

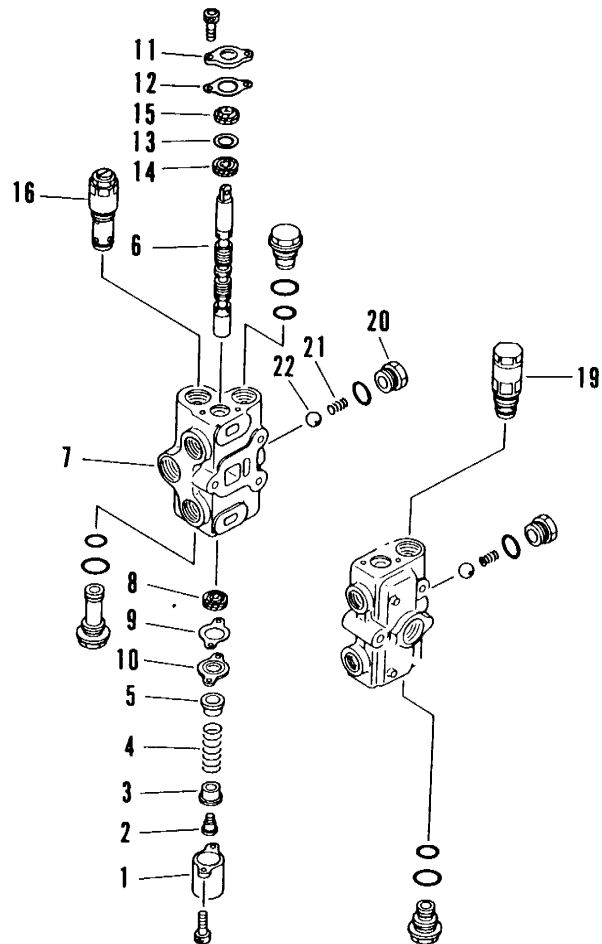
DISASSEMBLY OF 2-SPOOL CONTROL VALVE ASSEMBLY

1. Spool assembly

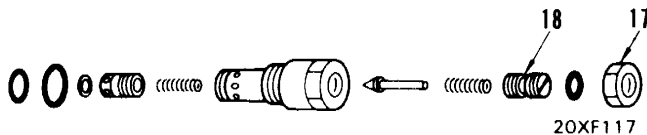
- 1) Remove cover (1).
- 2) Remove plug (2), then remove retainer (3), spring (4) and retainer (5).
 - ★ Loosen the plug while the spool is still assembled in the body.
- 3) Remove spool (6) from body (7).
- 4) Remove U-packing (8), gasket (9) and plate (10) from spool.
- 5) Remove plate (11), then remove gasket (12), collar (13) and U-packing (14).
- 6) Remove dust seal (15) from plate.
 - ★ If disassembly shows that there is any abnormality in the spool or body, replace the whole assembly.

2. Main relief valve assembly

- Remove main relief valve assembly (16).
- ★ If locknut (17) is loosened and screw (18) turned, the set pressure will change, so do not disassemble unless necessary.



20SF166



NOTE: Not all parts shown are serviceable.

3. Safety valve assembly

- Remove safety valve assembly (19).
- ★ The set pressure of the safety valve is higher than the set pressure of the main relief valve, so do not disassemble further.

4. Check valve


- Remove plug (20), then remove spring (21) and check valve (22).

ASSEMBLY OF 2-SPOOL CONTROL VALVE ASSEMBLY

- ★ Clean all parts, and check for dirt or damage. Coat the sliding surfaces of all parts with engine oil before installing.


1. Check valve

Assemble check valve (22) and spring (21) in body (7), then fit O-ring and install plug (20).

 Plug: 7 ± 1 kgm


2. Safety valve assembly

Fit O-ring and install safety valve assembly (19).

 Safety valve assembly: 5.5 ± 0.5 kgm

3. Main relief valve assembly


Fit O-ring and install main relief valve assembly (16).

 Main relief valve assembly: 5.5 ± 0.5 kgm

- ★ If the main relief valve assembly has been disassembled, adjust the set pressure to 155 kg/cm^2 by turning the screw after installing the control valve on the machine.

4. Spool assembly


- 1) Assemble U-packing (8) on body (7).
- 2) Fit gasket (9) and plate (10), then assemble spool (6) in body (7).
- 3) Fit retainer (5), spring (4) and retainer (3), then install plug (2).

 Plug: 1.5 ± 0.5 kgm

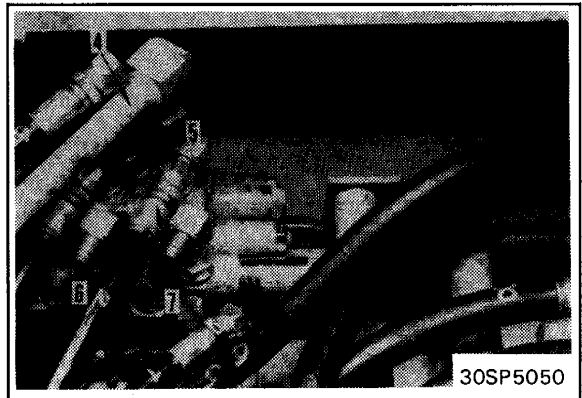
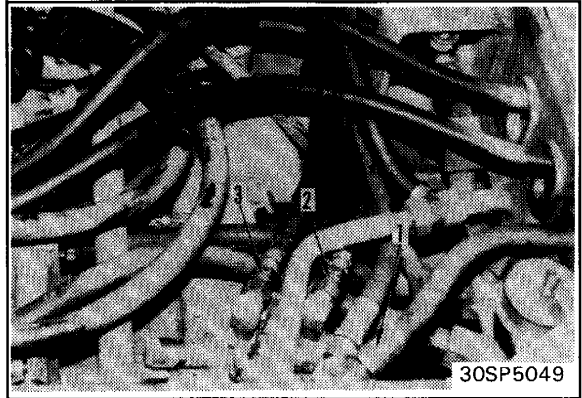
- ★ Be sure to tighten plug with spool assembled in body.
- 4) Install cover (1).
 - 5) Install dust seal (15) on plate (11).
 - 6) Fit U-packing (14), collar (13) and gasket (12), then install plate (11).

REMOVAL OF 3-SPOOL CONTROL VALVE ASSEMBLY (FOR SWING, TRAVEL ACCELERATION, BLADE)




WARNING AVOID INJURY

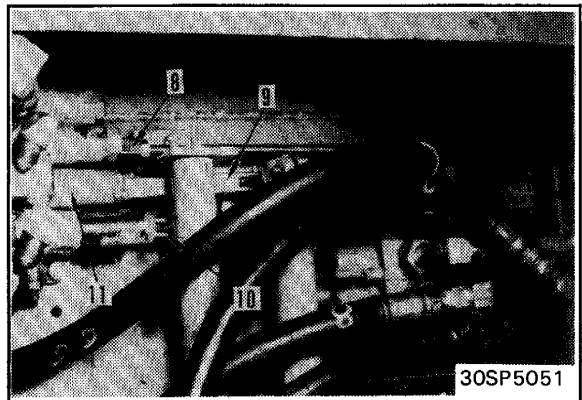
 Lower the work equipment completely to the ground and stop the engine. Operate the control lever several times to release the remaining pressure in the hydraulic piping. Then loosen the oil filler cap slowly to release the pressure inside the hydraulic tank.

1. Remove floor frame assembly.
For details, see 93 REMOVAL OF FLOOR FRAME ASSEMBLY.
2. Disconnect hose (1) between pump and control valve.
3. Disconnect blade hoses (2) and (3).
4. Disconnect tube (4) between tank and control valve.
5. Disconnect travel acceleration hose (5), and swing hoses (6) and (7).
6. Disconnect rods (8), (9) and (10).
7. Remove 3 mounting bolts, then remove 3-spool control valve assembly (11).

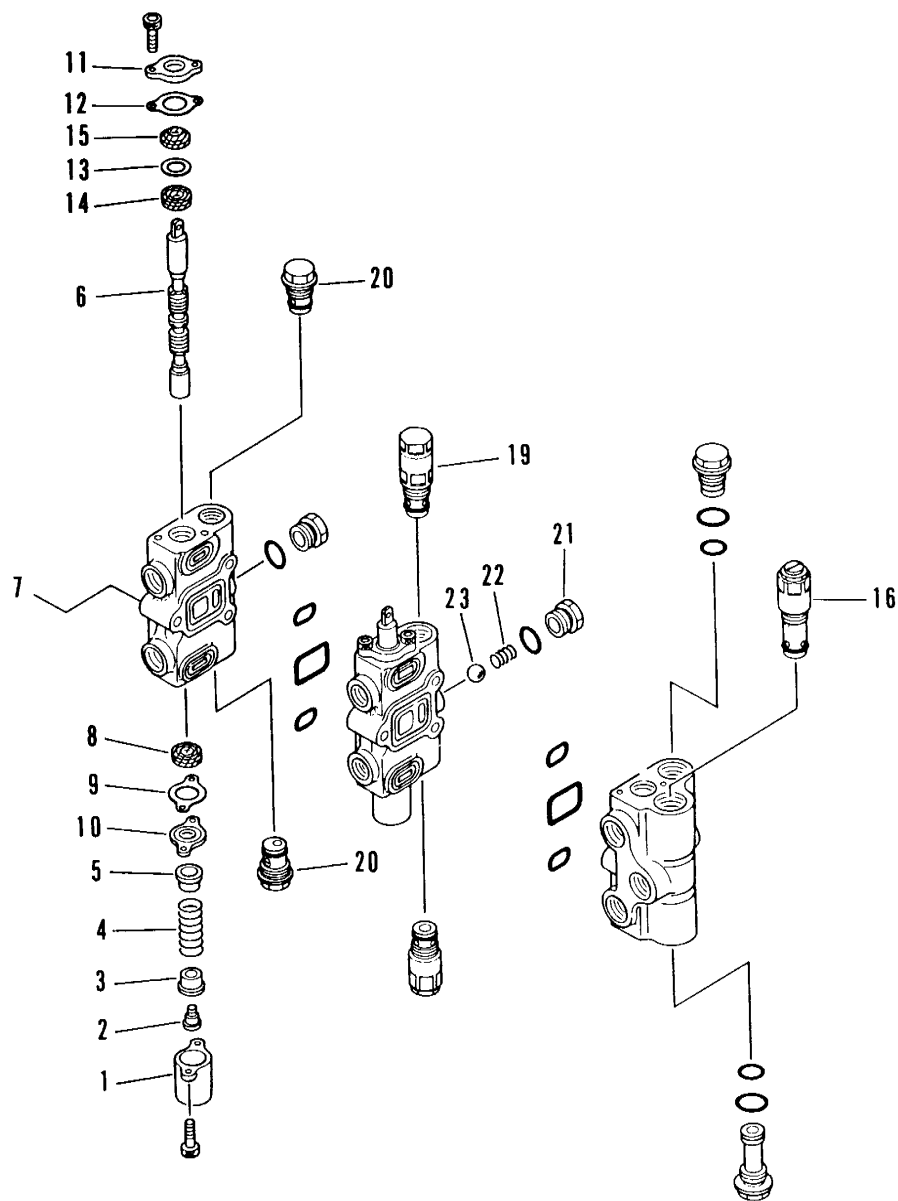


INSTALLATION OF 3-SPOOL CONTROL VALVE ASSEMBLY

1. Set 3-spool control valve assembly (11) in mounting position, and tighten 3 mounting bolts.
 - ★ Tighten the 3 mounting bolts uniformly.
2. Connect rods (10), (9) and (8).
 - ★ Bend the cotter pin securely.
3. Connect swing hoses (7) and (6), and travel acceleration hose (5).
 -  Sleeve nut: 8 ± 2 kgm
(width across flats: 27 mm)
4. Connect tube (4) between tank and control valve, then tighten clamp.
5. Connect blade hoses (3) and (2).
 -  Sleeve nut: 5 ± 2 kgm
(width across flats: 24 mm)
6. Connect hose (1) between pump and control valve.
 -  Sleeve nut: 8 ± 2 kgm
(width across flats: 27 mm)
7. Install floor frame assembly.
For details, see 93 INSTALLATION OF FLOOR FRAME ASSEMBLY.
 - ★ Add engine oil to the hydraulic tank to the specified level, run the engine to circulate the oil through the system, then check the oil level again.



DISASSEMBLY OF 3-SPOOL CONTROL VALVE ASSEMBLY

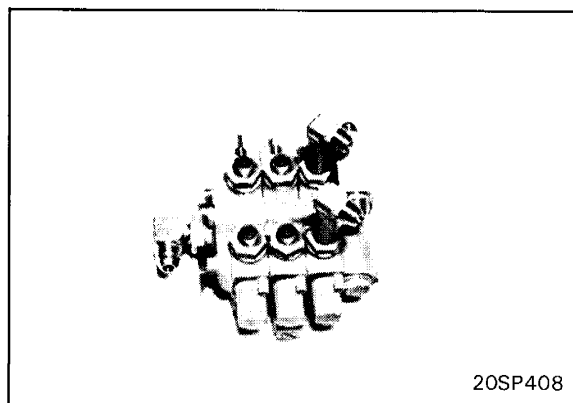


20SF164

1. Spool assembly

- 1) Remove cover (1).
- 2) Remove plug (2), then remove retainer (3), spring (4) and retainer (5).
 - ★ Loosen the plug while the spool is still assembled in the body.
- 3) Remove spool (6) from body (7).
- 4) Remove U-packing (8), gasket (9) and plate (10) from spool.

NOTE: Not all parts shown are serviceable.



20SP408

5) Remove plate (11), then remove gasket (12), collar (13) and U-packing (14).

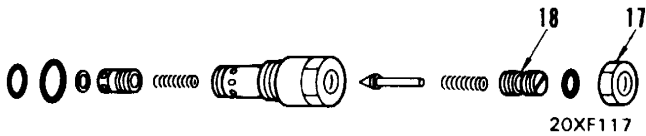
6) Remove dust seal (15) from plate.

- ★ If disassembly shows that there is any abnormality in the spool or body, replace the whole assembly.

2. Main relief valve assembly

Remove main relief valve assembly (16).

- ★ If locknut (17) is loosened and screw (18) turned, the set pressure will change, so do not disassemble unless necessary.



3. Safety valve assembly

Remove safety valve assembly (19).

- ★ The set pressure of the safety valve is higher than the set pressure of the main relief valve, so do not disassemble further.

4. Suction valve assembly

Remove suction valve assembly (20).

5. Check valve

Remove plug (21), then remove spring (22) and check valve (23).