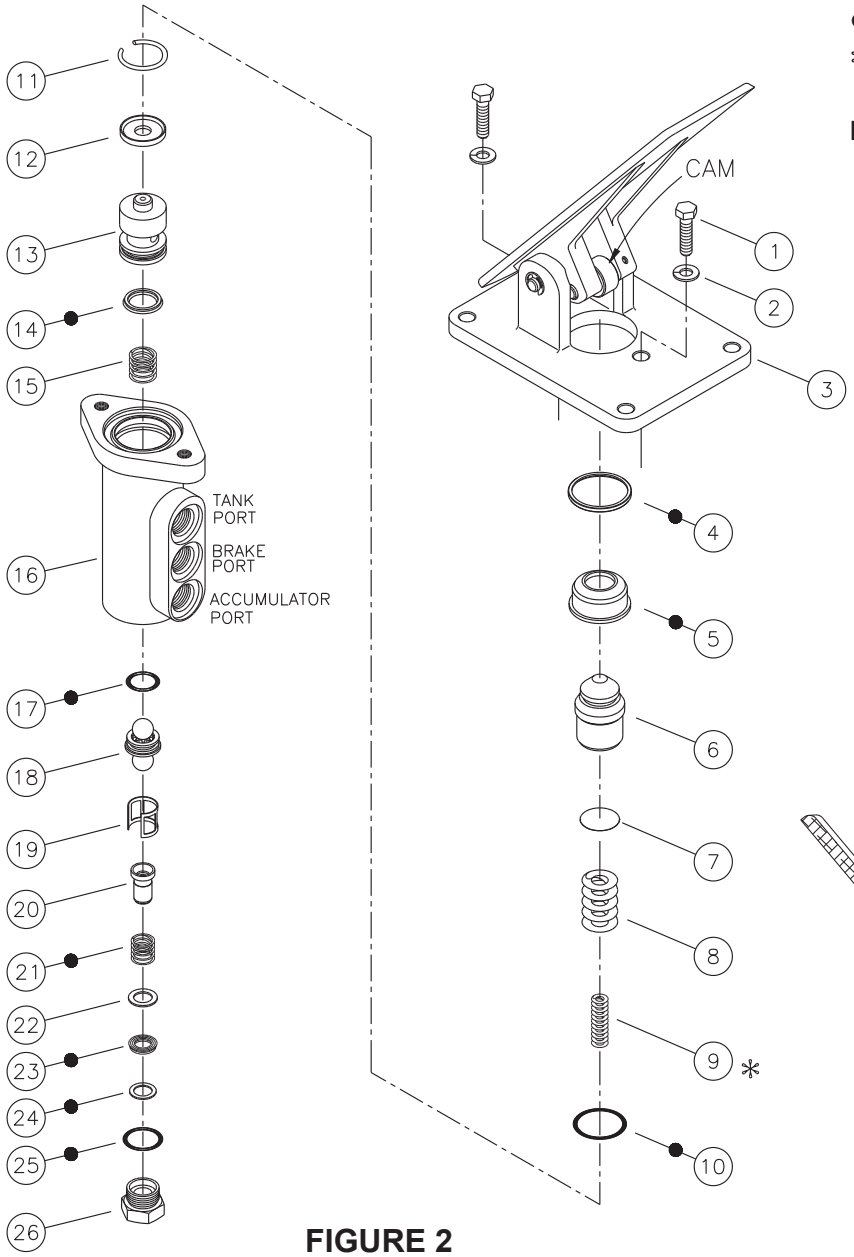


**FIGURE 2**

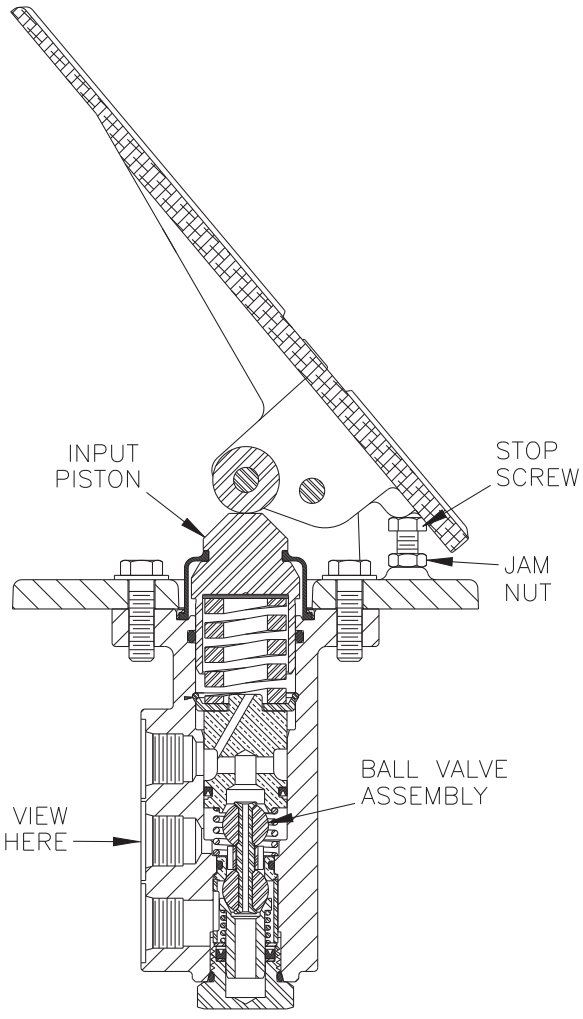


**FIGURE 3**

## NOTE

If the stop screw or jam nut shown in Figure 3 are loosened or removed, they must be properly reset. Adjust stop screw and nut to allow 1.52 mm (0.060 in) minimum travel of input piston (6) before before internal ball valve assembly (18) begins to move. Torque nut 24.4-29.8 N·m (18-22 lb·ft). The correct adjustment can be determined by viewing or feeling the ball valve assembly (18) through the port shown in Figure 3.

After service, the valve must develop the pressure indicated in the specifications, TABLE 1. Shim(s) (7) may be added or removed to obtain the correct pressure setting.

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