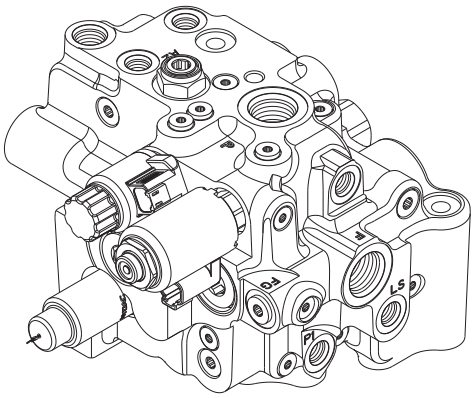


ACCUMULATOR CHARGING VALVE AND FAN SPEED CONTROL

Caterpillar Part Numbers: 467-3081, 579-9586

Product Explanation, Operating Information, and Service Instructions

PRODUCT EXPLANATION

The accumulator charging and fan speed control valve is designed for installation in a load sensing hydraulic system. The valve senses pressure at the lower pressure of two accumulator ports. If the lower pressure is below a specified limit a load sense signal is sent to command flow to the accumulator ports. When pressure at the accumulator ports reaches a specified upper limit the load sense command signal ends.

The accumulator charging and fan speed control valve controls speed of a hydraulic motor used to drive a fan. This is done with an electrohydraulic pilot valve. The pilot valve sends a load sense signal to command flow to the fan port. Fan speed is reverse modulated. With the pilot valve off, load sense signal and fan speed are at maximum. Minimum fan speed is with the pilot valve fully energized.

Priority is given to sending flow to the accumulator ports. Flow to the fan port passes through a flow compensation spool valve to maintain fan speed at commanded level as system pressure changes.

The accumulator charging and fan speed control valve has a full flow pressure relief valve.

The accumulator charging and fan speed control valve also includes a pressure reducing valve for external pilot pressure. The pressure reducing valve provides a pressure signal to an external port.

OPERATING INFORMATION

End user must provide proper maintenance of valve, should it become inoperable, by replacing the valve or servicing it with the proper repair kit. Use Caterpillar repair kit, part number 478-7695, for this valve. Observe Service Instruction procedures on the following pages. See Warnings A, B, and C below.

IMPORTANT INFORMATION

A **⚠ WARNING**

Due to allowable operating temperature of accumulator charging valve avoid contact or burn injury may occur.

B **⚠ WARNING**

Be sure system energy is relieved from accumulator charging valve before removing from machine. See machine operating instructions for procedures to relieve system energy.

C **⚠ WARNING**

Relief valve is preset at the factory. DO NOT READJUST or system damage or failure may occur.

Part Numbers: 467-3081, 579-9586

NOTE

Locate the part number on the accumulator charging valve and compare it to the part number listed above. Be sure you have the proper service instructions.

This literature may service similar designs of this charging valve. The components shown in Figures 1 and 2 may appear different than what is found in your valve.

SERVICE INSTRUCTIONS

⚠ WARNING

Be sure system energy is relieved from accumulator charging valve before removing from machine. See machine service manual for procedures to relieve system energy.

Disassembly

(Refer to Figure 2)

1. Disconnect fluid lines and electrical connections and remove accumulator charging valve from machine as recommended in the machine service manual.
2. Remove hex nut and washer from top of solenoid valve assembly (1). Remove coil from solenoid valve assembly (1). Remove solenoid valve assembly (1) from housing (43), cavity 5, by turning counter-clockwise on solenoid valve wrench flats.
3. Remove plastic knob from top of solenoid valve assembly (2). Remove solenoid valve assembly (2) from housing (43), cavity 3, by turning counter-clockwise on solenoid valve wrench flats.
4. **NOTE: Service items (37) are included in a separate seal kit 360-1280.** Remove relief valve (36) from from housing (43) using hex flats. If replacing seals, remove o-ring (40), back-up ring (39) and o-ring (38) from relief valve (36).

⚠ WARNING

Relief valve (36) is preset at the factory. DO NOT READJUST or system damage or failure may occur.

5. **Directional spring (7) is attached to screw assembly (5) by means of the small diameter end of spring (7) being snapped into a groove on the nose end of screw assembly (5). See Figure 2b.** Remove nut (3) from screw assembly (5). Remove screw assembly (5)/spring (7) from housing (43) cavity 1. Remove o-ring (4) from screw assembly (5) from nut (3) side of screw assembly. Remove shim (6), steel ball (8), seat (9), o-ring (10), orifice (11), screen (12), and washer (13) from housing (43) cavity 1.
6. Remove plug (14) from housing (43), cavity 8. Remove o-ring (15) from plug (14).
7. Using a hex key wrench remove shuttle valve assembly (16) from housing (43), cavity 8. Turn hex key wrench counter-clockwise. Remove two back-up rings (17) and o-ring (18) from shuttle valve (19).
8. Remove plug (20) and spring (22) from housing (43), cavity 6a. Remove o-ring (21) from plug (20).
9. Remove plug (25) from housing (43), cavity 6b. Remove o-ring (21) from plug (25).
10. Using a 6.35-7.87 mm (0.25-0.31 in) diameter wood or plastic dowel, carefully remove spool (24) from cavity 6a side of housing (43). Remove quad ring (23) from spool (24).
11. Remove plug (29) from housing (43), cavity 4b. Remove o-ring (21) from plug (29).
12. Remove plug (26) and spring (27) from housing (43), cavity 4a. Remove o-ring (21) from plug (26).
13. Remove spool (28) from housing (43), cavity 4a. Remove quad ring (23) from spool (28).
14. Remove plug (30), spring (31), and poppet (32) from housing (43), cavity 2a. Remove o-ring (15) from plug (30).
15. Remove plug (33), spring (34), and poppet (35) from housing (43), cavity 2b.
16. Remove plug (41) from housing (43), cavity 9. Remove o-ring (42) from plug (41).

Assembly

(Refer to Figure 2)

NOTE

Observe torque specifications as indicated in assembly procedures or system damage or failure may occur.

WASH ALL PARTS WITH CLEAN SOLVENT AND DRY. LUBRICATE ALL RUBBER PARTS WITH CLEAN SYSTEM FLUID PRIOR TO ASSEMBLY. BE SURE ENTIRE ASSEMBLY PROCEDURE IS DONE WITH CONTAMINATION FREE METHODS.

1. Inspect internal orifices shown in Figure 1 on page 3 to be sure they are free of obstruction or contamination. Introduce pressurized air into these cavities to clear any contamination or debris. **NOTE: Do not attempt to remove the screw-in orifices.**
2. Install new o-ring (42) on plug (41). Install plug (41) in housing (43), cavity 9. Torque plug (41) 13.6-19.0 N·m (10-14 lb·ft).
3. Install new o-ring (21) on plug (29). Install plug (29) in housing (43), cavity 4b. Torque plug (29) 94.9-101.7 N·m (70-75 lb·ft).
4. Install new quad ring (23) on spool (28). Install new o-ring (21) on plug (26).
5. Lubricate spool (28) with clean system fluid. Install spool (28), spring (27), and plug (26) in housing (43), cavity 4a. Torque plug (26) 94.9-101.7 N·m (70-75 lb·ft).
6. Install new o-ring (21) on plug (25). Install plug (25) in housing (43), cavity 6b, and torque 94.9-101.7 N·m (70-75 lb·ft).
7. Install new quad ring (23) on spool (24). Install new o-ring (21) on plug (20).
8. Lubricate spool (24) with clean system fluid. Install spool (24), spring (22), and plug (20) in housing (43), cavity 6a. Torque plug (20) 94.9-101.7 N·m (70-75 lb·ft).
9. Install two new back-up rings (17) and new o-ring (18) on shuttle valve (19). Note, new back-up rings (17) and o-ring (18) are in a separate bag within the repair kit.
10. Install shuttle valve assembly (16) in housing (43), cavity 8. Use a hex key wrench and torque shuttle valve assembly (16) 5.4-6.8 N·m (4-5 lb·ft).
11. Install new o-ring (15) on plug (14). Install plug (14) in housing (43), cavity 7, and torque 27.1-32.5 N·m (20-24 lb·ft).
12. **Directional spring (7) is attached to screw assembly (5) by means of the small diameter end of spring (7) being snapped into a groove on the nose end of screw assembly (5). If necessary, reattach the small diameter of spring (7) into the groove on the nose end screw assembly (5) using a slight twisting motion. See Figure 2a.** Position housing with cavity 1 facing up. Install new o-ring (4) on screw assembly (5) from nut (3) side of screw assembly. Install washer (13),

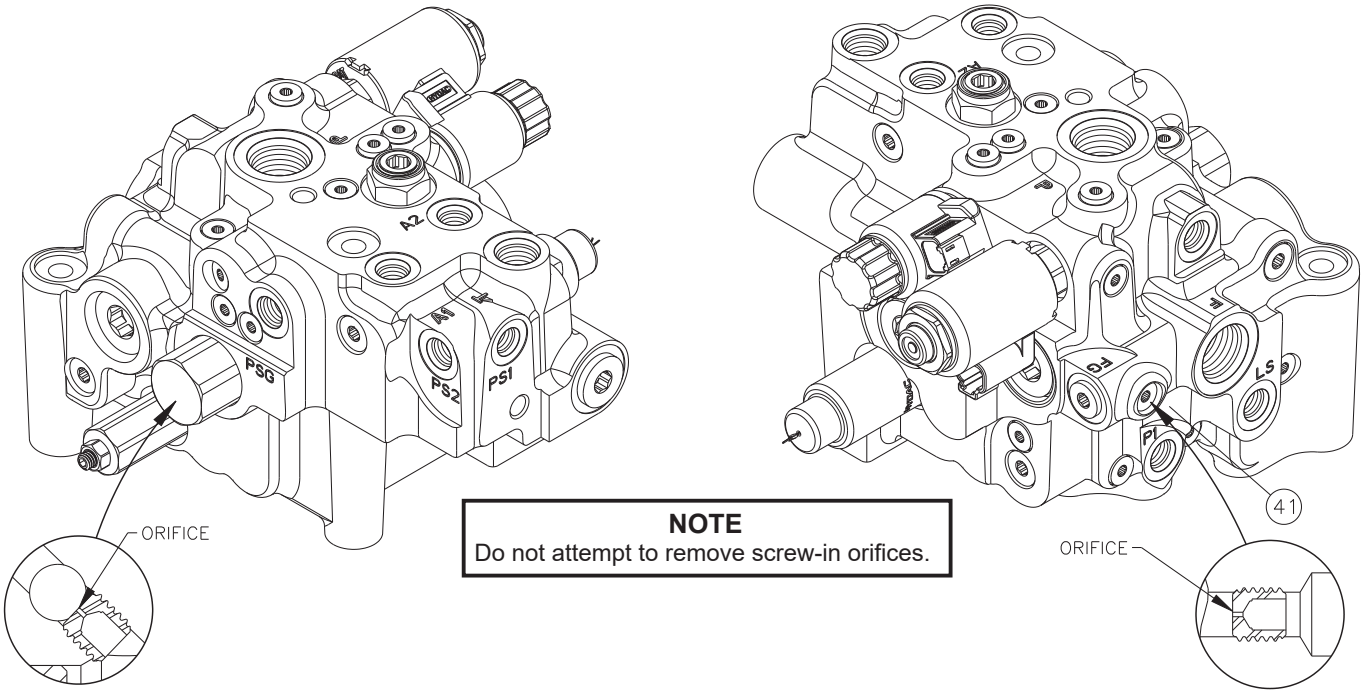
new screen (12), orifice (11), new o-ring (10), seat (9), and steel ball (8) in housing (43), cavity 1. Fully lubricate shim (6) with clean system fluid and install in housing (43) on end of seat (9). Install screw assembly (5)/spring (7) in housing (43) cavity 1. Torque screw assembly (5) 24.4-29.8 N·m (18-22 lb·ft). Then install nut (3) on screw assembly (5) and torque nut 43.4-51.5 N·m (32-38 lb·ft).

13. Install solenoid valve assembly (2) in housing (43), cavity 3. Torque solenoid valve assembly (2) on wrench flats 24.4-29.8 N·m (18-22 lb·ft). Install plastic knob and torque 2.7-3.2 N·m (24-28 in-lb). **NOTE: Solenoid valve assembly (2) seals are not included in repair kit. Contact machine manufacture for proper replacement seals. Note the orientation of solenoid valve assembly (2).**
14. Install solenoid valve assembly (1) in housing (43), cavity 5. Torque solenoid valve assembly (1) on wrench flats 43.4-57.0 N·m (32-42 lb·ft). Install washer and nut. Torque the hex nut 3.5-4.5 N·m (31-40 lb·in). **NOTE: Solenoid valve assembly (1) seals are not included in repair kit. Contact machine manufacture for proper replacement seals. Note orientation of solenoid valve assembly (1).**
15. **NOTE: Service items (37) are included in a separate seal kit 365-5724.** If replacing seals, install new o-ring (38), new back-up ring (39), and new o-ring (40) on relief valve (36). Note order of o-rings and back-up ring. Install relief valve (36) housing (43) and torque 50.2-59.7 N·m (37-44 lb·ft) using hex flats.

⚠ WARNING

Relief valve (36) is preset at the factory. DO NOT READJUST or system damage or failure may occur.

16. See machine servicing instructions to properly reinstall accumulator charging valve. Contact machine manufacture for additional service kits and replacement compnents for the accumulator charging valve.



NOTE
Do not attempt to remove screw-in orifices.

FIGURE 1

● Items included in Repair Kit Number 478-7695

■ Items included in Repair Kit Number 365-5724

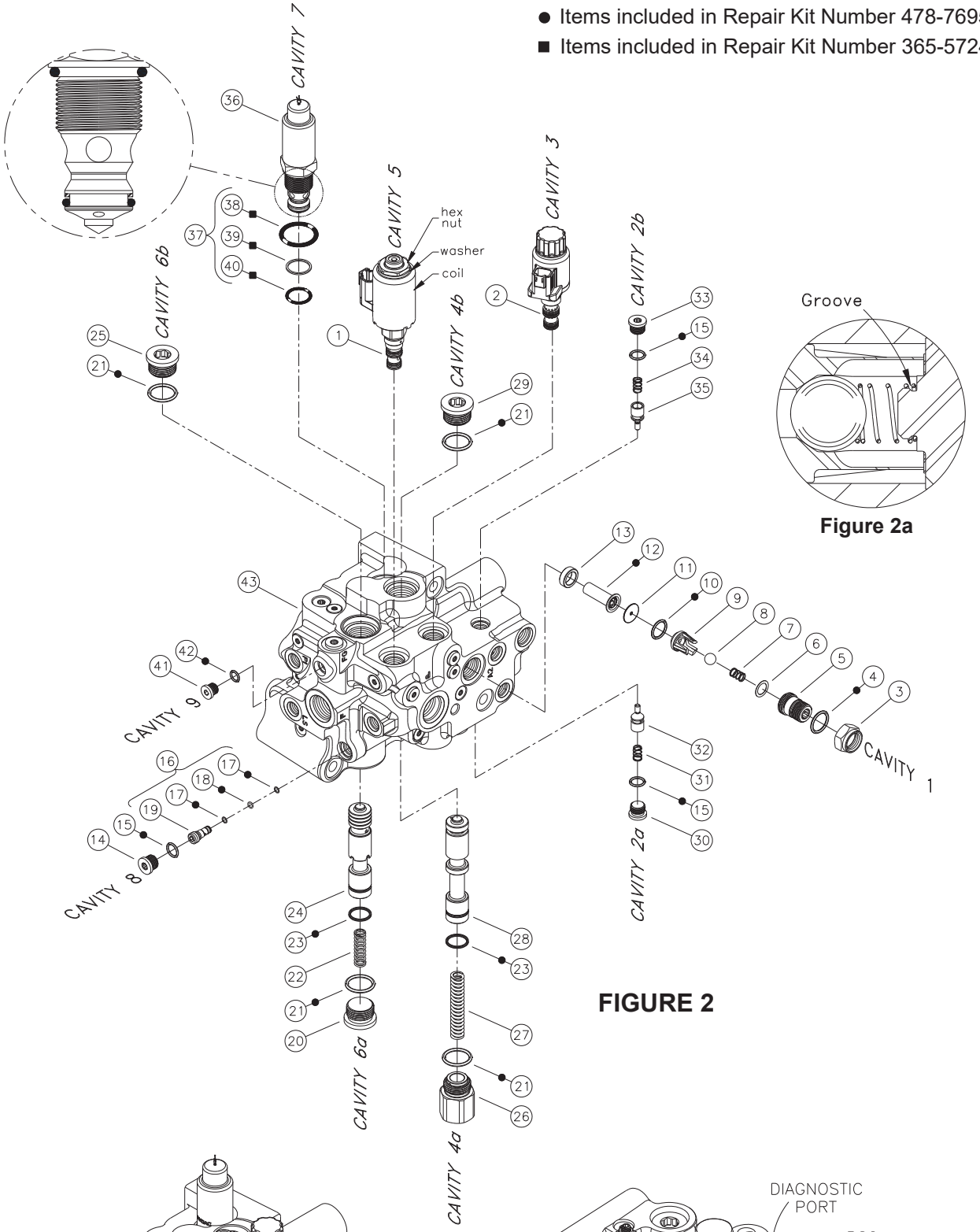


Figure 2a

FIGURE 2

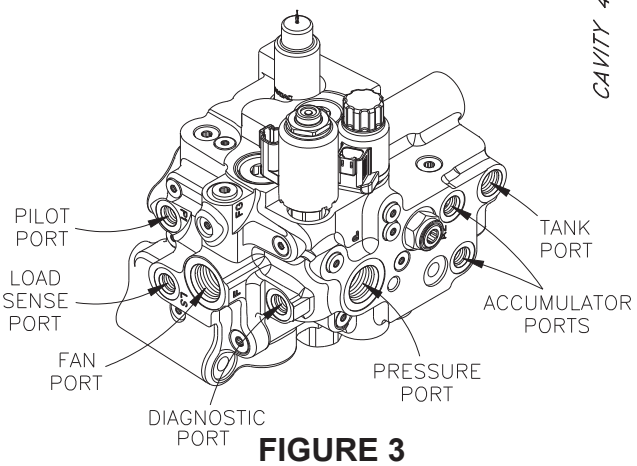


FIGURE 3

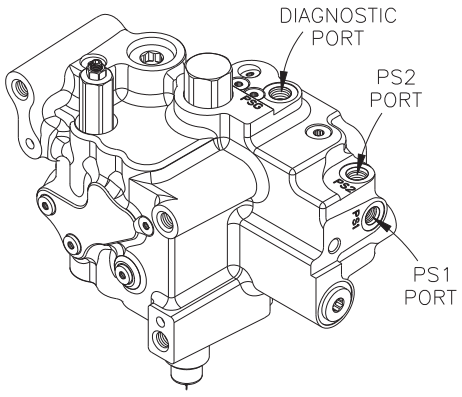


FIGURE 4