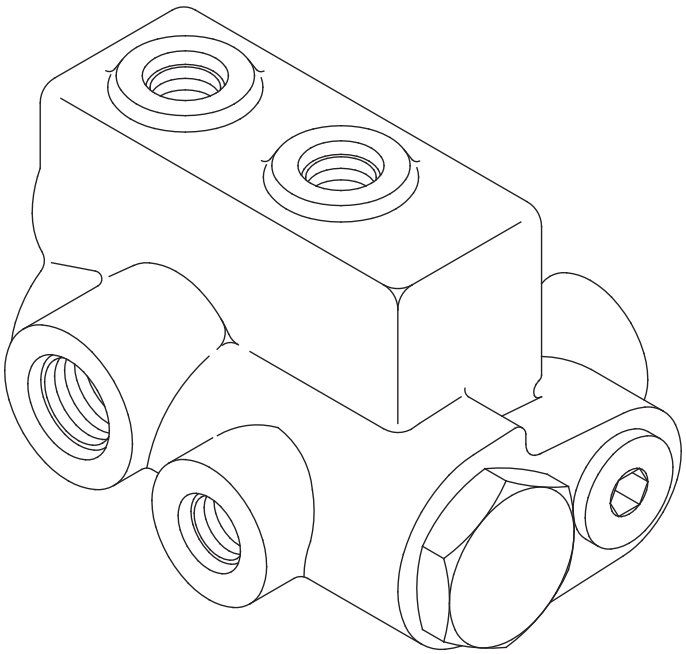
ACCUMULATOR CHARGING VALVE (Dual Load Sensing)

Service Instructions



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DISASSEMBLY
(Refer to Figure 1)

1. Remove plug (1) from housing (10). Remove o-ring (2) from plug.
2. Remove spring (3), poppet (4), sleeve (6), poppet (8) and spring (9) from housing. **NOTE: Be careful not to scratch or mar housing or sleeve bore.** Remove o-rings (5 & 7) from sleeve (6).
3. Remove plug (26) from housing. Remove o-ring (25) from plug.
4. BEFORE moving screw (24), ACCURATELY MEASURE ITS DEPTH from the end of housing and record for reassembly purposes. Remove screw (24) from housing.
5. Remove spring (22), retainer (21) and ball (20). Be sure to keep ball (20) separate from ball (15) for reassembly.
6. Remove pin (23) from screw (24) using a drive pin punch. **NOTE: Be careful not to damage threads.**
7. Remove plug (11) from housing. Remove o-ring (12) from plug.
8. Remove spring (13), stop (14) and ball (15) from housing.
9. Place housing (10) on a bench with plug (11) end down. Spool (16) may or may not fall out at this point.
10. Using a 6.4-7.9 mm (0.25-0.31 in) diameter wood or plastic dowel, carefully remove insert (17) and spool (16) from housing. Insert (17) must come out plug (11) end of housing. **NOTE: Be careful not to scratch or mar valve seats on insert (17).**
11. Remove spool (16) from insert (17). Remove o-rings (18 & 19) from insert.
12. Remove sleeve (35) from housing. Remove o-rings (30, 32 & 34) and back-up rings (31 & 33) from sleeve (35).
13. Remove ball (29), stop (28) and spring (27) from housing.

ASSEMBLY
(Refer to Figure 1)

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-rings (5 & 7) on sleeve (6).
2. Install spring (9), new poppet (8), sleeve (6), new poppet (4) and spring (3) into housing.
3. Install new o-ring (2) on plug (1). Install plug (1) in housing and torque 67.8-81.4 N·m (50-60 lb·ft).
4. Install new o-rings (18 & 19) on insert (17) and install in housing. Note direction of assembly. Seat insert with 12.7 mm (0.50 in) diameter wooden dowel.
5. Install spool (16) into insert (17) in housing. Note direction of spool, long shoulder end is toward end plug (11).
6. Install ball (15) on insert (17) in housing. Install stop (14) on ball.
7. Install spring (13) over stop.
8. Install new o-ring (12) on plug (11) and install in housing, centering spring (13). Torque 47.5-54.2 N·m (35-40 lb·ft).
9. Turn housing so plug (26) end is vertically upward. Install ball (20), 6.35 mm (0.25 in) diameter. Be sure ball is centered in bottom of hole in housing. Drop retainer (21) and spring (22) into housing.
10. Insert new pin (23) in screw (24). Be sure pin is aligned properly and is evenly driven into screw. Do not damage threads.
11. Thread screw (24) into housing to the depth recorded during disassembly.
12. Install new o-ring (25) on plug (26). Install plug in housing and torque 47.5-54.2 N·m (35-40 lb·ft).
13. Insert spring (27), stop (28) and ball (29) in housing. Be sure stop is positioned inside of spring.
14. Install new o-rings (34, 32 & 30) and new back-up rings (31 & 33) on sleeve (35).
15. Install sleeve (35) into housing. Torque 67.8-81.4 N·m (50-60 lb·ft).

VALVE ADJUSTMENT
(Refer to Table 1)

1. Reinstall valve correctly. Tee an accurate pressure gauge into each accumulator line.
2. Start pump and allow approximately one minute for charging to start (pressure in gauge will read accumulator pre-charge plus). If valve does not begin to charge, turn screw (24) inward, stopping when gauge shows an increase in pressure. Check the high limit specifications and adjust screw (24) until the high limit setting is met. This pressure can be checked correctly only if after each adjustment of screw (24) the accumulator pressure is reduced to below the low limit setting and the system re-charges the accumulator pressure to its high limit.
3. Once the high limit setting is accurately adjusted install plug (26) into housing and torque 47.5-54.2 N·m (35-40 lb·ft).

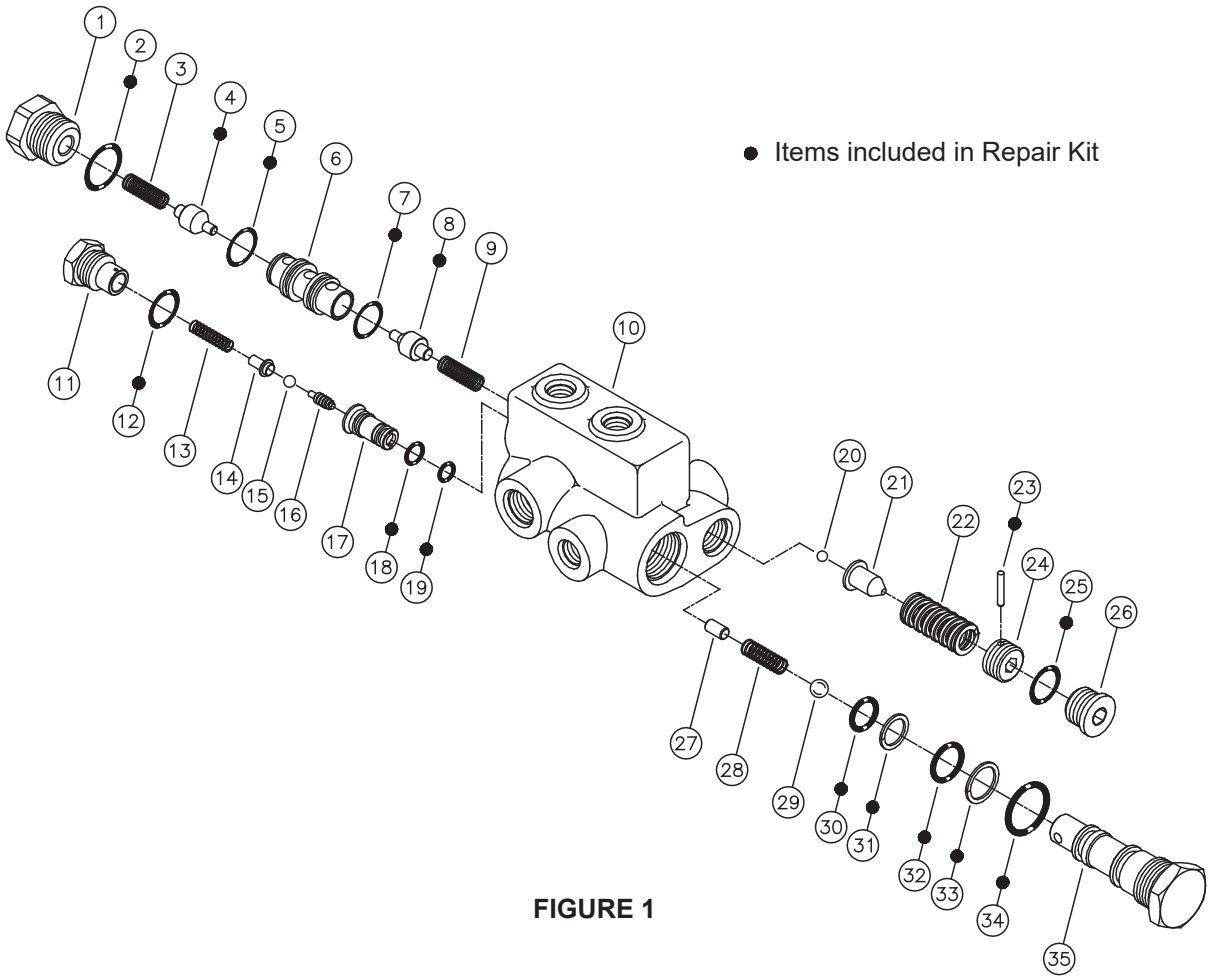

FIGURE 1

TABLE 1 (Specifications)

Model Number	Repair Kit Number	Accumulator Charge Rate		Accumulator High Limit		Accumulator Low Limit	
		L/min	(PSI)	bar	(PSI)	bar	(PSI)
06-463-124	06-400-204	7.6 ± 1.9	(2.00 ± 0.50)	172.4 ± 3.5	(2500 ± 50)	96.5 ± 3.5	(1400 ± 50)

SERVICE CHECKS FOR HYDRAULIC SYSTEMS

ACCUMULATOR CHARGING CYCLE REPEATS FREQUENTLY WHEN ACCUMULATORS ARE NOT NORMALLY BEING DISCHARGED IN SERVICE

1. Leaking accumulator lines or fittings
1. **Check lines and fittings for leaks and correct**
2. Incorrect setting of accumulator gas charge
2. **Check accumulator gas charge**
3. Line to accumulator plugged
3. **Replace line**
4. Inoperative charging valve
4. **Replace charging valve**

ACCUMULATORS START TO CHARGE BUT DO NOT REACH HIGH LIMIT

1. No oil or low oil level in tank
1. **Check oil level**
2. Pump worn or inoperative and not delivering full flow or pressure
2. **Check pump**
3. Inoperative system relief valve (valve leaking or has low setting so full flow and pressure are not available)
3. **Check relief valve**
4. Inoperative charging valve
4. **Replace charging valve**

ACCUMULATOR CHARGING TIME TOO LONG

1. No oil or low oil level in tank
1. **Check oil level**
2. Relief valve setting too low
2. **Check valve setting**
3. Pump worn or inoperative and not delivering full flow or pressure
3. **Check pump**
4. Inoperative charging valve
4. **Replace charging valve**

ACCUMULATORS FAIL TO START CHARGING

1. No oil or low oil level in tank
1. **Check oil level**
2. Worn or inoperative pump
2. **Check pump pressure and flow**
3. Inoperative relief valve
3. **Check relief valve setting**
4. Air in accumulator line
4. **Bleed accumulator line**
5. Inoperative charging valve
5. **Replace charging valve**

VERY RAPID CYCLING OF CHARGING VALVE

1. Incorrect setting of accumulator gas charge
1. **Check accumulator gas charge**
2. Inoperative charging valve
2. **Replace charging valve**

LACK OF ADEQUATE FLOW THRU VALVE

1. Inoperative pump
1. **Check pump pressure and delivery**
2. Inoperative relief valve
2. **Check relief valve setting**
3. Blocked lines
3. **Replace lines**
4. Inoperative charging valve
4. **Replace charging valve**

CHARGING VALVE SERVICE DIAGNOSIS

ACCUMULATOR CHARGING CYCLE REPEATS FREQUENTLY WHEN ACCUMULATORS ARE NOT NORMALLY BEING DISCHARGED IN SERVICE

1. Ball (29) leaking
2. O-ring (30) leaking
3. O-ring (18) leaking
4. Ball (15) leaking
5. Inoperative seat on insert (17)

ACCUMULATORS START TO CHARGE BUT DO NOT REACH HIGH LIMIT

1. O-ring (19) leaking
2. O-ring (32) leaking

ACCUMULATOR CHARGING TIME TOO LONG

1. Poppets (4 or 8) or ball (29) stuck, partially closed
2. Orifice in sleeve (35) partially plugged

ACCUMULATORS FAIL TO START CHARGING

1. Broken spring (22)
2. O-ring (19) leaking

VERY RAPID CYCLING OF CHARGING VALVE

1. Insert (17) worn
2. Poppets (4 or 8) stuck partially closed

ACCUMULATOR PRESSURES ARE NOT ISOLATED FROM ONE ANOTHER

1. O-rings (5 or 7) leaking
2. Inoperative poppets (4 or 8)