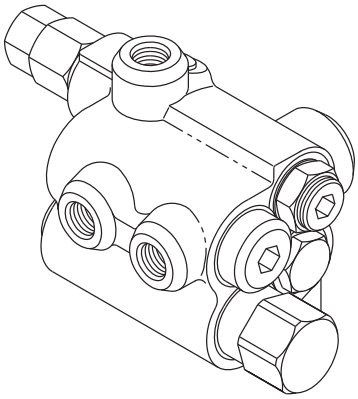

Dual ACCUMULATOR CHARGING VALVE with RELIEF VALVE

Product Explanation, Operating Information and Service Instructions

PRODUCT EXPLANATION

The accumulator charging valve is designed for installation in an open center hydraulic system between the pump and the hydraulic system reservoir.

The accumulator charging valve supplies oil on demand to the accumulators from the open center circuit and isolates the pressure at each of its accumulator ports from one another. Accumulator charging is accomplished at a preset rate (GPM) and is relatively constant within the preset pressure limits.

Excess flow at the tank port is routed directly back to the hydraulic system reservoir.

The accumulator charging valve incorporates a full flow relief valve to limit the maximum pressure in the hydraulic system.

The accumulator charging flow rate, upper and lower accumulator pressure limits and relief valve setting are set at the time of manufacture.

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. See TABLE 1 for proper repair kit number. Observe Service Instruction procedures on following pages.
See Warnings A, B, C & D.

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 RE-ADJUST or system damage or failure may occur.

D **⚠ WARNING**

Do not exceed the high limit pressure setting indicated in TABLE 1 or system damage or failure may occur.

Form No. 81-463-013 Revised 2004-03-25

NOTE

Locate the identification number on the accumulator charging valve and compare it to the identification number in TABLE 1. Be sure you have the proper service instructions.

SERVICE INSTRUCTIONS

⚠ 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.

Disassembly

(Refer to Figure 1)

1. Remove end plug (1) from housing (51) and remove o-ring (2) from end plug. **NOTE: End plug is under spring tension.**
2. Remove springs (5 & 4) and shim(s) (3) from housing (51). Note the number of shim(s) removed for reassembly purposes. **NOTE: Not all models use spring (5) or shim(s) (3).**
3. Remove plug (10) from housing (51) and remove o-ring (9) from plug.
4. Using a 6.35 mm (0.25 in) diameter wooden or plastic dowel, carefully push stop (6) and piston (7) from bore out plug (1) side of housing. **NOTE: Not all models use stop (6).**
5. Remove o-ring (8) from piston (7).
6. Loosen nut (11) and remove screw assembly (12) from housing. Remove o-ring (13) from screw assembly.
7. Remove spring (14), poppet (15), seat (16), o-ring (17), washer (18), and washer (19) from housing.
8. Remove end plug (20) from housing and remove o-ring (21) from end plug.
9. Remove spring (22), poppet (23), sleeve (25), poppet (27) and spring (28). Remove o-rings (24 & 26) from sleeve. **NOTE: Be careful not to scratch or mar housing or sleeve bore.**
10. Remove plug (44) from housing and remove o-ring (43) from plug.
11. BEFORE moving screw (41), ACCURATELY MEASURE ITS DEPTH from the end of housing and record for reassembly purposes. Remove screw (41) from housing.
12. Remove spring (40), retainer (39) and ball (38). Be sure to keep ball (38) separate from ball (33) for reassembly purposes.
13. Remove pin (42) from screw (41) using a drive pin punch. Be careful not to damage screw threads.
14. Remove plug (29) from housing and remove o-ring (30) from plug.
15. Remove spring (31), stop (32) and ball (33) from housing.
16. Using a 6.35 mm (0.25 in) diameter wooden or plastic dowel, carefully push insert (35) and spool (34) from bore out plug (29) side of housing. **NOTE: Be careful not to scratch or mar valve seats on insert (35).**
17. Remove spool (34) from insert (35). Remove o-rings (37 & 36) from insert.
18. Remove relief valve (48) from housing. Remove o-rings (45 & 47) and back-up ring (46) from relief valve. Note order of components. Be careful not to damage grooves on relief valve.

⚠ WARNING

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

19. Remove plug (50) from housing and remove o-ring (49) from plug.

Assembly

(Refer to Figure 1)

NOTE

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

CLEAN 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. Install new o-ring (9) on plug (10) and install plug in housing. Torque plug 54.2-61.0 N·m (40-45 lb·ft).
2. Install new o-ring (8) on piston (7) and carefully install piston into housing from plug (1) end of housing. Note direction of piston. **NOTE: Be careful not to scratch or mar piston or housing bore.**
3. Install stop (6), springs (5 & 4) into housing. **NOTE: Not all models use spring (5) or stop (6).**
4. Install o-ring (2) on end plug (1). Install shim(s) (3) into end plug (1). Be sure to install the same number of shim(s) as were removed during disassembly. **NOTE: Not all models use shim(s) (3).**
5. Carefully install end plug (1) into housing. Torque 95.0-101.7 N·m (70-75 lb·ft).
6. Install washer (19), washer (18) and new o-ring (17) into housing. Be sure o-ring properly seats against washer (18).
7. Install seat (16), new poppet (15) and spring (14) into housing.
8. Install new o-ring (13) on screw assembly (12) and install screw assembly into housing. Torque screw assembly 24.4-29.8 N·m (18-22 lb·ft). Torque nut (11) 43.3-51.5 N·m (32-38 lb·ft).
9. Install new o-rings (24 & 26) on sleeve (25). Install spring (28), new poppet (27), sleeve (25), new poppet (23) and spring (22) into housing.
10. Install new o-ring (21) on plug (20) and install plug into housing. Torque plug 95.0-101.7 N·m (70-75 lb·ft).
11. Install new o-rings (36 & 37) on insert (35).
12. Install spool (34) into insert (35). Note direction of insert (35) and spool (34). Carefully install insert (35) into bore from plug (29) side of housing.
13. Install new o-ring (30) on plug (29).
14. Install ball (33), stop (32), spring (31) and plug (29) into housing. Torque plug 47.5-54.2 N·m (35-40 lb·ft).
15. Position housing so plug (44) housing bore faces up. Drop ball (38), retainer (39) and spring (40) into housing.
16. Insert new pin (42) in screw (41). Be sure pin is properly aligned and evenly driven into screw. Do not damage screw threads.
17. Thread screw (41) into housing TO THE DEPTH RECORDED during disassembly.
18. Install new o-ring (43) on plug (44) and install plug into housing. Torque plug 47.5-54.2 N·m (35-40 lb·ft).
19. Install new o-rings (45 & 47) and new back-up ring (46) on relief valve (48). Items 45, 46 & 47 are in a bag labeled 04-001-022. Install relief valve in housing and torque 27.1-33.9 N·m (20-25 lb·ft).

⚠ WARNING

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

● Items included in Repair Kit
▲ Not used in model 8R3584
■ Not used in model 8R5603

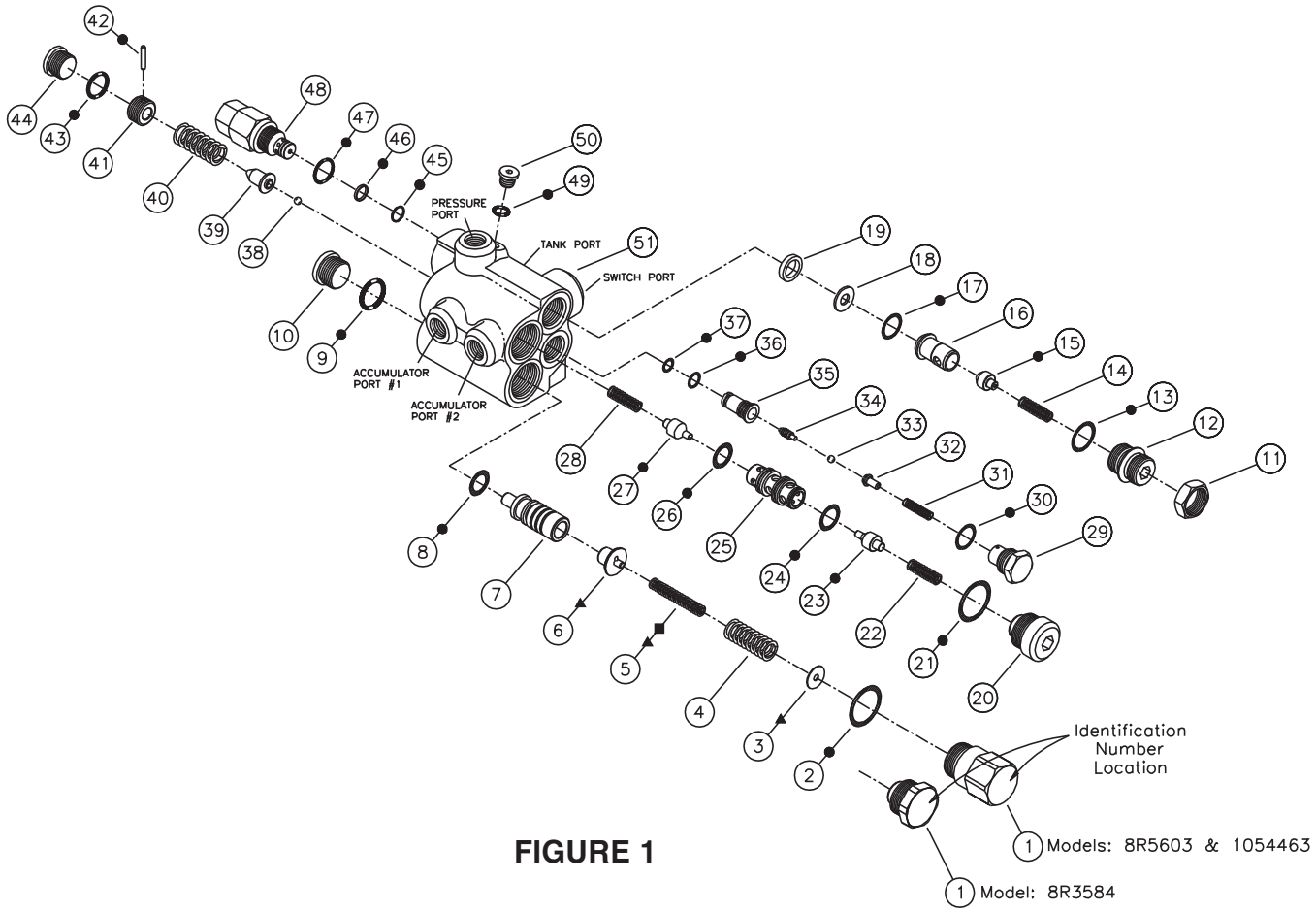

FIGURE 1

TABLE 1 (Specifications)

Caterpillar Part Number	Identification Number	Repair Kit Number	Accumulator High Limit (cut out)		Accumulator Low Limit (cut in)		Relief Valve Setting	
			bar	(PSI)	bar	(PSI)	bar	(PSI)
8R3584	06-463-402	101-8087	145 ± 3.5	(2100 ± 50)	117 ± 3.5	(1700 ± 50)	182.7 ± 3.4	(2650 ± 50)
8R5603	06-463-404	101-8087	145 ± 3.5	(2100 ± 50)	117 ± 3.5	(1700 ± 50)	182.7 ± 3.4	(2650 ± 50)
1054463	06-463-406	101-8087	145 ± 3.5	(2100 ± 50)	117 ± 3.5	(1700 ± 50)	182.7 ± 3.4	(2650 ± 50)

20. Install new o-ring (49) on plug (50) and install plug into housing. Torque plug 13.6-19.0 N·m (10-14 lb·ft).

Accumulator Charging Valve Adjustment

(Refer to Figure 1)

1. See machine servicing instructions to properly reinstall accumulator charging valve. Tee an accurate pressure gauge on an accumulator line.
2. Start pump and allow approximately one minute for charging to start (pressure in gauge will read accumulator precharge plus). If valve does not begin to charge, stop pump and remove end plug (44) and turn screw (41) in 1/4 turn or less. Be sure to reinstall plug (44) before starting pump. Check the high limit specifications (see TABLE 1) and adjust screw (41) until the high limit setting is met. This pressure can be checked correctly only if after each adjustment of screw (41) the accumulator pressure is reduced below the low limit setting and the system recharges the accumulator pressure to its high limit. Repeat process until high pressure setting is accurately adjusted. **NOTE: Be sure to reinstall plug (44) before starting pump.**

⚠ WARNING

Do not exceed the high limit pressure setting indicated in TABLE 1 or system damage or failure may occur.

3. Torque end plug (44) 47.5-54.2 N·m (35-40 lb·ft).