3.9 HYDRAULIC CONTROL VALVE (No. XCO-A35AA-4-DA5I-DA53-DA5I-ZI6)

Description: The Commercial Multiple Unit Valve is an assembly of directional control valves arranged in any desired sequence of types and number to perform or control a given variety of work operations.

This bank of valves is flanked by an inlet plate which contains a relief valve, and by an outlet plate. Each of the varied valves in the bank bears an identification letter, which designates the type of valving function it will perform. Each valve block has the same overall external design or mating faces, which features permits an unlimited sequence of valve arrangements in the bank to facilitate installation and operation.

The valve blocks are machined castings, which are precision fitted with balanced sliding spools and have threaded pipe connections. Separating the valve sections are sealing ring spacers which locate "O" ring seals around the oil ports.

Inlet and outlet plates, the control valves and the mounting flanges are all tied together by bolts whose nuts are tightened evenly.

CAUTION: Over-tightening will cause the valve spools to seize.

1. GENERAL VALVE OPERATING CHARACTERISTICS

The Commercial Multiple Unit Valve is installed in the hydraulic circuit between the pump and the work load, where it serves to direct the oil from the pump to the selected ports of the actuating cylinders or hydraulic motor.

The valving arrangement is such that, with all operating valve spools in neutral position, the oil flow from the pump will circulate freely through the various valve sections to the tank.

2. INDIVIDUAL VALVE SECTION CHARACTERISTICS

(1) The "AA4" section is equipped with an integral relief valve for overload protection. The cracking pressure of the standard relief valve is 1100 psi.

(2) The "DA" section is used with double acting cylinders. When the spool is in central position, it blocks both cylinder ports and, when it is shifted from center, it opens one port to the pump flow and the other to the tank. The "DA" section is spring-loaded to permit lever to return to neutral when released.

NOTE: The "DA" section (Mast Raising Control) has a special machined spool to relieve the top pressure of the mast raising cylinder back to the hydraulic tank.

(3) The DA53" section is used to control the amount of oil to the fluid motor. When in neutral, it blocks both ports of the valve, preventing rotating of the fluid motor. In the forward position, it opens the port letting the oil return to the tank from the fluid motor. This position allows the operator to shift the pulldown transmission to neut4al. The pulldown handle should now be moved to the neutral position to relieve the Racine Pump pressure. The kelly can then be hoisted by the hoisting drum line. This section is friction loaded by the leather disc on the control handle.

(4) The ZI6" section or outlet plate provides only one connection for exhaust oil returning to the tank.

NOTE: Care should be taken to keep the oil clean, free of dust, water, sealing compounds, etc. If a sealing compound is used on piping installations, it must be non-soluble in oil and should be applied at least two or three threads back on the fitting to insure that the compound will not enter the hydraulic system when the fitting is tightened.

OVERHAUL: Overhaul of these valves will depend to a great extent upon the conditions under which they are required to operate. If hydraulic oil of improper viscosity is used in the system; or, if it is allowed to become contaminated by foreign matter, the resultant damage will reduce the efficiency of the valve to a minimum.

Should excessive leakage caused by abrasives in the oil occur, first remove the

operating linkage connected to the spool. After the removal of the end caps from the affected section, the spool can then be pulled out. Inspection of the spool is scored considerably; the body bore will be also. Should this condition develop, the complete section must be replaced with a new one.

When ordering hydraulic valve sections, the section must be ordered by correct part number.

Aside from spool and body wear, very little repair is required on these valve sections. However, since the design of these sections incorporates check and relief valves as well, it is advisable to check their operation for freedom of movement. Examine also the condition of the seating faces of the respective spools and valves.

At reassembly of the individual sections, dip all seals in hydraulic fluid to ease assembly procedures and to prevent damage caused by attempting to slide a dry spool through a dry seal. Extreme care should be taken in this respect when returning the operating spools to their respective bores.

When assembling the various sections into the banks, care should be taken with the seals used between the sections. Lubricate these seals with a minimum amount of vaseline or other lubricant having similar viscosity while leaving the body dry.

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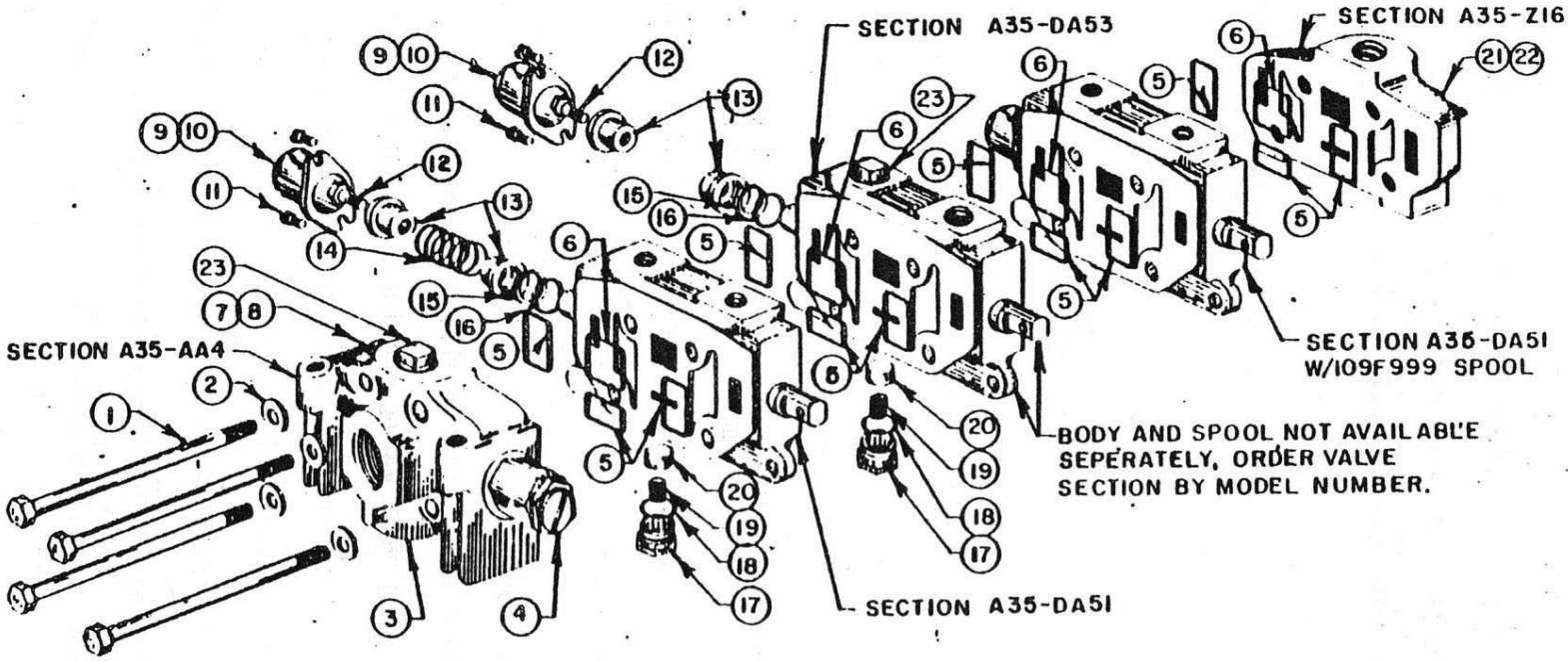
IMPORTANT: ALWAYS GIVE OUR SHOP NUMBER OF YOUR DRILL WHEN ORDERING PARTS

HYDRAULIC VALVE

MODEL NO. XCQ-A35-AA4-DA51-DA53-DA51-Z16
REWORK TO 150F782
105



SECTION A35-AA4

3. XCQ-U1126-64 ___ HOUSING, INLET ____ 1
4. XCQ-BL6625K-1 ___ VALVE, RELIEF ____ 1
5. XCQ-L3006-106 ___ O-RING ____ 3
6. XCQ-L3006-108 ___ O-RING ____ 1
7. XCQ-A2078-23-1 ___ PLATE, NAME ____ 1
8. XCQ-X41-4 ___ SCREW, DRIVE ____ 2
23. 7199 ___ PLUG, PIPE ____ 1

SECTION A35-Z16

21. XCQ-JA1125-36 ___ HOUSING, OUTLET ___ 1
22. XCQ-X1-7 ___ PLUG, PIPE ____ 1

MISCELLANEOUS

1. XCQ-X1402K-3 ___ SCREW, VALVE ____ 4
2. WASHER ___ (INCLUDED IN ITEM ONE) ___ 4

SECTION A35-DA53

5. XCQ-L3006-106 ___ O-RING ____ 3
6. XCQ-L3006-108 ___ O-RING ____ 1
9. XCQ-AH1311 ___ CAP, VALVE ____ 1
10. XCQ-P1532 ___ PLATE, RETAINER ____ 1
11. XCQ-X45-9 ___ SCREW, CAP ____ 2
12. XCQ-G1048 ___ BOLT, STRIPPER ____ 1
13. XCQ-DA1023 ___ GUIDE SPRING ____ 2
15. XCQ-S1352-1 ___ RING, BACK-UP ____ 1
16. XCQ-L3006-7 ___ O-RING ____ 2
17. XCQ-M1021 ___ CAP, CHECK ____ 1
18. XCQ-L3006-1 ___ O-RING ____ 1
19. XCQ-A1327-119 ___ SPRING, CHECK ____ 1
20. XCQ-C1530-3 ___ POPPET, CHECK ____ 1
23. 7199 ___ PLUG, PIPE ____ 1

SECTION A35-DA51

5. XCQ-L3006-106 ___ O-RING ____ 3
6. XCQ-L3006-108 ___ O-RING ____ 1
9. XCQ-AH1311 ___ CAP, VALVE ____ 1
10. XCQ-P1532 ___ PLATE, RETAINER ____ 1
11. XCQ-X45-9 ___ SCREW, CAP ____ 2
12. XCQ-G1048 ___ BOLT, STRIPPER ____ 1
13. XCQ-DA1023 ___ GUIDE, SPRING ____ 2
14. XCQ-A1327-129 ___ SPRING ____ 1
15. XCQ-S1352-1 ___ RING, BACK UP ____ 1
16. XCQ-L3006-7 ___ O-RING ____ 2
17. XCQ-M1021 ___ CAP, CHECK ____ 1
18. XCQ-L3006-1 ___ O-RING ____ 1
19. XCQ-A1327-119 ___ SPRING, CHECK ____ 1
20. XCQ-C1530-3 ___ POPPET, CHECK ____ 1