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VALVE MANUALLY CONTROLLED MODEL C92

The C92 valve offers combined differential circuit fast ram approach followed by controlled pressing speed which may be regulated. Return speed is rapid. The ram will descend at full speed and change automatically to controlled pressing speed upon reaching a preset distance. When the ram contacts the work, it will apply preset pressure until the controls are released. The ram will then return up at full return speed. Use of dual shipper rods makes it possible to control the distance the ram will descend before starting the slow pressing speed. As an optional feature, the valve may be set up to give single cycle pressure reversal. There is a choice of controls available.

To begin the ram cycle, the operator must be press the dual hand levers which raise the shipper rod and lower the spool. This position of the spool connects the pressure port to the top cylinder port, and the bottom cylinder port to the exhaust port, causing the ram to start down.

As shown in Figure I, the exhaust flow from bottom cylinder port is transmitted through the exhaust port to the bottom of the flow control spool. This oil is trapped and having pressure greater than the flow control spool spring force, the spool is lifted permitting the exhaust flow to enter the top cylinder port. This provides a differential circuit for fast ram approach speed. This speed is maintained until the speed change over shipper rod collar is contacted by the weight.

The resulting action is shown in Figure 2. The flow control sleeve is raised, cutting out the differential circuit. The exhaust flow must now pass through the needle valve (speed control valve) and the pressure drop across the valve opening is transmitted to both ends of the flow control spool.

When this pressure differential is great enough to overcome the spring force, the flow control spool lifts. This allows a portion of the top cylinder oil to flow to tank thereby reducing the speed of the ram's downward travel. (See Figure 3)

Any degree of pressing speed may be obtained by adjusting the needle valve. With the needle valve fully closed, the ram will stop since pump flow is fully open to tank.

Once the cycle is initiated the ram continues its descent at fast approach until collar is contacted by the weight. The ram then changes to controlled speed until the work is contacted. Upon contact pressure immediately builds up. This full pressure will be maintained until the hand levers are released.

The ram will stay down exerting full pressure until the hand levers are released.

When the hand levers are released, the spool becomes spring offset so that the pressure port is connected to the bottom cylinder port and the top cylinder port is connected to tank (See Figure 4). The ram will continue to move up until the upper stop collar is contacted by the shipper rod arm. This contact pulls the spool down to an open center position so that pump volume is directed to tank and back pressure balances the ram in the up position (See Figure 5). The ram will remain up until a new cycle is initiated.

Releasing the hand levers at any point in the cycle will cause the ram to return to the up position.

To obtain distance reversal, set the bottom stop collar at the required reversal point. When the shipper rod arm contacts this stop collar, the shipper rod is pulled down, the dual handles are pushed up forcing the spool up, thereby reversing the direction of ram travel.

Pressure reversal may be obtained with this valve by installing an orifice at B. (See Figure 6).

When the stop collar on the speed change-over shipper rod is contacted by the ram, the exhaust oil back pressure created by the orifice at (B) is transmitted to the top of the spool. The dual handles may then be released and the ram will continue down to the work and exert full pressure spilling the main relief valve. The ram will stop, causing cessation of exhaust oil flow. Pressure to the top of the spool will dissipate through the orifice and the spool will be offset by its spring force so that the ram will return up.

Inching control for set-up purposes can be had by manipulating the dual hand levers to obtain desired control of ram. Ram can be inched up and down or stopped at any position.

FIGURE 1

NOTICE

MULTIPRESS supplies service bulletins, parts lists and parts for presses with serial numbers below 30,000; only as a convenience to our customers.

Any press with a serial number below 30,000 was not manufactured by *MULTIPRESS*.

All guarding and safety considerations are the responsibility of the current owner per ANSI B11.2 1995.

FIGURE 2

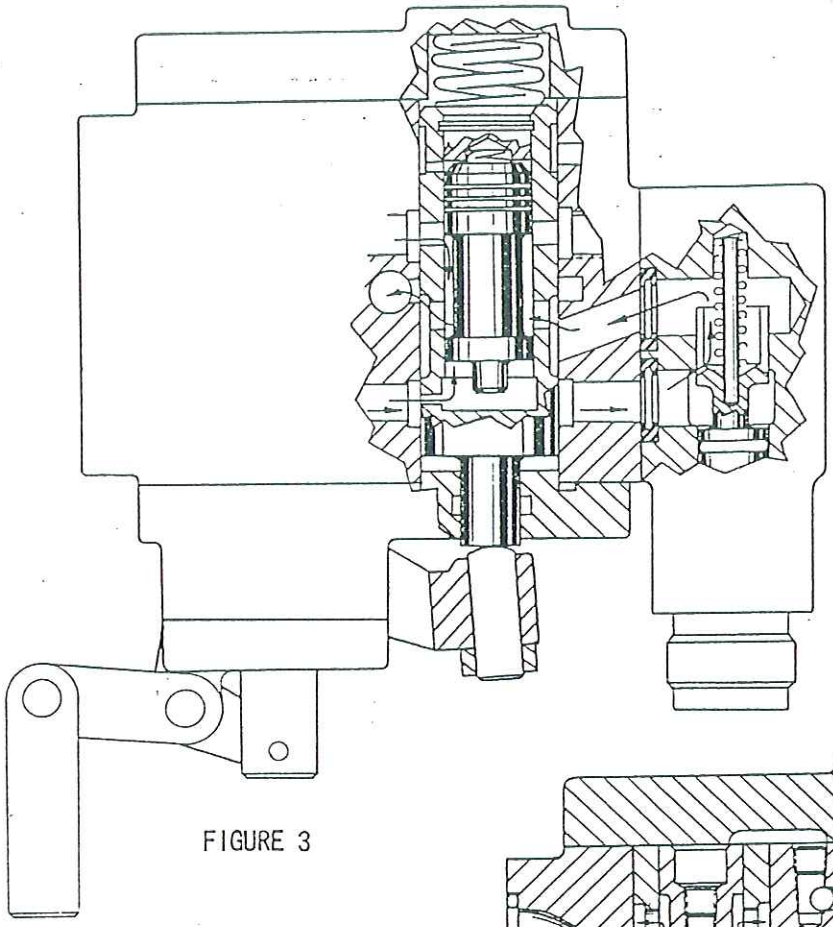

FIGURE 3

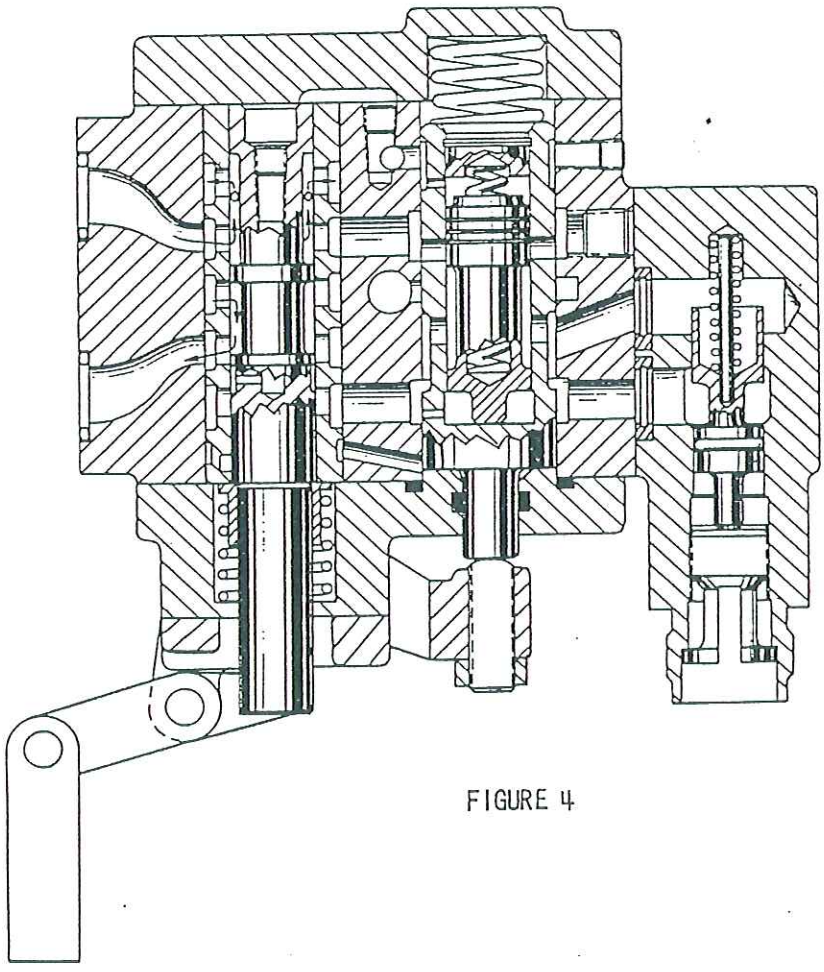

FIGURE 4

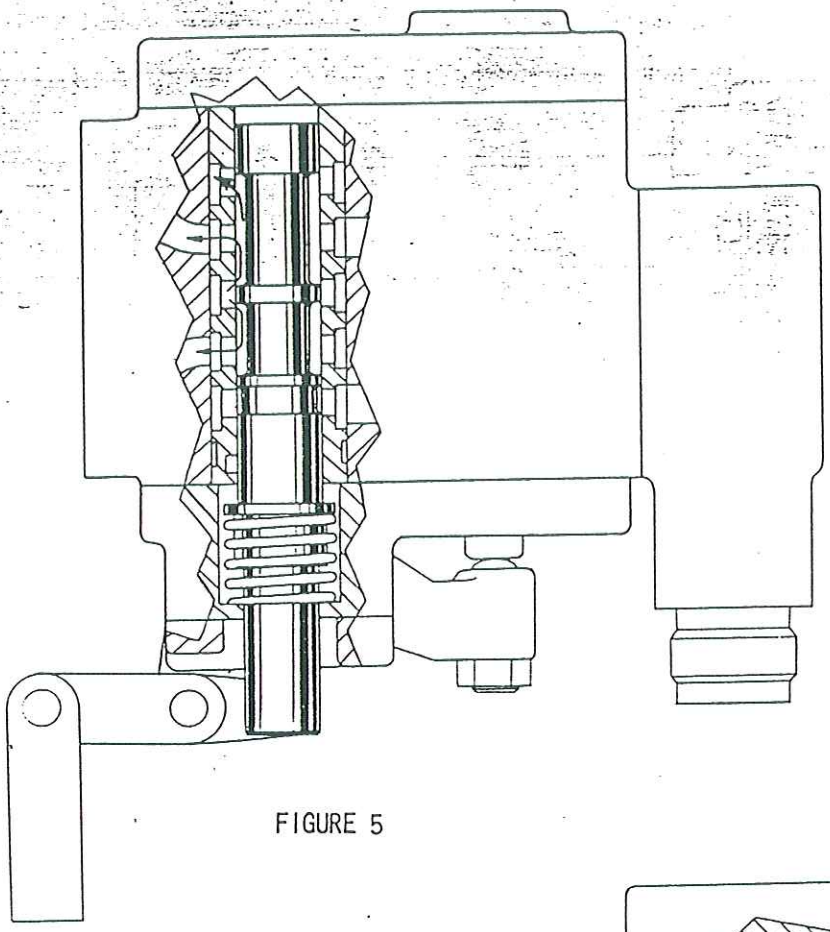

FIGURE 5

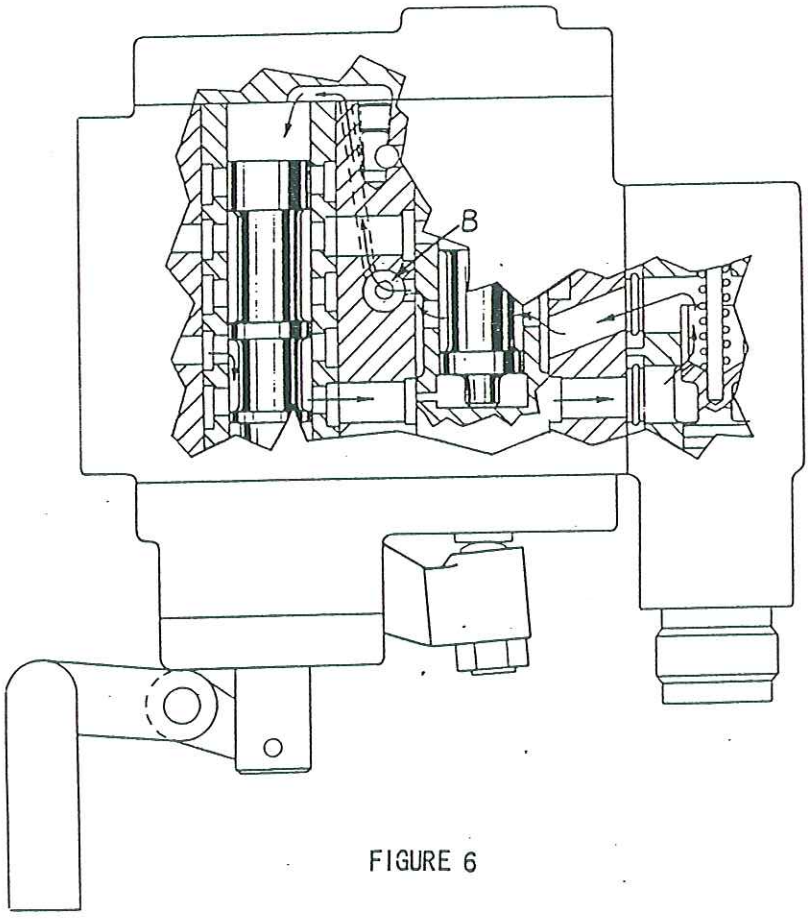

FIGURE 6

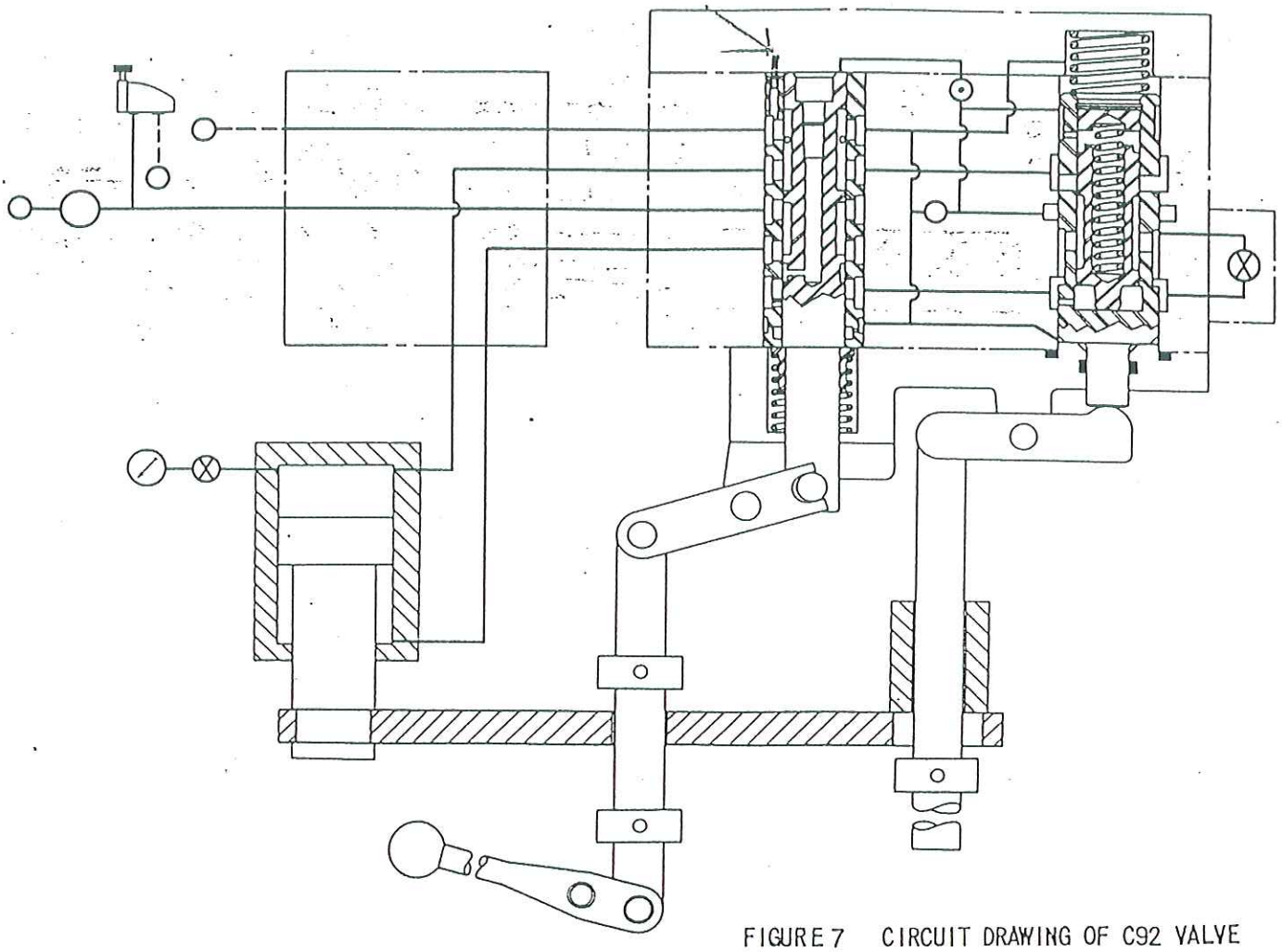

FIGURE 7 CIRCUIT DRAWING OF C92 VALVE

DIFFICULTIES	CAUSE	REMEDY
Ram sticks down.	1. Make sure weight is being picked up by collar on shipper rod.	1. Adjust left shipper rod collar upwards to pick up weight.
	2. Spring at bottom of main spool may be broken.	2. Remove and replace with new spring.
No speed control.	1. Same as (1) above.	1. Same as (1) above.
	2. Flow control spool may be stuck shut.	2. Disassemble and clean thoroughly. Check for dirt, if still tight polish with crocus cloth and oil.
Unable to obtain pressure.	1. With dual handles check adjustment of shipper rod. Handles may be contacting frame before spool is completely shifted.	1. Adjust shipper rod so that it is raised further when handles are depressed.
	2. Dirt may be holding valve open.	2. Back off relief valve then readjust for pressure.
	3. Same as (1) in item (1).	3. Same as (1) above.

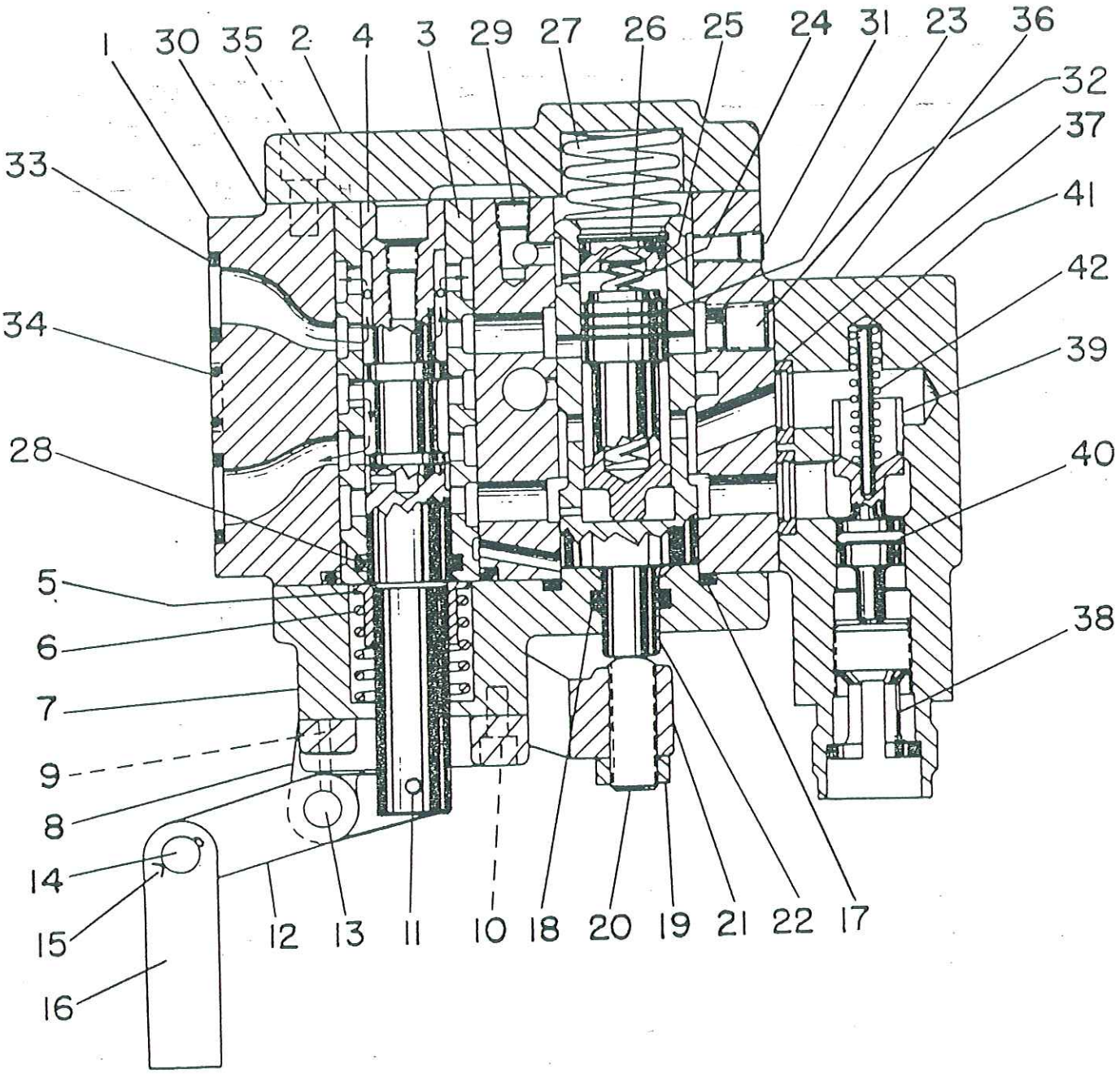

Figure 8 C92 Valve Reference Illustration

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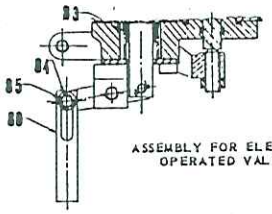
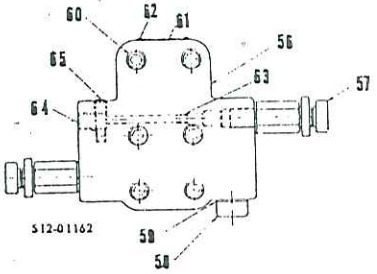
ITEM	PART NUMBER	DESCRIPTION	QUANTITY
1	35-13785-W	Body - Valve	1
2	35-13788-Y	Cap	1
3	35-13741-Y	Sleeve - Valve	1
4	35-13742-Y	Spool	1
5	35-13744-Z	Stop	1
6	35-12007-Y-25	Spring - Compression	1
7	35-13789-Y	Cap	1
8	35-11906-Z	Cap	1
9	35-11908-Z	Pin - Retaining	1
10	COMM	Screw - Cap, soc hd, 3/8 - 16NC x 2-1/4 in. lg.	4
11	35-11909-Z	Pin - Spool	1
12	35-13727-Z	Link - Shifter	1
13	35-11907-Z	Pin - Lever	1
14	AN397-25	Pin - Flat hd.	1
15	COMM	Pin - Cotter 3/32 dia. x 3/4 in. lg.	2
16	35-13728-Z	Link - Adjusting	1
17	6227-27	Packing - "O" ring	2
18	6227-12	Packing - "O" ring	1
19	COMM	Nut - Hex. Jam, 1/2 - 13NC	1
20	COMM	Screw - Set Oval Pt., Soc. 1/2 - 13NC x 1-1/2	1
21	35-13790-Y	Link - Valve Shifter	1
22	25-2057-Z	Sleeve - Speed Control	1
23	35-13783-Z	Spool - Speed Control	1
24	35-12003-Y-15	Spring - Compression	1
25	35-13784-Z	Retainer - Spring	1
26	5000-93	Ring Retaining	2
27	35-12007-Y - 14	Spring - Compression	1
28	6227-18	Packing - "O" ring	1
29	35-13786-Z	Orifice	1
30	35-13787-Z	Gasket	1
31	COMM	Plug - 1/16 Soc. Pipe	3
32	COMM	Plug - 1/4 Soc. Pipe	1
33	6227-15	Packing - "O" ring	3
34	6227-17	Packing "O" ring	1
35	COMM	Screw - Cap, soc hd, 16NC x 1" lg.	6
36	35-13062-Y	Body	1
37	66945	Vickerseal	2
38	35-11495-Z	Screw - Adjusting	1
39	35-11480-Z	Orifice - Adjusting	1
40	6227-11	Packing - "O" ring	1
41	35-13063-Z	Pin	1
42	35-12002-Y-5	Spring - Compression	1
*	COMM	Pin - Driv Loc 3/32 Dia. x 1/2 in. lg.	1
*	COMM	Screw - Cap, soc hd, 3/8 - 16NC x 3/4 in. lg.	4
*	COMM	Plug - 3/8 Sq. hd. pipe	1
*	COMM	Tag	1
*	25-1853-Z	Orifice - Adjustable	1
*	COMM	Screw - Cap, soc hd, 3/8 - 16NC x 2	4
*	AN937-33	Pin - Flat hd.	1
		Add the following only when Pressure Reversal is required:	
*	25-2320-Z	Orifice for C92 valve	1

* Not shown

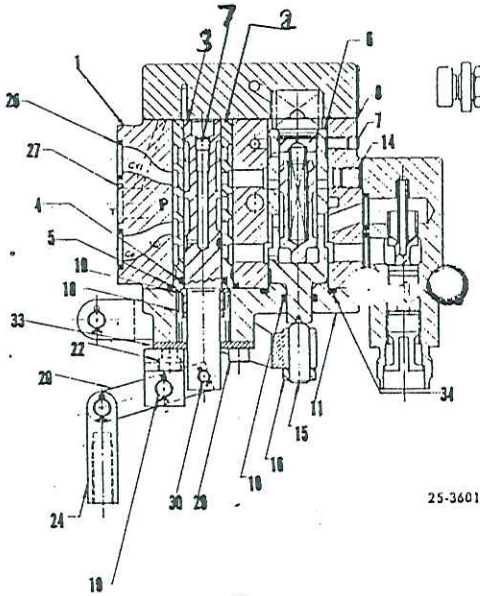
ITEM	DESCRIPTION AND PART NUMBER	QTY
1	BODY – VALVE 032–19220	1
2	SLEEVE – VALVE 032–13741	1
3	SPOOL 032–13742	1
4	"O" RING 671–00213	1
5	"O" RING 671–00222	1
6	SLEEVE – FLOW CONTROL 512–13334	1
7	PLUG, 1/16" SOC. PIPE FLUSH 431–90104	5
8	GASKET 032–13787	1
9	CAP – CONTROL 512–01162	1
10	"O" RING 671–00114	1
11	CAP – BOTTOM 032–13789	1
12	SCREW–SOC. HD. CAP 3/8–16NC X 3/4 308–16122	4
13	LINK – VALVE SHIFTER 032–13790	1
14	PLUG–1/4" SOC. PIPE, FLUSH 431–90404	1
15	SCREW – SOC. 1/2–13NC X 1¼ 311–20201	1
16	NUT–HEX JAM 1/2 – 13 NC 388–20100	1
17	STOP – 1-5/16 DIA. X 1-1/8 032–13744	1
18	SPRING – COMPRESSION 033–22389	2
19	PIN–CLEVIS 7/16 DIA. X 1¼" 321–39734	1
20	LINK – SHIFTER 032–13727	1
21	BRACKET – SUPPORT 032–17480	1
22	SCREW, SOC.HD.CAP 3/8–16 NC X 2¼ 308–16240	2
23	PIN–FLAT HD. 7/16 DIA. X 25/32 321–39728	1
24	LINK – ADJUSTING 032–13728	1
25	PIN – COTTER 3/32 DIA. X 3/4 322–09240	4
26	"O" RING 671–00210	2
27	"O" RING 671–00212	2
28	PLUG – 1/4 SOC. PIPE 431–90400	1
29	SCREW–SOC.HD.CAP 3/8–16NC X 2 308–16240	6
30	PIN–FLAT HD. 5/16 DIA. X 27/32 321–39827	1
31	PLUG – 3/8 SOC. PIPE 431–90600	1
32	PIN–FLAT HD. 7/16 DIA. X 1-3/32 321–39735	1
33	STOP – SPOOL 032–20146	1
34	"O" RING 671–00223	1
35	ORIFICE 032–14767	1
36	ORIFICE 031–41726	1
37	ORIFICE 032–13155	1
38	ORIFICE 032–28325	1
39	ORIFICE – ADJ. (H SERIES) 512–01158	1
40	ORIFICE – ADJ. (K–L–Q SERIES) 512–01160	1
41	SLEEVE – FLOW CONTROL 032–13218	1
42	SPOOL – FLOW CONTROL 032–13788	1
43	SPRING 032–22161	1
44	BUTTON 032–13784	1
45	RING – RETAINING 386–30003	2



ASSEMBLY FOR ELECTRIC OPERATED VALVE



S12-01162



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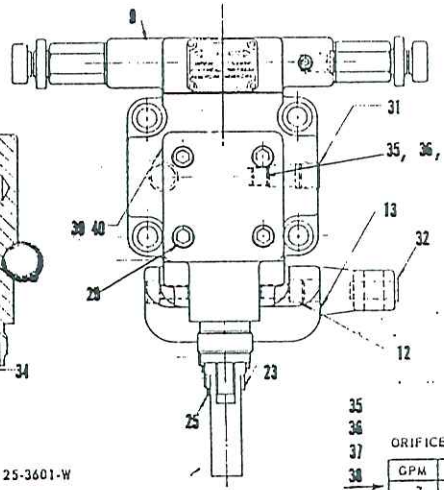
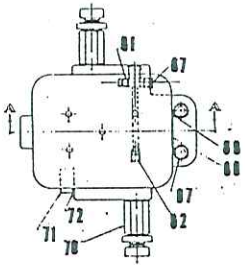


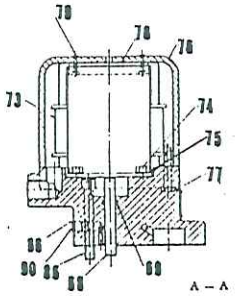


CAP FOR ELECTRIC OPERATED VALVE

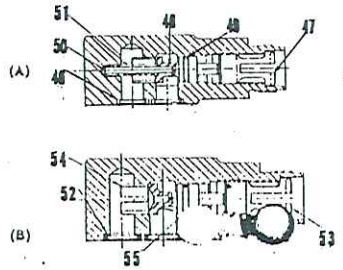
35
36
37
38

ORIFICE PLUG ALTERNATES

GPM	B	DET. NO. (Pipe)
7	1/8	35-13185-Z
10	9/64	35-28325-Z
15	3/16	35-14767-Z
20	1/4	35-18086-Z

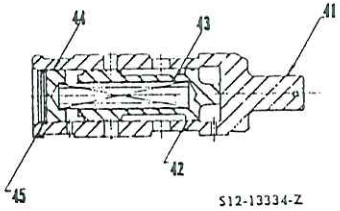


A – A



S12-01160

S12-01158

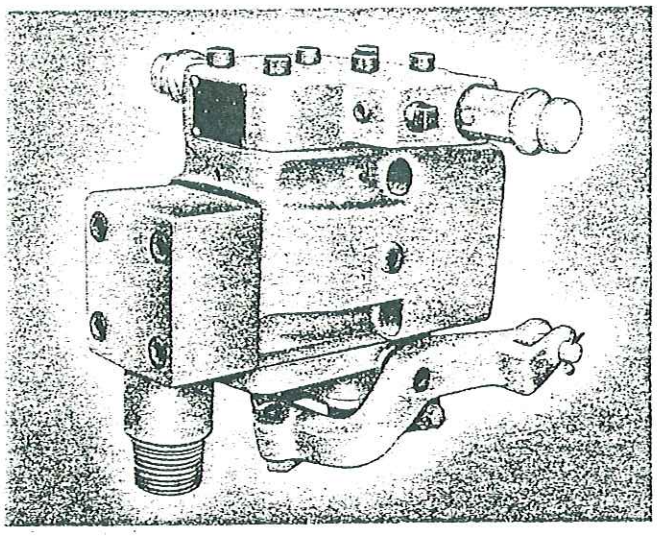


S12-13334-Z

(A) – For use on "K", "L", "N", & "Q" Frame Press
(B) – For use on "H" Frame Press with explosion proof or totally enclosed fan cooled motors.

ITEM	DESCRIPTION AND PART NUMBER	QTY
46	SEAL 630–66940	2
47	SCREW – ADJUSTING 032–11495	1
48	ORIFICE – ADJUSTING 032–19021	1
49	"O" RING 671–00113	1
50	PIN 032–13083	1
51	SPRING 736–02008	1
52	SEAL 630–66940	2
53	SCREW – ADJUSTING 032–11496	1
54	ORIFICE – ADJUSTABLE 032–19221	1
55	"O" RING 671–00113	1
56	CAP – CONTROL 032–19208	1
57	VALVE – NEEDLE 511–00472	2
58	VALVE – SIDE CHECK 512–01159	1
59	WASHER 032–10167	3
60	SCREW, SOC.HD.CAP 3/8–16NC X 2 308–16240	6
61	PLATE – NAME 032–20180	1
62	SCREW – DRIVE "U" 2X3/16 320–10203	4
63	ORIFICE 032–17035	1
64	ORIFICE 032–13786	1
65	PLUG – 1/8" SOC. PIPE 431–90200	2
66	CAP – CONTROL, ELECTRIC 032–19204	1
67	PLUG – 1/8 SOC. PIPE 431–90200	2
68	ROD – PUSH 032–19222	1
69	"O" RING 671–00111	1
70	VALVE – NEEDLE 511–00472	2
71	VALVE – SIDE CHECK 512–01159	1
72	WASHER 032–10167	3
73	SOLENOID 120–03216 (110V)COIL ONLY 121–20916 120–03226 (220V)COIL ONLY 121–20926 120–03244 (440V)COIL ONLY 121–20946	1 1 1
74	SCREW–HEX HD. CAP 5/16–18NCX5/8 306–14100	4
75	WASHER – 5/16 LOCK 348–1020	8
76	HOUSING 032–13624	1
77	SCREW–HEX HD. CAP 5/16–18NCX1¼ 306–14200	4
78	STOP 032–13625	1
79	RIVET – 9/64 DIA X 5/8 382–10910	4
80	LINK 032–17777	1
81	ORIFICE 032–13786	1
82	ORIFICE 032–17035	1
83	SPRING 032–22370	1
84	PIN–FLAT 7/16 DIA X 1-7/32 DIA 321–39730	1
85	WASHER – 7/16 348–10028	1
86	SCREW–SOC.HD.CAP 3/8–16NC X3 308–16320	4
87	SCREW–SOC.HD.CAP 3/8–16NC X 1¼ 308–16200	2
88	PLATE – NAME 032–20180	1
89	SCREW – DRIVE 2 X 3/16 320–10203	4
90	PLUG–1/4 SOC. PIPE, FLUSH 431–00404	1

MULTIPRESS® C-92 VALVE



C-92 VALVE

A. OPERATION

The C-92 is designed to obtain a differential circuit for fast ram approach and to provide adjustable pressing speed which may be started at any position during the down stroke. The main spool is manually operated and adjustable stop collars control the length of stroke and also the speed control stroke.

For operation without pressure reversal, open needle valve "E" and close needle valve "D."

To initiate a cycle starting with the ram in the up position, the operator must depress the dual hand levers (or foot pedal), thus raising the shipper rod and lowering the main spool. This SPOOL MOVEMENT CONNECTS THE PRESSURE PORT TO THE TOP CYLINDER port and the bottom cylinder port to the exhaust port. The ram therefore starts down. The exhaust flow from the bottom cylinder port is transmitted thru the exhaust port to the bottom of the flow control spool. This oil is trapped and therefore lifts the flow control spool allowing exhaust flow to be fed into the top cylinder port, thus giving a differential circuit for fast ram approach speed. This speed is maintained until the speed change-over shipper rod collar is contacted by the weight. This action raises the flow control sleeve, thus cutting out the differential circuit. The exhaust flow must now pass thru the adjustable orifice and the pressure drop across the orifice is transmitted to both ends of the flow control spool. When this pressure differential is great enough to overcome the flow-control-spool spring force, the flow control spool lifts again and becomes stabilized, thus allowing a portion of the top cylinder oil to flow to tank at a controlled rate. This action permits controlled pressing speed. Any percentage of full pressing speed, down to 20% of full speed can be obtained by simply regulating the adjustable orifice. The minimum ram speed is controlled by orifice "A."

The ram continues down to the work and exerts full pressure because the pump volume spills the main relief valve at this time. The ram will stay down exerting full pressure until the hand levers are released. Releasing the hand levers shifts the main spool to the extreme up position, connecting pressure to the bottom cylinder port and opening the top cylinder port to tank. The ram reverses and will continue up until the upper stop collar is contacted by the control arm. This action pulls the spool down, throttling pressure to tank through top cylinder while maintaining pressure open to bottom cylinder and top cylinder open to tank. This back pressure on the bottom cylinder balances the ram in the up position. The ram will remain up until a new cycle is initiated. If the hand levers are released at any point in the cycle, the ram will go up.

If distance reversal is required, the bottom stop collar should be set for the required reversal point. When the control arm contacts this collar, the shipper rod is pulled down, the dual handles are pushed up and the spool is forced to the top position. The ram therefore reverses.

Inching control for set up purposes can be obtained by manipulating the dual hand levers to control the desired stroke and speed of the ram. The ram can be inched up and down or stopped at any desired position.

Pressure reversal may be obtained with this valve by first closing needle valve "E" which will prevent pressure loss on top of the main spool during the speed control stroke. This pressure is fed to the top of the main spool by opening needle valve "D." Check valve "F" prevents a vacuum from being created on top of the main spool at the start of the sequence when the main spool is shifted down. Now, when the flow control sleeve is shifted up at the beginning of the speed control stroke, pressure is directed to the top of the main spool and holds it in the down position. Orifice "B" provides sufficient system pressure during speed control to hold the main spool offset against its spring. The handles may now be released and the ram will continue on down to the work. When the ram gets down, the exhaust flow will stop and the flow control spool will drop at a rate determined by orifice "A." This action stops the partial drain of top cylinder oil to tank thus causing the main relief valve to spill and the ram to give full pressure. Since the exhaust flow has stopped, pressure is no longer being directed to

(continued on page 4)

the top of the main spool and because the spool is spring offset, the spring force reacts to push the oil on top of the spool through orifice "C" to tank thru orifice "A." The main spool is now returned to the p position and the ram goes up and completes the cle.

OPERATION OF ELECTRIC OPERATED C-92 VALVE

A solenoid mounted on top of valve when energized starts ram down.

• For operation without pressure reversal, open needle valve "E" and close needle valve "D." Push-buttons or foot switch must be held closed until ram contacts work and builds up pressure. Releasing push-buttons while ram is moving down will cause ram to immediately reverse.

• For operation with pressure reversal, close needle valve "E" and open needle valve "D." After weight shifts valve into controlled pressing speed, push-buttons must be released and ram will continue on down, contact work, build up pressure and reverse. Releasing pushbuttons before weight contacts collar and shifts valve into speed control will cause ram to reverse immediately. If emergency reverse is required after speed change-over is made it will be necessary to have a 1/4" solenoid valve connected to emergency reverse port in cap of solenoid operated valve. By pushing emergency reverse button, 1/4" solenoid valve will be de-energized and oil from top of main spool is then directed to tank and main spool will immediately raise and reverse ram.

SERVICE TIPS

DIFFICULTIES	CAUSE	REMEDY
SOLENOID CHATTERS	1. Bottom collar on shipper rod set too high and when ram starts down weight of shipper rod pulls against solenoid.	1. Set bottom collar down so that weight of shipper rests on collar when ram starts down.
SOLENOID BURNS OUT	1. Same as above. 2. Holding push buttons in when using pressure reversal after weight shifts valve into speed control. 3. Using bottom stop collar for distance reversal when needle valves are set for pressure reversal.	1. Same as above or short circuit in wiring. 2. Release pushbuttons after weight shifts valve and before pressure build up on ram. 3. Bottom stop collar cannot be used as it causes ram to force shipper rod to push main spool against solenoid.
RAM STAYS DOWN	1. Spring at bottom of main spool may be broken. 2. Dirt around shipper rod.	1. Remove and replace with new spring. 2. Clean dirt and chips away from shipper rod.
NO SPEED CONTROL	1. Weight not shifting collar on shipper rod. 2. Flow control spool may be stuck.	1. Adjust left shipper rod collar upwards to pick up weight. 2. Disassemble and clean thoroughly. Check for dirt, if still tight polish with crocus cloth and oil.
UNABLE TO OBTAIN PRESSURE	1. Weight not shifting collar on shipper rod. 2. On manual valve, handles may be contacting frame before spool is completely shifted. 3. Dirt may be holding relief valve open. 4. Pressure line from pump to relief valve may be cracked or broken. 5. Defective pump.	1. Adjust left shipper rod collar upwards to pick up weight. 2. Adjust shipper rod so that it is raised further when handles are depressed. 3. Back off relief valve, then re-adjust for pressure. 4. Check pump and pressure lines. 5. Repair or replace.
RAM IS SLOW AND/OR PUMP IS NOISY	1. Dirty filter.	1. Remove filter from suction line of pump and clean thoroughly or replace.
PRESS OVERHEATS	1. Top collar on shipper rod set too high. 2. Water not circulating.	1. Lower top stop collar so that valve centers before piston of ram contacts top of cylinder. 2. Check and make sure water is turned on and circulating in cooler coils.