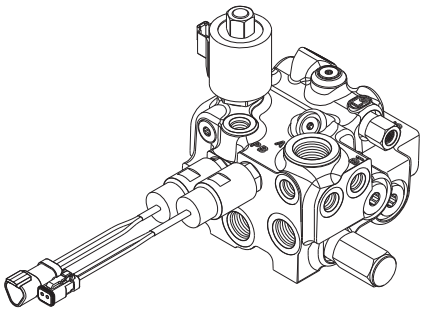

ACCUMULATOR CHARGING VALVE

Product Explanation, Operating Information and Service Instructions

PRODUCT EXPLANATION

The accumulator charging valve is designed for installation in a system with a fixed displacement pump and is located between the pump and downstream secondary hydraulic devices. The accumulator charging valve receives a load sense signal from the steering valve.

The accumulator charging valve supplies oil on demand with priority to the accumulator and steering at the Control Flow (CF) port. Accumulator charging is accomplished at a preset rate (GPM) and is relatively constant within the preset pressure limits. Excess flow is diverted to the Excess Flow (EF) port for use by secondary hydraulic devices.

Flow to steering and downstream secondary hydraulic devices will be reduced fractionally for a short time while the accumulator is charging. This does not noticeably affect the operation of these components. Full system pressure is available to steering and 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.

Additional features of the charging valve include a normally closed pressure switch that is set to indicate when pressure in the accumulator is below a specified limit, and a normally closed pressure switch that is set to indicate when pressure in the park brake is below a specified limit. It also has a solenoid valve for actuation of the park brake in which the park brake is released while the solenoid valve is energized.

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. 81-463-046 Revised 2012-03-20

NOTE

Locate the part number on the accumulator charging valve, see Figure 1, and compare it to the part number in TABLE 1 on page 5. Be sure you have the proper service instructions. This literature services various models in this accumulator charging valve series. The components shown in Figure 1 may appear different than what is found in your valve.

SERVICE INSTRUCTIONS

⚠ WARNING

Be sure system energy is relieved from accumulator charging valve before removing from machine. See machine service manual for procedures to relieve system energy.

Disassembly

(Refer to Figure 1)

1. Disconnect fluid lines and electrical connections and remove accumulator charging valve from machine as recommended in the machine service manual.
2. Remove pressure switches (1 & 3) from housing (55) using hex flats. Remove o-ring (2) from pressure switches (1 & 3). **NOTE: Pressure switch (1) for 06-463-902 is identified 32-580-127. Pressure switch (1) for 06-463-916 is identified 32-580-142. Pressure switch (3) is identified 32-580-128 for both 06-463-902 and 06-463-916. Earlier model 06-463-902 used switches identified 32-580-084 for pressure switch (1) and 32-580-086 for pressure switch (3).**
3. Remove nut (5) and coil (6) from solenoid valve stem (7). Be careful not to damage coil.
4. Remove solenoid valve stem (7) from housing (55) using hex flats.
5. Remove back-up rings (9), o-ring (10), back-up rings (11), o-ring (12) and o-ring (13) from solenoid valve stem (7). Be careful not to scratch or damage solenoid valve stem.
6. Remove relief valve (14) from housing (55).

⚠ WARNING

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

7. Remove o-ring (17), back-up ring (16) and o-ring (15) from relief valve (14).
8. Remove plug (18) from housing (55) and remove o-ring (15) from plug.
9. BEFORE moving screw (19), ACCURATELY MEASURE ITS DEPTH from the end of housing and record for reassembly purposes. Remove screw (19) from housing (55).
10. Remove spring (21), retainer (22) and ball (23). Be sure to keep ball (23) separate from ball (28) for reassembling.
11. Remove pin (20) from screw (19) using a drive pin punch. Be careful not to damage threads.
12. Remove plug (32) from housing. Remove o-ring (31) from plug.
13. Remove spring (30), stop (29) and ball (28) from housing.
14. Place housing on a bench with plug (32) end down. Spool (27) may or may not fall out at this point.
15. Using a 6.35-7.87 mm (0.25-0.31 in) diameter wood or plastic dowel, carefully remove insert (26) and spool (27) from housing. Insert (26) must come out plug (32) end of housing. Be careful not to scratch or damage valve seats on insert (26).
16. Remove spool (27) from insert (26). Remove o-rings (24 & 25) from insert.
17. Remove plug (33), shim(s) (35), spring (36) and stop (37) from housing. Remove o-ring (34) from plug (33). **NOTE: Be aware of the number of shim(s) removed for reassembly purposes. Model 06-463-916 does not use shims (35).**
18. Remove plug (39) and spool (38) from housing. Remove o-ring (15) from plug.
19. Remove plug (40) and spring (41) from housing. Remove o-ring (2) from plug (40).
20. Remove plug (43) and spool (42) from housing. Remove o-ring (2) from plug (43).
21. **Model 06-463-902:** Loosen nut (44) on screw assembly (45) and remove screw assembly (45) from housing (55). Remove o-ring (15) from screw assembly (45). Remove spring (46), poppet (47), seat (48) and o-ring (31) from housing (55). **Model 06-463-916: This model uses a directional spring (46). Directional spring (46) is attached to screw assembly (45) by means of the small diameter end of spring (46) being snapped into a groove on the nose end of screw assembly (45). See Figure 1a.** Remove nut (44) and remove screw assembly (45)/spring (46) from housing (55). Remove o-ring (15) from screw assembly (45) from nut (44) side of screw assembly. Remove shim (56), steel ball (47), seat (48), o-ring (31) and washer (57) from housing (55).
22. Remove plugs (49, 52 & 53) from housing. Remove o-ring (50) from plugs.
23. Remove plugs (51 & 54) from housing. Remove o-ring (2) from plugs.

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. Inspect internal orifices shown in FIGURE 2 on page 5 to be sure they are free of obstruction or contamination. **NOTE: Do not attempt to remove the screw-in orifices. The orifice shown in SECTION C-C is used in 06-463-902 and is not used in 06-463-916.**

2. **Model 06-463-902:** Install new o-ring (15) on screw assembly (45). Install new o-ring (31), seat (48), new poppet (47), spring (46) and screw assembly (45) into housing (55). Torque screw assembly (45) 24.4-29.8 N·m (18-22 lb·ft). Then install nut (44) on screw assembly (45) and torque nut 43.4-51.5 N·m (32-38 lb·ft).
   Model 06-463-916: This model uses a directional spring (46). directional spring (46) is attached to screw assembly (45) by means of the small diameter end of spring (46) being snapped into a groove on the nose end of screw assembly (45). If necessary, reattach the small diameter of spring (46) into the groove on the nose end of screw assembly (45) using a slight twisting motion. See Figure 1a. Install new o-ring (15) on screw assembly (45) from nut (44) side of screw assembly. Install washer (57), new o-ring (31), seat (48) and steel ball (47) in housing (55). Fully lubricate shim (56) with clean system fluid and install in housing (55) on end of seat (48). Install screw assembly (45)/spring (46) in housing (55). Torque screw assembly (45) 24.4-29.8 N·m (18-22 lb·ft). Then install nut (44) on screw assembly (45) and torque nut 43.4-51.5 N·m (32-38 lb·ft).
3. Install new o-ring (2) on plug (43). Install plug (43) in housing and torque 24.4-29.8 N·m (18-22 lb·ft).
4. Install new o-ring (2) on plug (40). Install spool (42), spring (41) and plug (40) in housing and torque plug 27.1-32.5 N·m (20-24 lb·ft). Note direction of spool (42). See SECTION B-B Figure 2 on page 5.
5. Install new o-ring (15) on plug (39). Install spool (38) and plug (39) in housing and torque plug 94.9-101.7 N·m (70-75 lb·ft). Note direction of spool (38). See SECTION B-B of Figure 2 on page 5.
6. Install stop (37) in housing.
7. Install new o-ring (34) on plug (33). Install shim(s) (35) and spring (36) in plug (33). Install plug (33) in housing and torque 94.9-101.7 N·m (70-75 lb·ft). **NOTE: Be sure to install the same number of shim(s) as were removed. Model 06-463-916 does not use shims (35).**
8. Install new o-rings (24 & 25) on insert (26) and place into housing. Note direction of assembly. Seat insert using a 6.35-7.87 mm (0.25-0.31 in) diameter wood or plastic dowel.
9. Install spool (27) into insert (26) in housing. Note direction of spool, long shoulder end faces plug (32).
10. Install ball (28) on insert (26) in housing. Install stop (29) over ball and spring (30) over stop.
11. Install new o-ring (31) on plug (32). Carefully install plug into housing, centering spring (30). Torque plug 47.5-54.3 N·m (35-40 lb·ft).
12. Turn housing so plug (18) is vertically upward. Install ball (23) in housing. Be sure ball is centered in bottom of hole. Install retainer (22) and spring (21) into housing.
13. Insert new pin (20) in screw (19). Be sure pin is aligned properly and is evenly driven into screw. Do not damage threads.
14. Thread screw (19) into housing TO THE DEPTH RECORDED during disassembly.
15. Install new o-ring (15) on plug (18). Install plug (18) in housing and torque 94.9-101.7 N·m (70-75 lb·ft).
16. Install new o-ring (15), new back-up ring (16) and new o-ring (17) on relief valve (14). Note location and order of back-up ring and o-rings.
17. Install relief valve (14) in housing and torque 67.8-74.6 N·m (50-55 lb·ft).

⚠ WARNING

Relief valve is preset at the manufacturer. DO NOT READUST or system damage or failure may occur.

18. Install new o-ring (2) on plugs (51 & 54). Install plugs (51 & 54) in housing and torque 24.4-29.8 N·m (18-22 lb·ft).
19. Install new o-ring (50) on plugs (49, 52 & 53). Install plugs (49, 52 & 53) in housing and torque 13.6-19.0 N·m (10-14 lb·ft).
20. Install new o-ring (2) on pressure switch (3). Install pressure switch (3) in housing cavity "SB" and torque 27.1-32.5 N·m (20-24 lb·ft) using hex flats. Switch (3) can be identified by its electrical connector. **NOTE: Pressure switch (3) is identified 32-580-128 for both 06-463-902 and 06-463-916. Earlier model 06-463-902 pressure switch (3) is identified 32-580-086.**
21. Install new o-ring (2) on pressure switch (1). Install pressure switch (1) in housing cavity "SA" and torque 27.1-32.5 N·m (20-24 lb·ft) using hex flats. Switch (1) can be identified by its electrical connector. **NOTE: Pressure switch (1) for 06-463-902 is identified 32-580-127. Pressure switch (1) for 06-463-916 is identified 32-580-142. Earlier model 06-463-902 pressure switch (1) is identified 32-580-084.**
22. **NOTE: Seal kit (8) is a separate package included in the primary repair kit.** Install new o-ring (13), new back-up rings (11), new o-ring (12), new back-up rings (9) and new o-ring (10) on solenoid valve stem (7). Note location and order of back-up rings and o-rings.
23. Install solenoid valve stem (7) in housing and torque 24.4-27.1 N·m (18-20 lb·ft) using hex flats. Note the orientation of coil (6), see Figure 2, and install coil (6) and nut (5) on solenoid valve stem. Torque nut (5) 6.8-9.5 N·m (5-7 lb·ft)
24. To continue, refer to "Accumulator Charging Valve Adjustment" on page 5.

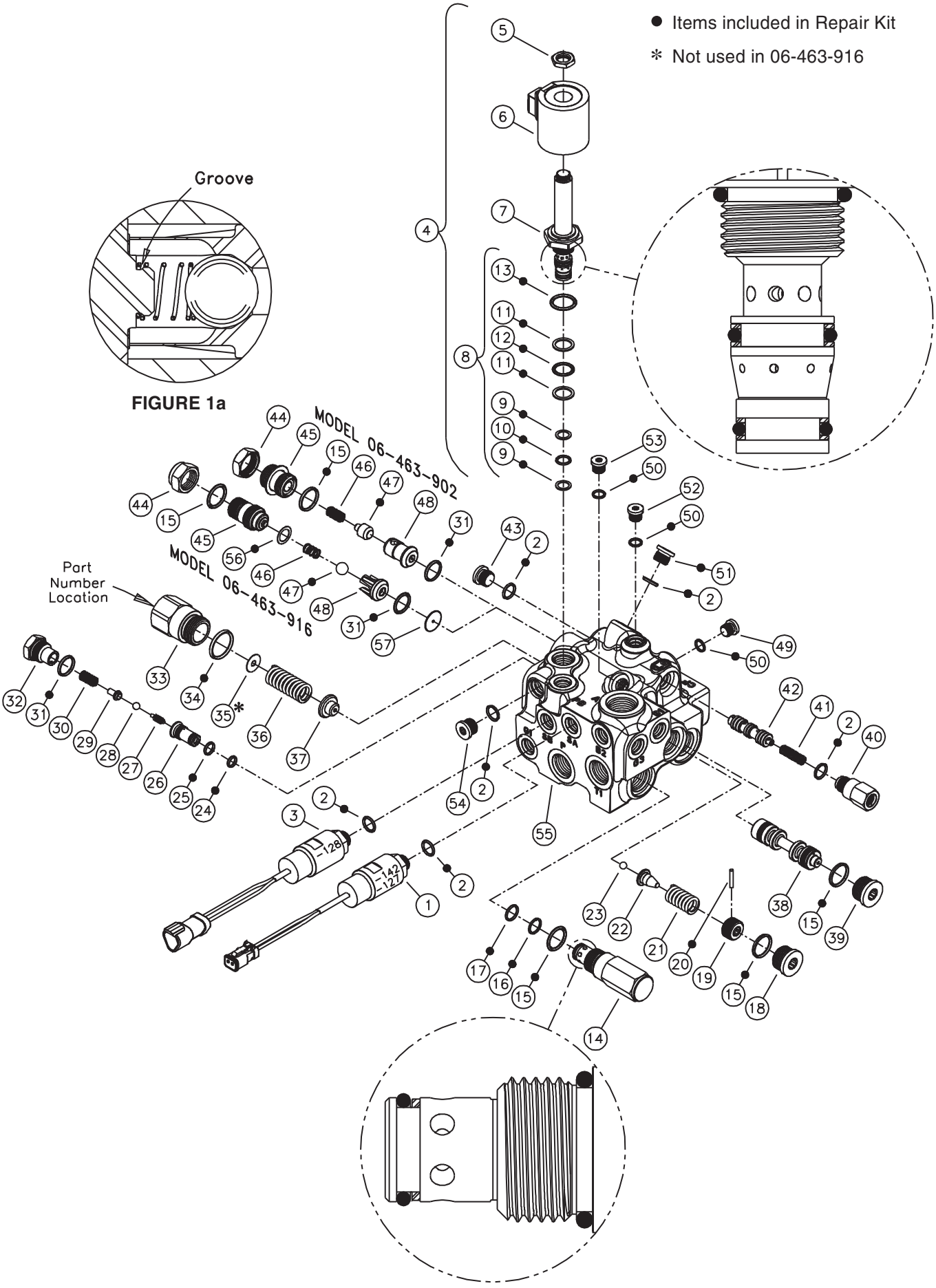

FIGURE 1a

FIGURE 1

NOTE
Do not attempt to remove screw-in orifices.

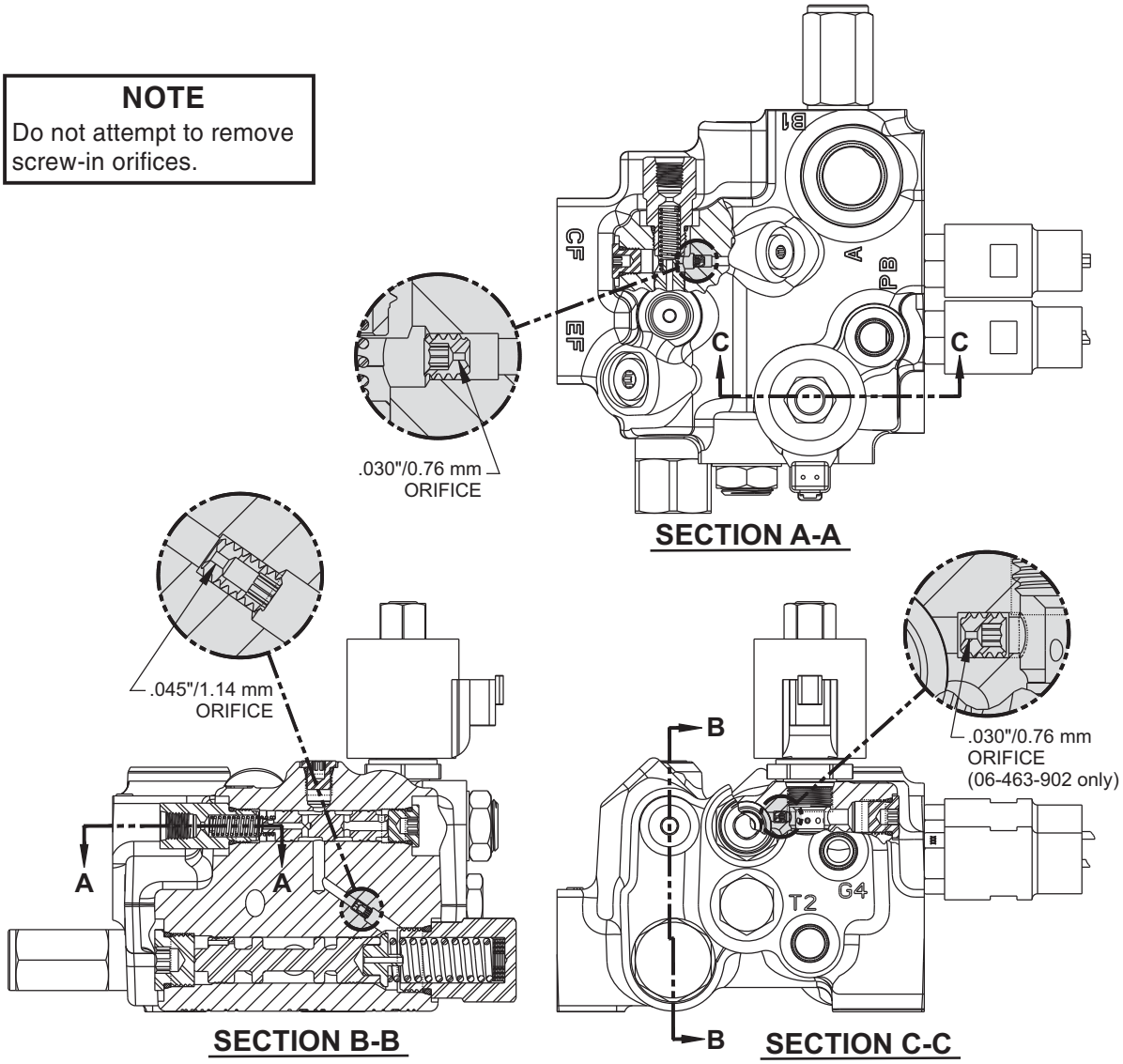

FIGURE 2
Orifice Locations
(06-463-902 shown)

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 (18) and turn screw (19) in, stopping when gauge shows an increase in pressure. Check the high limit specifications (see TABLE 1) and adjust screw (19) until the high limit setting is met. Reinstall plug (18). This pressure can be checked correctly only if after each adjustment of screw (19) 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 (18) 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 (18) 94.9-101.7 N·m (70-75 lb·ft).

TABLE 1 (Specifications)

Part Number	Repair Kit Number	High Limit (cut out)		Low Limit (cut in)	
		bar	(PSI)	bar	(PSI)
06-463-902	06-400-281	158.6 ± 3.5	(2300 ± 50)	127.6 ± 3.5	(1850 ± 50)
06-463-916	06-400-281	189.6 ± 3.5	(2750 ± 50)	156.9 ± 3.5	(2275 ± 50)