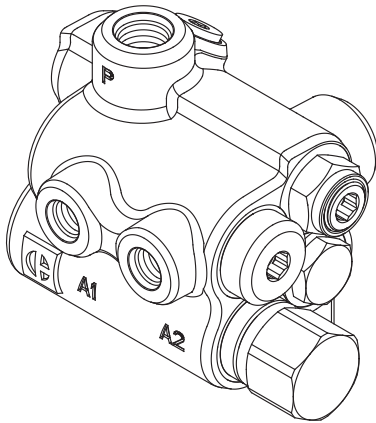




DUAL ACCUMULATOR CHARGING VALVE with INTERNAL RELIEF VALVE

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 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.

C **⚠ WARNING**

Relief valve is preset at the factory. DO NOT RE-ADJUST or system damage or failure 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.

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 plug (1) and spring (3) from housing (42). Remove o-ring (2) from plug (1). **NOTE: End plug is under spring tension.**
2. Remove plug (8) from housing (42) and remove o-ring (7) from plug (8).
3. Using a 6.35 mm (0.25 in) diameter wooden or plastic dowel, carefully push relief valve (5) and stop (4) from housing bore out plug (1) side of housing (42). **NOTE: Do not tamper with relief valve setting. Be careful not to scratch or mar relief valve or housing bore.**

⚠ WARNING

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

4. Remove o-ring (6) from relief valve (5).
5. **Directional spring (12) is attached to screw assembly (10) by means of the small diameter end of spring (12) being snapped into a groove on the nose end of screw assembly (10). See Figure 1a.** Remove nut (9) and remove screw assembly (10)/spring (12) from housing (42). Remove o-ring (7) from screw assembly (10) from nut (9) side of screw assembly. Remove shim (11), ball (13), seat (14), o-ring (15), orifice (16), screen (17) and washer (18) from housing (42).
6. Remove end plug (19) from housing (42) and remove o-ring (2) from end plug (19).
7. Remove spring (20), poppet (21), sleeve (23), poppet (25) and spring (26). Remove o-rings (22 & 24) from sleeve (23). **NOTE: Be careful not to scratch or mar housing bore or sleeve.**
8. BEFORE moving screw (38), ACCURATELY MEASURE ITS DEPTH from the end of housing (42) and record for reassembly purposes. Remove screw (38) from housing (42).
9. Remove spring (37), retainer (36) and ball (35). Be sure to keep ball (35) separate from balls (13 & 30) for reassembly purposes.
10. Remove pin (39) from screw (38) using a drive pin punch. Be careful not to damage screw threads.
11. Remove plug (27) from housing (42) and remove o-ring (15) from plug (27).
12. Remove spring (28), stop (29) and ball (30) from housing (42).
13. Using a 6.35 mm (0.25 in) diameter wooden or plastic dowel, carefully push insert (32) and spool (31) from bore out plug (27) side of housing (42). **NOTE: Be careful not to scratch or mar valve seats on insert (32).**
14. Remove spool (31) from insert (32). Remove o-rings (33 & 34) from insert (32).
15. Remove plug (40) from housing (42) and remove o-ring (41) from plug (40).

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 ENTIRE ASSEMBLY PROCEDURE IS DONE WITH CONTAMINATION FREE METHODS.

1. Install new o-ring (7) on plug (8) and install plug (8) in housing (42). Torque plug (8) 54.2-61.0 N·m (40-45 lb·ft).
2. Install new o-ring (6) on relief valve (5) and carefully install relief valve (5) into housing (42). See Figure 1c. Note direction of relief valve (5). **NOTE: Do not tamper with relief valve setting.**

⚠ WARNING

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

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

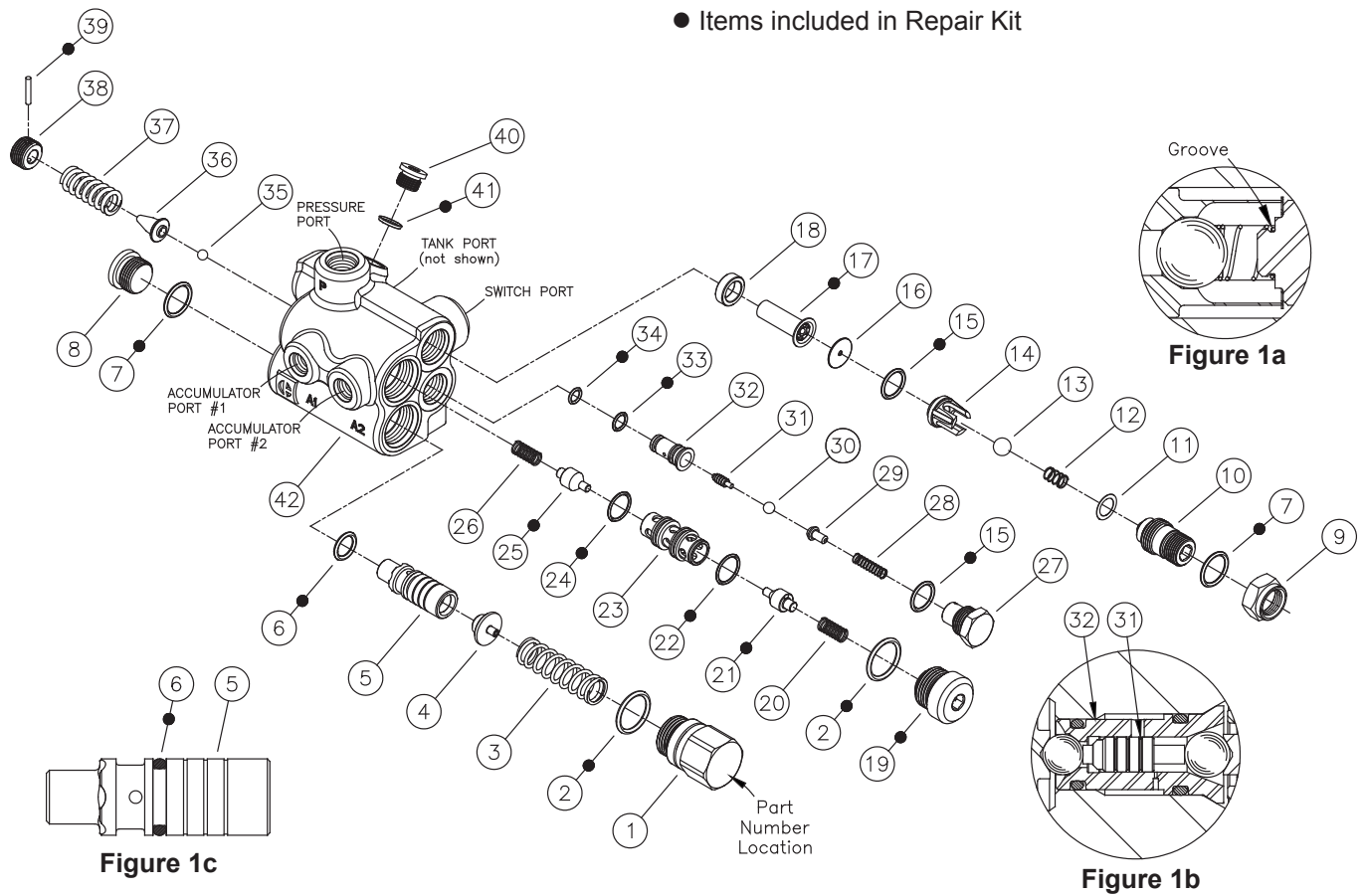


Figure 1

TABLE 1 (Specifications)

Caterpillar Part Number	Repair Kit Number	Accumulator High Limit (cut out)		Accumulator Low Limit (cut in)	
		bar	(PSI)	bar	(PSI)
389-3149	421-5486	158.6 ± 3.5	(2300 ± 50)	96.5 ± 3.5	(1400 ± 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 turn screw (38) in, stopping when gauge shows an increase in pressure. Check the high limit specifications (see TABLE 1) and adjust screw (38) until the high limit setting is met.

This pressure can be checked correctly only if after each adjustment of screw (38) 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.

⚠ WARNING

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