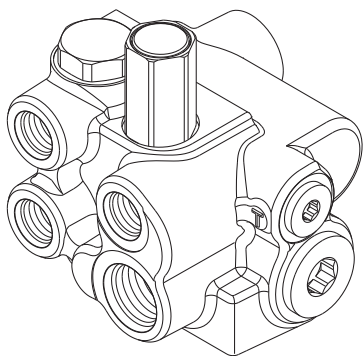




Single and Dual ACCUMULATOR CHARGING VALVE with Relief Valve

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 downstream secondary hydraulic devices.

The accumulator charging valve supplies oil on demand to the accumulator(s) 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.

The flow to the downstream secondary hydraulic devices will be reduced fractionally for a short time when the accumulator(s) are charging. This does not noticeably affect the operation of these components. Full system pressure is available to the downstream secondary hydraulic devices at all times provided oil delivery and pressure from the pump is not impeded.

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 on page 3 for proper repair kit number. Observe service instruction procedures on the following pages. See warnings A, B, C and D below.

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 READJUST 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 (8) from housing (16). Remove o-ring (7) from plug (8). **NOTE: Plug (8) is under spring tension.**
2. Remove spring (5) and rod (6) from housing (16).
3. Remove plug (1) from housing (16) and remove o-ring (2) from plug (1).
4. Remove spool (3) from housing bore through plug (8) side of housing (16). Remove seal (4) from spool (3).
5. Loosen nut (34) and remove screw assembly (33) from housing (16). Remove o-ring (32) from screw assembly (33).
6. Remove spring (31), poppet (30), seat (29), o-ring (28), washer (27), and washers (26) from housing. Be careful not to mar inside surfaces of seat (29).
7. Remove plug (9) from housing (33) and remove o-ring (10) from plug (9).
8. BEFORE moving screw (11), ACCURATELY MEASURE ITS DEPTH from the end of housing and record for reassembly purposes. Remove screw (11) from housing.
9. Remove spring (13), retainer (14), and ball (15). Be sure to keep ball (15) separate from ball (21) for reassembling.
10. Remove pin (12) from screw (11) using a drive pin punch. Be careful not to damage screw threads.
11. Remove plug (25) from housing (16). Remove o-ring (24) from plug (25).
12. Remove spring (23), stop (22), and ball (21) from housing.
13. Place housing on a bench with plug (25) side down. Spool (20) may or may not fall out at this point.
14. Using a 6.35-7.87 mm (0.25-0.31 in) diameter wood or plastic dowel, carefully remove insert (19) and spool (20) from housing (16). Insert (19) must come out plug (25) side of housing. Be careful not to scratch or mar valve seats on insert (19).
15. Remove spool (20) from insert (19). Remove o-rings (17 & 18) from insert.
16. Remove plug (43) from housing (16). Remove o-ring (42) from plug (43).
17. Remove spring (41), poppet (40), sleeve (38), poppet (36), and spring (35) from housing (16). Remove o-rings (37 & 39) from sleeve (38). **NOTE: Be careful not to scratch or mar housing or sleeve bore. Single accumulator charging valve does not use items 35 through 41.**
18. Remove relief valve (44) from housing (16).

⚠ WARNING

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

19. Remove o-ring (47), back-up ring (46), and o-ring (45) from relief valve (44).

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

1. Install new o-ring (2) on plug (1). Install plug (1) into housing (16) and torque 122.0-135.6 N·m (90-100 lb·ft).
2. Install new seal (4) on spool (3). Be sure seal does not twist in the groove.
3. Lubricate spool (3) and properly install in housing (16).
4. Install spring (5) and rod (6) into housing (33).
5. Install new o-ring (7) on plug (8). Install plug (8) into housing (16) and torque 122.0-135.6 N·m (90-100 lb·ft).
6. Install new o-rings (17 & 18) on insert (19) and install in housing (16). Note direction of assembly. Seat insert (19) using a 12.7 mm (0.50 in) diameter wood dowel.
7. Install spool (20) into insert (19) in housing (16). Note the direction of spool, long shoulder end faces plug (25).
8. Install ball (21) on insert (20) in housing (16). Install stop (22) over ball (21) and spring (23) over stop (22).
9. Install new o-ring (24) on plug (25). Carefully install plug (25) in housing (16), centering spring (23). Torque 47.5-54.2 N·m (35-40 lb·ft).
10. Turn housing (16) so plug (1) is vertically upward. Install ball (15) in housing (16). Be sure ball (15) is centered in the bottom of hole. Drop retainer (14) and spring (13) into housing (16).
11. Insert new pin (12) in screw (11). Be sure pin is aligned properly and is evenly driven into screw. Do not damage threads.
12. Thread screw (11) into housing (16) TO THE DEPTH RECORDED during disassembly.
13. Install new o-ring (10) on plug (9). Install plug (9) in housing (16) and torque 47.5-54.2 N·m (35-40 lb·ft).
14. Install new o-ring (32) on screw assembly (33).
15. Install washers (26), washer (27), new o-ring (28), seat (29), new poppet (30), spring (31), and screw assembly (33) into housing. Torque screw assembly 24.4-29.8 N·m (18-22 lb·ft).
16. Install nut (34) on screw assembly (33) and torque 43.4-51.5 N·m (32-38 lb·ft).
17. Install new o-rings (37 & 39) on sleeve (38). Install spring (35), new poppet (36), sleeve (38), new poppet (40), and spring (41) into housing (16). **NOTE: Single accumulator charging valves do not use items 35 through 41.**
18. Install new o-ring (42) on plug (43). Install plug (43) in housing (16) and torque 67.8-81.4 N·m (50-60 lb·ft).
19. Install new o-ring (45), new back-up ring (46), and new o-ring (47) on relief valve (44). Note location of o-rings and back-up ring.
20. Install relief valve (44) in housing and torque 67.8-74.6 N·m (50-55 lb·ft).

⚠ WARNING

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

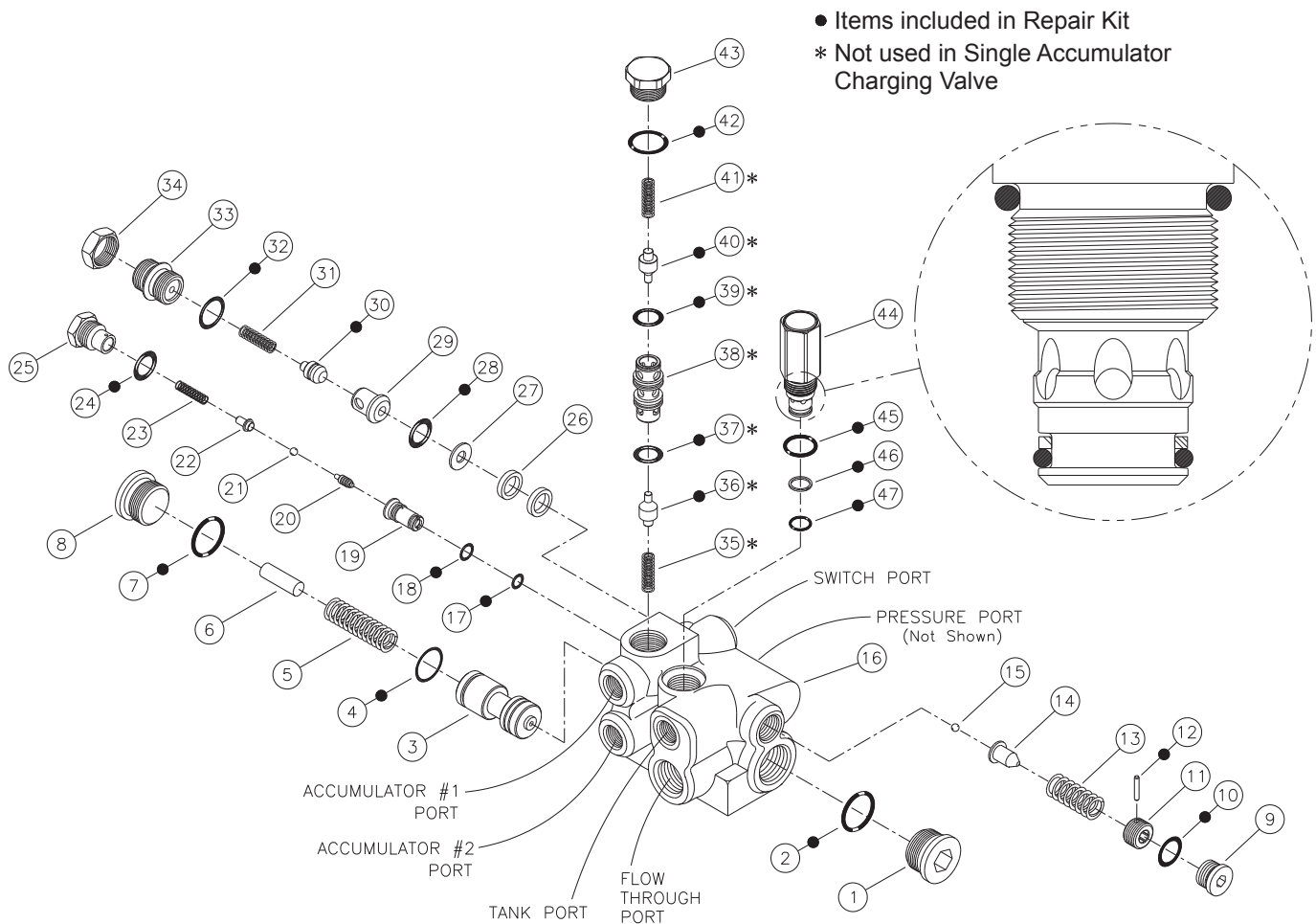


FIGURE 1

TABLE 1 (Specifications)

Caterpillar Part Number	Repair Kit Number	Description	Accumulator High Limit (cut out)		Accumulator Low Limit (cut in)	
			bar	(PSI)	bar	(PSI)
133-7102	143-9148	Dual	144.8 ± 3.5	(2100 ± 50)	117.2 ± 3.5	(1700 ± 50)
137-7038	255-4466	Single	144.8 ± 3.5	(2100 ± 50)	117.2 ± 3.5	(1700 ± 50)
235-0251	143-9148	Dual	144.8 ± 3.5	(2100 ± 50)	117.2 ± 3.5	(1700 ± 50)
235-0252	255-4466	Single	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 plug (9) and turn screw (11) in, stopping when gauge shows an increase in pressure. Check the high limit specifications (see TABLE 1) and adjust screw (11) until the high limit setting is met. Reinstall plug (9). This pressure can be checked correctly only if after each adjustment of screw (11) 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 (9) 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 plug (9) 47.5-54.2 N·m (35-40 lb-ft).