MULTIPRESS®
A Division of
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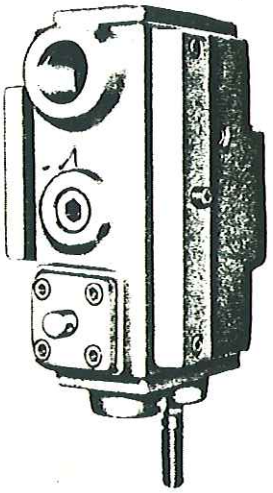
Multipress Control Valves

MODELS: C204 – C264 – C209 – C269
C204SS – C264SS – C209SS – C269SS
C204FS – C264FS

OPERATION OF AUTOMATIC C204 VALVE

This is basically a four-way valve with the shuttle acting as the four-way spool. The control spool and the movable sleeve between the shuttle and the body are the controls that cause reciprocation of the shuttle. The movable sleeve is operated by adjustable stop collars on the shipper rod and the control spool is actuated and held in position by an eccentric crank.

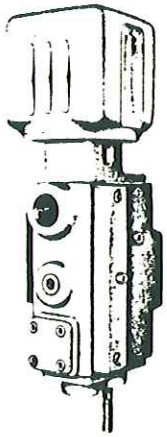


MANUAL VALVE

When the control spool is in the "neutral" position it is spring centered in the valve body.

Let us look at the location of all the parts in this "neutral" position. The movable sleeve is raised by the banjo resting against the upper stop collar and the shuttle is held down by its spring force. This movable sleeve position allows the pump volume to be dumped to tank by going around the control spool and then back thru the top row of holes in the movable sleeve. This action in turn keeps the ram in the "up" position because if the ram should start to drift down the movable sleeve would go with it and back pressure would be created at point "X" and transmitted to the bottom cylinder port bringing the ram back up again.

For automatic operation starting with the ram in the "up" position the control spool is moved down to the "automatic" position therefore blocking the outlet to tank and opening the bottom of the shuttle to full pump volume. Orifice "S" restricts this sudden surge of flow enough to overcome the shuttle spring force and the shuttle is immediately raised up. The pump volume is now directed to the top cylinder port and the ram starts down. The bottom cylinder port is now open to tank thru the exhaust holes in the movable sleeve and orifice "R" in the shuttle. As the ram moves down the movable sleeve goes with it for approximately 3/16 of an inch because it is spring centered. This action closes off the sequence holes at point "X" and opens up the bottom cylinder holes to the exhaust port in the valve body. All of the exhaust oil coming from the bottom cylinder must now pass to tank thru orifice "R" in the shuttle thus creating back pressure sufficient enough to keep the shuttle spring compressed. This back pressure is transmitted to the bottom of the shuttle thru orifice "S" therefore the shuttle is held up throughout the down stroke of the ram.



SOLENOID OPERATED VALVE

The ram may now be reversed by either one of two ways, pressure reversal or distance reversal. With pressure reversal the ram contacts the work and immediately pressure on top cylinder begins to build up to the relief valve setting. Also at this time bottom cylinder exhaust oil has stopped and the shuttle spring has started to push the shuttle down. The shuttle is prevented from dropping fast by the oil under it being restricted on its way to tank by orifice "S". This slow dropping action permits the relief valve to reach its full setting before the shuttle has gone down far enough to reverse the ram, thus we have pressure reversal.

With distance reversal the lower stop collar is raised up so that the banjo will strike it on the downstroke and pull the movable sleeve down against its spring. This action dumps the pump volume to tank at point "Y", stalling the ram thus stopping the exhaust oil and the shuttle drops, reversing the ram just as it did before in the pressure reversal sequence.

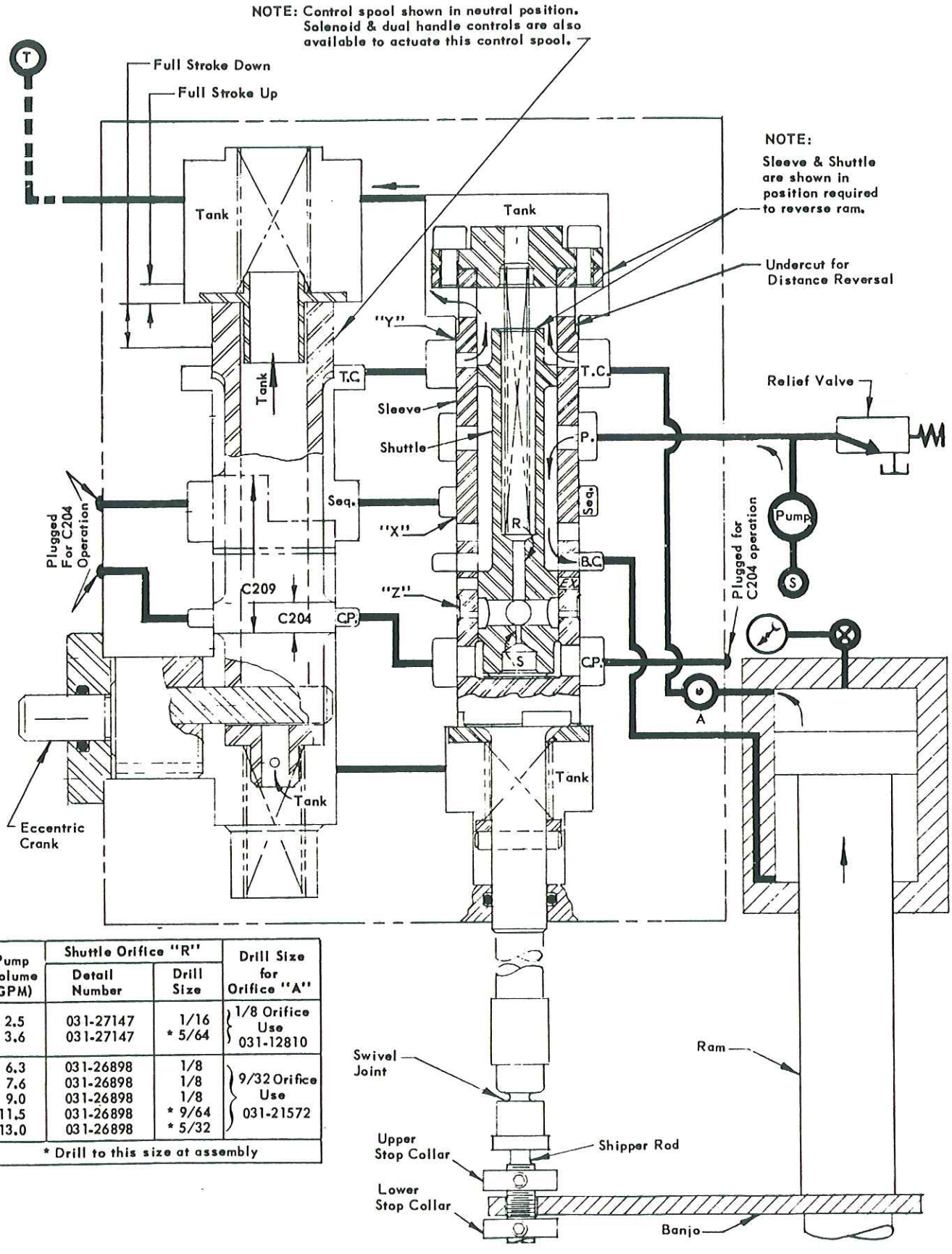
At the top of the upstroke the banjo contacts the upper stop collar raising the sleeve. This action opens the sequence holes and closes the bottom cylinder port. Therefore, if the control spool has been left down in the "automatic" position, the pump volume again will kick the shuttle up and start another cycle. This automatic cycling will continue until the control spool is manually released, letting the pump volume go to tank thus putting all the parts previously mentioned in the "neutral" position stopping the ram.

Inching of the ram may be obtained by turning the handwheel on the side of the press. This action raises the movable sleeve up beyond the "neutral" position creating a back pressure in the top cylinder port and opens the bottom cylinder port to tank thru undercut "Z" therefore forcing the ram down. As long as the handwheel is kept turning, the movable sleeve will stay in this position and the ram will continue to move down. If the handwheel is stopped, the movable sleeve will come to rest in the "neutral" position and in turn stop the ram.

This inching feature also provides a simple means by which the relief valve setting may be adjusted. The ram should be inched down, bottoming out the tooling, and the handwheel should then be given approximately 1/2 turn extra. As a result of this action all of the pump volume is forced to go to tank thru the relief valve, because the top row of holes in the movable sleeve are completely shut off. Any setting desired may now be obtained.

OPERATION OF AUTOMATIC C209 VALVE

Operation of the C209 valve differs from the C204 valve in that a different control spool is used so that oil entering the sequence port cannot go directly to the control port but must be connected to it thru valving on an external mechanism. This oil is delivered only when the ram is in the "up" position and may be used to operate the external mechanism, thus creating a tie-up in sequence between the external mechanism and the main ram. Oil from any external source applied to the control port of the C209 valve can be used to initiate a cycle of the main ram.



Pump Volume (GPM)	Shuttle Orifice "R" Detail Number	Shuttle Orifice "R" Drill Size	Drill Size for Orifice "A"
2.5	031-27147	1/16	1/8 Orifice Use 031-12810
3.6	031-27147	* 5/64	
6.3	031-26898	1/8	9/32 Orifice Use 031-21572
7.6	031-26898	1/8	
9.0	031-26898	1/8	
11.5	031-26898	* 9/64	
13.0	031-26898	* 5/32	
* Drill to this size at assembly			

Circuit – Hydraulic
C204 & C209 Control Valves

SERVICE TIPS

A. Ram descends but will not return.	1. Check shuttle. Should move freely in sleeve. 2. Check spring in shuttle for breakage. 3. Check orifices to be sure they are open. 4. Check relief valve for failure to open.
B. Ram will not descend.	1. Check relief valve setting. This valve's minimum operating pressure is 300 psi. 2. Check relief valve for dirt, lint, etc. 3. Also check system for dirt in valves. 4. Check shuttle as above. 5. Check pump and pressure line. Line may be broken. 6. Install smaller orifice in top cylinder port of valve at cylinder. 7. Top collar too high on shipper and valve not centering.
C. Shipper rod arm breaks on "up" stroke.	1. Check screws in top cap of sleeve. Be sure that all screws are in place and tight.
D. Pressure will not build up before ram reverses.	1. Check lower stop collar. Arm should not contact it unless distance reversal is required. 2. Check relief valve setting. Should be at least 300 psi. 3. Check pressure lines for cracks and other leaks. 4. Possibly slightly smaller orifice in bottom of shuttle will help. 5. Smaller orifice in pipe plug in top cylinder port of valve at cylinder. 6. Possibly use a smaller top orifice in shuttle. This is especially true on a blanking operation when pressure pads force the ram downward faster than normal speeds obtainable.
E. Press overheats.	1. Be sure cooler coils within the press tank are attached to water lines and water is flowing through them.
F. Index table creeps during inching.	1. Control spool does not return to neutral position when solenoid is de-energized. External sequence must be blocked by control spool during inching.

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.

OPERATION OF AUTOMATIC C264 VALVE

This is basically a four-way valve with the shuttle assembly acting as the four-way spool. The control spool and the movable sleeve between the shuttle assembly and the body are the controls that cause reciprocation of the shuttle assembly. The movable sleeve is operated by adjustable stop collars on the shipper rod and the control spool is actuated and held in position by an eccentric crank. When the control spool is in the "neutral" position it is spring centered in the valve body.

Let us look at the location of all the parts in this "neutral" position. The movable sleeve is raised by the banjo resting against the upper stop collar and the shuttle assembly is held down by its spring force. This movable sleeve position allows the pump volume to be dumped to tank by going around the control spool and then back thru the top row of holes in the movable sleeve. This action in turn keeps the ram in the "up" position, because if the ram should start to drift down the movable sleeve would go with it and back pressure would be created at point "X" and transmitted to the bottom cylinder port, bringing the ram back up again.

For automatic operation, starting with the ram in the "up" position, the control spool is moved down to the "automatic" position, therefore blocking the outlet to tank and opening the bottom of the shuttle assembly to full pump volume. Orifice "C" restricts this sudden surge of flow enough to overcome the shuttle assembly spring force and the shuttle assembly is immediately raised up. The pump volume is now directed to the top cylinder port and the ram starts down. The bottom cylinder port is now open to the inside of the shuttle assembly thru the exhaust holes in the movable sleeve. Therefore, as the ram starts down the exhaust, oil from bottom cylinder raises poppet "M" up against its spring force and allows the bottom cylinder oil to join the incoming pump volume on its way to top cylinder giving us a differential circuit. As the ram moves down the movable sleeve goes with it for approximately 3/16 of an inch because it is spring centered. This action closes off the sequence holes at point "X" and opens up the bottom cylinder holes to the exhaust port in the valve body. All of the exhaust oil coming from bottom cylinder must now pass thru the shuttle assembly to top cylinder. The back pressure created by the exhaust oil holding poppet "M" in the up position is transmitted to the bottom of the shuttle assembly thru orifice "A" and will hold the shuttle assembly up as long as the ram is going down.

The ram may now be reversed by either one of two ways, pressure reversal or distance reversal. With pressure reversal the ram contacts the work and immediately pressure on top cylinder begins to build up to the relief valve setting. Also, at this time bottom cylinder exhaust oil has stopped, allowing poppet "M" to drop and the shuttle assembly spring has started to push the shuttle assembly down. The shuttle assembly is prevented from dropping fast by the oil under it being restricted on its way to tank by orifice "C". As the pressure increases, poppet "N" is raised against its spring force opening the bottom cylinder port to tank. This action insures that full tonnage is developed by the ram since no pressure exists in the bottom cylinder port. The dropping of the shuttle assembly is now slowed down by orifice "A" and orifice "C". As the shuttle assembly completes its downward drop, the pump volume is directed to the bottom cylinder port and the ram reverses, thus we have pressure reversal.

With distance reversal, the lower stop collar is raised up so that the banjo will strike it on the downstroke and pull the movable sleeve down against its spring. This action dumps the pump volume to tank at point "Y", stalling the ram, thus stopping the exhaust oil, which allows the shuttle assembly to drop on orifice "C" reversing the ram.

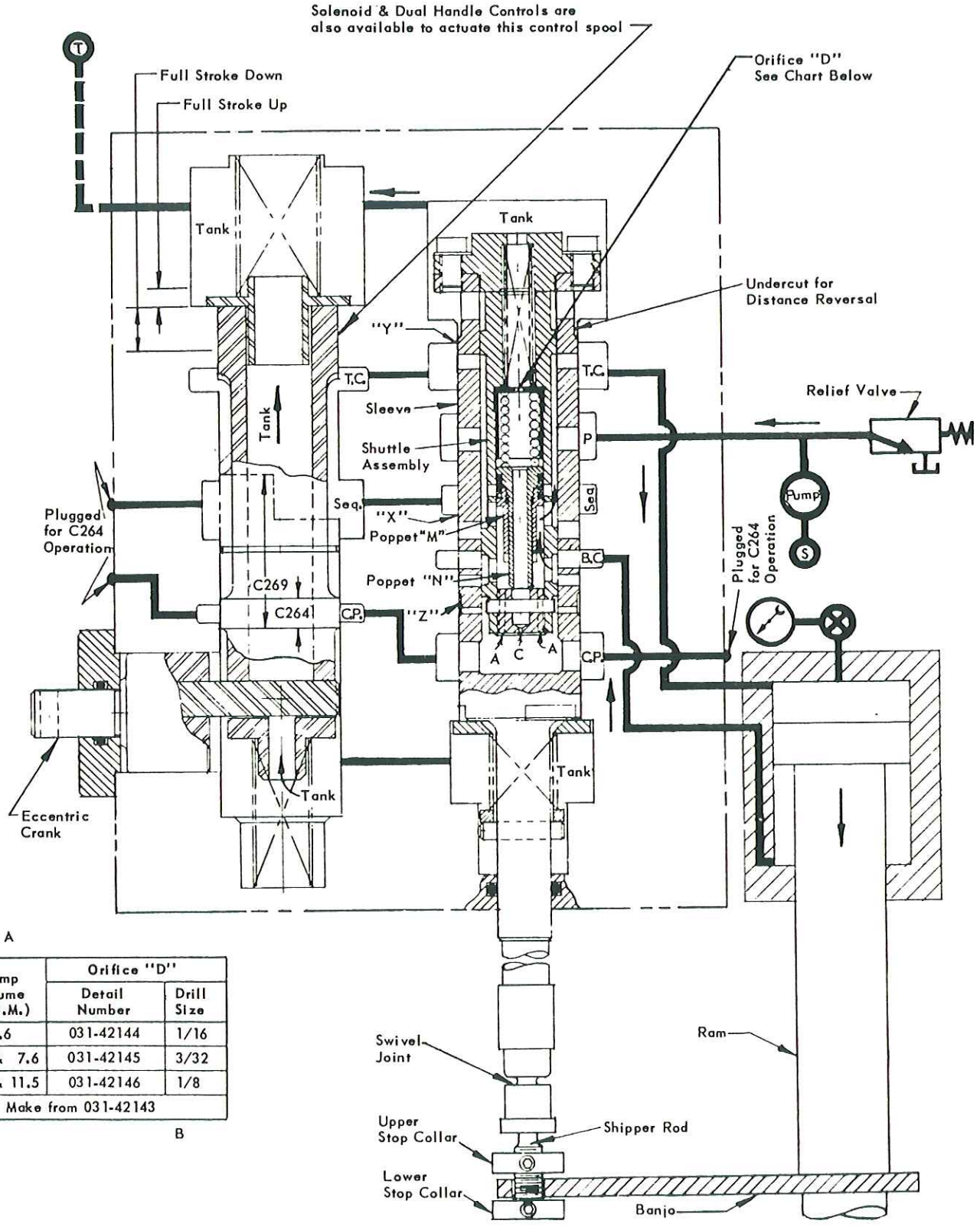
At the top of the upstroke the banjo contacts the upper stop collar raising the sleeve. This action opens the sequence holes and closes the bottom cylinder port. Therefore, if the control spool has been left down in the "automatic" position, the pump volume again will kick the shuttle assembly up and start another cycle. This automatic cycling will continue until the control spool is manually released, letting the pump volume go to tank, thus putting all the parts previously mentioned in the "neutral" position stopping the ram.

Inching of the ram may be obtained by turning the hand wheel on the side of the press. This action raises the movable sleeve up beyond the "neutral" position creating a back pressure in the top cylinder port and opens the bottom cylinder port to tank thru undercut "Z" therefore forcing the ram down. As long as the handwheel is kept turning, the movable sleeve will stay in this position and the ram will continue to move down. If the handwheel is stopped, the movable sleeve will come to rest in the "neutral" position and in turn stop the ram.

This inching feature also provides a simple means by which the relief valve setting may be adjusted. The ram should be inched down, bottoming out the tooling and the handwheel should then be given approximately 1/2 turn extra. As a result of this action, all of the pump volume is forced to go to tank thru the relief valve because the top row of holes in the movable sleeve are completely shut off. Any setting desired may now be obtained.

OPERATION OF AUTOMATIC C269 VALVE

Operation of the C269 valve differs from the C264 valve in that a different control spool is used, so that oil entering the sequence port cannot go directly to the control port, but must be connected to it thru valving on an external mechanism. This oil is delivered only when the ram is in the "up" position and may be used to operate the external mechanism, thus creating a tie-up in sequence between the external mechanism and the main ram. Oil from any external source applied to the control port of the C269 valve can be used to initiate a cycle of the main ram.



A

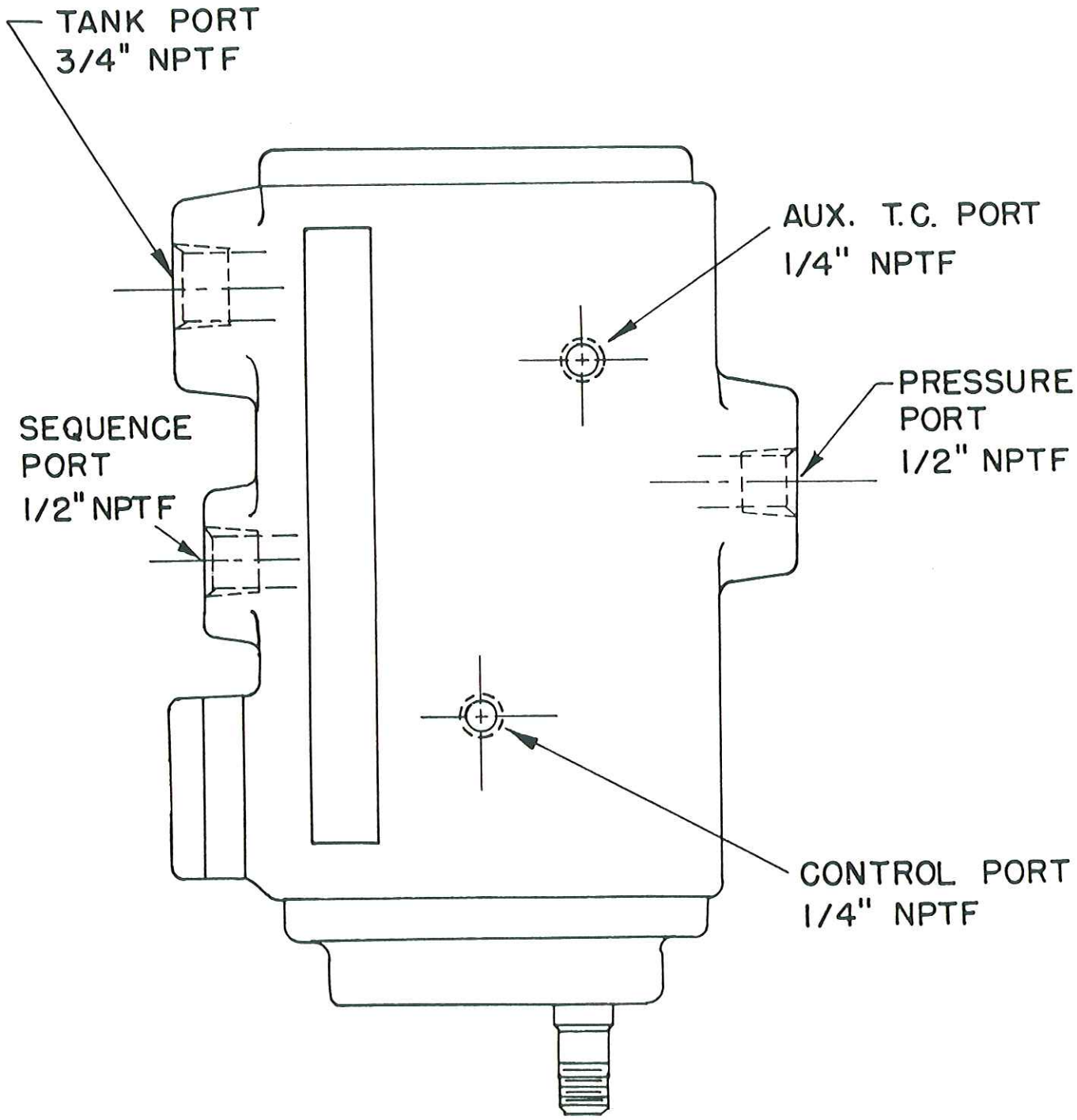
Pump Volume (G.P.M.)	Orifice "D"	
	Detail Number	Drill Size
3.6	031-42144	1/16
6.3 & 7.6	031-42145	3/32
9.0 & 11.5	031-42146	1/8
Make from 031-42143		

B

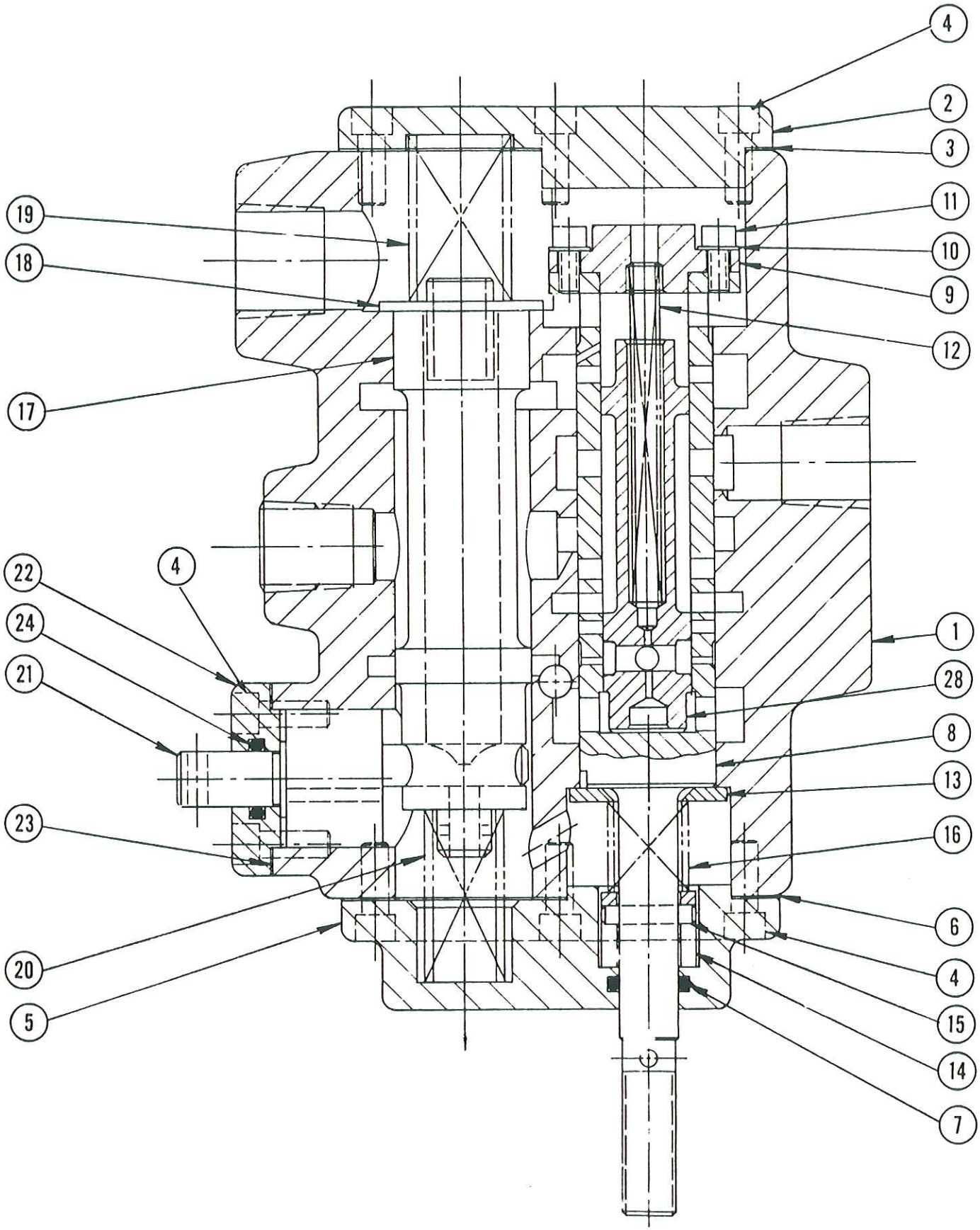
Circuit – Hydraulic
C264 & C269 Control Valves

SERVICE TIPS

A. Ram descends but will not return.	1. Check shuttle. Should move freely in sleeve. 2. Check spring at the top of the shuttle for breakage. 3. Check orifices in shuttle to be sure they are open. 4. Check relief valve for failure to open. 5. Check parts in S11-14423 shuttle assembly for breakage or sticking.
B. Ram will not decend.	1. Top collar too high on shipper rod and valve not centering. 2. Check relief valve setting. This valve's minimum operating pressure is 100 psi. 3. Check relief valve for dirt, lint, etc. 4. Also check for dirt in valves. 5. Check shuttle as above. 6. Check pump and pressure line. Line may be broken.
C. Shipper rod arm breaks on "up" stroke.	1. Check screws in top cap of sleeve. Be sure that all screws are in place and tight.
D. Pressure will not build up before ram reverses.	1. Check lower stop collar. Arm should not contact it unless distance reversal is required. 2. Check relief valve setting. Should be at least 300 psi. 3. Check pressure lines for cracks and other leaks. 4. Possibly slightly smaller orifice in bottom of shuttle will help.
E. Press overheats.	1. Be sure cooler coils within the press tank are attached to water lines and water is flowing through them.
F. Ram fails to go into fast approach speed.	1. Check S11-14423 shuttle assembly for breakage or sticking.
G. Ram takes short repeat strokes when in down position.	1. In all probability too short a stroke is being used. Lengthen stroke to at least 3/4 inch.
H. Ram will pressure reverse before going into pressing speed.	1. Decrease orifice "D" in S11-14423 shuttle assembly.
K. Pin breakage in S11-14423 shuttle assembly.	1. Pump in excess of 9 GPM and using distance reversal after blanking. Distance reversal not recommended.
L. Index table creeps during inching.	1. Control spool does not return to neutral when solenoid de-energized. External sequence must be blocked by control spool during inching.

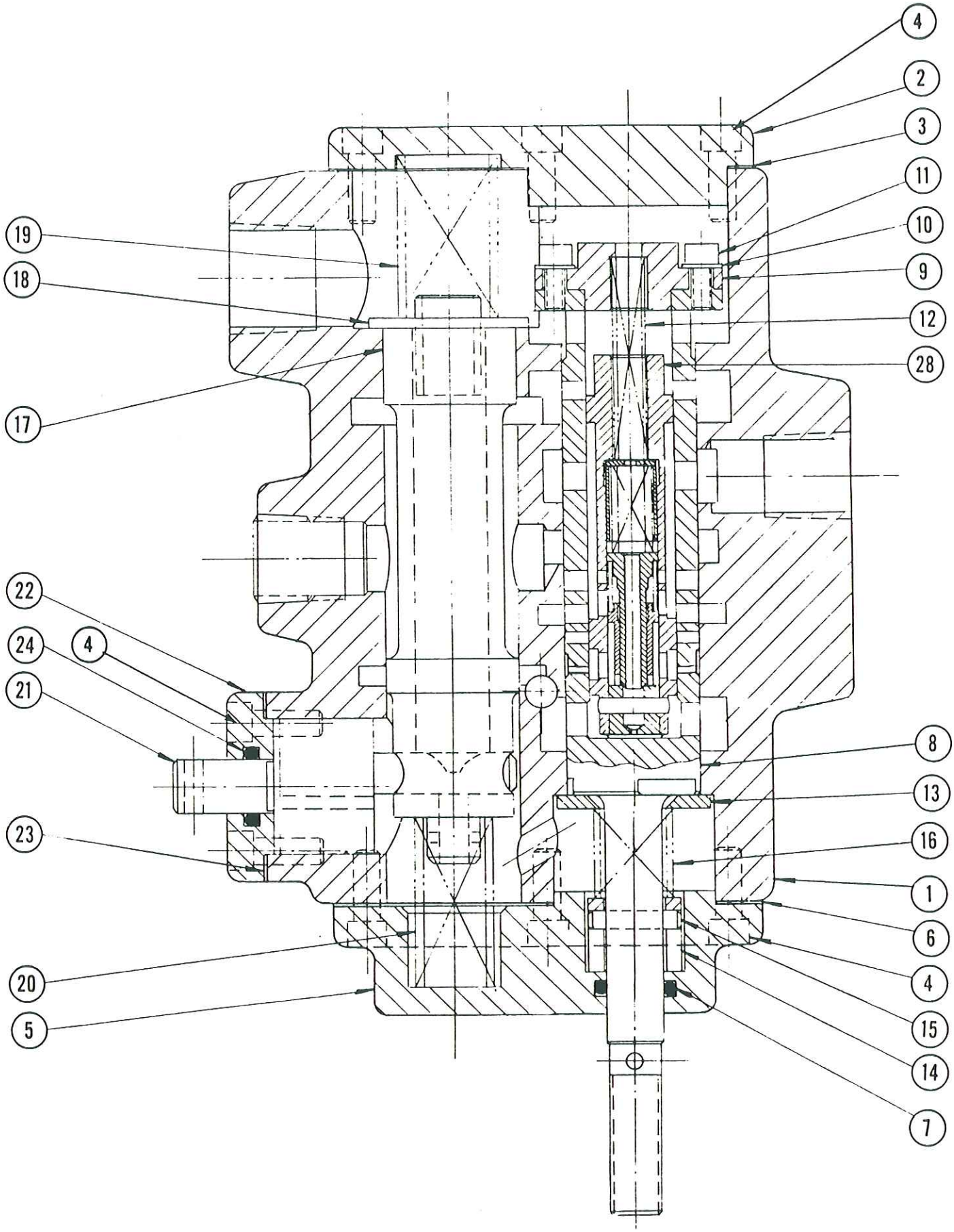


Porting Definition for All C204, C264, C209 & C269 Valves



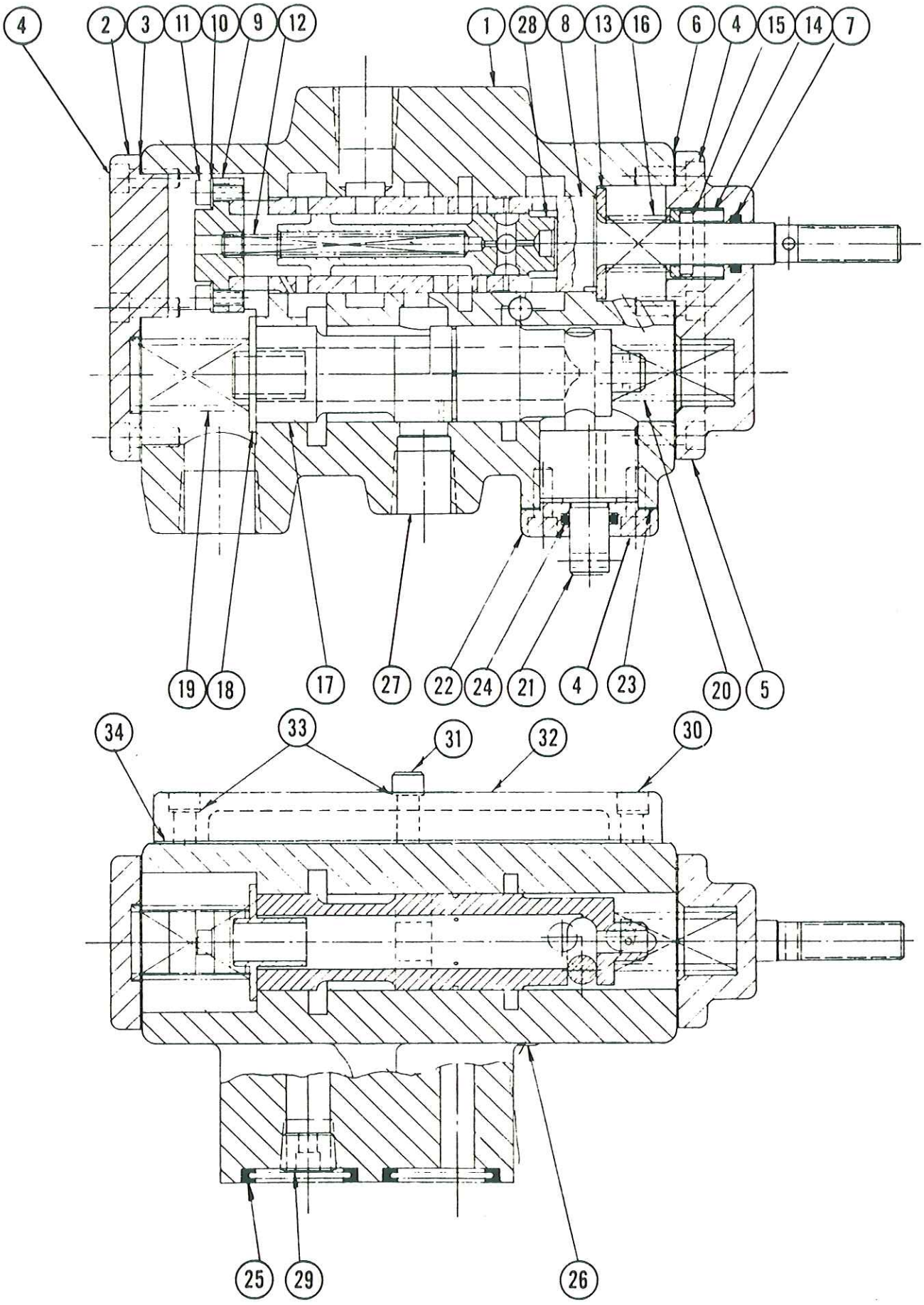
Manual Control Valve – Model C204 – No. S11-10139

(See Page 18, Col. A for Parts List)



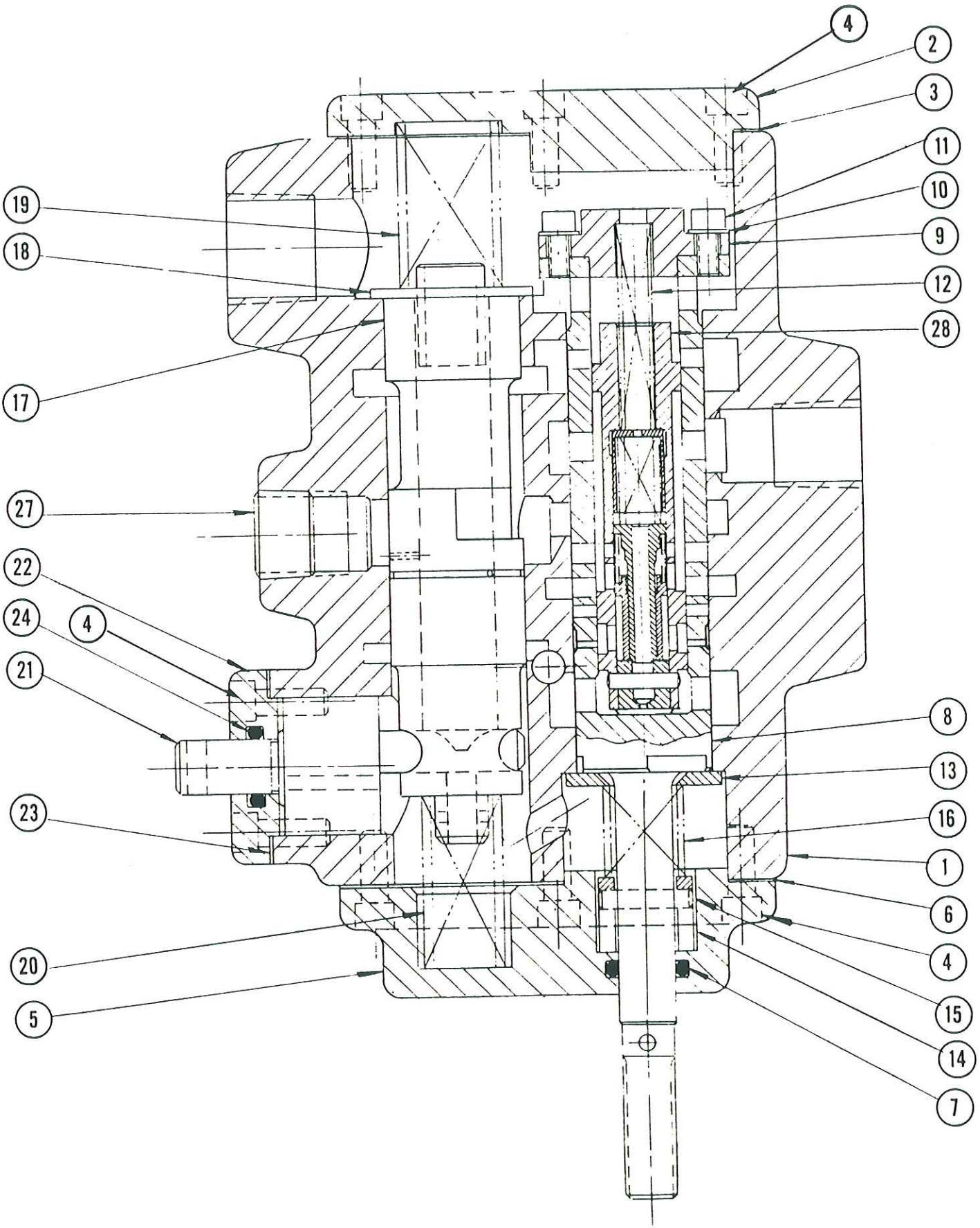
Manual Control Valve – Model C264 – No. S11 10140

(See Page 18, Col. B for Parts List)



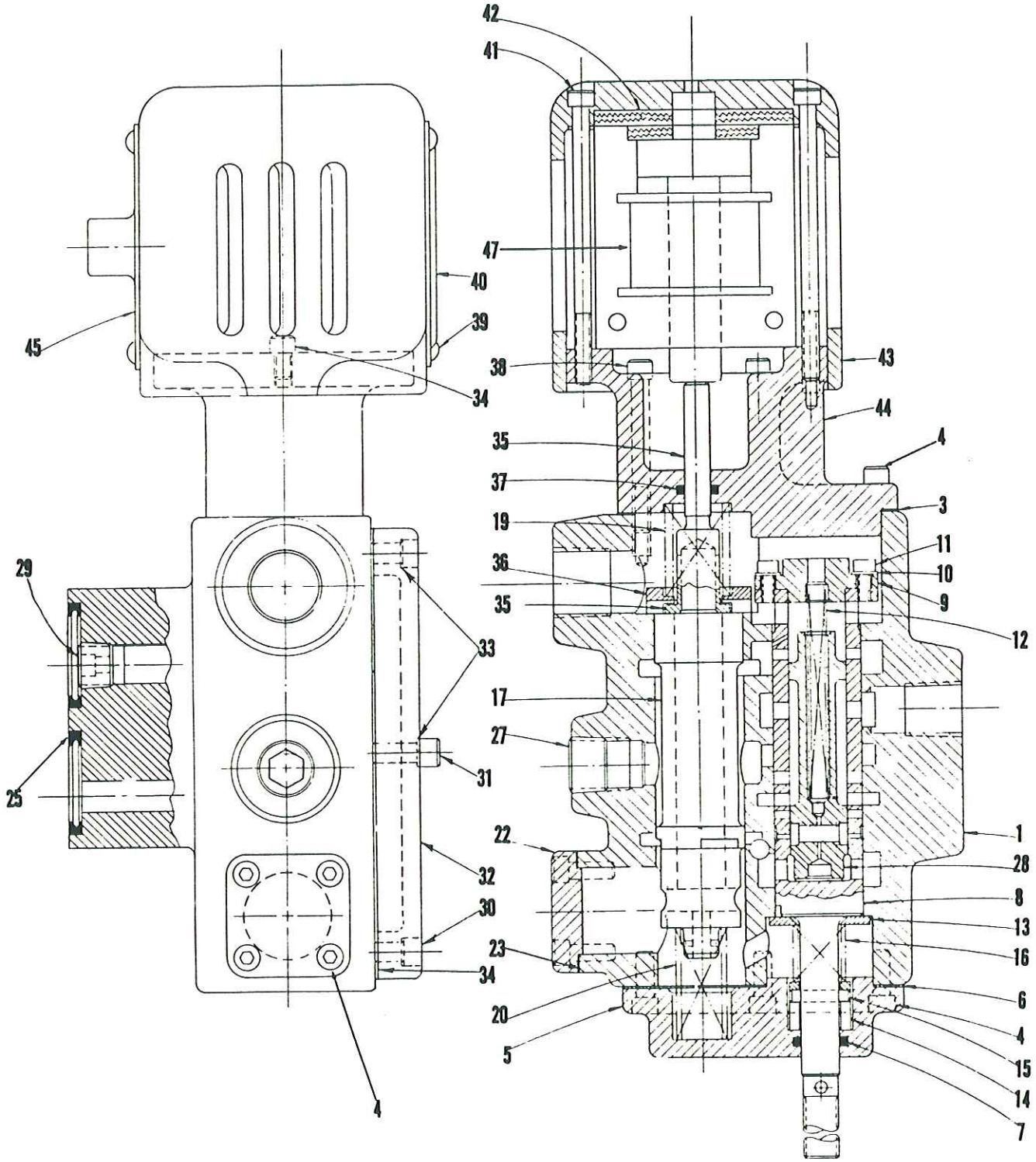
Manual Control Valve – Model C209 – No. S11-10141

(See Page 18, Col. C for Parts List)



Manual Control Valve – Model C269 – No. S11-10142

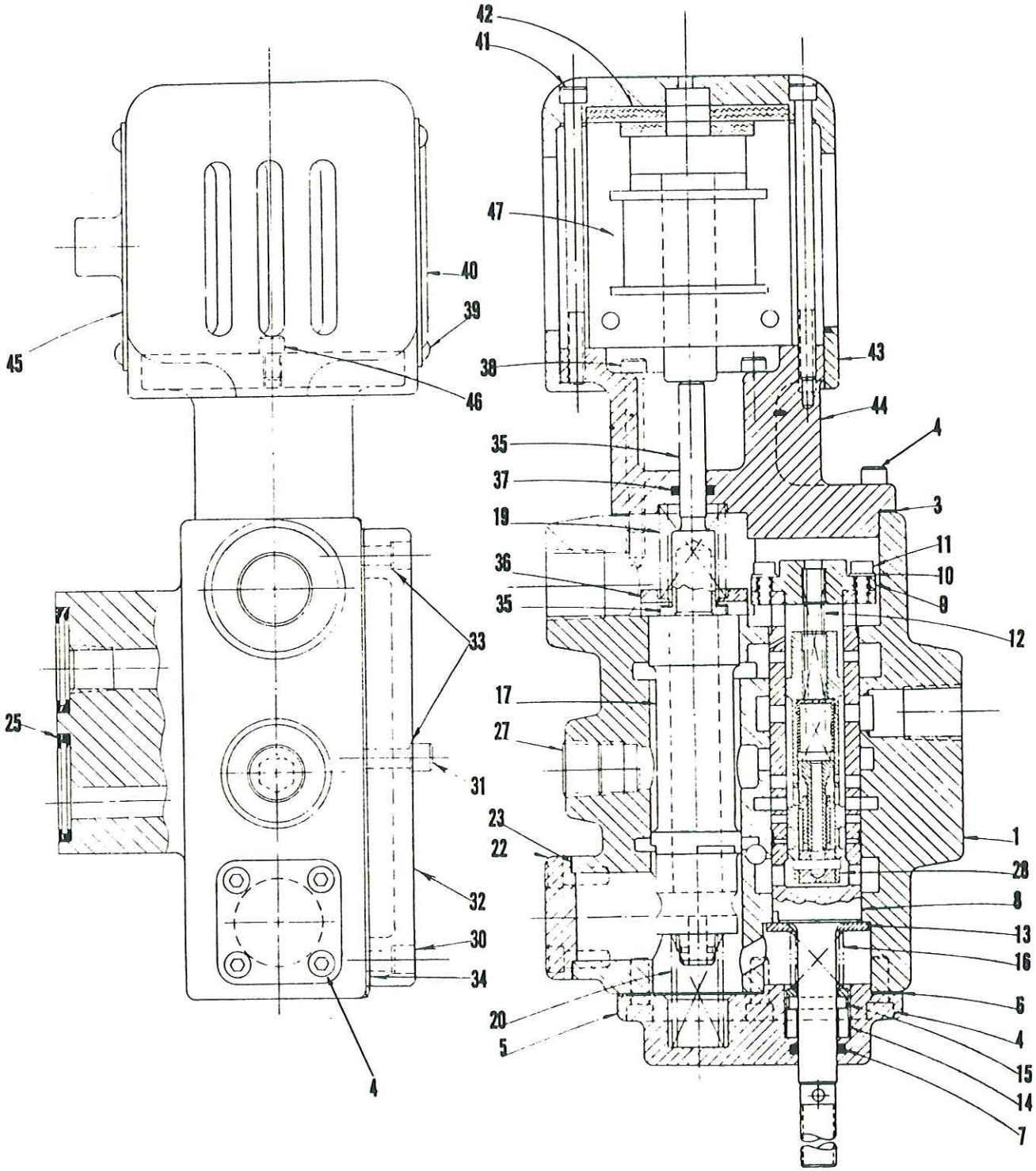
(See Page 18, Col. D for Parts List)



C204SS – Solenoid Control Semi-Safety Valve

110V., 60 Cy. – S11-10146
220V., 60 Cy. – S11-10152
440V., 60 Cy. – S11-10185
550V., 60 Cy. – S11-10369

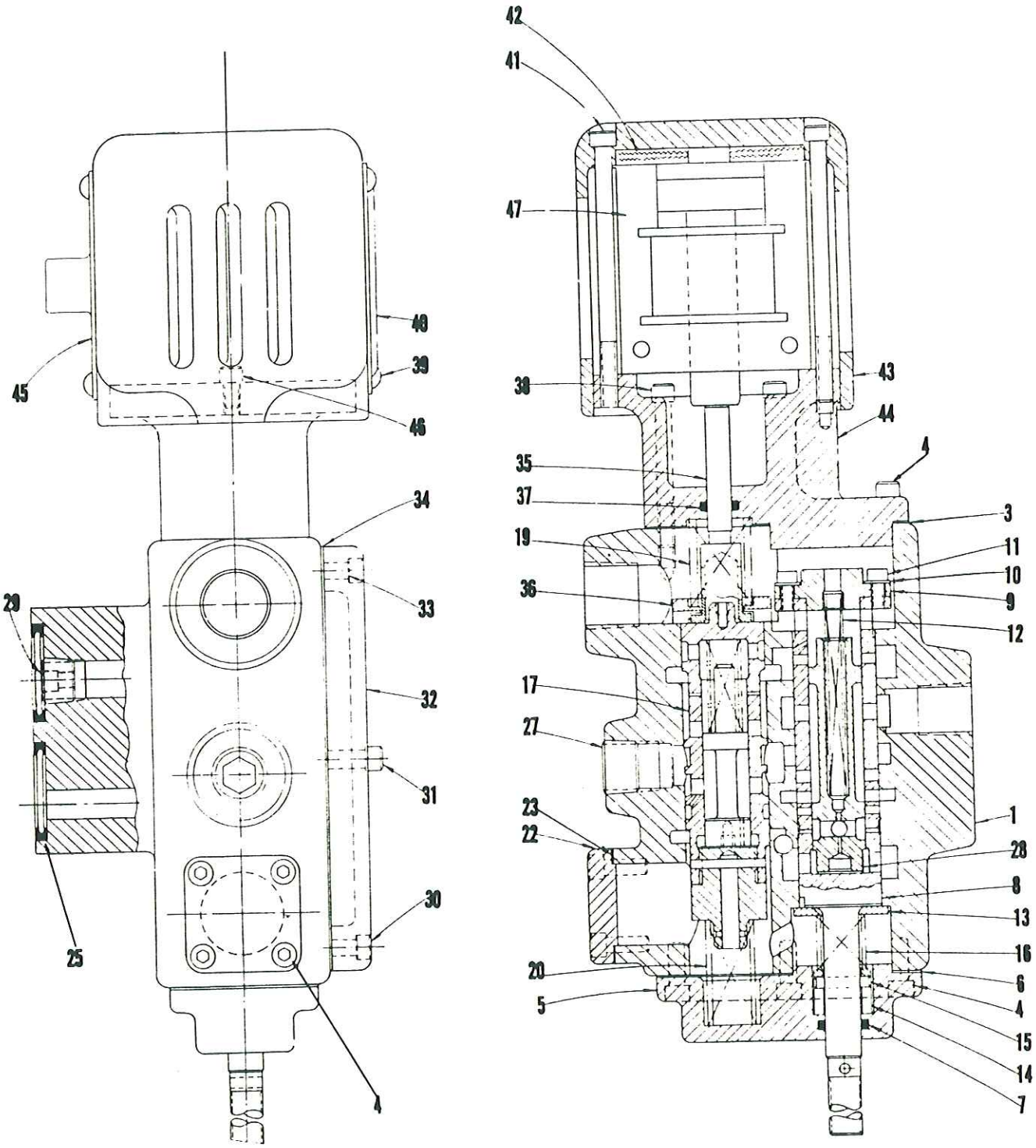
(See Page 18, Col. E for Parts List)



C264SS Solenoid Control Semi-Safety Valve

110V., 60 Cy. – S11-10148
220V., 60 Cy. – S11-10154
440V., 60 Cy. – S11-10187
550V., 60 Cy. – S11-10371

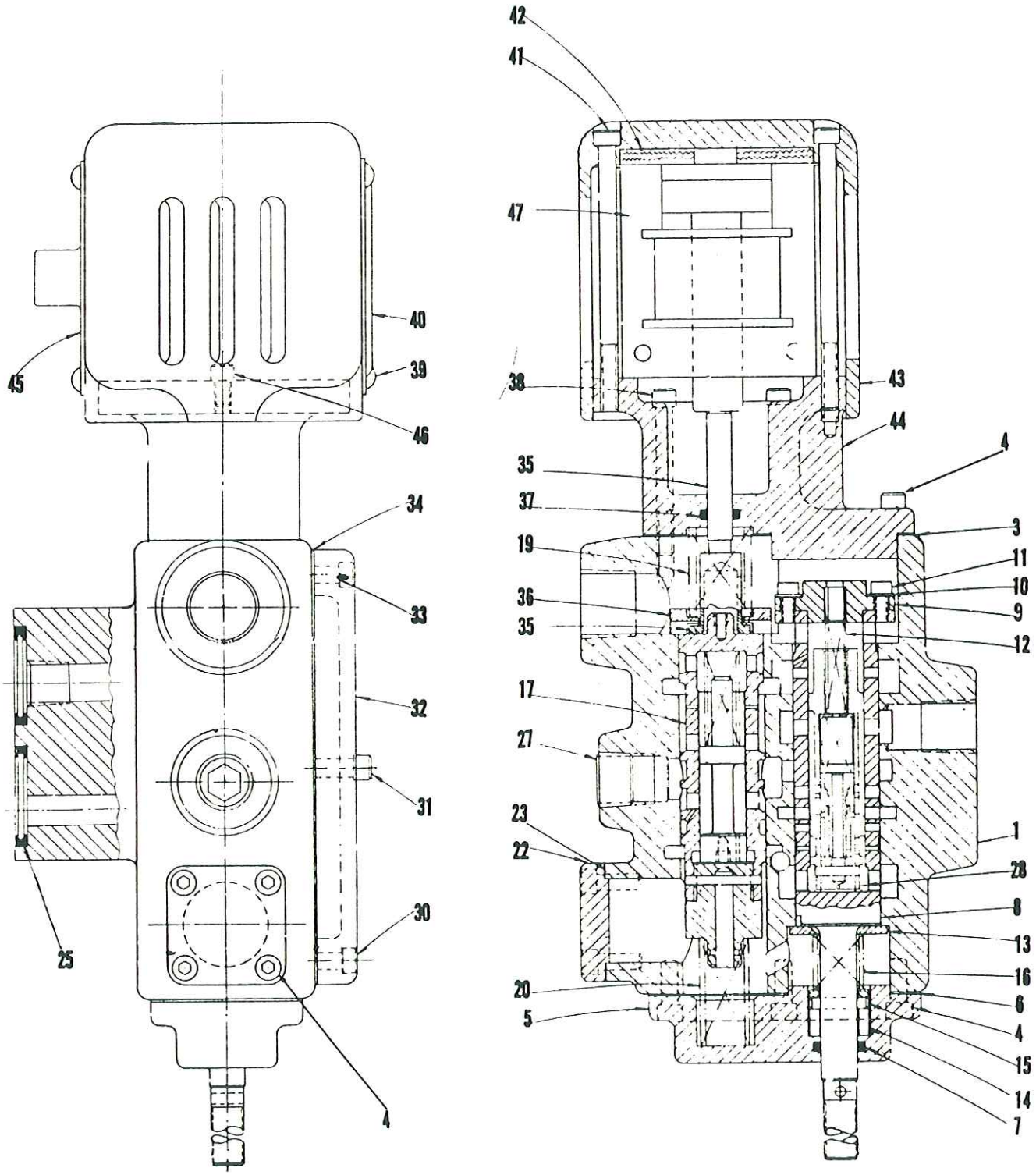
(See Page 18, Col. F for Parts List)



C204FS – Solenoid Control Full Safety Valve

110V., 60 Cy. – S11-10147
220V., 60 Cy. – S11-10153
440V., 60 Cy. – S11-10186
550V., 60 Cy. – S11-10370

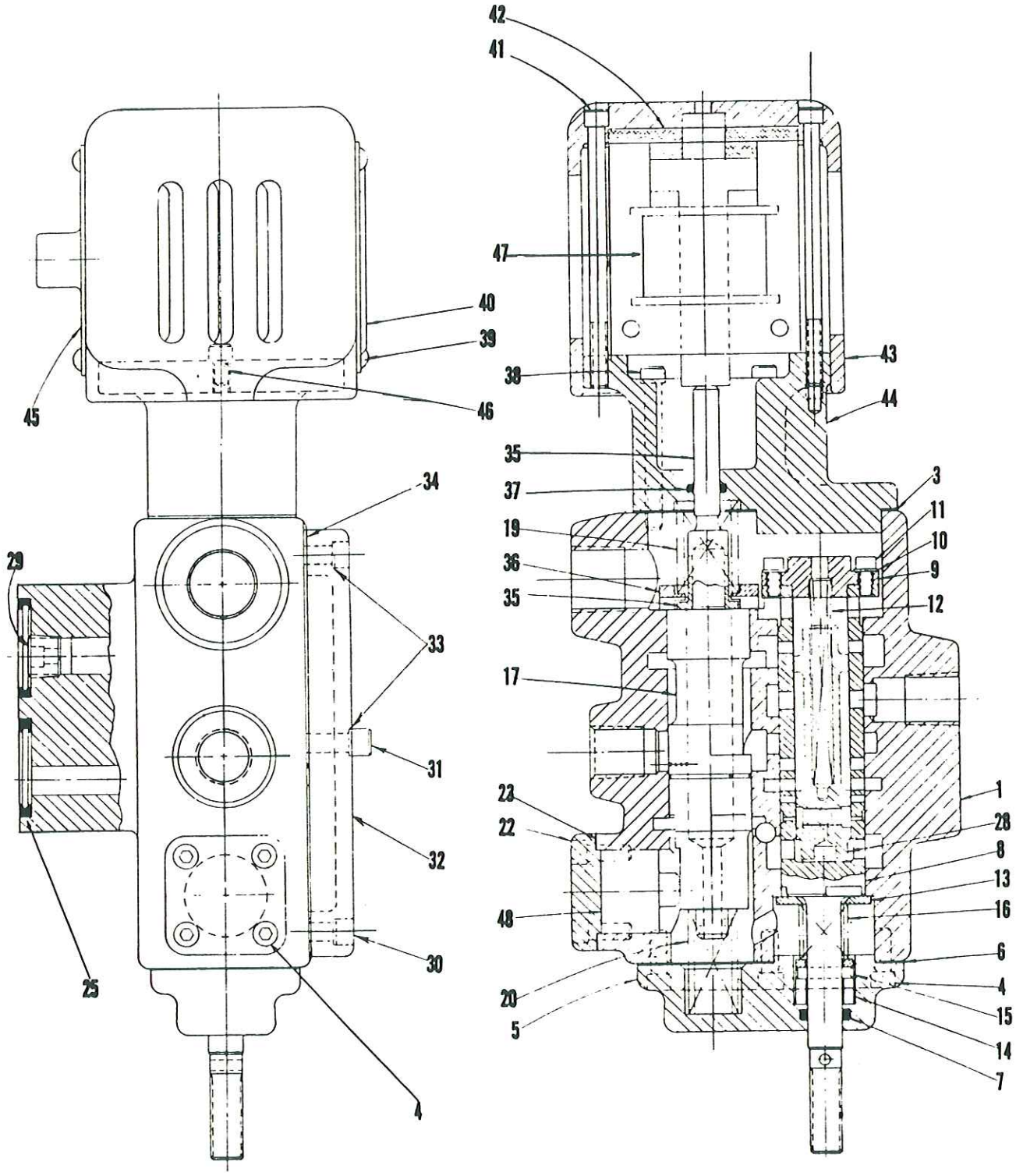
(See Page 18, Col. G for Parts List)



C264FS Solenoid Control Full Safety Spool

110V., 60 Cy. – S11-10149
220V., 60 Cy. – S11-10155
440V., 60 Cy. – S11-10188
550V., 60 Cy. – S11-10372

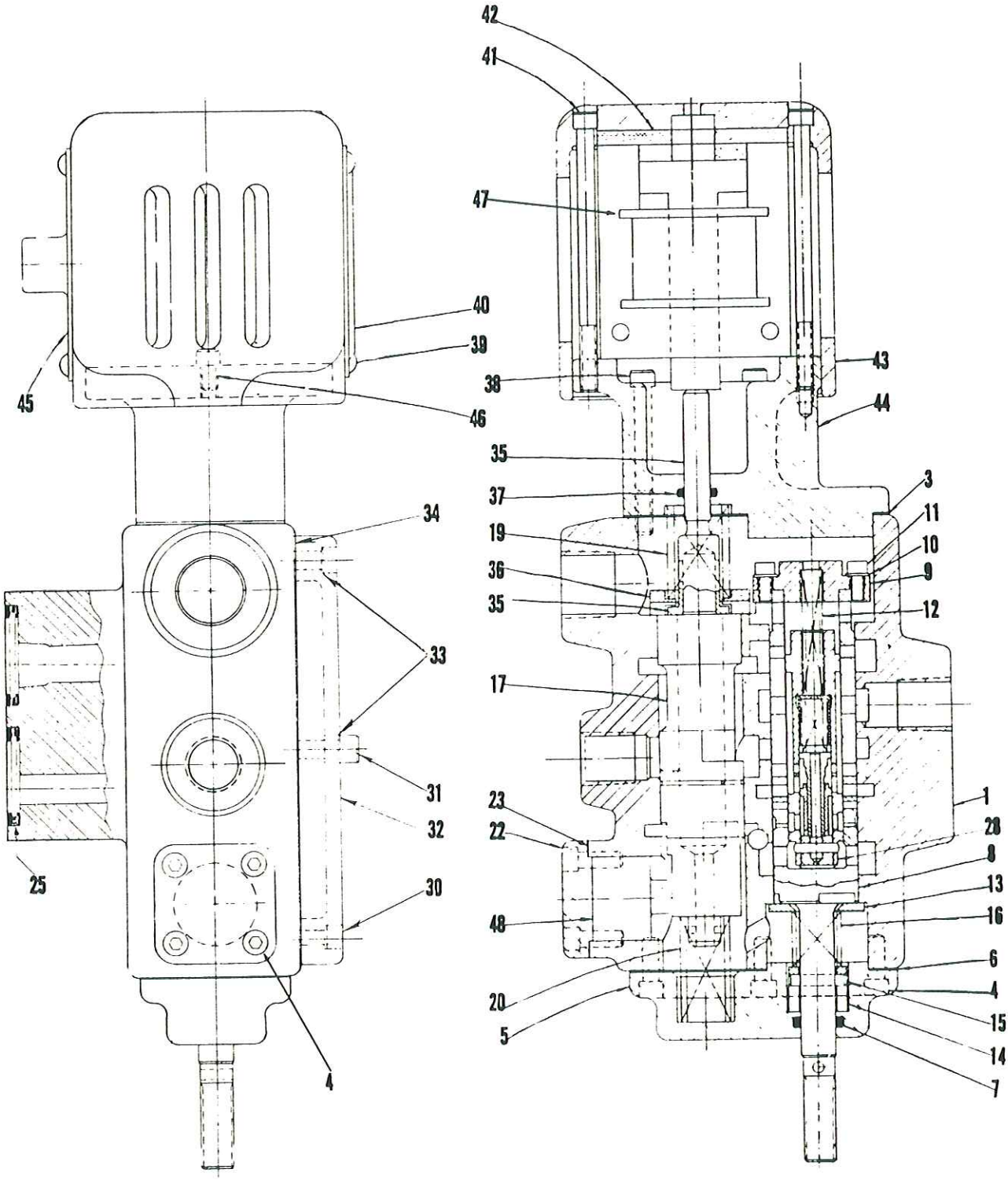
(See Page 18, Col. H for Parts List)



C209SS – Solenoid Control Semi-Safety Valve

110V., 60 Cy. – S11-10150
220V., 60 Cy. – S11-10156
440V., 60 Cy. – S11-10367
550V., 60 Cy. – S11-10373

(See Page 18, Col. J for Parts List)



C269SS Solenoid Control Semi-Safety Valve

110V., 60 Cy. – S11-10151
220V., 60 Cy. – S11-10184
440V., 60 Cy. – S11-10368
550V., 60 Cy. – S11-10374

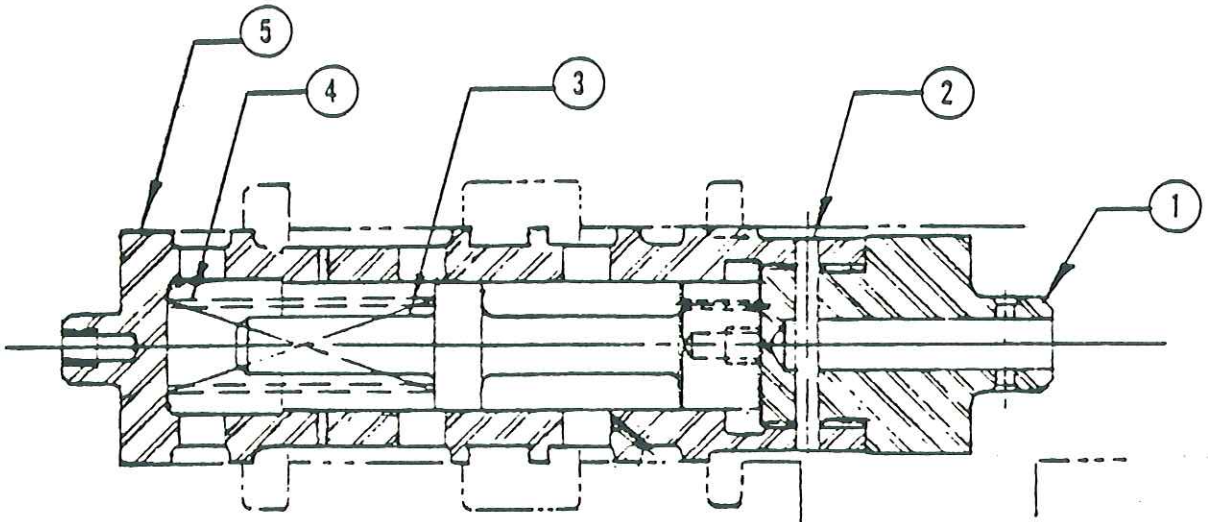
(See Page 18, Col. K for Parts List)

PARTS LIST

A. C204 Manual Control
B. C264 Manual Control
C. C209 Manual Control
D. C269 Manual Control
E. C204SS Solenoid Control Semi-safety
F. C264SS Solenoid Control Semi-safety
G. C204FS Solenoid Control Full-safety
H. C264FS Solenoid Control Full-safety
J. C209SS Solenoid Control Semi-safety
K. C269SS Solenoid Control Semi-safety

Item	Part No.	Description	A	B	C	D	E	F	G	H	J	K
1	031-17305	Body	1	1	1	1	1	1	1	1	1	1
2	031-10085	★ Cap – Top Valve	1	1	1	1	–	–	–	–	–	–
3	031-10084	Gasket – Top Valve Cap (Vellumoid)	1	1	1	1	1	1	1	1	1	1
4	308-12100	Screw – Soc. Hd. Cap 1/4 – 20 x 5/8	16	16	16	16	12	12	12	12	12	12
5	031-10076	Cap – Bottom Valve	1	1	1	1	1	1	1	1	1	1
6	031-10083	Gasket – Bottom Valve Cap (Vellumoid)	1	1	1	1	1	1	1	1	1	1
7	671-00113	"O" Ring 6227-11	1	1	1	1	1	1	1	1	1	1
8	031-25544	Sleeve – Valve	1	1	1	1	1	1	1	1	1	1
9	031-10086	Cap – Sleeve	1	–	1	–	1	–	1	–	1	–
	031-14298	Cap – Sleeve	–	1	–	1	–	1	–	1	–	1
10	348-10010	Lockwasher – Shakeproof No. 1210	6	6	6	6	6	6	6	6	6	6
11	308-10060	Screw – Soc. Hd. Cap 10 – 24 x 3/8	6	6	6	6	6	6	6	6	6	6
12	031-22057	Spring – Compression	1	–	1	–	1	–	1	–	1	–
	031-22108	Spring – Compression	–	1	–	1	–	1	–	1	–	1
13	031-10079	Washer	1	1	1	1	1	1	1	1	1	1
14	031-10078	Collar	1	1	1	1	1	1	1	1	1	1
15	031-10080	Pin	1	1	1	1	1	1	1	1	1	1
16	031-22251	Spring – Compression	1	1	1	1	1	1	1	1	1	1
17	031-10072	Spool – Control C204, C264 Manual	1	1	–	–	–	–	–	–	–	–
	031-25546	Spool – Control C209, C269 Manual	–	–	1	1	–	–	–	–	–	–
	031-17000	Spool – Control, Semi-Safety C204, C264	–	–	–	–	1	1	–	–	–	–
	S11-12244	Spool – Control, Full-Safety C204, C264 (See Page 19)	–	–	–	–	–	–	1	1	–	–
	031-25785	Spool – Control, Semi-Safety C209, C269	–	–	–	–	–	–	–	–	1	1
18	031-10092	★ Follower – Spring	1	1	1	1	–	–	–	–	–	–
19	031-22307	Spring – Compression	1	1	1	1	1	1	1	1	1	1
20	031-22265	★ Spring – Compression	1	1	1	1	–	–	–	–	–	–
	031-22235	▲ Spring – Compression	–	–	–	–	1	1	1	1	1	1
21	S11-00454	★ Eccentric Assembly	1	1	1	1	–	–	–	–	–	–
22	031-10090	★ Cap – Side	1	1	1	1	–	–	–	–	–	–
	031-13363	▲ Cap – Side	–	–	–	–	1	1	1	1	1	1
23	031-10081	Gasket – Side Cap (Vellumoid)	1	1	1	1	1	1	1	1	1	1
24	671-00112	★ "O" Ring 6227-10	1	1	1	1	–	–	–	–	–	–
25	630-42305	Vickerseal	2	2	2	2	2	2	2	2	2	2
26	431-90404	Plug – 1/4 Soc. Pipe	2	2	1	1	2	2	2	2	2	1
27	431-90800	Plug – 1/2 Soc. Pipe	1	1	–	–	1	1	1	1	–	–
28	031-26898	Shuttle	1	–	1	–	1	–	1	–	1	–
	S11-14423	Shuttle Assembly (See Page 19)	–	1	–	1	–	1	–	1	–	1
29	031-21572	Plug – Orifice 9/32" (Use with 6 GPM or over pump)	1	–	1	–	1	–	1	–	1	–
	031-12810	Plug – Orifice 1/8" (Use with 4 GPM or under pump)	1	–	1	–	1	–	1	–	1	–
30	308-12120	Screw – Soc. Hd. Cap 1/4 – 20 x 3/4	2	2	2	2	2	2	2	2	2	2
31	308-12140	Screw – Soc. Hd. Cap 1/4 – 20 x 7/8	1	1	1	1	1	1	1	1	1	1
32	031-17307	Cap – Port	1	1	1	1	1	1	1	1	1	1
33	031-22737	Gasket (Copper)	3	3	3	3	3	3	3	3	3	3
34	031-17308	Gasket (Vellumoid)	1	1	1	1	1	1	1	1	1	1
35	031-17130	▲ Plunger	–	–	–	–	1	1	1	1	1	1
36	031-13733	▲ Stop – Spool	–	–	–	–	1	1	1	1	1	1
37	671-00110	▲ "O" Ring 6227-8	–	–	–	–	1	1	1	1	1	1
38	308-12260	▲ Screw – Soc. Hd. Cap 1/4 – 20 x 2¼	–	–	–	–	4	4	4	4	4	4
39	310-08040	▲ Screw – Rd. Hd. Mach. 8 – 32 x 1/4	–	–	–	–	4	4	4	4	4	4
40	036-11878	▲ Cover	–	–	–	–	1	1	1	1	1	1
41	308-12360	▲ Screw – Soc. Hd. Cap 1/4 – 20 x 4	–	–	–	–	2	2	2	2	2	2
42	031-29433	▲ Pad – Solenoid	–	–	–	–	1	1	1	1	1	1
43	036-11873	▲ Housing – Solenoid	–	–	–	–	1	1	1	1	1	1
44	031-13731	▲ Adapter – Solenoid	–	–	–	–	1	1	1	1	1	1
45	036-11877	▲ Cover	–	–	–	–	1	1	1	1	1	1
46	308-12060	▲ Screw – Soc. Hd. Cap 1/4 – 20 x 3/8	–	–	–	–	2	2	2	2	2	2
47	120-02416	▲ Solenoid 110V – 60 Cy. (Coil Only 121-19716)	–	–	–	–	1	1	1	1	1	1
	120-02426	▲ Solenoid 220V – 60 Cy. (Coil Only 121-19726)	–	–	–	–	1	1	1	1	1	1
	120-02444	▲ Solenoid 440V – 60 Cy. (Coil Only 121-19746)	–	–	–	–	1	1	1	1	1	1
	120-02456	▲ Solenoid 550V – 60 Cy. (Coil Only 121-19756)	–	–	–	–	1	1	1	1	1	1
48	031-25784	▲ Pin – Alignment	–	–	–	–	–	–	–	–	1	1

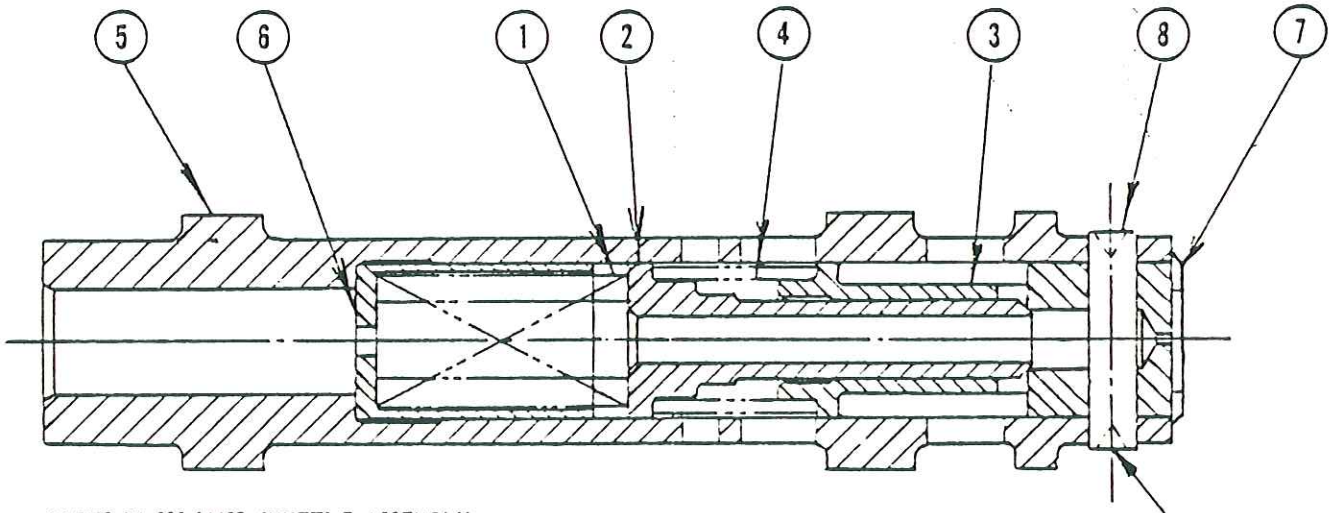
★ These parts used on Manual Valves only.
▲ These parts used on Solenoid Controlled Valves only.



PARTS IN S11-12244 FULL SAFETY SPOOL

Item	Part No.	Description
1	031-27148	Plug - Valve
2	325-08180	Roll Pin
3	031-17128	Shuttle - Valve
4	031-22141	Spring
5	031-17129	Spool - Valve

Safety Spool Assembly for C204FS & C264FS



NOTE: Center punch ends of Item No. 8 after assembly

PARTS IN S11-14423 SHUTTLE ASSEMBLY

Item	Part No.	Description
1	031-13244	Spring
2	031-14295	Poppet
3	031-14296	Shuttle
4	031-22183	Spring
5	031-25667	Shuttle Valve
6	031-42144	Orifice & Spring Retainer for 3.6 GPM Pump
	031-42145	Orifice & Spring Retainer for 6.3 & 7.6 GPM Pump
	031-42146	Orifice & Spring Retainer for 9.0 & 11.5 GPM Pump
7	031-42147	Seat, Poppet
8	031-13040	Pin

Differential Shuttle Assembly for All C264 & C269 Valves