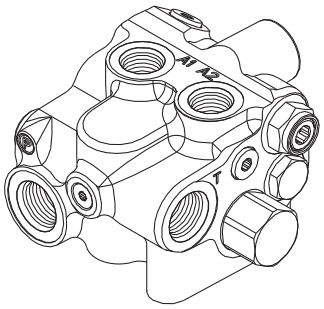

DUAL ACCUMULATOR CHARGING VALVE with Relief Valve

Product Explanation, Operating Information, and Service Instructions

PRODUCT EXPLANATION

The accumulator charging valve is designed for installation in an open center hydraulic system. It supplies oil on demand to the accumulators from an 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.

The excess flow at the tank port is routed directly to the reservoir with no restriction. The accumulator charging valve incorporates an internal relief valve to limit the maximum pressure in the hydraulic system at machine startup.

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 the proper repair kit number. Observe the service instruction procedures on following pages. See Warnings A, B, C, and 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 READJUST 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.

NOTE

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

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 relief valve (40) from housing (42). Remove o-ring (41) from relief valve (40).

⚠ WARNING

Relief valve (40) is preset at the factory. DO NOT READJUST or system damage or failure may occur.

2. Remove plug (1), spring (3), and washer (4) from housing (42). Remove o-ring (2) from plug (1). **NOTE: End plug (1) is under spring tension.**
3. Remove plug (7) from housing (42) and remove o-ring (2) from plug (7).
4. Using a 6.35 mm (0.25 in) diameter wooden or plastic dowel, carefully push spool (5) out plug (1) side of housing (42). **NOTE: Be careful not to scratch or mar spool or housing bore.**
5. Remove quad ring (6) from spool (5).
6. Remove plug (8) and spring (10) from housing (42). Remove o-ring (9) from plug (8).
7. Remove plug (13) and spring (12) from housing (42). Remove o-ring (9) from plug (13).
8. Carefully remove two poppets (11) from housing (42). **NOTE: Be careful not to scratch or mar housing bore.**
9. Remove plug (28) from housing (42). Remove o-ring (15) from plug (28).
10. BEFORE moving screw (26), ACCURATELY MEASURE ITS DEPTH from the end of housing (42) and record for reassembly purposes. Remove screw (26) from housing (42).
11. Remove spring (25), retainer (24), and ball (23). Be sure to keep ball (23) separate from balls (18 & 32) for reassembly purposes.
12. Remove pin (27) from screw (26) using a drive pin punch. Be careful not to damage screw threads.
13. Remove plug (14) from housing (42) and remove o-ring (15) from plug (14).
14. Remove spring (16), stop (17), and ball (18) from housing (42).
15. Using a 6.35 mm (0.25 in) diameter wooden or plastic dowel, carefully push insert (20) and spool (19) out plug (14) side of housing (42). **NOTE: Be careful not to scratch or mar valve seats on insert (20).**
16. Remove spool (19) from insert (20). Remove o-rings (21& 22) from insert (20).
17. Directional spring (31), earlier design only, is attached to screw (30) by means of the small diameter end of spring (31) being snapped into a groove on the nose end of screw assembly (30). See Figure 1b. Remove nut (29) and remove screw (30) and spring (31) from housing (42). Remove o-ring (15) from screw assembly (30) from nut (29) side of screw (30). Remove ball (32), seat (33), o-ring (34), orifice (35), screen assembly (36) from housing (42).
18. Remove plug (37) from housing (42). Remove o-ring (9) from plug (37).
19. Remove three plugs (38) from housing (42). Remove o-rings (39) from plugs (38).

Assembly

(Refer to Figure 1)

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 THE ENTIRE ASSEMBLY PROCEDURE IS DONE USING CONTAMINATION FREE METHODS.

1. Directional spring (31), earlier design only, is attached to screw (30) by means of the small diameter end of spring (31) being snapped into a groove on the nose end of screw (30). If necessary, reattach the small diameter end of spring (31) into the groove on the nose end of screw (30) using a slight twisting motion. See Figure 1b. Install new o-ring (15) on screw (30) from nut (29) side of screw (30). Install new screen assembly (36), orifice (35), new o-ring (34), seat (33), and steel ball (32) in housing (42). Install screw (30), spring (31) in housing (42). Torque screw (30) 24.4-29.8 N·m (18-22 lb·ft). Then install nut (29) on screw (30) and torque 43.4-51.5 N·m (32-38 lb·ft).
2. Install new o-rings (21 & 22) on insert (20).
3. Install spool (19) into insert (20). Note direction of insert (20) and spool (19). Carefully install insert (20) into housing (42) from plug (14) side of housing (42). See Figure 1a.
4. Install new o-ring (15) on plug (14). Install ball (18), stop (17), spring (16), and plug (14) into housing (42). Torque plug (14) 47.5-54.2 N·m (35-40 lb·ft).
5. Position housing (42) so plug (28) housing bore faces up. Install ball (23). Look to make sure ball (23) is centered on end of insert (20). Then install retainer (24) and spring (25) into housing (42).
6. Insert new pin (27) in screw (26). Be sure pin is properly aligned and evenly driven into screw (26). **NOTE: Be careful not to damage threads.**
7. Thread screw (26) into housing (42) to the depth recorded during disassembly.
8. Install new o-ring (15) on plug (28) and install plug (28) in housing (42). Torque plug (28) 47.5-54.2 N·m (35-40 lb·ft).
9. Install new o-ring (9) on plug (13). Install new poppet (11), spring (12) and plug (13) in housing (42). Torque plug (13) 27.1-32.5 N·m (20-24 lb·ft).
10. Install new o-ring (9) on plug (8). Install new poppet (11), spring (10) and plug (8) in housing (42). Torque plug (8) 27.1-32.5 N·m (20-24 lb·ft).
11. Install new o-ring (2) on plug (7). Install plug (7) in housing (42) and torque 94.9-101.7 N·m (70-75 lb·ft).
12. Install new quad-ring (6) on spool (5). Install spool (5) in housing (42). Note direction of spool (5). Install washer (4) in housing (42) on spool (5).
13. Install new o-ring (2) on plug (1). Install spring (3) in plug (1) and install plug (1) in housing (42). Torque plug (1) 94.9-101.7 N·m (70-75 lb·ft).
14. Install new o-ring (9) on plug (37). Install plug (37) in housing (42) and torque 27.1-32.5 N·m (20-24 lb·ft).
15. Install new o-rings (39) on three plugs (38). Install plugs (38) in housing (42) and torque 13.6-19.0 N·m (10-14 lb·ft).
16. Install new o-ring (41) on relief valve (40). Install relief valve (40) in housing (42) and torque 50.2-55.6 N·m (37-41 lb·ft).

⚠ WARNING

Relief valve (40) is preset at the factory. DO NOT READJUST or system damage or failure may occur.

● Items included in Repair Kit

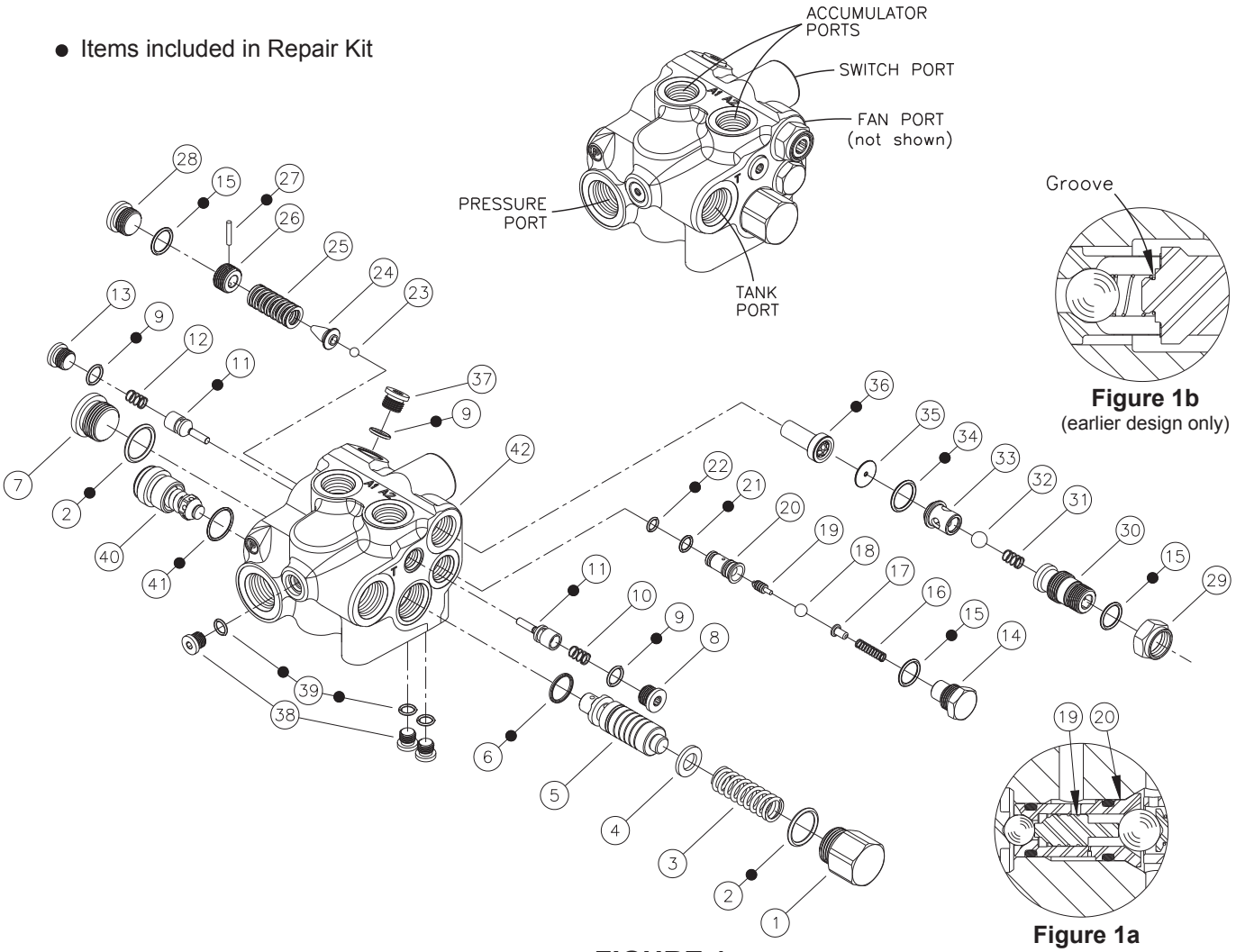

FIGURE 1

TABLE 1 (Specifications)

Caterpillar Part Number	Repair Kit Number	Accumulator High Limit (cut out)		Accumulator Low Limit (cut in)	
		bar	(PSI)	bar	(PSI)
439-1533	459-1875	200.0 ± 3.5	(2900 ± 50)	117.2 ± 3.5	(1700 ± 50)
508-2323	459-1875	144.8 ± 3.5	(2100 ± 50)	117.2 ± 3.5	(1700 ± 50)
522-2546	459-1875	180.0 ± 3.5	(2610 ± 50)	105.8 ± 3.5	(1534 ± 50)
533-1130	459-1875	158.5 ± 3.5	(2300 ± 50)	96.5 ± 3.5	(1400 ± 50)
557-7866	459-1875	144.8 ± 3.5	(2100 ± 50)	117.2 ± 3.5	(1700 ± 50)

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 remove end plug (28) and turn screw (26) in, stopping when gauge shows an increase in pressure. Check the high limit specifications (see TABLE 1) and adjust screw (26) until the high limit setting is met. Reinstall end plug (28). This pressure can be checked correctly only if after each adjustment of screw (26) 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 (28) before starting the pump.**
3. Torque plug (28) 47.5-54.2 N·m (35-40 lb·ft).

⚠ WARNING

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