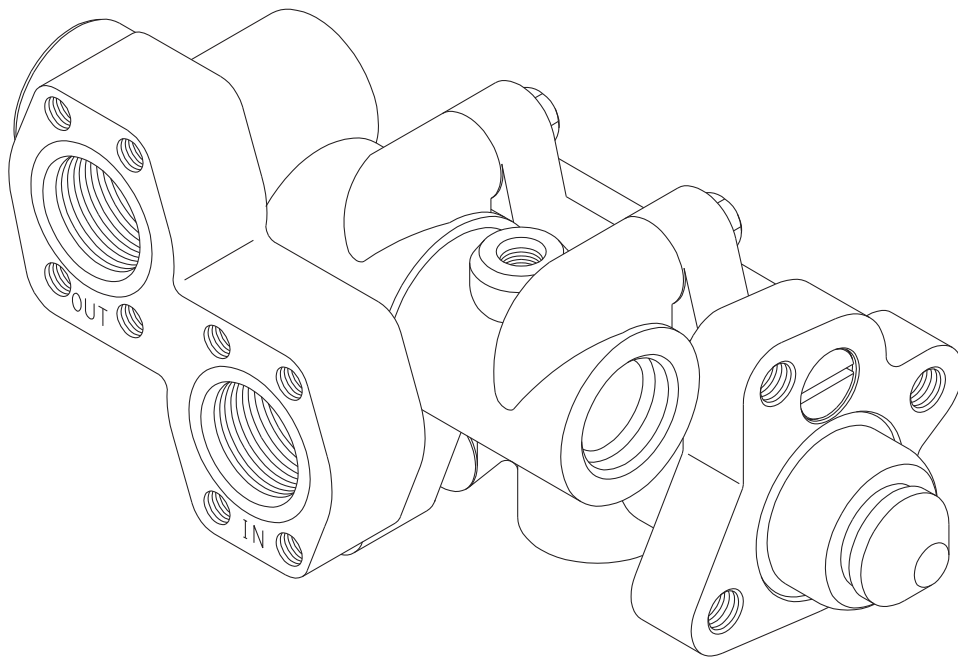


FULL POWER HYDRAULIC POWER BRAKE VALVE

Service Instructions

TABLE 1 (Specifications)

Caterpillar Part Number	Caterpillar Repair Kit Number	Brake Port Pressure		Nominal Accumulator High Limit (cut out)		Nominal Accumulator Low Limit (cut in)	
		bar	(PSI)	bar	(PSI)	bar	(PSI)
145-9560	148-3573	75.8 ± 3.5	(1100 ± 50)	168.9 ± 3.5	(2450 ± 50)	118.9 ± 3.5	(1725 ± 50)



NOTE

Locate the part number on the power brake valve and compare it to the part number in TABLE 1. Be sure you have the proper service instructions.

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 ring (21) and boot (20) from control section housing (10).
2. Remove piston (19), shim(s) (18) and spring (17) from control section housing (10). Note the number of shim(s) removed for reassembly purposes.
3. Remove o-ring (16). Depress plunger (13) and remove retaining ring (15).
4. Remove washer (14), plunger (13) and spring (11) from housing (10). Remove cup (12) from plunger (13). Note direction of cup (12).
5. Remove plug (1) from control section housing (10).
6. Remove washer (5), spring (6) and guide (7) from housing bore.
7. Remove o-ring (2), cup (4), and back-up ring (3) from plug (1).
8. Remove valve assembly (8) from housing bore.
9. Remove o-ring (9) from valve assembly (8).
10. Remove plug (23) from control section housing (10). Remove o-ring (24) from plug (23).
11. Remove nylon pin (22) from plug (23) using a drive pin punch. Be careful not to damage threads.
12. Remove spring (25), seat (26) and ball (27) from housing bore.
13. Remove plug (36) from control section housing (10). Remove o-ring (35) from plug (36).
14. Remove spring (34), stop (33) and ball (32) from housing bore.
15. Using a 6.35 mm (.25 in) diameter wood or plastic dowel, carefully push insert (30) and spool (31) from housing bore. **NOTE: Be careful not to scratch or mar valve seats on insert (30).**
16. Remove spool (31) from insert (30). Remove o-rings (28 & 29) from insert (30).
17. Loosen nut (37) and remove screw (38) from control section housing (10). Remove o-ring (39) from screw (38).
18. Remove spring (40), poppet (41), seat (42), o-ring (43), washer (44) and filter (45) from housing bore.
19. Depress plug (47) and remove retaining ring (46) from charging section housing (54).
20. Remove plug (47), spring (50) and stop (51) from housing bore. Remove o-ring (49) and back-up ring (48) from plug (47).
21. Remove spool (53) from housing bore. The spool can be guided out of the charging section by reaching into either of the large ports.
22. Remove o-ring (52) from spool (53).
23. Depress plug (57) and remove retaining ring (58). Remove plug (57) from housing bore.
24. Remove o-ring (55) and back-up ring (56) from plug (57).
25. Remove three cap screws (59 & 63) and lock washers (60).
26. Separate control section housing (10) and charging section housing (54).
27. Remove o-rings (61 & 62) from sections.

NOTE

Observe torque specifications as indicated in assembly procedures or system damage or failure may occur.

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. Place new o-rings (61 & 62) in the proper grooves on charging section housing (54).
2. Assemble control section housing (10) and charging section housing (54) using three cap screws (59 & 63) and lock washers (60). Torque cap screws 29.8-36.6 N·m (22-27 lb·ft).
3. Install new back-up ring (56) and new o-ring (55) on plug (57). Install plug in charging section housing (54). Note direction of plug (57).
4. Install retaining ring (58) in housing bore (54).
5. Install new o-ring (52) on spool (53). Insert spool in housing bore. Be sure spool is all the way into bore so that the end of the spool contacts the plug on opposite end. Note direction of spool.
6. Install spring (50) and stop (51) into housing (54).
7. Install new back-up ring (48) and new o-ring (49) on plug (47). Install plug (47) in housing bore. Note direction of plug.
8. Install retaining ring (46) in charging section housing (54).
9. Install new filter (45), washer (44), new o-ring (43), seat (42), new poppet (41) and spring (40) in control section housing (10).
10. Install new o-ring (39) on screw (38) and install in control section housing (10). Torque screw (38) 24.4-29.8 N·m (18-22 lb·ft).
11. Install nut (37) on screw (38). Torque 43.4-51.5 N·m (32-38 lb·ft).
12. Install new o-rings (28 & 29) on insert (30).
13. Install spool (31) into insert (30). Note direction of insert (30) and spool (31). Carefully install insert (30) into control section housing (10).
14. Install ball (32) in housing bore.
15. Put a small amount of grease on end of spring (34) to hold stop (33) in place. Install stop and spring in housing bore. Note direction of stop and spring.
16. Install new o-ring (35) on plug (36) and install in housing bore. Torque plug 47.5-54.2 N·m (35-40 lb·ft).
17. Position housings so plug (23) housing bore faces up. Drop ball (27), seat (26) and spring (25) into housing.
18. Insert new nylon pin (22) into plug (23). Be sure nylon pin is properly aligned and evenly driven into screw. Do not damage threads.
19. Install new o-ring (24) on plug (23). Install plug (23) in housing bore.
20. Install new o-ring (9) on valve assembly (8). Install valve assembly (8) into control section housing (10). Note direction of valve assembly.
21. Insert new back-up ring (3) and new cup (4) in plug (1). Note order of back-up ring and cup. Install new o-ring (2) on plug (1).
22. Install guide (7), spring (6) and washer (5) in plug (1).
23. Install plug assembly in control section housing (10). Torque 54.2-67.8 N·m (40-50 lb·ft).
24. Install new cup (12) and spring (11) on plunger (13). Install plunger (13) in control section housing (10). Note direction of plunger.

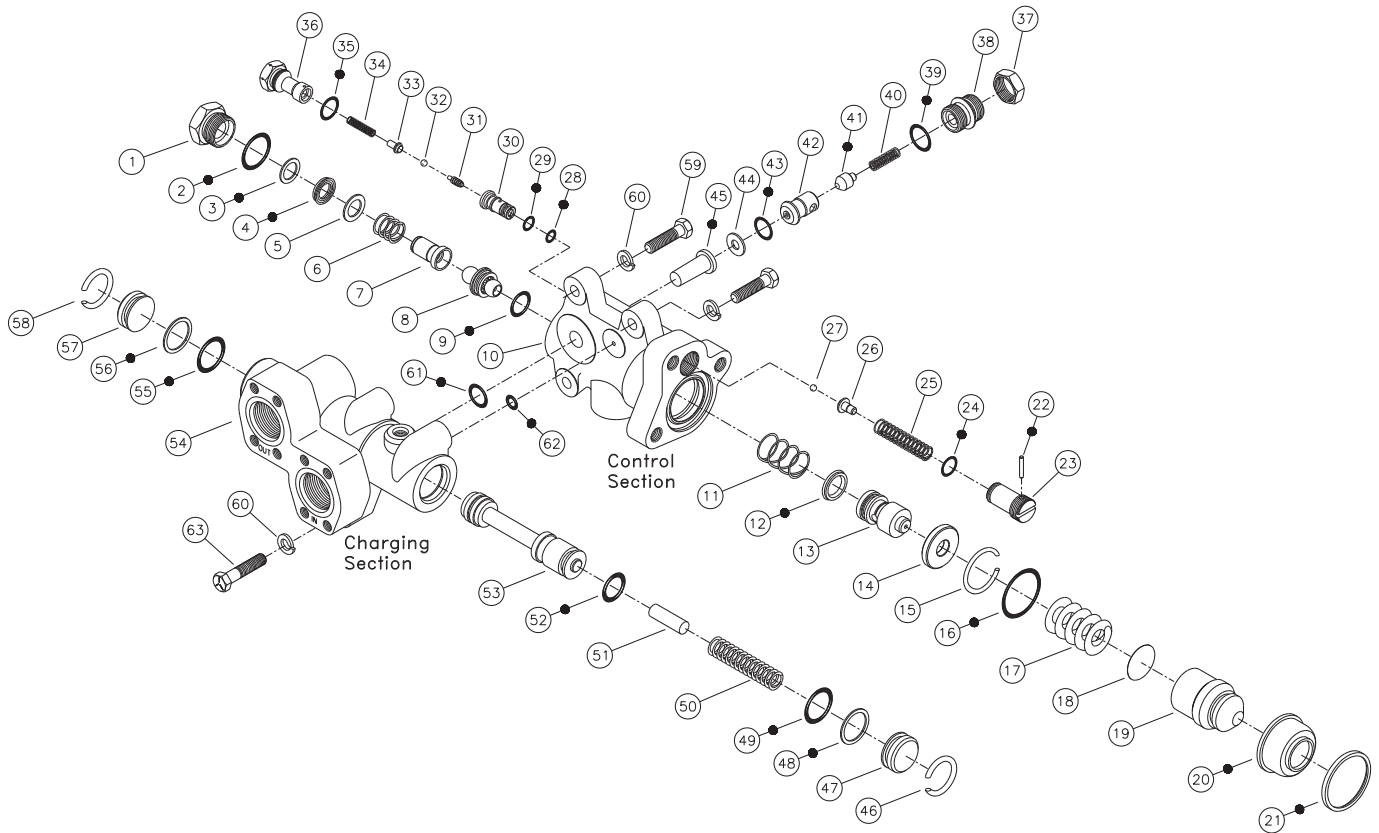


FIGURE 1

25. Install washer (14) in housing bore.
26. Install retaining ring (15) in housing bore.
27. Install new o-ring (16), spring (17), shim(s) (18) and piston (19) in housing bore. Be sure to install the same number of shim(s) as removed during disassembly.
28. Install new boot (20) and new ring (21) on control section housing (10).

VALVE ADJUSTMENT

The maximum accumulator pressure is adjusted by turning plug (23). The high limit is raised by screwing plug into the body and lowered by screwing plug out of the body.

- a. Attach a gauge to accumulator port on valve.
- b. Pump up the valve until a decisive click is heard, caused by the shifting of the insert and spring.
- c. If the pressure is not as shown in specifications chart, page 1, at the time the click is heard, turn adjusting plug (23) to alter the pressure to within specifications.

The brake port pressure, shown in specifications chart page 1, is while piston (19) is bottomed against housing (10).

- a. If pressure is not as shown, add or remove shim(s) (18) until desired pressure is obtained.