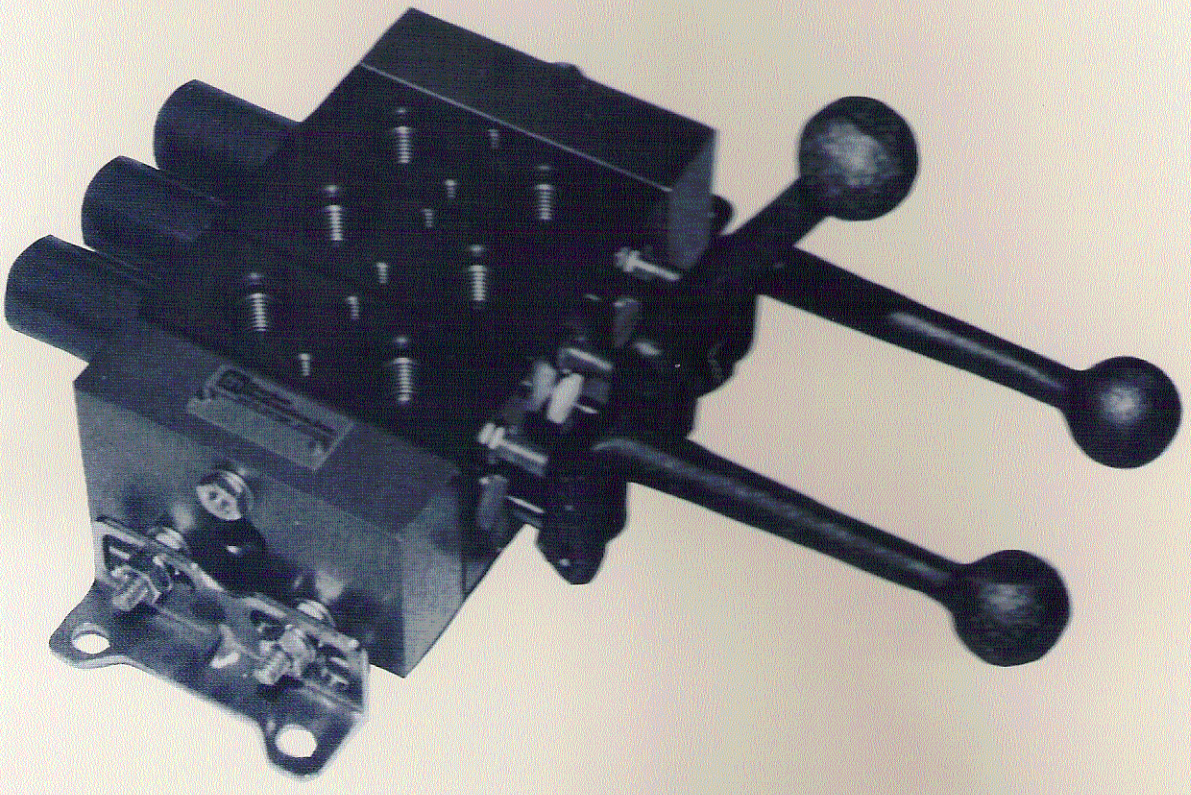
Burton Hydraulics, Inc.



industrial products

Racine / Sarasota

7875 DIVISION DRIVE MENTOR, OHIO 44060 (440) 974-8868 FAX - (440) 974-0951

INDEX

3000 PSI SERIES VALVES

CODING — DIRECTIONAL CONTROLS

OD4-DTES-103S

FLUID TYPE
- O -- OIL
- F -- VITON SEALS

TYPE
- D -- DIRECT SPOOL
- R -- ROTARY

VALVE TYPE
- 2 -- 2-WAY
- 3 -- 3-WAY
- 4 -- 4-WAY

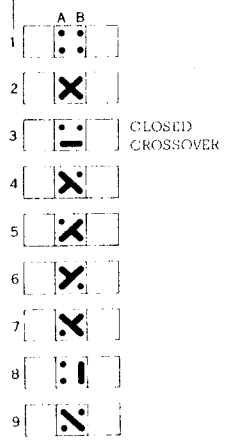
SECOND OPERATION CHARACTER
- N -- DETENTS
- O -- SPRING RETURN, STEM IN.
- P -- PRESSURE CENTERED
- S -- SPRING CENTERED
- T -- SPRING RETURN, STEM OUT.
- W -- STANDARD ACTION

BASIC OPERATION CHARACTER
- B -- SOLENOID OR PNEUMATIC CONTROLLED, PILOT OPERATED, INTERNAL PILOT, INTERNAL DRAIN.
- D -- DIRECT SOLENOID OR PNEUMATIC OPERATED.
- F -- SOLENOID OR PNEUMATIC CONTROLLED, PILOT OPERATED EXTERNAL PILOT INTERNAL DRAIN.
- L -- LEVER
- P -- PILOT
- R -- ROLLER OR CAM
- S -- STEM

PRESSURE PSI
- E -- 1,500

BODY MOUNTING STYLE
- F -- FOOT MOUNTED, FLANGED CONNECTIONS.
- S -- SUBPLATE
- T -- FOOT MOUNTED, THREADED CONNECTIONS.

FLOW PATTERN



PORT SIZE
- 02 -- 1/4" N. P. T. F.
- 03 -- 3/8" N. P. T.
- 06 -- 3/4" N. P. T.
- 10 -- 1-1/4" N. P. T.
- 12 -- 1-1/2" N. P. T.
- 16 -- 2" N. P. T.

STANDARD DEVIATIONS
- H -- INTEGRAL RETURN CHECK
- S -- STANDARD

CAUTION:

This page supplied for valve code analysis only. If used for synthesis, unavailable or impossible combinations may easily result. Refer to "How to Order" sections of specific engineering bulletins for allowable combinations.

NOTE: SPECIAL VALVES WILL BE CODED BY THE FIRST THREE LETTERS OF THE VALVE CODE, FOLLOWED BY THE SIX DIGIT MANUFACTURING NUMBER.

EXAMPLE: OD4-967076

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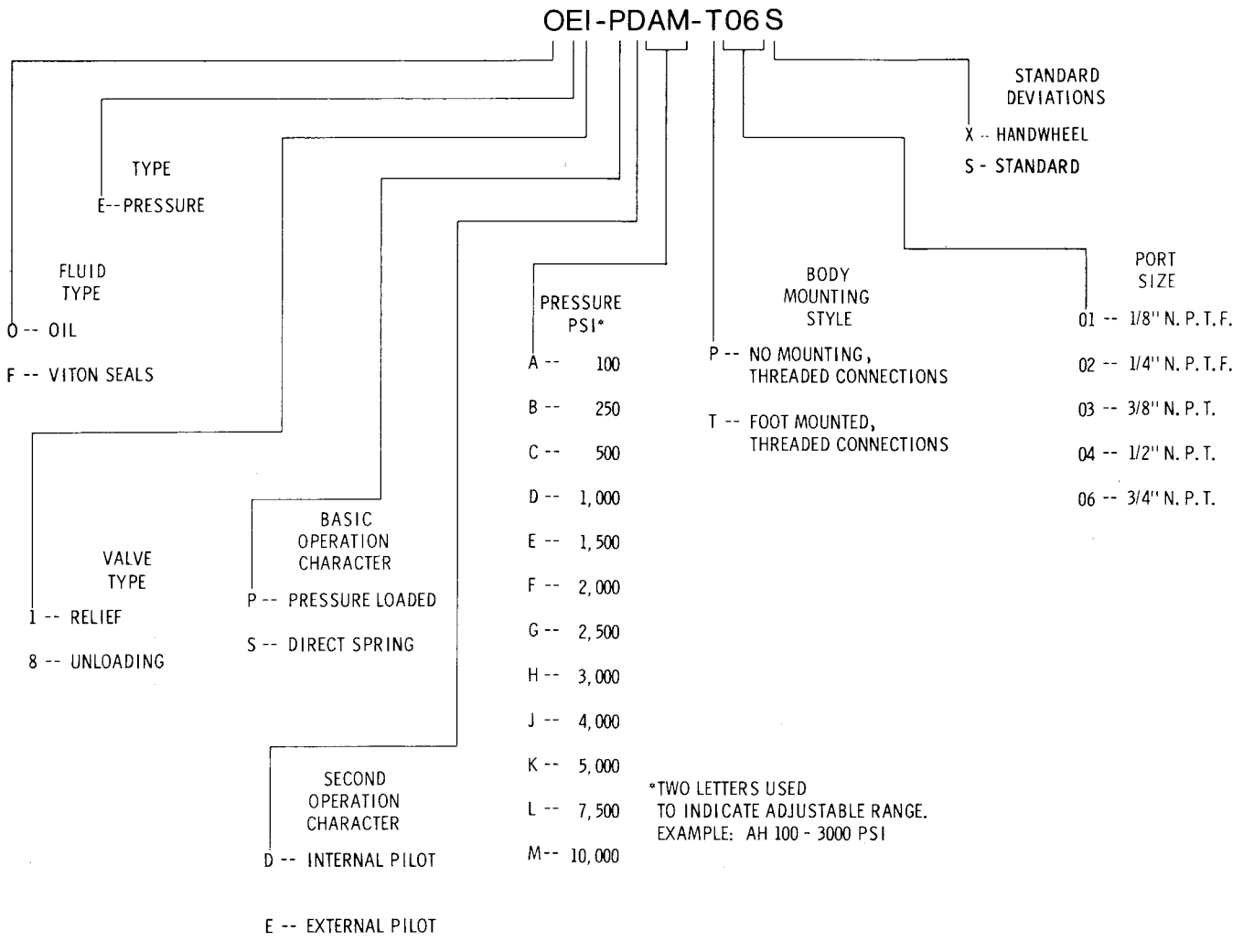
CODING — PRESSURE CONTROLS



CAUTION:

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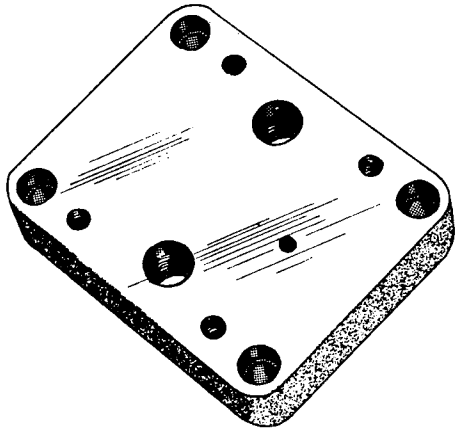
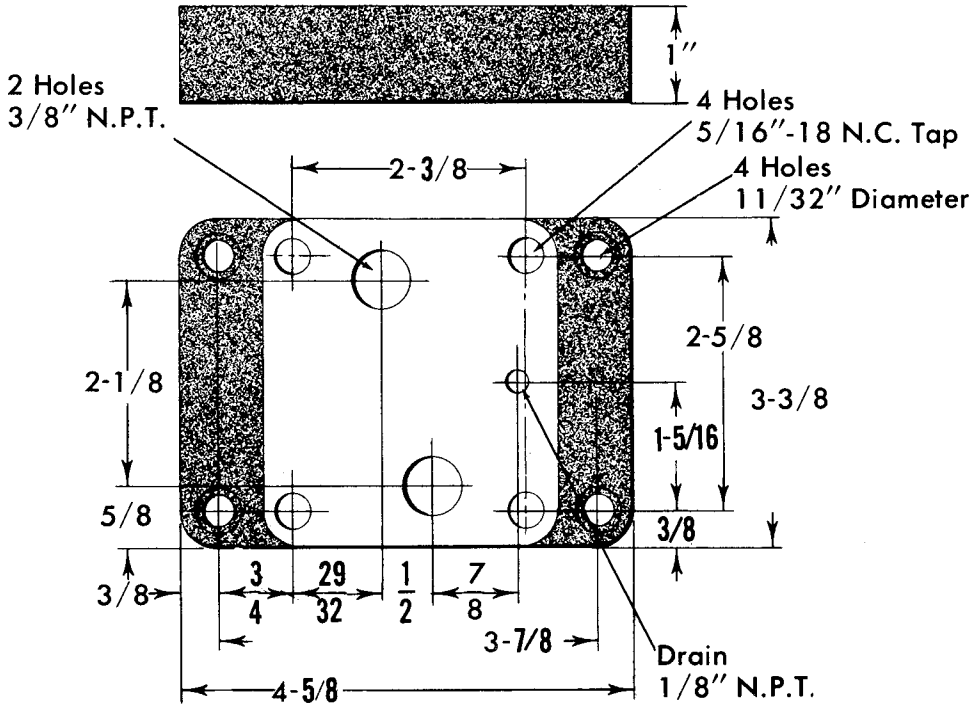
SUBPLATE No: DZE-03S
BOLT KIT No: B-12

SUB-PLATE
DIRECTIONAL AND
PRESSURE CONTROL
TWO-WAY VALVE
3/8"





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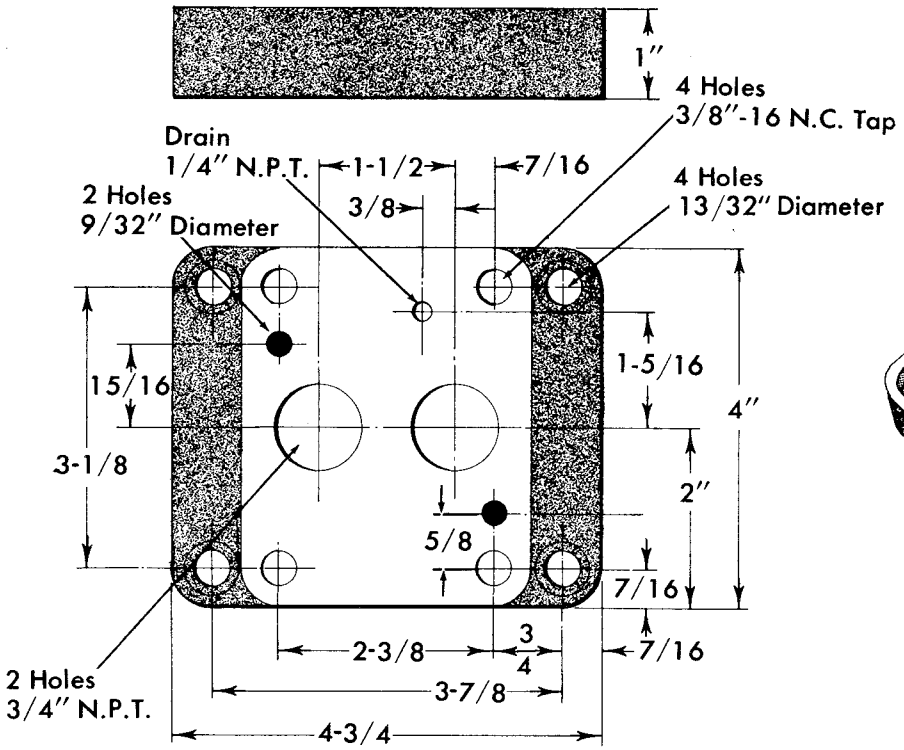
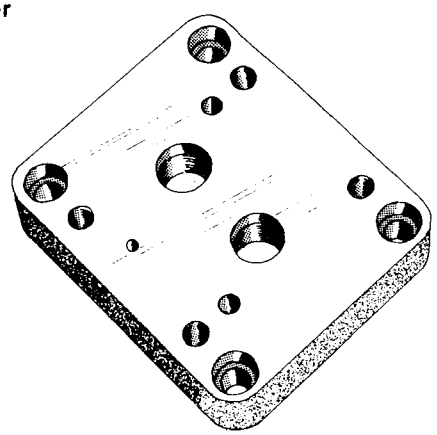
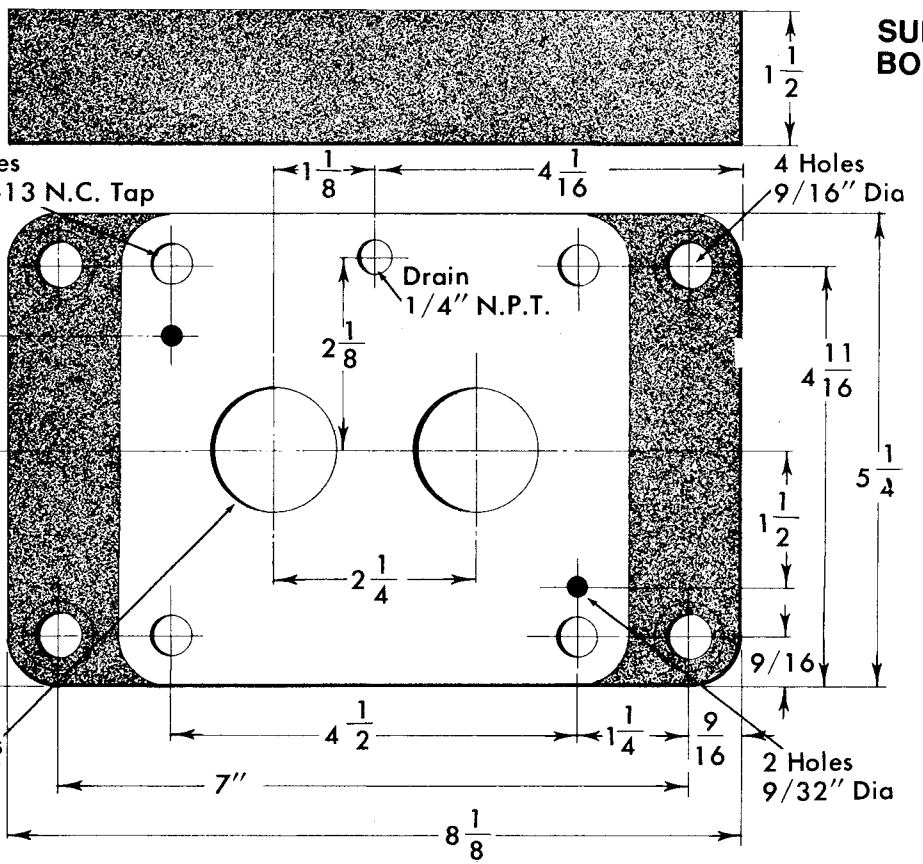
SUBPLATE No: DZE-06S
BOLT KIT No: B-13

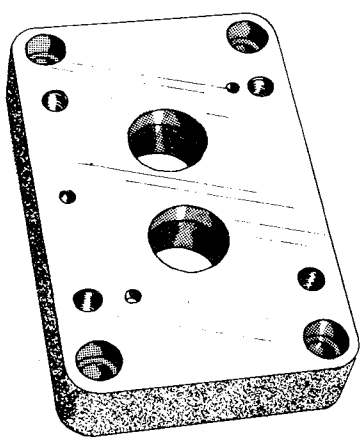
SUB-PLATE
DIRECTIONAL AND
PRESSURE CONTROL
TWO-WAY VALVE
¾"—1¼"





SUBPLATE No: DZE-10S
BOLT KIT No: B-14





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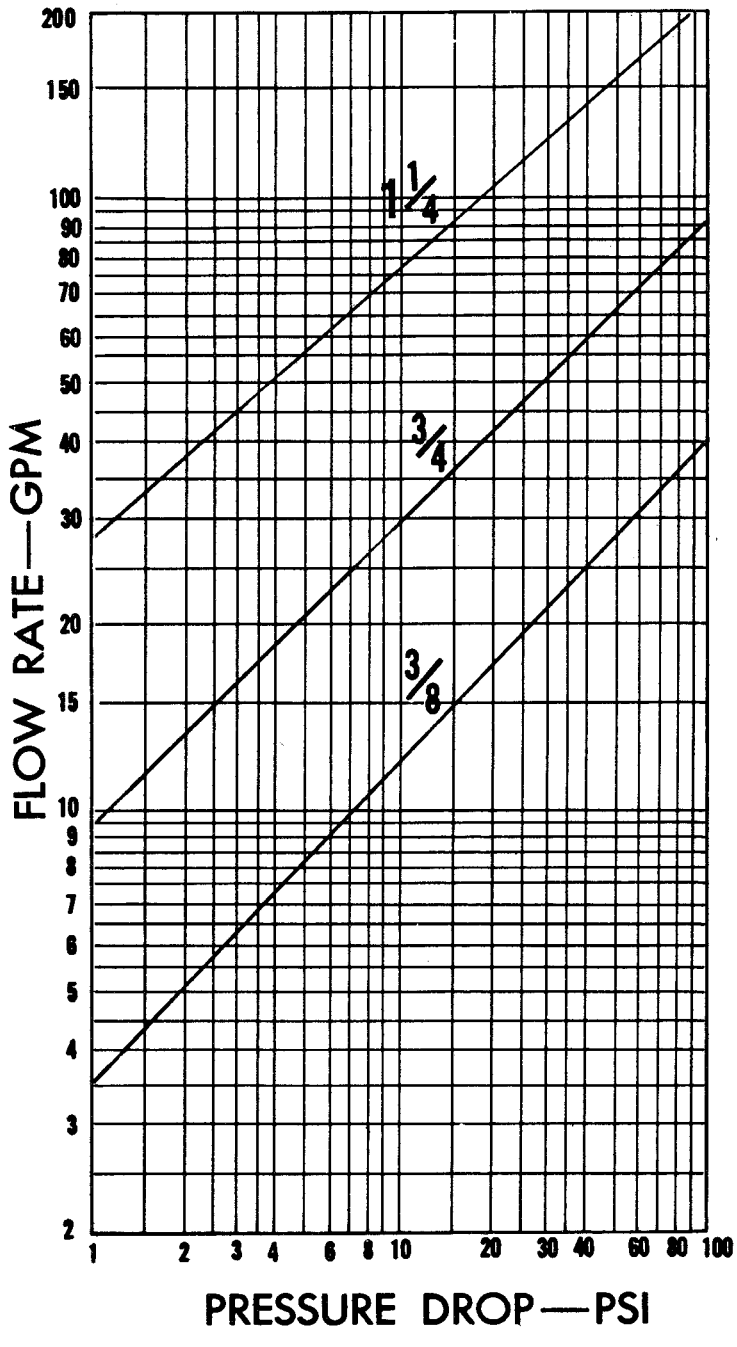
These curves represent the actual pressure drop thru the flow path having the greatest restriction. Pressure drop shown is for the valve only and does not include any piping. Data, as plotted, was obtained using 200 SSU oil at 100°F. at operating temperature of 120°F.

2-WAY VALVES



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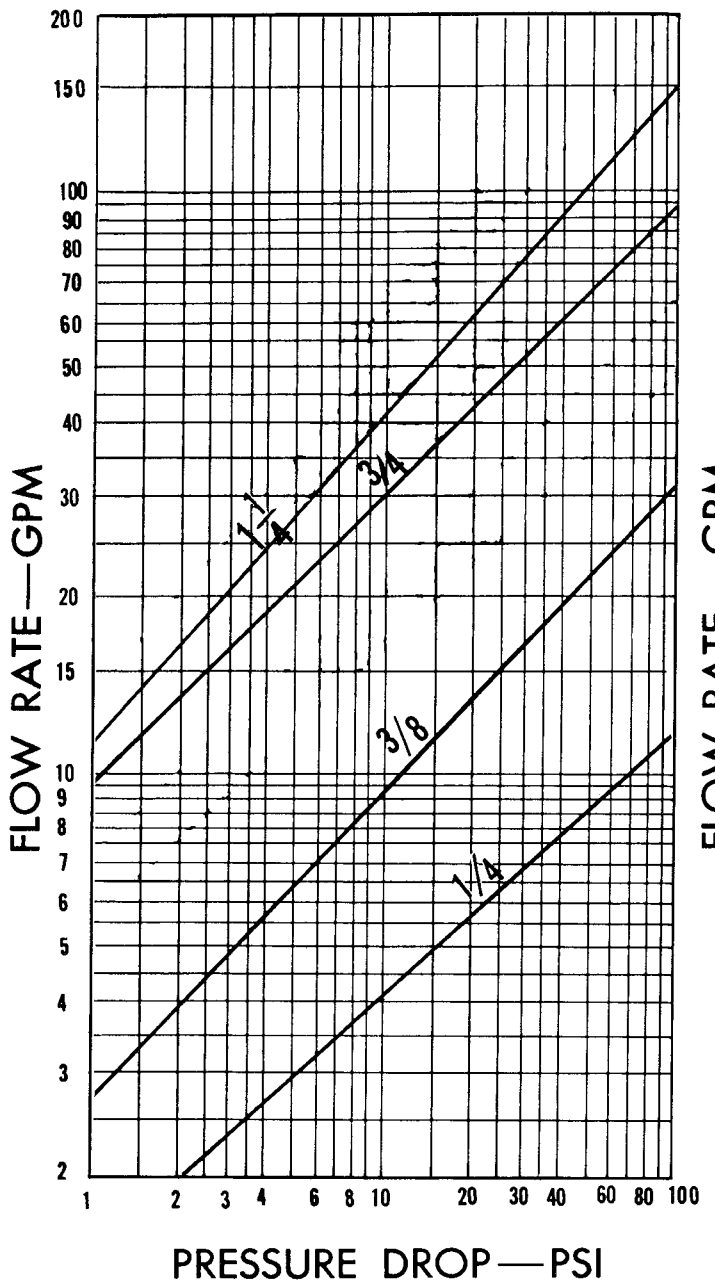
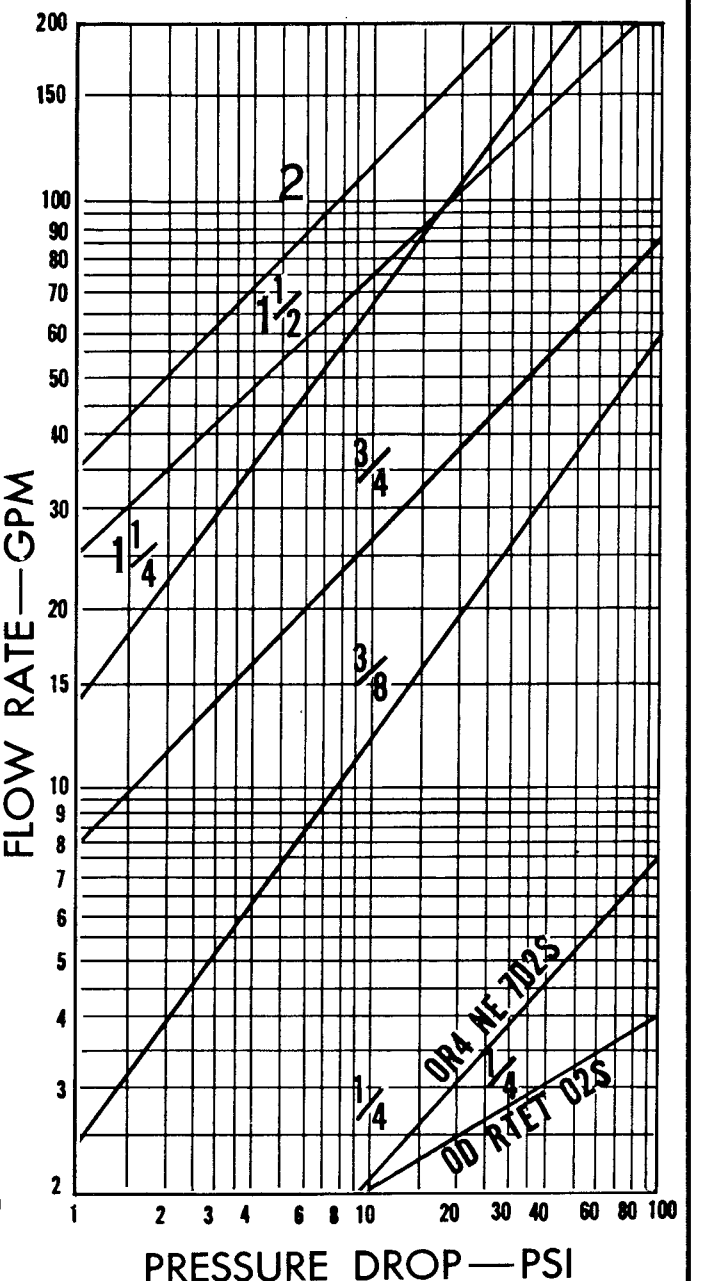
These curves represent the actual pressure drop thru the flow path having the greatest restriction. Pressure drop shown is for the valve only and does not include any piping. Data, as plotted, was obtained using 200 SSU oil at 100°F. at operating temperature of 120°F.

4-WAY VALVES
SUBPLATE MOUNTED



4-WAY VALVES
FOOT MOUNTED



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J.I.C. Recommendation For Tube Wall Thickness							
Tube Size	Fitting Size	0-500 psi		500-1200 psi		1200-3000 psi	
		Minimum Wall	I.D. Area	Minimum Wall	I.D. Area	Minimum Wall	I.D. Area
1/8	2	.035	.0023	.035	.0023	.035	.0023
3/16	3	.035	.0107	.035	.0107	.060	.0035
1/4	4	.035	.0254	.035	.0254	.060	.0133
5/16	5	.035	.046	.035	.046	.060	.029
3/8	6	.035	.073	.035	.073	.060	.051
1/2	8	.035	.145	.035	.145	.075	.096
5/8	10	.035	.242	.049	.218	.095	.149
3/4	12	.035	.363	.049	.334	.109	.222
7/8	14	.049	.474	.065	.436	.109	.339
1	16	.049	.639	.065	.594	.120	.454
1 1/4	20	.065	.985	.095	.882		
1 1/2	24	.065	1.474	.095	1.348		

HYDRAULIC PIPE TABLE

STANDARD PIPE											
Nominal Pipe Size	1/8	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3
O.D.	.405	.540	.675	.84	1.05	1.315	1.66	1.90	2.375	2.875	3.50
I.D.	.269	.364	.493	.622	.824	1.049	1.380	1.610	2.067	2.469	3.068
Area, Sq. In.	.06	.10	.19	.30	.53	.86	1.49	2.03	3.35	4.78	7.38
Recommended Working Pressure											
Safety Factor 8	1705	1629	1348	1298	1076	1011	843	763	648	706	617
Safety Factor 10	1364	1303	1078	1038	860	808	674	610	518	564	493

EXTRA HEAVY PIPE											
I.D.	.215	.302	.423	.546	.742	.957	1.278	1.500	1.939	2.323	2.90
Area, Sq. In.	.036	.071	.141	.231	.425	.710	1.271	1.753	2.935	4.209	6.569
Recommended Working Pressure											
Safety Factor 8	2983	2203	1866	1750	1716	1611	1150	1052	917	960	857
Safety Factor 10	2386	1762	1492	1400	1172	1088	920	841	733	768	685

DOUBLE EXTRA HEAVY PIPE											
I.D.				.252	.434	.599	.896	1.100	1.503	1.771	2.300
Area, Sq. In.				.047	.140	.271	.615	.930	1.744	2.419	4.097
Recommended Working Pressure											
Safety Factor 8				3500	2933	2722	2301	2105	1920	1835	1714
Safety Factor 10				2800	2346	2177	1840	1684	1536	1468	1371

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ENGINEERING DATA

ORIFICE PRESSURE DROP

$Q\ (G.P.M.) = 24.12 \times A\ (SQ.IN.) \times \sqrt{PRESSURE\ DROP}\ (P.S.I.)$

WHEN C = .6 AND SPECIFIC GRAVITY = .895

NO ALLOWANCE FOR VISCOSITY CHANGE

FROM:

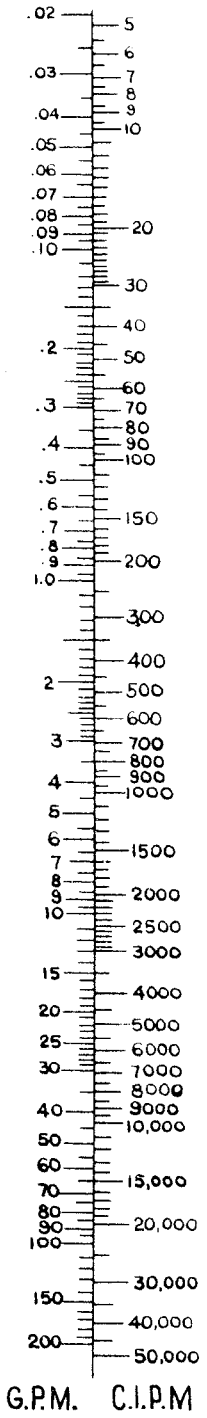
$Q = C \times A \times \sqrt{2GH}$

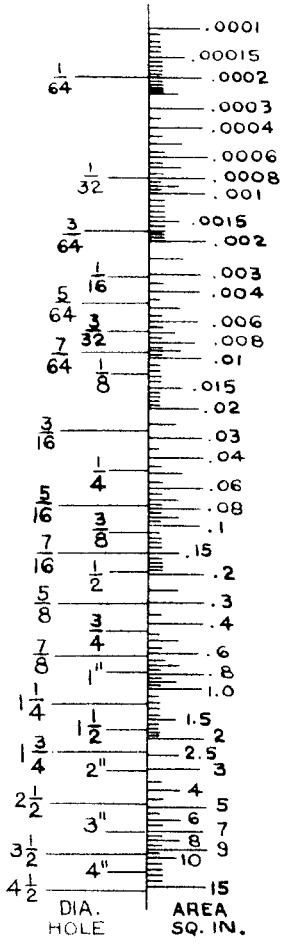
WHEN: Q = FLOW IN CU. FT./SEC.

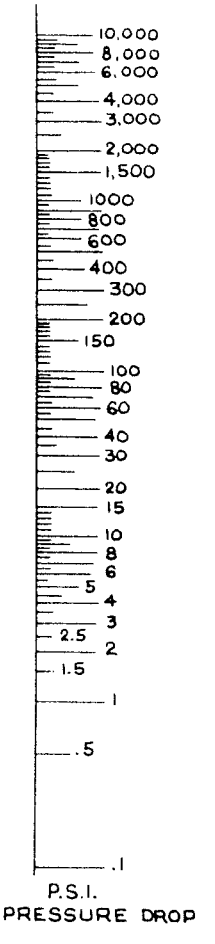
C = ORIFICE COEFFICIENT

A = AREA IN SQ. FT.

H = PRESSURE HEAD IN FT.







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ENGINEERING DATA

AREAS OF CIRCLES

AREAS OF CIRCLES

Diameter	Area	Diameter	Area	Diameter	Area	Diameter	Area
1/64	.0002	25/32	.4794	4 1/4	14.186	16 1/2	213.82
1/32	.0008	13/16	.5185	4 1/2	15.904	17	226.98
3/64	.0017	27/32	.5591	4 3/4	17.721	17 1/2	240.53
1/16	.0031	7/8	.6013	5	19.635	18	254.47
5/64	.0048	29/32	.6450	5 1/4	21.648	18 1/2	268.80
3/32	.0069	15/16	.6903	5 1/2	23.758	19	283.53
7/64	.0093	31/32	.7371	5 3/4	25.967	19 1/2	298.65
1/8	.0123	1	.7854	6	28.274	20	314.16
9/64	.0154	1 1/16	.8866	6 1/4	30.680	20 1/2	330.06
5/32	.0192	1 1/8	.9940	6 1/2	33.183	21	346.36
11/64	.0231	1 3/16	1.1075	6 3/4	35.785	21 1/2	363.05
3/16	.0276	1 1/4	1.2272	7	38.485	22	380.13
13/64	.0323	1 5/16	1.3530	7 1/4	41.282	22 1/2	397.61
7/32	.0376	1 3/8	1.4849	7 1/2	44.179	23	415.48
15/64	.0431	1 7/16	1.6230	7 3/4	47.173	23 1/2	433.74
1/4	.0491	1 1/2	1.7671	8	50.265	24	452.39
17/64	.0553	1 9/16	1.9175	8 1/4	53.456	24 1/2	471.44
9/32	.0621	1 5/8	2.0739	8 1/2	56.745	25	490.87
19/64	.0691	1 11/16	2.2365	8 3/4	60.132	25 1/2	510.71
5/16	.0767	1 3/4	2.4053	9	63.617	26	530.93
21/64	.0845	1 13/16	2.5802	9 1/4	67.201	26 1/2	551.55
11/32	.0928	1 7/8	2.7612	9 1/2	70.882	27	572.56
23/64	.1013	1 15/16	2.9483	9 3/4	74.662	27 1/2	593.96
3/8	.1105	2	3.1416	10	78.540	28	615.75
25/64	.1198	2 1/8	3.5466	10 1/4	82.516	28 1/2	637.94
13/32	.1296	2 1/4	3.9761	10 1/2	86.590	29	660.52
27/64	.1398	2 3/8	4.4301	10 3/4	90.763	29 1/2	683.49
7/16	.1503	2 1/2	4.9087	11	95.033	30	706.86
29/64	.1612	2 5/8	5.4119	11 1/4	99.402	30 1/2	730.62
15/32	.1726	2 3/4	5.9396	11 1/2	103.87	31	754.77
31/64	.1842	2 7/8	6.4918	11 3/4	108.43	31 1/2	779.31
1/2	.1964	3	7.0686	12	113.10	32	804.25
17/32	.2217	3 1/8	7.6699	12 1/2	122.72	32 1/2	829.58
9/16	.2485	3 1/4	8.2958	13	132.73	33	855.30
19/32	.2769	3 3/8	8.9462	13 1/2	143.14	33 1/2	881.41
5/8	.3068	3 1/2	9.6211	14	153.94	34	907.92
21/32	.3382	3 5/8	10.321	14 1/2	165.13	34 1/2	934.82
11/16	.3712	3 3/4	11.045	15	176.71	35	962.11
23/32	.4057	3 7/8	11.793	15 1/2	188.69	35 1/2	989.80
3/4	.4418	4	12.566	16	201.06	36	1017.9

Diameters are in Inches.

Areas are in Square Inches.

Burton Hydraulics, Inc.

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DECIMAL EQUIVALENTS

1/64	.015625
1/32	.03125
3/64	.046875
1/16	.0625
5/64	.078125
3/32	.09375
7/64	.109375
1/8	.1250
9/64	.140625
5/32	.15625
11/64	.171875
3/16	.1875
13/64	.203125
7/32	.21875
15/64	.234375
1/4	.2500
17/64	.265625
9/32	.28125
19/64	.296875
5/16	.3125
21/64	.328125
11/32	.34375
23/64	.359375
3/8	.3750
25/64	.390625
13/32	.40625
27/64	.421875
7/16	.4375
29/64	.453125
15/32	.46875
31/64	.484375
1/2	.5000
33/64	.515625
17/32	.53125
35/64	.546875
9/16	.5625
37/64	.578125
19/32	.59375
39/64	.609375
5/8	.6250
41/64	.640625
21/32	.65625
43/64	.671875
11/16	.6875
45/64	.703125
23/32	.71875
47/64	.734375
3/4	.7500
49/64	.765625
25/32	.78125
51/64	.796875
13/16	.8125
53/64	.828125
27/32	.84375
55/64	.859375
7/8	.8750
57/64	.890625
29/32	.90625
59/64	.921875
15/16	.9375
61/64	.953125
31/32	.96875
63/64	.984375
1	1.0000

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OD2 • DTE••03S

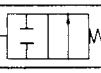
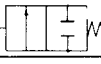
DIRECTIONAL CONTROL

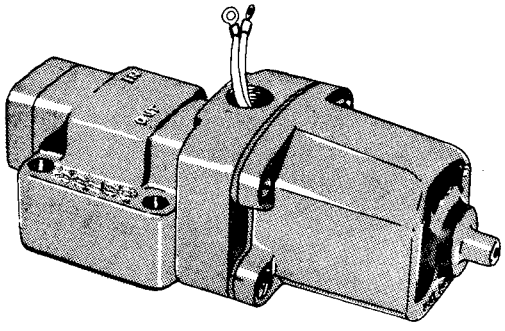
TWO-WAY VALVE

SOLENOID OPERATED

SPRING RETURN

3/8"

Foot Mounted Valves	Normal Porting Arrangement	Sub-Plate Mounted Valves
3/8" Size		3/8" Size
OD2 • DTET • 203S	N.O. 	OD2 • DTES • 203S
OD2 • DTET • 103S	N.C. 	OD2 • DTES • 103S
7	WEIGHT	8
.141	AREA	.141
12	GPM @ 10 psi DROP	12



OPERATION

Solenoid Controlled Spring Return Two-Way Valves provide directional control of oil flow in either of two available positions.

With a normally closed spool, there is no flow through the valve until the solenoid is energized.

A normally open spool allows oil flow through the valve until the solenoid is energized.

When the solenoid is energized, hydraulic pilot pressure moves the spool in position against light spring force.

The solenoid must remain energized to hold the valve spool in this position.

A spring return arrangement automatically returns the valve spool to the normal position when the solenoid is de-energized.

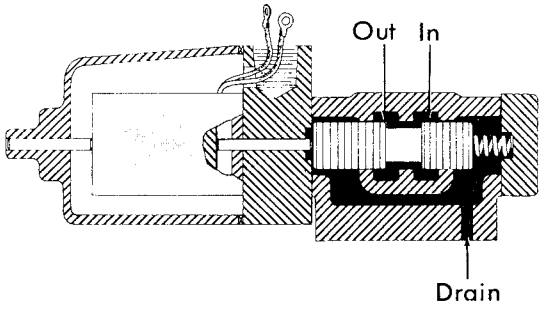
APPLICATION

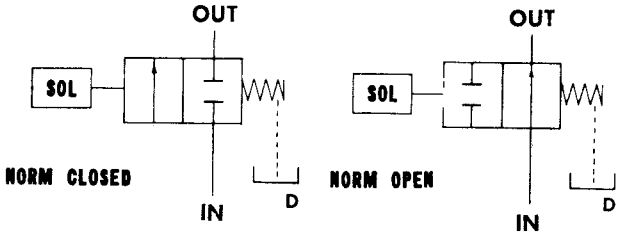
Electric control for automatic hydraulic applications requiring sequencing of operations or a by-pass of oil flow is achieved by the selection of this valve type.

Unloading of pumps by pressure switch actuation of the valve is a useful application.

The spring return arrangement can often be used as a safety device to immediately open or block flow of oil as desired, in the event of electric power failure.

Flow of oil in either direction through the valve is possible when desired by opening the valve at the proper time.





SPECIFICATIONS

J.I.C.—Design conforms to specifications of the Joint Industry Conference.
PRESSURE RATING—1500 pounds per square inch.
DRAIN PORT—Drain must be connected to tank and back pressure must not exceed 30 psi.
FLOW RATE—For complete information of flow rate by pressure drop, refer to curves
RESPONSE TIME—Reversal speed of valve spool will be less than .05 second to shift to the end position and .1 second to spring return.
CYCLES/MINUTE—Maximum continuous rating is 80 cycles/minute.
SOLENOIDS—The inrush current required for 115 volt, 60 cycle, AC service is 4.6 amps. The holding current is .57 amps. Other standard and special solenoid characteristics are available on request. Solenoids will not operate properly on less than 90% voltage.
TEMPERATURE—Under normal conditions of continuous operation, fluid temperature should not exceed 130° F. In no instance should the temperature exceed 160° F.
OIL RECOMMENDATION—Premium grade hydraulic oil with 200 to 250 SSU viscosity at 100° F for use at normal ambient temperatures.

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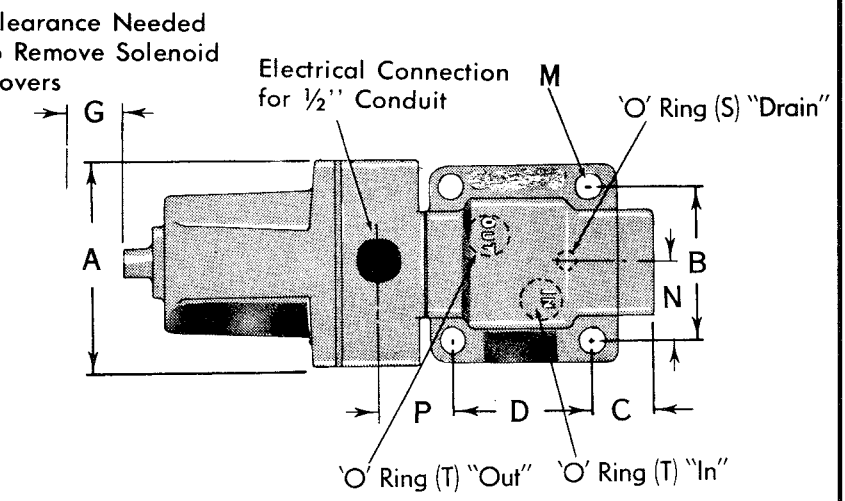
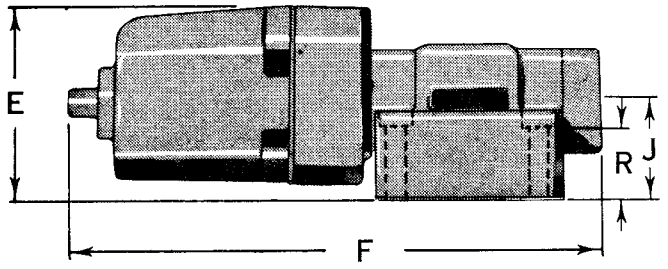
OD2 • DTE**03S

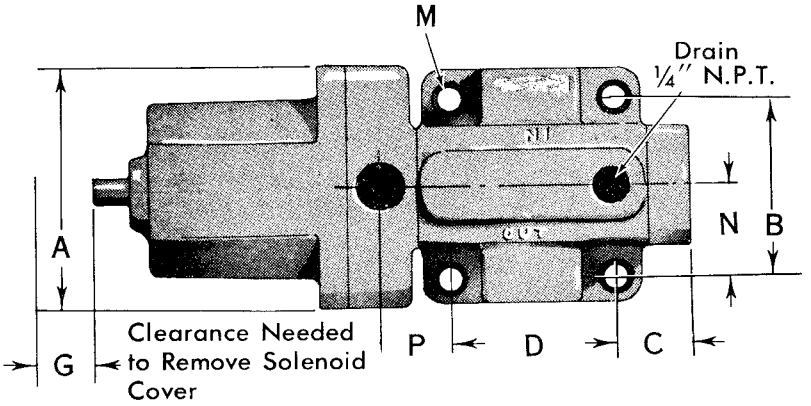
DIRECTIONAL CONTROL
TWO-WAY VALVE
SOLENOID OPERATED
SPRING RETURN
⅜"

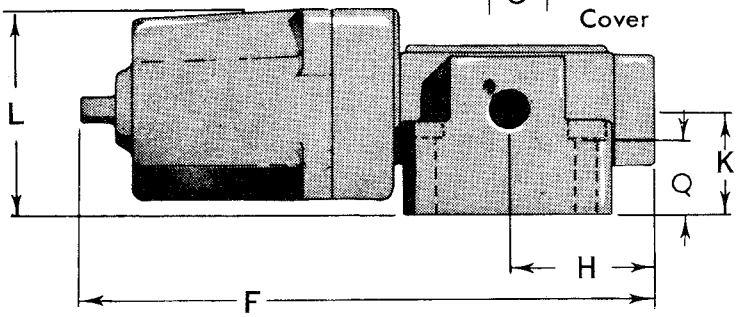




Sub-Plate Mounted
OD2 · DTES · *03S

A	B	C	D	E	F	G	H	J	K	L	M Dia.	N	P	Q	R	S ID	S CS	T ID	T CS
3 5/8	2 5/8	1 1/16	2 3/8	3 25/64	9 3/16	3/4	2 1/4	1 45/64	1 5/8	3.5/16	11/32	1 5/16	1 1/16	1 3/16	1 17/64	3/8	3/32	11/16	3/32





Foot Mounted
OD2 · DTET · *03S

SPECIFICATIONS

MOUNTING SUB-PLATE—Refer to Sheet No. for details of dimensions.
MOUNTING POSITION—Not restricted.
END CAPS—Rotation in 90° increments is possible if clearance is provided.
LEFT HAND ASSEMBLY—When supplied, will provide for the solenoid head at the opposite end of the body from the position shown.

Burton Hydraulics, Inc.
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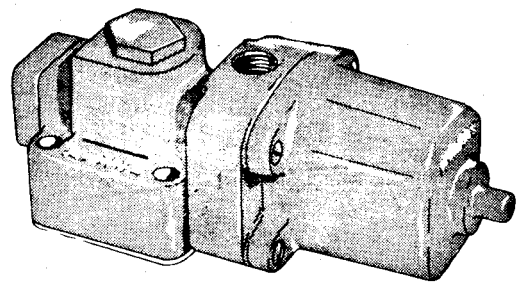
Discontinued Valve only parts are available

OD2 • DTES • * 03H

TWO-WAY VALVE

SOLENOID OPERATED
SPRING RETURN
INTEGRAL CHECK
⅜"

Normal Porting Arrangement	Sub-Plate Mounted Valves ⅜" Size
N.O.	OD2 • DTES • 203H
N.C.	OD2 • DTES • 103H
WEIGHT	8
AREA	.141
GPM @ 10 psi DROP	12



OPERATION

Solenoid Controlled Spring Return Two-Way Valves, provide directional control of oil flow in either of two available positions.

With a normally closed spool, there is no flow through the valve until the solenoid is energized.

A normally open spool allows oil flow through the valve until the solenoid is energized.

When the solenoid is energized, the spool is moved in position against light spring force.

The solenoid must remain energized to hold the valve spool in this position.

A spring return arrangement automatically returns the valve spool to the normal position when the solenoid is de-energized.

A free flow return check valve is provided and allows unrestricted flow of oil from the outlet to the inlet port if the spool is in the closed position.

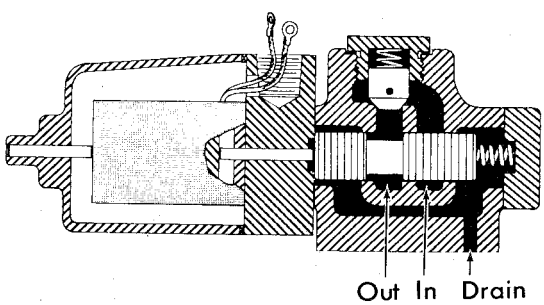
APPLICATION

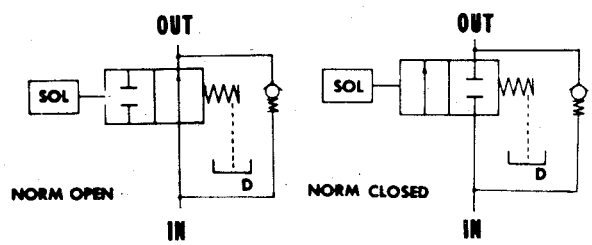
Electric control for automatic hydraulic applications requiring sequencing of operations or a by-pass of oil flow is achieved by the selection of this valve type.

The spring return arrangement can often be used as a safety device to immediately open or block flow of oil as desired, in the event of electric power failure.

Flow of oil in either direction through the valve is possible when desired by opening the valve at the proper time.

The free flow check valve will allow reverse flow of oil even though the spool is in a closed position.





SPECIFICATIONS

J.I.C.—Design conforms to specifications of the Joint Industry Conference.
PRESSURE RATING—1500 pounds per square inch.
DRAIN PORT—Drain must be connected to tank and back pressure must exceed 30 psi.
FLOW RATE—For complete information of flow rate by pressure drop, refer to curves
RESPONSE TIME—Reversal speed of valve spool will be less than .05 second to shift to the end position and .1 second to spring return.
CYCLES/MINUTE—Maximum continuous rating is 80 cycles/minute.
SOLENOIDS—The inrush current required for 115 volt, 60 cycle, AC service is 4.6 amps. The holding current is .57 amps. Other standard and special solenoid characteristics are available on request. Solenoids will not operate properly on less than 90% voltage.
TEMPERATURE—Under normal conditions of continuous operation, fluid temperature should not exceed 130° F. In no instance should the temperature exceed 160°F.
OIL RECOMMENDATION—Premium grade hydraulic oil with 200 to 250 SSU viscosity at 100° F for use at normal ambient temperatures.

Burton Hydraulics, Inc.
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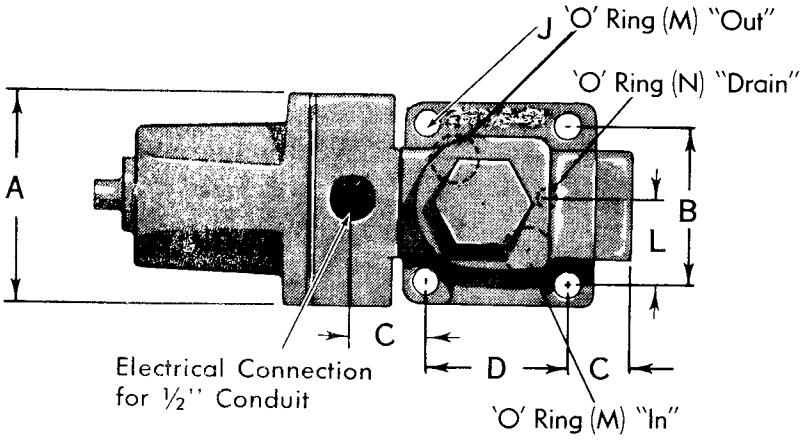
OD2 • DTES • *03H

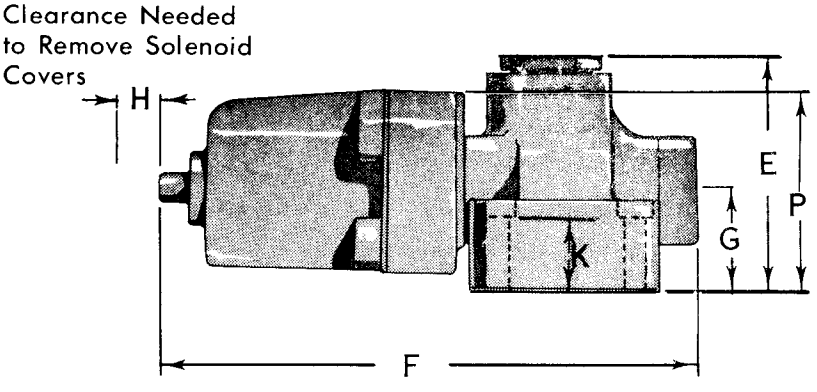
DIRECTIONAL CONTROL

TWO-WAY VALVE

SOLENOID OPERATED
SPRING RETURN
INTEGRAL CHECK
⅜"



Sub-Plate Mounted



Valve Size	A	B	C	D	E	F	G	H	J Dia.	K	L	M ID	M CS	N ID	N CS	P
⅜	3 21/32	2 5/8	1 1/16	2 3/8	3 13/16	9 3/16	1 23/32	¾	11/32	1 1/4	1 5/16	11/16	3/32	⅜	3/32	3 13/32

SPECIFICATIONS

MOUNTING SUB-PLATE—Refer to Sheet Number for details of dimensions.
MOUNTING POSITION—Not restricted.

END CAPS—Rotation in 90° increments is possible.
LEFT HAND ASSEMBLY—When supplied, will provide for the solenoid head at the opposite end of the body from the position shown.

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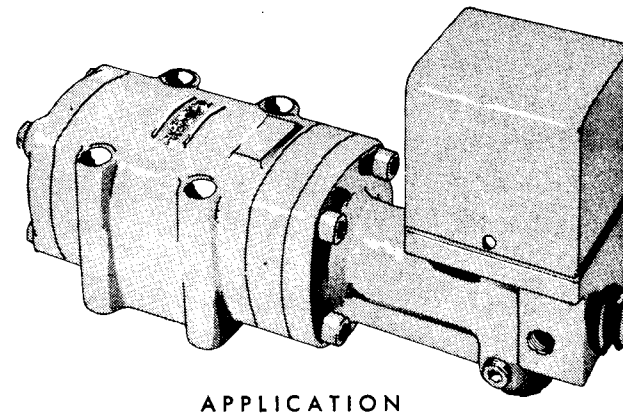
OD2 • FTE•• •••S

DIRECTIONAL CONTROL

TWO WAY VALVE

SOLENOID PILOT OPERATED
SPRING RETURN
¾"—1¼"

Foot Mounted Valves		Normal Porting Arrangement
¾" Size	1¼" Size	
OD2 • FTET • 206S	OD2 • FTET • 210S	N.O.
OD2 • FTET • 106S	OD2 • FTET • 110S	N.C.
26	36	WEIGHT
.425	1.271	AREA
30	78	GPM @ 10 psi DROP



OPERATION

Solenoid Controlled Pilot Operated Spring Return Two-Way Valves provide directional control of oil flow in either of two available positions.

With a normally closed spool, there is no flow through the valve until the solenoid is energized.

A normally open spool allows oil flow through the valve until the solenoid is energized.

When the solenoid is energized, hydraulic pilot pressure moves the spool in position against light spring force.

The solenoid must remain energized to hold the valve spool in this position.

The spring return arrangement automatically returns the valve spool to the normal position when the solenoid is de-energized.

Throttling notches in the spool are provided to allow smooth opening and closing of the valve ports.

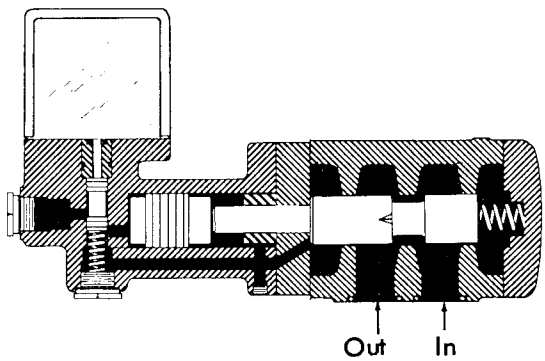
APPLICATION

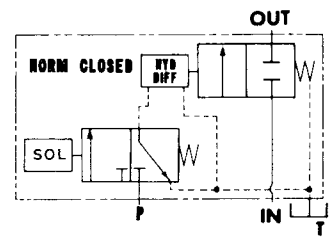
Electric control for automatic hydraulic applications requiring sequencing of operations or a by-pass of oil flow is achieved by the selection of this valve type.

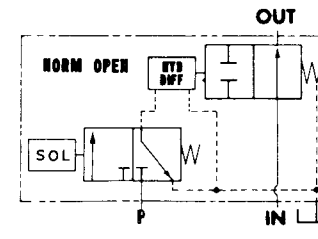
Unloading of pumps by pressure switch actuation of the valve is a useful application.

The spring return arrangement can often be used as a safety device to immediately open or block flow of oil as desired, in the event of electric power failure.

Flow of oil in either direction through the valve is possible when desired by opening the valve at the proper time.







SPECIFICATIONS

J.I.C.—Design conforms to specifications of the Joint Industry Conference.
PRESSURE RATING—1500 pounds per square inch.
PILOT PRESSURE—A pilot pressure of approximately 65 psi minimum must be available for pilot operation of the valve. Pilot pressure should not exceed 1500 psi maximum. Only external pilot is supplied.
VOLUME OF OIL—Hydraulic pilot operation requires maximum of .77 cubic inches for ¾" size valve and 1.08 cubic inches of oil displacement to shift spool to the end position for 1¼" size valves.
DRAIN PORT—Drain must be connected to tank and back pressure must not exceed 30 psi.

FLOW RATE—For complete information of flow rate by pressure drop, refer to curves

RESPONSE TIME—Reversal speed of valve spool with pilot pressure in excess of 250 psi will be less than .1 second to shift to the end position and .15 second to spring return.
CYCLES/MINUTE—Maximum continuous rating is 30 cycles/minute.

PILOT CHOKE ADJUSTMENT—A pilot choke is available for controlling speed of valve spool reversal. This pilot choke will only control speed of reversal when solenoid is energized and spool is moving by hydraulic pressure. Specify OD2 • FTE• ••••K.
SOLENOIDS—The inrush current required for 115 volt, 60 cycle, AC service is 3.6 amps. The holding current is .45 amps. Other standard and special solenoid characteristics are available on request. Solenoids will not operate properly on less than 90% voltage.
TEMPERATURE—Under normal conditions of continuous operation, fluid temperature should not exceed 130° F. In no instance should the temperature exceed 160° F.
OIL RECOMMENDATION—Premium grade hydraulic oil with 200 to 250 SSU viscosity at 100° F for use at normal ambient temperatures.

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OD2 • FTE ••••• S

DIRECTIONAL CONTROL

TWO-WAY VALVE

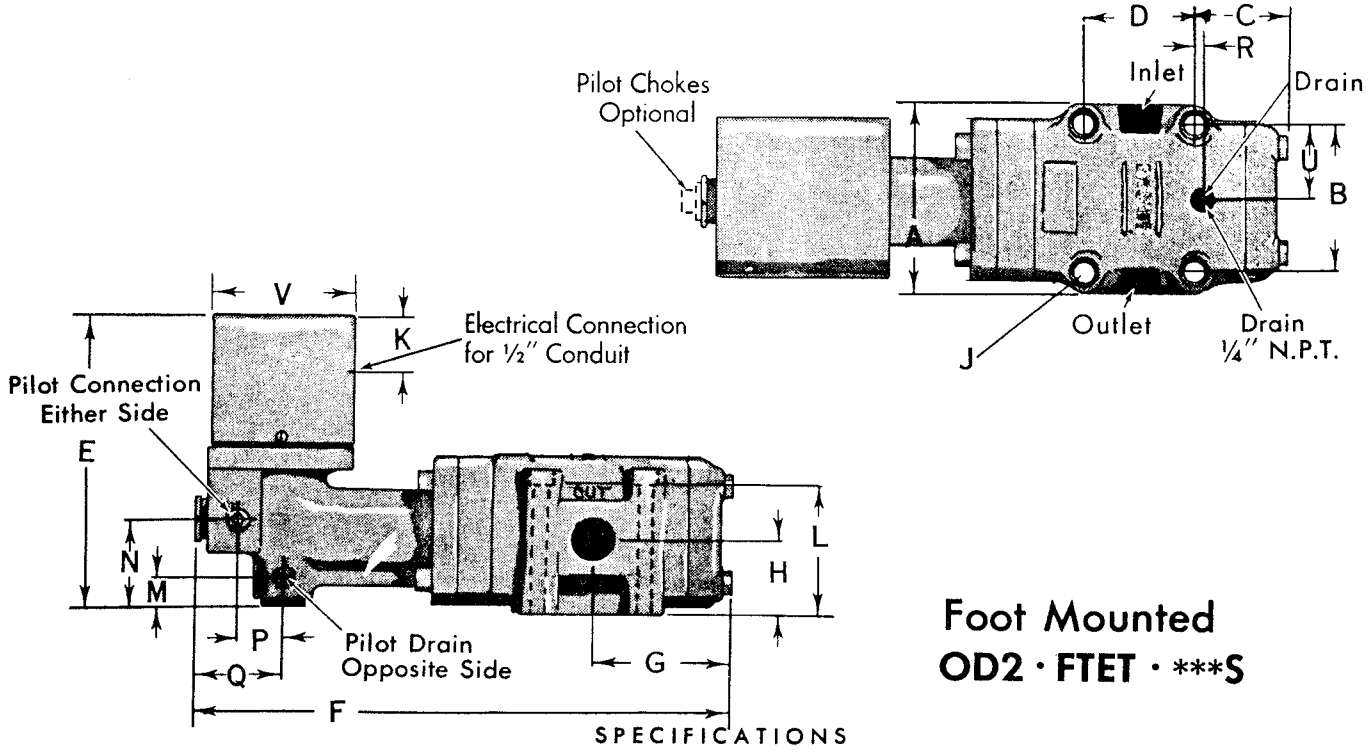
SOLENOID PILOT OPERATED

SPRING RETURN

¾"—1¼"

Valve Size	A	B	C	D	E	F	G	H	J Dia	K	L	M	N	P	Q	R
¾	4	3 1/8	2 1/16	2 3/8	6 3/4	12 7/16	3 1/4	1 7/8	7/16	1 5/8	2 15/16	7/8	2 1/16	15/16	2 1/16	19/32
1¼	5 1/4	4 1/8	2	4 1/2	6 3/4	14 7/16	4 1/4	1 5/8	9/16	1 5/8	2 5/8	7/8	2 1/16	15/16	2 1/16	1/4

U	V
1 9/16	3 5/16
2 1/16	3 5/16



SPECIFICATIONS

Foot Mounted
OD2 • FTET • ***S

MOUNTING POSITION—Not restricted.

END CAPS—Rotation in 90° increments is possible.
LEFT HAND ASSEMBLY—When supplied, will provide for the solenoid head at the opposite end of the body from the position shown.

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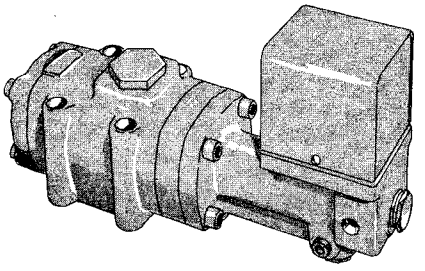
OD2 • FTE••••H

DIRECTIONAL CONTROL

TWO WAY VALVE

SOLENOID PILOT OPERATED
SPRING RETURN
INTEGRAL CHECK
¾"—1¼"

Foot Mounted Valves		Normal Porting Arrangement	Sub-Plate Mounted Valves	
¾" Size	1¼" Size		¾" Size	1¼" Size
OD2 • FTET • 206H	OD2 • FTET • 210H	N.O.	OD2 • FTES • 206H	OD2 • FTES • 210H
OD2 • FTET • 106H	OD2 • FTET • 110H	N.C.	OD2 • FTES • 106H	OD2 • FTES • 110H
27	38	WEIGHT	27	38
.425	1.271	AREA	.425	1.271
30	78	GPM @ 10 psi DROP	30	78



OPERATION

Solenoid Controlled Pilot Operated Spring Return Two-Way Valves provide directional control of oil flow in either of two available positions.

With a normally closed spool, there is no flow through the valve until the solenoid is energized.

A normally open spool allows oil flow through the valve until the solenoid is energized.

When the solenoid is energized, hydraulic pilot pressure moves the spool in position against light spring force.

The solenoid must remain energized to hold the valve spool in this position.

A spring return arrangement automatically returns the valve spool to the normal position when the solenoid is de-energized.

Throttling notches in the spool are provided to allow smooth opening and closing of the valve ports.

Free flow return check valve is provided and allows unrestricted flow of oil from the outlet to the inlet port if the spool is in the closed position.

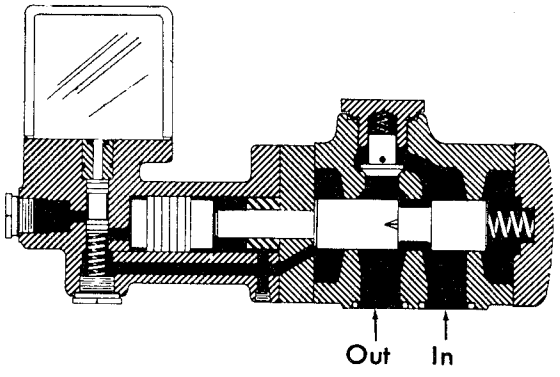
APPLICATION

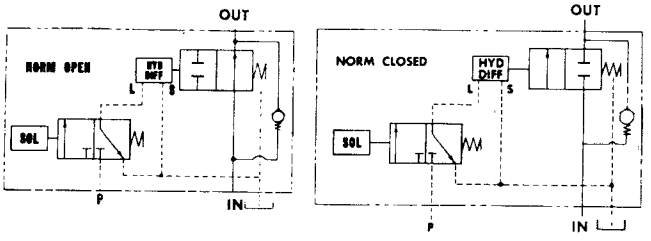
Electric control for automatic hydraulic applications requiring sequencing of operations or a by-pass of oil flow is achieved by the selection of this valve type.

The spring return arrangement can often be used as a safety device to immediately open or block flow of oil as desired, in the event of electric power failure.

Flow of oil in either direction through the valve is possible when desired by opening the valve at the proper time.

The free flow check valve will allow reverse flow of oil even though the spool is in a closed position.





SPECIFICATIONS

J.I.C.—Design conforms to specifications of the Joint Industry Conference.
PRESSURE RATING—1500 pounds per square inch.
PILOT PRESSURE—A pilot pressure of approximately 65 psi minimum must be available for pilot operation of the valve. Pilot pressure should not exceed 1500 psi maximum. Only external pilot is supplied.
VOLUME OF OIL—Hydraulic pilot operation requires maximum of .77 cubic inches for ¾" size valve and 1.08 cubic inches of oil displacement to shift spool to the end position for 1¼" size valves.
DRAIN PORT—Drain must be connected to tank and back pressure must not exceed 30 psi.

FLOW RATE—For complete information of flow rate by pressure drop, refer to curves.

RESPONSE TIME—Reversal speed of valve spool with pilot pressure in excess of 250 psi will be less than .1 second to shift to the end position and .15 second to spring return.
CYCLES/MINUTE—Maximum continuous rating is 80 cycles/minute.

PILOT CHOKE ADJUSTMENT—A pilot choke is available for controlling speed of valve spool reversal. This pilot choke will only control speed of reversal when solenoid is energized and spool is moving by hydraulic pressure. **Specify OD2 • FTE• ••••K.**
SOLENOIDS—The inrush current required for 115 volt, 60 cycle, AC service is 3.6 amps. The holding current is .45 amps. Other standard and special solenoid characteristics are available on request. Solenoids will not operate properly on less than 90% voltage.
TEMPERATURE—Under normal conditions of continuous operation, fluid temperature should not exceed 130° F. In no instance should the temperature exceed 160° F.
OIL RECOMMENDATION—Premium grade hydraulic oil with 200 to 250 SSU viscosity at 100° F for use at normal ambient temperatures.

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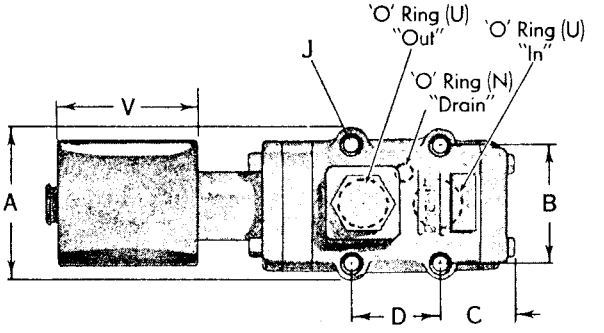
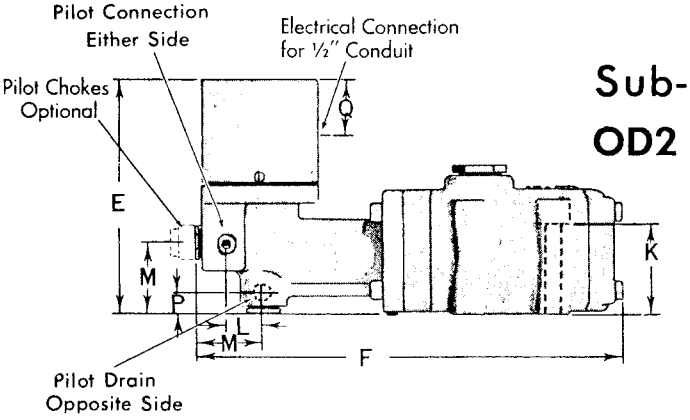
OD2 • FTE••***H

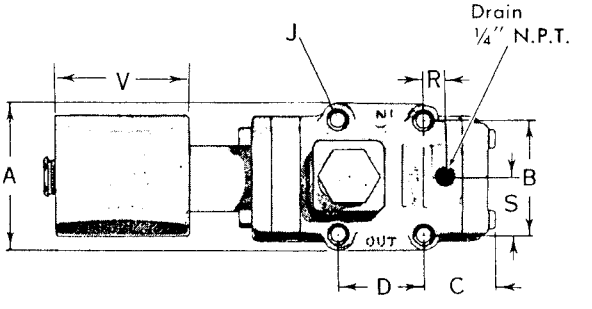
DIRECTIONAL CONTROL
TWO-WAY VALVE
SOLENOID PILOT OPERATED
SPRING RETURN
INTEGRAL CHECK
¾"—1¼"

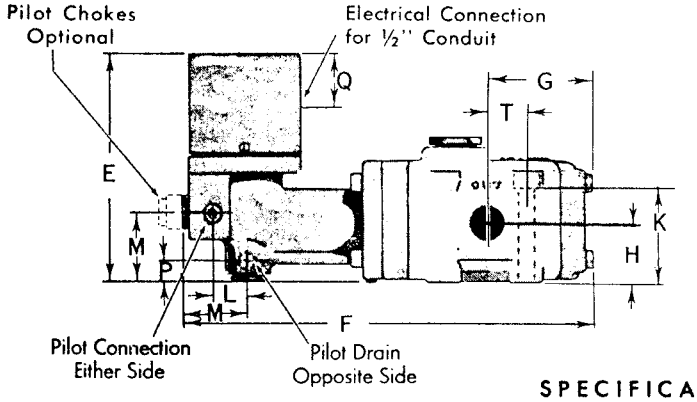




Sub-Plate Mounted
OD2 • FTES • ***H

Valve Size	A	B	C	D	E	F	G	H	J Dia.	K	L	M	N ID	N CS	P	Q	R	S	T	U ID	U CS	V
¾	4	3⅛	2 1/16	2⅜	6¾	12 7/16	3¼	1⅞	7/16	2 15/16	15/16	2 1/16	¼	1/16	⅞	1⅝	19/32	1 9/16	1 3/16	1	⅛	3 5/16
1¼	5¼	4⅛	2	4½	6¾	14 7/16	4¼	1⅝	9/16	2⅝	15/16	2 1/16	7/16	3/32	⅞	1⅝	¼	2 1/16	2¼	1⅝	⅛	3 5/16





Foot Mounted
OD2 • FTET • ***H

SPECIFICATIONS

MOUNTING SUB-PLATE—Refer to Sheet No. for details of dimensions.
MOUNTING POSITION—Not restricted.
END CAPS—Rotation in 90° increments is possible.

LEFT HAND ASSEMBLY—When supplied, will provide for the solenoid head at the opposite end of the body from the position shown.

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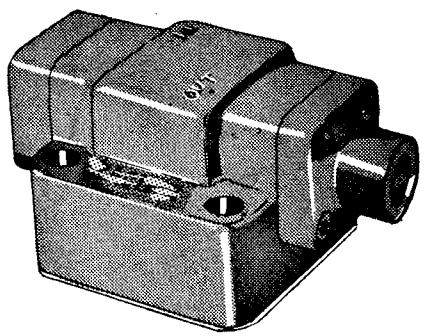
OD2 • PTE • • • 03S

DIRECTIONAL CONTROL

TWO-WAY VALVE

SINGLE PILOT OPERATED
SPRING RETURN
⅜"

Foot Mounted Valves	Normal Porting Arrangement	Sub-Plate Mounted Valves
⅜" Size		⅜" Size
OD2 • PTET • 203S	N.O. 	OD2 • PTES • 203S
OD2 • PTET • 103S	N.C. 	OD2 • PTES • 103S
6	WEIGHT	7
.141	AREA	.141
12	GPM @ 10 psi DROP	12



OPERATION

Pilot Operated Spring Return Two-Way Valves provide directional control of oil flow in either of two available positions.

With a normally closed spool there is no flow through the valve until hydraulic pilot pressure is applied to the pilot port.

A normally open spool allows oil flow through the valve until hydraulic pilot pressure is applied to the pilot port.

Applying hydraulic pilot pressure moves the spool in position against light spring force.

Pilot pressure must be maintained to hold the valve spool in position.

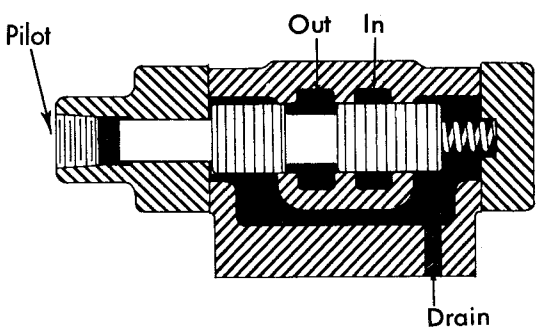
The spring return arrangement automatically returns the valve spool to the normal position when pilot pressure is exhausted from the pilot port.

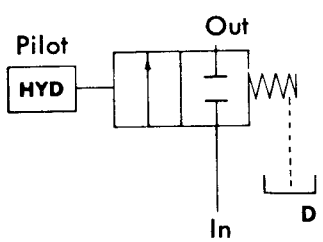
APPLICATION

Hydraulic control for automatic applications requiring sequencing of operations or a by-pass of oil flow is achieved by the selection of this valve type.

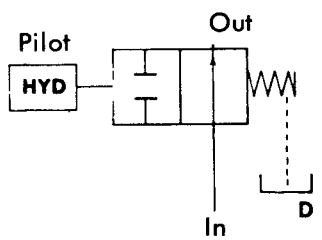
The spring return arrangement can often be used as a safety device to immediately open or block oil flow as desired in the event of hydraulic pilot pressure failure.

Flow of oil in either direction through the valve is possible when desired by opening the valve at the proper time.





NORM CLOSED



NORM OPEN

SPECIFICATIONS

J.I.C.—Design conforms to specifications of the Joint Industry Conference.
PRESSURE RATING—1500 pounds per square inch.
PILOT PRESSURE—A pilot pressure of approximately 65 psi minimum must be available for pilot operation of the valve. Pilot pressure should not exceed 1500 psi maximum.
VOLUME OF OIL—Hydraulic pilot operation requires maximum of .098 cubic inches of oil displacement to shift the spool from neutral to either end position.

DRAIN PORT—Drain must be connected to tank and back pressure must be at least 65 psi lower than the pilot pressure.

FLOW RATE—For complete information of flow rate by pressure drop, refer to curves.
TEMPERATURE—Under normal conditions of continuous operation, fluid temperature should not exceed 130° F. In no instance should the temperature exceed 160°F.
OIL RECOMMENDATION—Premium grade hydraulic oil with 200 to 250 SSU viscosity at 100° F for use at normal ambient temperatures.

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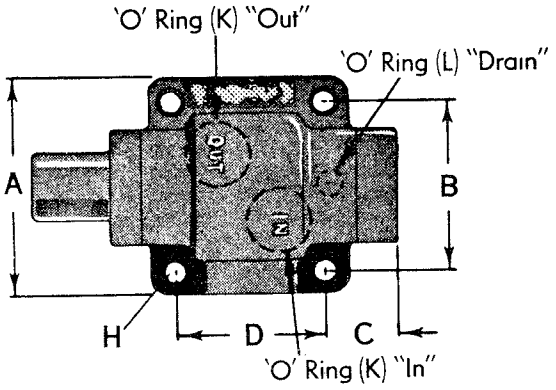
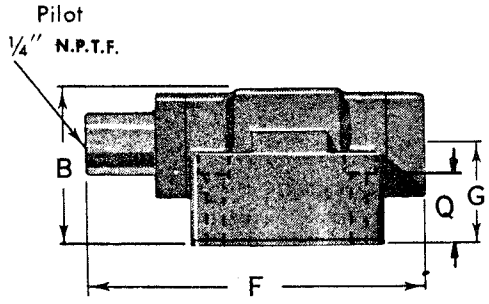
OD2 • PTE••03S

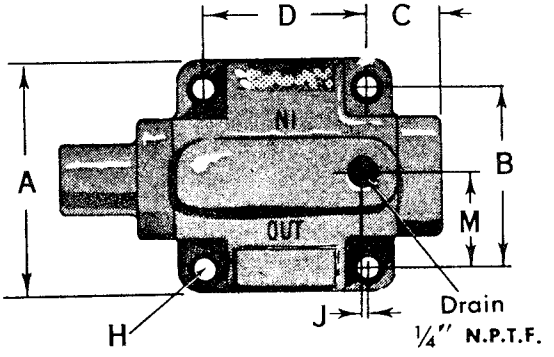
DIRECTIONAL CONTROL
TWO-WAY VALVE
SINGLE PILOT OPERATED
SPRING RETURN
⅜"

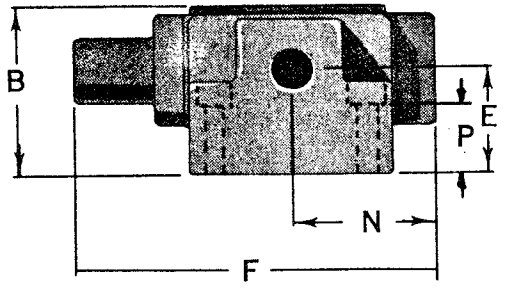




Sub-Plate Mounted
OD2 · PTES · *03S

Valve Size	A	B	C	D	E	F	G	H Dia.	J	K ID	K CS	L ID	L CS	M	N	P	Q
⅜	3 3/8	2 5/8	1 1/16	2 3/8	1 5/8	5 11/16	1 11/16	11/32	1/16	11/16	3/32	3/8	3/32	1 5/16	2 1/4	1 3/16	1 1/4





Foot Mounted
OD2 · PTET · *03S

SPECIFICATIONS

MOUNTING SUB-PLATE—Refer to Sheet Number for details of dimensions.
MOUNTING POSITION—Not restricted.
LEFT HAND ASSEMBLY—When supplied, will provide for the pilot port at the opposite end of the body from the position shown.

Burton Hydraulics, Inc.
7875 DIVISION DRIVE MENTOR, OHIO 44060 (440) 974-8868 FAX - (440) 974-0951

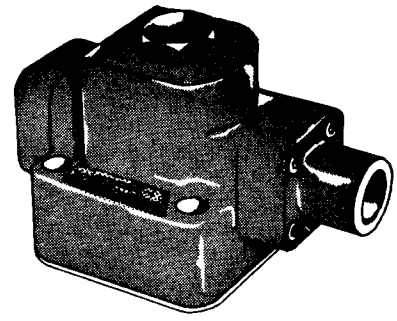
OD2 • PTES •* 03H

DIRECTIONAL CONTROL

TWO-WAY VALVE

SINGLE PILOT OPERATED
SPRING RETURN
INTEGRAL CHECK
⅜"

Normal Porting Arrangement	Sub-Plate Mounted Valves
	⅜" Size
N.O.	OD2 • PTES • 203H
N.C.	OD2 • PTES • 103H
WEIGHT	8
AREA	.141
GPM @ 10 psi DROP	12



OPERATION

Pilot Operated Spring Return Two-Way Valves provide directional control of oil flow in either of two available positions.

With a normally closed spool there is no flow through the valve until hydraulic pilot pressure is applied to the pilot port.

A normally open spool allows oil flow through the valve until hydraulic pilot pressure is applied to the pilot port.

Applying hydraulic pilot pressure moves the spool in position against light spring force.

Pilot pressure must be maintained to hold the valve spool in position.

The spring return arrangement automatically returns the valve spool to the normal position when pilot pressure is exhausted from the pilot port.

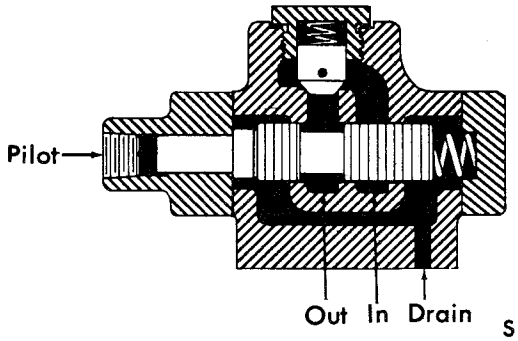
A free flow return check valve is provided and allows unrestricted flow of oil from the outlet to the inlet port for the spool in the closed position.

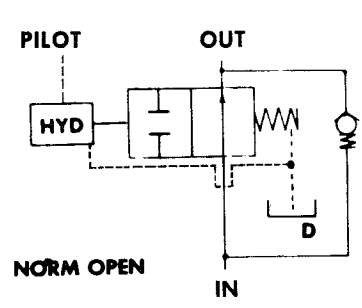
APPLICATION

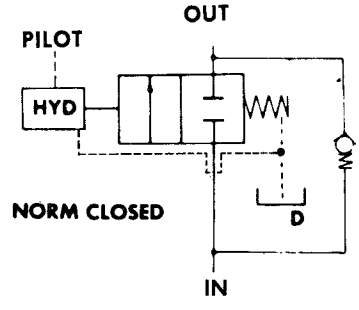
Hydraulic control for automatic applications requiring sequencing of operations or a by-pass of oil flow is achieved by the selection of this valve type.

The spring return arrangement can often be used as a safety device to immediately open or block oil flow as desired in the event of hydraulic pilot pressure failure.

Flow of oil in either direction through the valve is possible when desired by opening the valve at the proper time.







SPECIFICATIONS

J.I.C.—Design conforms to specifications of the Joint Industry Conference.
PRESSURE RATING—1500 pounds per square inch.
PILOT PRESSURE—A pilot pressure of approximately 65 psi minimum must be available for pilot operation of the valve. Pilot pressure should not exceed 1500 psi maximum.
VOLUME OF OIL—Hydraulic pilot operation requires maximum of .098 cubic inches of oil displacement to shift spool to the end position.
DRAIN PORT—Drain must be connected to tank and back pressure must be at least 65 psi lower than the pilot pressure.
FLOW RATE—For complete information of flow rate by pressure drop, refer to curves.
TEMPERATURE—Under normal conditions of continuous operation, fluid temperature should not exceed 130° F. In no instance should the temperature exceed 160° F.
OIL RECOMMENDATION—Premium grade hydraulic oil with 200 to 250 SSU viscosity at 100° F for use at normal ambient temperatures.

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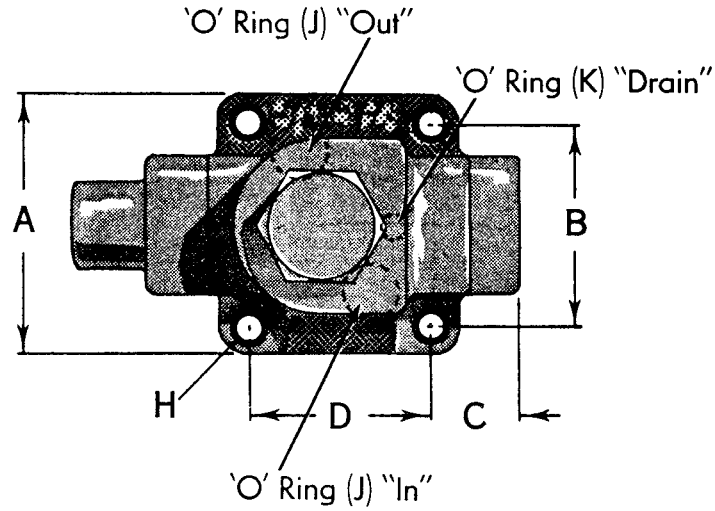
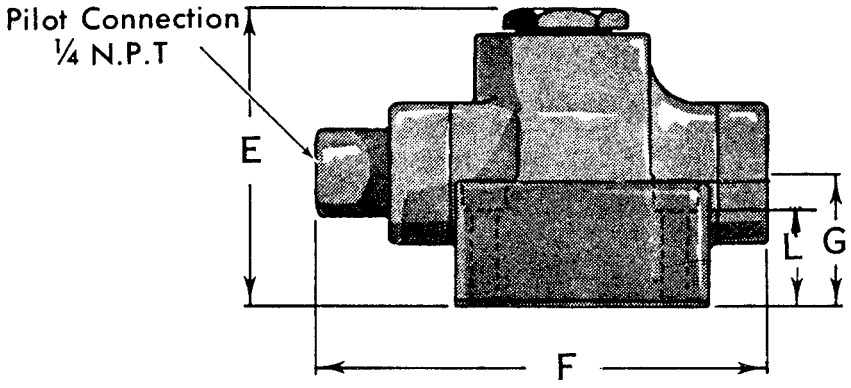
OD2 • PTES •* 03H

DIRECTIONAL CONTROL

TWO-WAY VALVE

SINGLE PILOT OPERATED
SPRING RETURN
INTEGRAL CHECK
⅜"





Sub-Plate Mounted

Valve Size	A	B	C	D	E	F	G	H Dia.	J ID	J CS	K ID	K CS	L
⅜	3⅜	2⅝	1 1/16	2⅜	3 13/16	5 11/16	1 11/16	11/32	11/16	3/32	⅜	3/32	1¼

SPECIFICATIONS

MOUNTING SUB-PLATE—Refer to Sheet No. for details of dimensions.
MOUNTING POSITION—Not restricted.

LEFT HAND ASSEMBLY—When supplied, will provide for the pilot port at the opposite end of the body from the position shown.

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OD2•PTET• *** S

DIRECTIONAL CONTROL

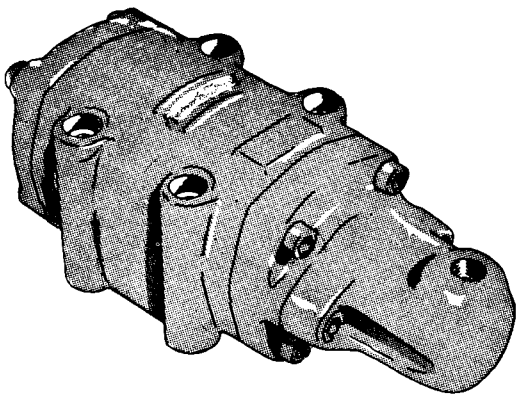
TWO-WAY VALVE

SINGLE PILOT OPERATED

SPRING RETURN

¾"—1¼"

Foot Mounted Valves		Normal Porting Arrangement
¾" Size	1¼" Size	
OD2 • PTET • 206S	OD2 • PTET • 210S	N.O.
OD2 • PTET • 106S	OD2 • PTET • 110S	N.C.
18	28	WEIGHT
.425	1.271	AREA
42	72	GPM @ 10 psi DROP



OPERATION

Pilot Operated Spring Return Two-Way Valves provide directional control of oil flow in either of two available positions.

With a normally closed spool there is no flow through the valve until hydraulic pilot pressure is applied to the pilot port.

A normally open spool allows oil flow through the valve until hydraulic pilot pressure is applied to the pilot port.

Applying hydraulic pilot pressure moves the spool in position against light spring force.

Pilot pressure must be maintained to hold the valve spool in position.

The spring return arrangement automatically returns the valve spool to the normal position when pilot pressure is exhausted from the pilot port.

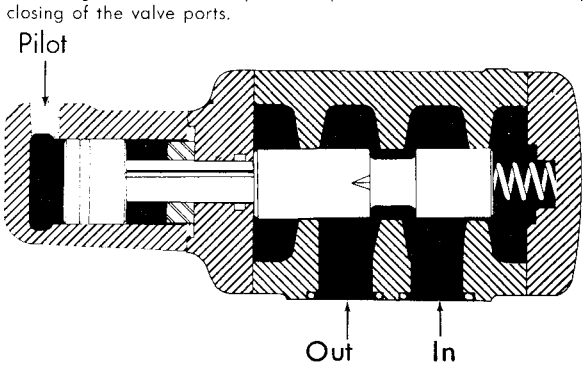
Throttling notches in the spool are provided to allow smooth opening and closing of the valve ports.

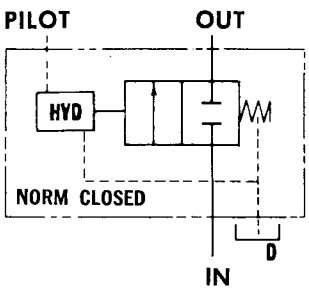
APPLICATION

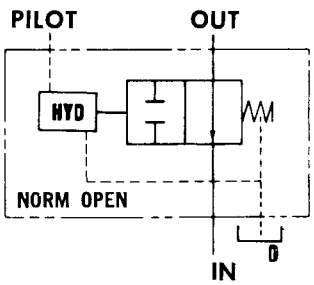
Hydraulic control for automatic applications requiring sequencing of operations or a by-pass of oil flow is achieved by the selection of this valve type.

The spring return arrangement can often be used as a safety device to immediately open or block oil flow as desired in the event of hydraulic pilot pressure failure.

Flow of oil in either direction through the valve is possible when desired by opening the valve at the proper time.







SPECIFICATIONS

J.I.C.—Design conforms to specifications of the Joint Industry Conference.
PRESSURE RATING—1500 pounds per square inch.
PILOT PRESSURE—A pilot pressure of approximately 65 psi minimum must be available for pilot operation of the valve. Pilot pressure should not exceed 1500 psi maximum.
VOLUME OF OIL—Hydraulic pilot operation requires maximum of .93 cubic inches for ¾" valves and 1.39 cubic inches for 1¼" valves of oil displacement to shift spool to the end position.

DRAIN PORT—Drain must be connected to tank and back pressure must be at least 65 psi lower than the pilot pressure.

FLOW RATE—For complete information of flow rate by pressure drop, refer to curves
TEMPERATURE—Under normal conditions of continuous operation, fluid temperature should not exceed 130° F. In no instance should the temperature exceed 160° F.
OIL RECOMMENDATION—Premium grade hydraulic oil with 200 to 250 SSU viscosity at 100° F for use at normal ambient temperatures.

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OD2•PTET• *** S

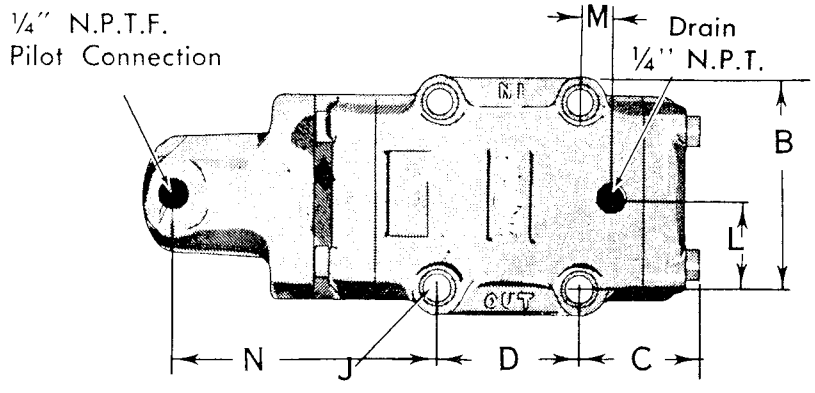
DIRECTIONAL CONTROL

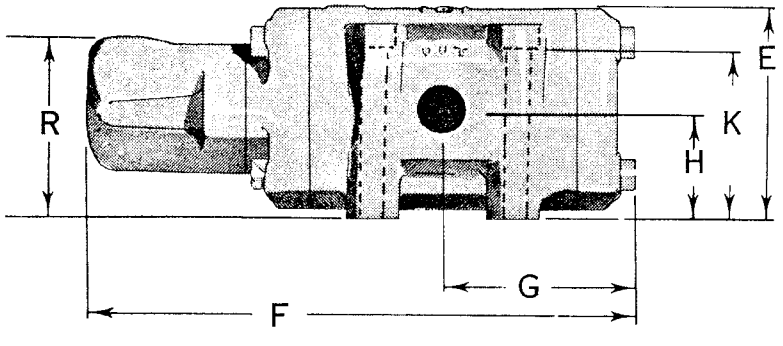
TWO-WAY VALVE

SINGLE PILOT OPERATED
SPRING RETURN

¾"—1¼"

Valve Size	B	C	D	E	F	G	H	J Dia.	K	L	M	N	R
¾	3⅛	2 1/16	2⅜	3 11/16	9½	3¼	1⅞	7/16	2 15/16	1 9/16	19/32	4 7/16	3⅛
1¼	4⅛	2	4½	3 11/16	11½	4¼	1 5/8	9/16	2 5/8	2 1/16	¼	4⅜	3⅛





Foot Mounted
OD2 · PTET · ***S

SPECIFICATIONS

MOUNTING POSITION—Not restricted.
END CAPS—Rotation in 90° increments is possible.

LEFT HAND ASSEMBLY—When supplied, will provide for the pilot port at the opposite end of the body from the position shown.

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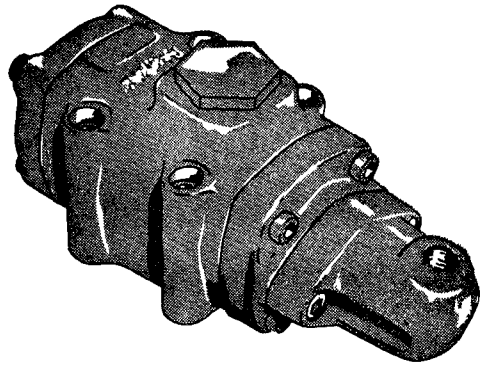
OD2 • PTE-••-***H

DIRECTIONAL CONTROL

TWO-WAY VALVE

SINGLE PILOT OPERATED
SPRING RETURN
INTEGRAL CHECK
¾"—1¼"

Foot Mounted Valves		Normal Porting Arrangement	Sub-Plate Mounted Valve	
¾" Size	1¼" Size		¾" Size	1¼" Size
OD2 • PTET • 206H	OD2 • PTET • 210H	N.O.	OD2 • PTES • 206H	OD2 • PTES • 210H
OD2 • PTET • 106H	OD2 • PTET • 110H	N.C.	OD2 • PTES • 106H	OD2 • PTES • 110H
19	30	WEIGHT	19	30
.425	1.271	AREA	.425	1.271
42	72	GPM @ 10 psi DROP	42	72



OPERATION

Pilot Operated Spring Return Two-Way Valves provide directional control of oil flow in either of two available positions.

With a normally closed spool there is no flow through the valve until hydraulic pilot pressure is applied to the pilot port.

A normally open spool allows oil flow through the valve until hydraulic pilot pressure is applied to the pilot port.

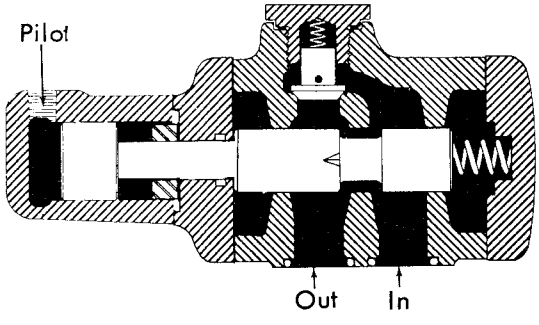
Applying hydraulic pilot pressure moves the spool in position against light spring force.

Pilot pressure must be maintained to hold the valve spool in position.

The spring return arrangement automatically returns the valve spool to the normal position when pilot pressure is exhausted from the pilot port.

Throttling notches in the spool are provided to allow smooth opening and closing of the valve ports.

A free flow return check valve is provided and allows unrestricted oil flow from the outlet to the inlet port if the spool is in the closed position.



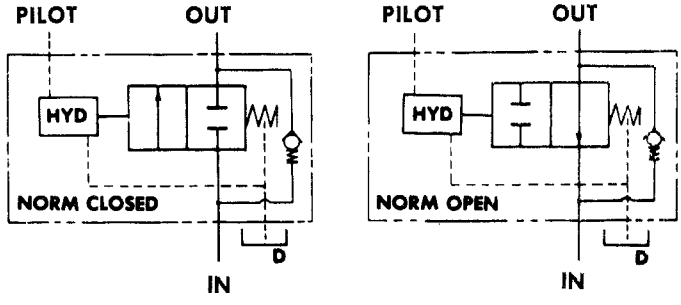
APPLICATION

Hydraulic control for automatic applications requiring sequencing of operations or a by-pass of oil flow is achieved by the selection of this valve type.

The spring return arrangement can often be used as a safety device to immediately open or block oil flow as desired in the event of hydraulic pilot pressure failure.

Flow of oil in either direction through the valve is possible when desired by opening the valve at the proper time.

The free flow check valve will allow reverse flow of oil even though the spool is in a closed position.



SPECIFICATIONS

J.I.C.—Design conforms to specifications of the Joint Industry Conference.
PRESSURE RATING—1500 pounds per square inch.
PILOT PRESSURE—A pilot pressure of approximately 65 psi minimum must be available for pilot operation of the valve. Pilot pressure should not exceed 1500 psi maximum.
VOLUME OF OIL—Hydraulic pilot operation requires maximum of .93 cubic inches for ¾" valves and 1.39 cubic inches for 1¼" valves of oil displacement to shift spool to the end position.
displacement to shift spool to the end position.
DRAIN PORT—Drain must be connected to tank and back pressure must be at least 65 psi lower than the pilot pressure.
FLOW RATE—For complete information of flow rate by pressure drop, refer to curves
TEMPERATURE—Under normal conditions of continuous operation, fluid temperature should not exceed 130° F. In no instance should the temperature exceed 160° F.
OIL RECOMMENDATION—Premium grade hydraulic oil with 200 to 250 SSU viscosity at 100° F for use at normal ambient temperatures.

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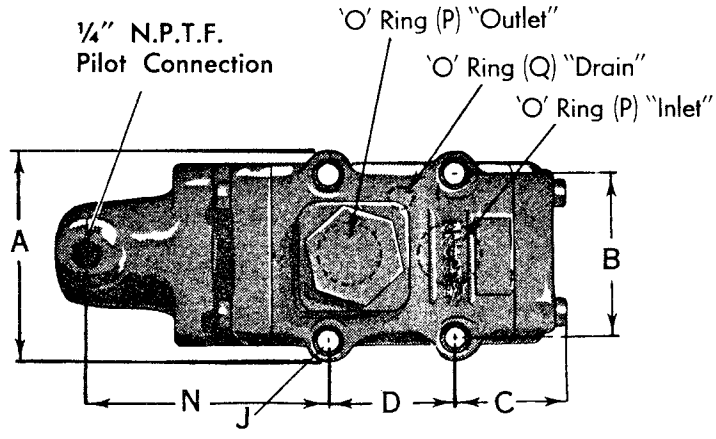
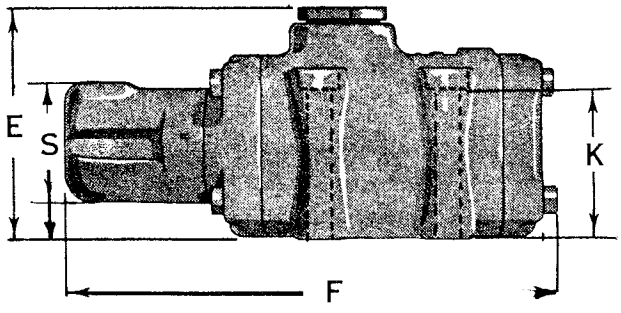
OD2 • PTE••***H

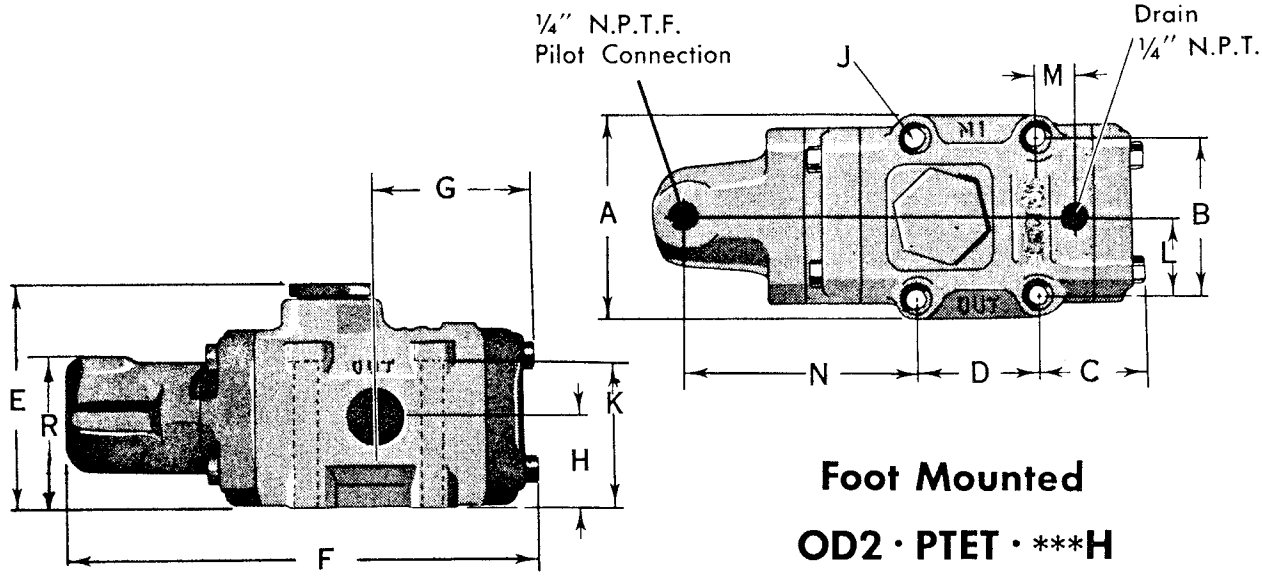
DIRECTIONAL CONTROL
TWO-WAY VALVE
SINGLE PILOT OPERATED
SPRING RETURN
INTEGRAL CHECK
¾"—1¼"





Sub-Plate Mounted
OD2 • PTES • ***S

Valve Size	A	B	C	D	E	F	G	H	J Dia	K	L	M	N	P ID	P CS	Q ID	Q CS	R	S
¾	4	3⅛	2 1/16	2⅜	4⅝	9½	3¼	1⅞	7/16	2 15/16	1 9/16	19/32	4 7/16	1	⅛	¼	1/16	3⅛	3⅛
1¼	5¼	4⅛	2	4½	5 11/16	11½	4¼	1⅝	9/16	2⅝	2 1/16	⅛	4⅜	1⅝	⅛	7/16	3/32	3⅛	3⅛



Foot Mounted
OD2 • PTET • ***H

SPECIFICATIONS

MOUNTING SUB-PLATE—Refer to Sheet No. for details of dimensions.
MOUNTING POSITION—Not restricted.
END CAPS—Rotation in 90° increments is possible.
LEFT HAND ASSEMBLY—When supplied, will provide for the pilot port at the opposite end of the body from the position shown.

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OD2 • RTE••03S

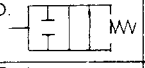
DIRECTIONAL CONTROL

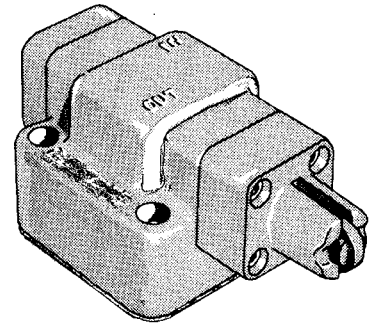
TWO-WAY VALVE

CAM OPERATED

SPRING RETURN

⅜"

Foot Mounted Valves	Normal Porting Arrangement	Sub-Plate Mounted Valves
⅜" Size		⅜" Size
OD2 • RTET • 203S	N.O. 	OD2 • RTES • 203S
OD2 • RTET • 103S	N.C. 	OD2 • RTES • 103S
6	WEIGHT	7
.141	AREA	.141
12	GPM @ 10 psi DROP	12



OPERATION

Mechanically Operated Spring Return Two-Way Valves provide directional control of oil flow by cam actuation.

With a normally closed spool, there is no flow through the valve until the roller is depressed.

A normally open spool allows flow through the valve until the roller is depressed.

Cam actuation depresses the roller against light spring force.

The position of the valve spool will be dependent upon cam design; therefore; controlled acceleration or deceleration can be obtained.

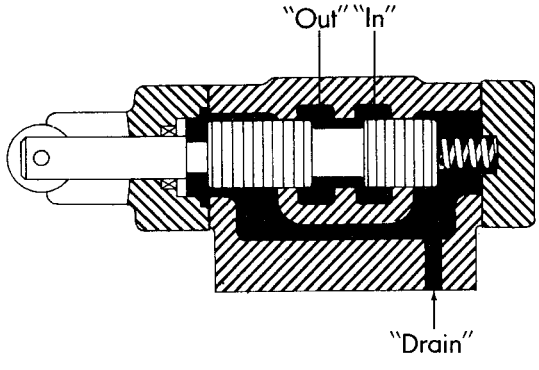
APPLICATION

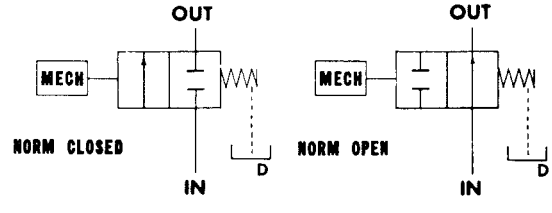
Mechanical control for hydraulic applications is achieved by selection of this valve type.

Arranged with a suitable cam mechanism to depress the roller, oil flow can be varied to suit system requirements.

Oil flow can be gradually diminished or increased with proper cam actuation of normally open or normally closed types.

The range of control depends upon the volume of oil and the pressure drop plus the adjustment of the cam travel.





SPECIFICATIONS

J.I.C.—Design conforms to specifications of the Joint Industry Conference.

PRESSURE RATING—1500 pounds per square inch.

DRAIN PORT—Pilot drain must be connected to tank and back pressure must not exceed 30 psi.

FLOW RATE—For complete information of flow rate by pressure drop, refer to curves

TEMPERATURE—Under normal conditions of continuous operation, fluid temperature should not exceed 130° F. In no instance should the temperature exceed 160°F.

SPRING FORCE—Approximately 40 pounds of force is required to stroke the roller to reverse position. For every 100 psi of back pressure on the drain port add 30 pounds to the spring force.

OIL RECOMMENDATION—Premium grade hydraulic oil with 200 to 250 SSU viscosity at 100° F for use at normal ambient temperatures.

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OD2 • RTE••03S

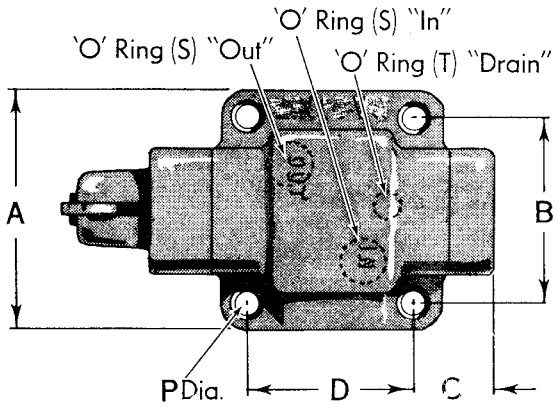
DIRECTIONAL CONTROL

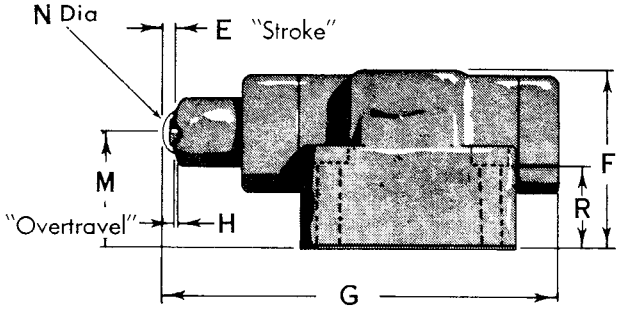
TWO-WAY VALVE

CAM OPERATED

SPRING RETURN

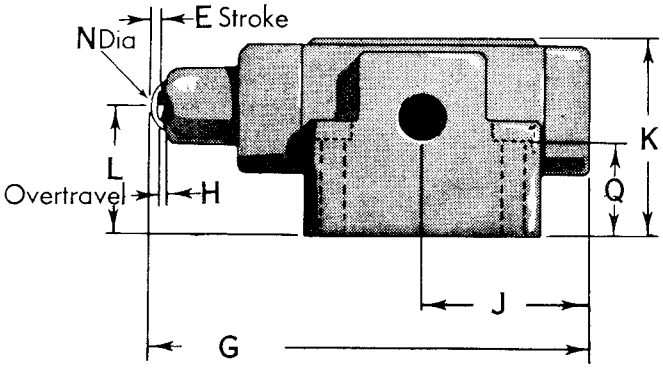
3/8"

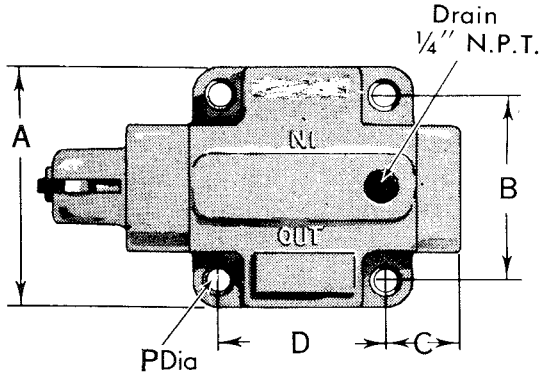




Sub-Plate Mounted
OD2 · RTES · ***S

Valve Size	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S		T	
																	ID	CS	ID	SC
3/8	3 3/8	2 5/8	1 1/16	2 3/8	1/4	2 41/64	6 5/16	1/8	2 1/4	2 5/8	1 5/8	1 45/64	3/4	11/32	1 3/16	1 17/64	1/16	3/32	3/8	3/32





Foot Mounted
OD2 · RTET · ***S

SPECIFICATIONS

MOUNTING SUB-PLATE—Refer to Sheet Number for details of dimensions.
MOUNTING POSITION—Not restricted.
END CAPS—Rotation in 90° increments is possible.
LEFT HAND ASSEMBLY—When supplied, will provide for the roller at the opposite end of the body from the position shown.

Burton Hydraulics, Inc.

7875 DIVISION DRIVE MENTOR, OHIO 44060 (440) 974-8868 FAX - (440) 974-0951

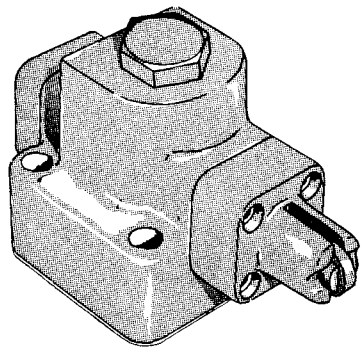
OD2 • RTES • * 03H

DIRECTIONAL CONTROL

TWO-WAY VALVE

CAM OPERATED
SPRING RETURN
INTEGRAL CHECK
⅜"

Normal Porting Arrangement	Sub-Plate Mounted Valves ⅜" Size
N.O.	OD2 • RTES • 203H
N.C.	OD2 • RTES • 103H
WEIGHT	8
AREA	.141
GPM @ 10 psi DROP	12



OPERATION

Mechanically Operated Spring Return Two-Way Valves provide directional control of oil flow by cam actuation.

With a normally closed spool, there is no flow through the valve until the roller is depressed.

A normally open spool allows flow through the valve until the roller is depressed.

Cam actuation depresses the roller against light spring force.

The position of the valve spool will be dependent upon cam design; therefore, controlled acceleration or deceleration can be obtained.

A free flow return check valve is provided and allows unrestricted flow of oil from the outlet to the inlet port with the spool in the closed position.

APPLICATION

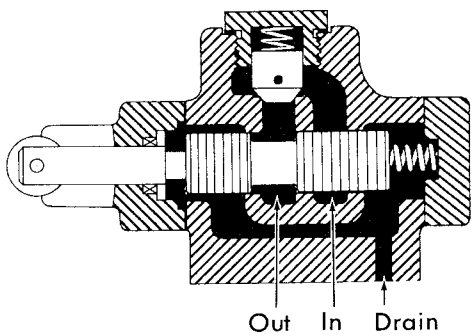
Mechanical control for hydraulic applications is achieved by selection of this valve type.

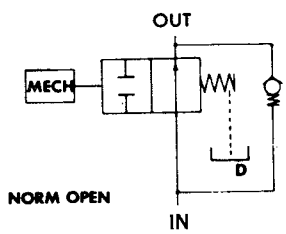
Arranged with a suitable cam mechanism to depress the roller, oil flow can be varied to suit system requirements.

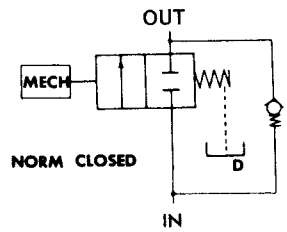
Oil flow can be gradually diminished or increased with proper cam actuation of normally open or normally closed types.

The range of control depends upon the volume of oil and the pressure drop plus the adjustment of the cam travel.

A free flow check valve will allow reverse flow of oil even though the spool is in a closed position.







SPECIFICATIONS

J.I.C.—Design conforms to specifications of the Joint Industry Conference.
PRESSURE RATING—1500 pounds per square inch.
DRAIN PORT—Drain must be connected to tank and back pressure must not exceed 500 psi.
FLOW RATE—For complete information of flow rate by pressure drop, refer to curves

TEMPERATURE—Under normal conditions of continuous operation, fluid temperature should not exceed 130° F. In no instance should the temperature exceed 160°F.

SPRING FORCE—Approximately 40 pounds of force is required to stroke the roller to reverse position. For every 100 psi of back pressure on the drain port add 30 pounds to the spring force.
OIL RECOMMENDATION—Premium grade hydraulic oil with 200 to 250 SSU viscosity at 100° F for use at normal ambient temperatures.

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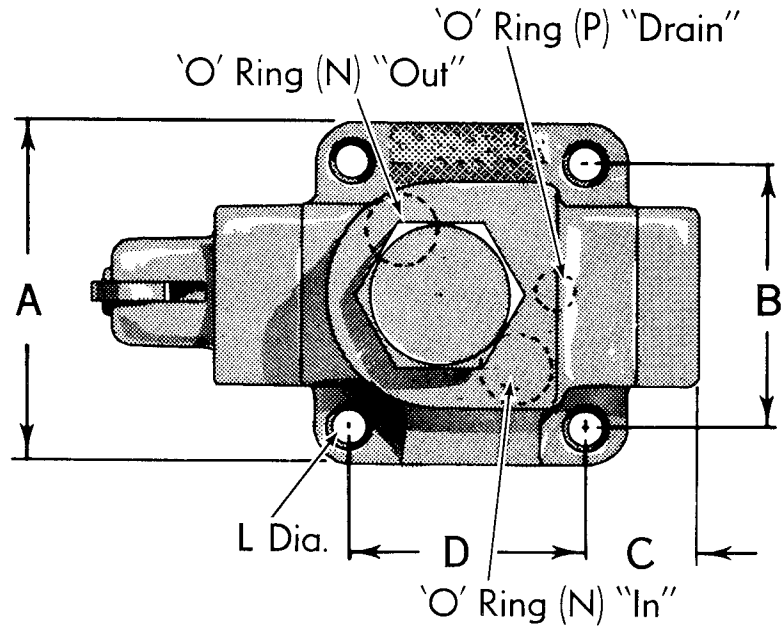
OD2 • RTES • *03H

DIRECTIONAL CONTROL

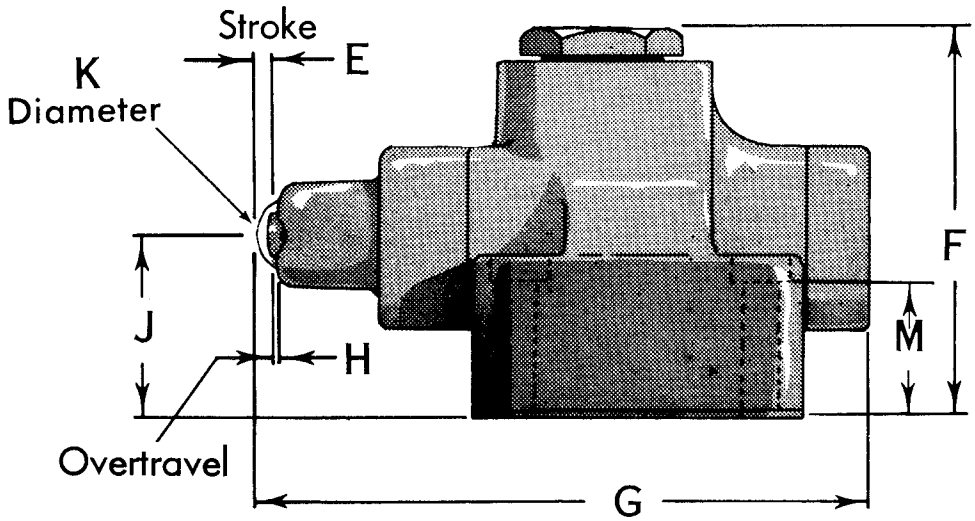
TWO-WAY VALVE

CAM OPERATED
SPRING RETURN
INTEGRAL CHECK

⅜"



Sub-Plate Mounted



Valve Size	A	B	C	D	E	F	G	H	J	K	L	M	N		P	
													ID	CS	ID	CS
⅜	3 ⅜	2 ⅝	1 1/16	2 ⅜	¼	3 13/16	6 5/16	⅛	1 45/64	¾	11/32	1 ¼	11/16	3/32	⅜	3/32

SPECIFICATIONS

MOUNTING SUB-PLATE—Refer to Sheet Number for details of dimensions.
MOUNTING POSITION—Not restricted.

END CAPS—Rotation in 90° increments is possible.
LEFT HAND ASSEMBLY—When supplied, will provide for the roller at the opposite end of the body from the position shown.

Burton Hydraulics, Inc.
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OD2 • RTE ••***S

DIRECTIONAL CONTROL

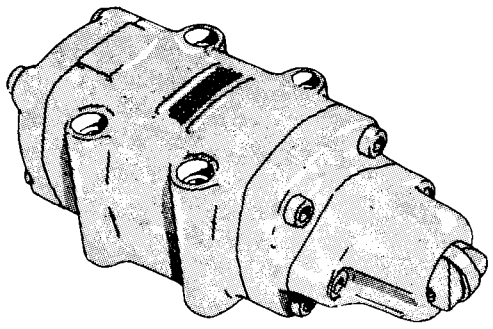
TWO-WAY VALVE

CAM OPERATED

SPRING RETURN

¾"—1¼"

Foot Mounted Valves		Normal Porting Arrangement	Sub-Plate Mounted Valves	
¾" Size	1¼" Size		¾" Size	1¼" Size
OD2 • RTET • 206S	OD2 • RTET • 210S	N.O.	OD2 • RTES • 206S	OD2 • RTES • 210S
OD2 • RTET • 106S	OD2 • RTET • 110S	N.C.	OD2 • RTES • 106S	OD2 • RTES • 110S
17	26	WEIGHT	17	26
.425	1.271	AREA	.425	1.271
30	78	GPM @ 10 psi DROP	30	78



OPERATION

Mechanically Operated Spring Return Two-Way Valves provide directional control of oil flow by cam actuation.

With a normally closed spool, there is no flow through the valve until the roller is depressed.

A normally open spool allows flow through the valve until the roller is depressed.

Cam actuation depresses the roller against light spring force.

The position of the valve spool will be dependent upon cam design, therefore controlled acceleration or deceleration can be obtained.

Throttling notches in the spool are provided to allow smooth opening and closing of the valve ports.

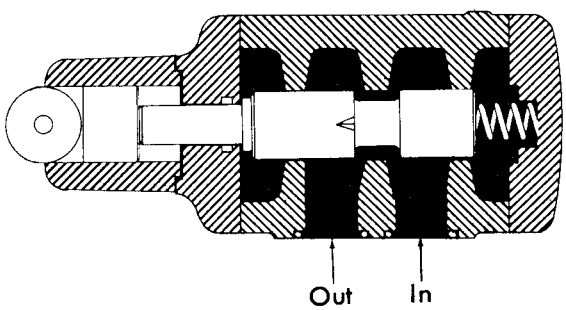
APPLICATION

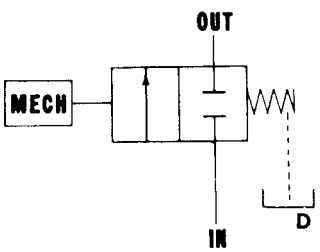
Mechanical control for hydraulic applications is achieved by selection of this valve type.

Arranged with a suitable cam mechanism to depress the roller, oil flow can be varied to suit system requirements.

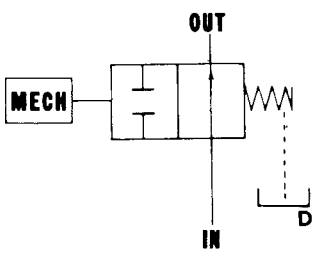
Oil flow can be gradually diminished or increased with proper cam actuation of normally open or normally closed types.

The range of control depends upon the volume of oil and the pressure drop plus the adjustment of the cam travel.





NORM CLOSED



NORM OPEN

SPECIFICATIONS

J.I.C.—Design conforms to specifications of the Joint Industry Conference.

PRESSURE RATING—1500 pounds per square inch.

DRAIN PORT—Pilot drain must be connected to tank and back pressure must not exceed 30 psi.

FLOW RATE—For complete information of flow rate by pressure drop, refer to curves

TEMPERATURE—Under normal conditions of continuous operation, fluid temperature should not exceed 130° F. In no instance should the temperature exceed 160°F.

SPRING FORCE—Approximately 40 pounds of force is required to stroke the roller to reverse position. For every 100 psi of back pressure on the drain port add 30 pounds to the spring force.

OIL RECOMMENDATION—Premium grade hydraulic oil with 200 to 250 SSU viscosity at 100° F for use at normal ambient temperatures.

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OD2 • RTE ••*** S

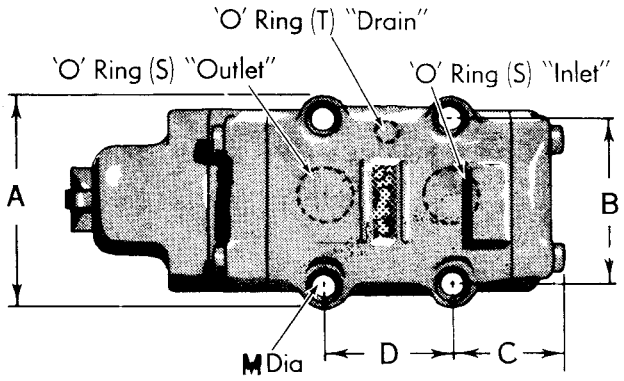
DIRECTIONAL CONTROL

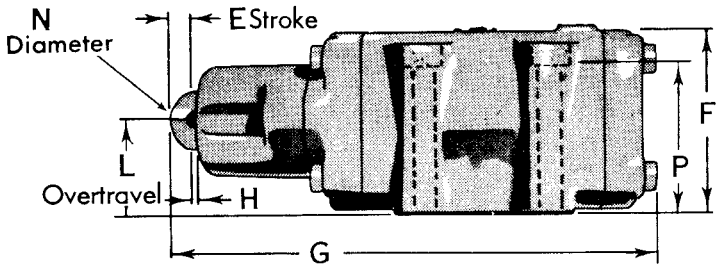
TWO-WAY VALVE

CAM OPERATED

SPRING RETURN

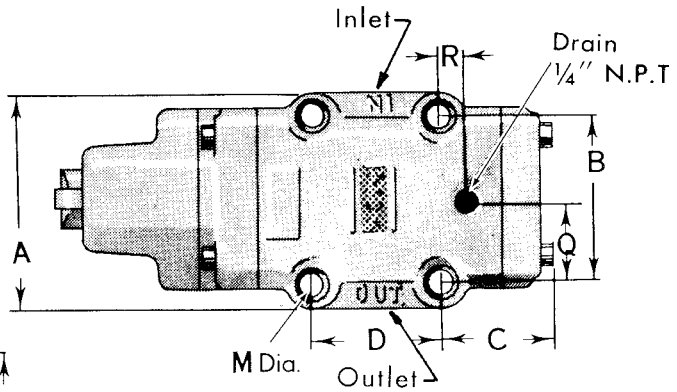
¾"—1¼"

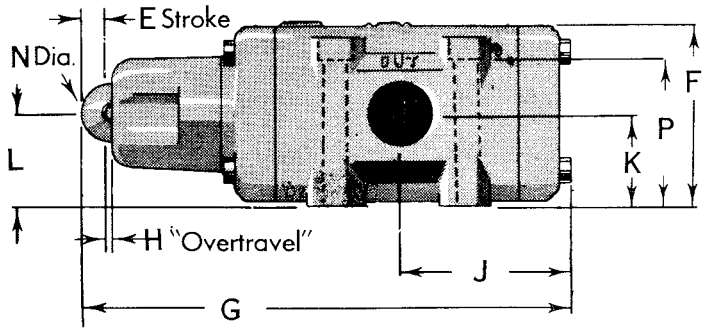




Sub-Plate Mounted
OD2 · RTES · ***H

Valve Size	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S		T	
																	ID	CS	ID	CS
¾	4	3 1/8	2 1/16	2 3/8	5/8	3 11/16	9 1/2	1/8	3 1/4	1 7/8	1 7/8	7/16	1 3/16	2 15/16	1 9/16	19/32	1	1/8	1/4	1/16
1¼	5 1/4	4 1/8	2	4 1/2	15/16	3 11/16	11¾	1/8	4 1/4	1 5/8	1 7/8	9/16	1 3/16	2 5/8	2 1/16	1/8	1 5/8	1/8	7/16	3/32





Foot Mounted
OD2 · RTET · ***H

SPECIFICATIONS

MOUNTING SUB-PLATE—Refer to Sheet Number for details of dimensions.

MOUNTING POSITION—Not restricted.

END CAPS—Rotation in 90° increments is possible.

LEFT HAND ASSEMBLY—When supplied will provide for the roller at the opposite end of the body from the position shown.

Burton Hydraulics, Inc.

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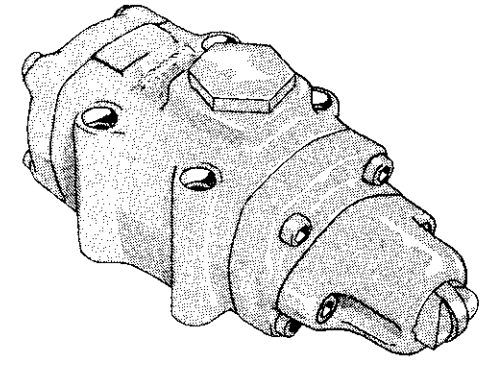
OD2 • RTE • • ***H

DIRECTIONAL CONTROL

TWO-WAY VALVE

CAM OPERATED
SPRING RETURN
INTEGRAL CHECK
¾"—1¼"

Foot Mounted Valves		Normal Porting Arrangement	Sub-Plate Mounted Valves	
¾" Size	1¼" Size		¾" Size	1¼" Size
OD2 • RTET • 206H	OD2 • RTET • 210H	N.O.	OD2 • RTES • 206H	OD2 • RTES • 210H
OD2 • RTET • 106H	OD2 • RTET • 110H	N.C.	OD2 • RTES • 106H	OD2 • RTES • 110H
18	28	WEIGHT	18	28
.425	1.271	AREA	.425	1.271
30	78	GPM @ 10 psi DROP	30	78



OPERATION

Mechanically Operated Spring Return Two-Way Valves provide directional control of oil flow by cam actuation.

With a normally closed spool, there is no flow through the valve until the roller is depressed.

A normally open spool allows flow through the valve until the roller is depressed.

Cam actuation depresses the roller against light spring force.

The position of the valve spool will be dependent upon cam design; therefore, controlled acceleration or deceleration can be obtained.

Throttling notches in the spool are provided to allow smooth opening and closing of the valve ports.

A free flow return check valve is provided and allows unrestricted flow of oil from the outlet to the inlet port with the spool in the closed position.

APPLICATION

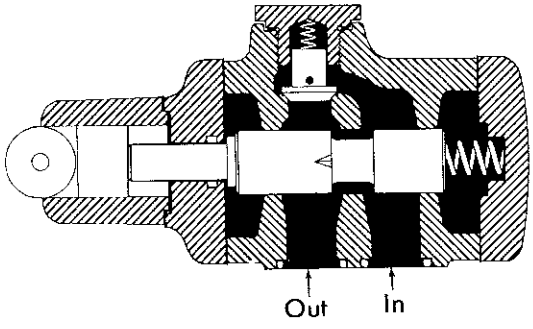
Mechanical control for hydraulic applications is achieved by selection of this valve type.

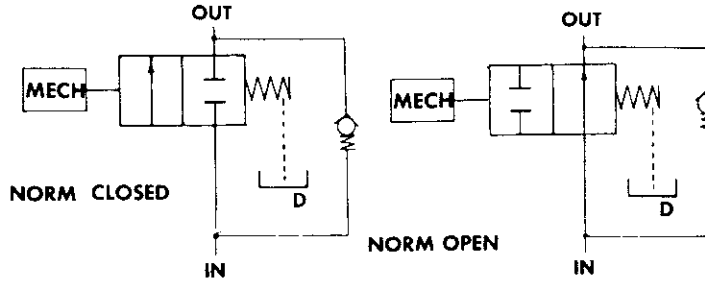
Arranged with a suitable cam mechanism to depress the roller, oil flow can be varied to suit system requirements.

Oil flow can be gradually diminished or increased with proper cam actuation of normally open or normally closed types.

The range of control depends upon the volume of oil and the pressure drop plus the adjustment of the cam travel.

A free flow check valve will allow reverse flow of oil even though the spool is in a closed position.





SPECIFICATIONS

J.I.C.—Design conforms to specifications of the Joint Industry Conference.
PRESSURE RATING—1500 pounds per square inch.
DRAIN PORT—Drain must be connected to tank and back pressure must not exceed 30 psi.
FLOW RATE—For complete information of flow rate by pressure drop, refer to curves

TEMPERATURE—Under normal conditions of continuous operation, fluid temperature should not exceed 130° F. In no instance should the temperature exceed 160°F.

SPRING FORCE—Approximately 40 pounds of force is required to stroke the roller to reverse position. For every 100 psi of back pressure on the drain port add 30 pounds to the spring force.
OIL RECOMMENDATION—Premium grade hydraulic oil with 200 to 250 SSU viscosity at 100° F for use at normal ambient temperatures.

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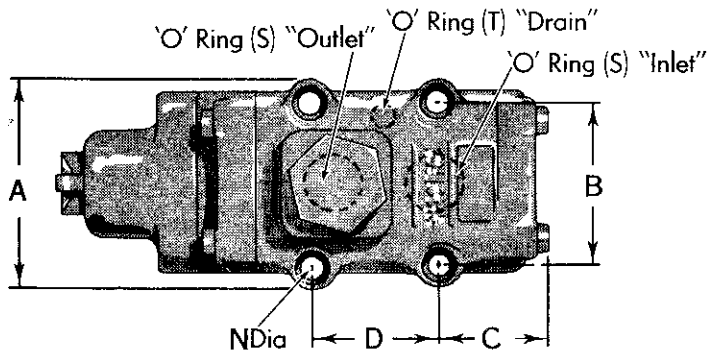
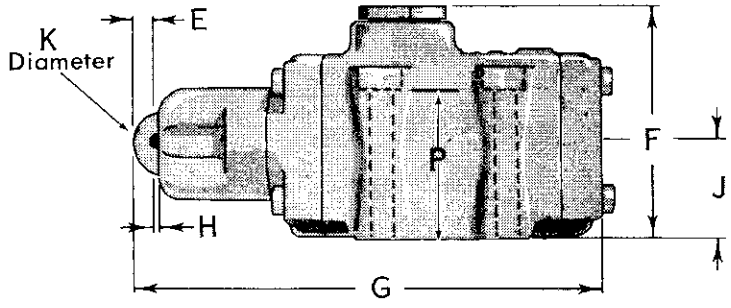
OD2 • RTE••***H

DIRECTIONAL CONTROL

TWO-WAY VALVE

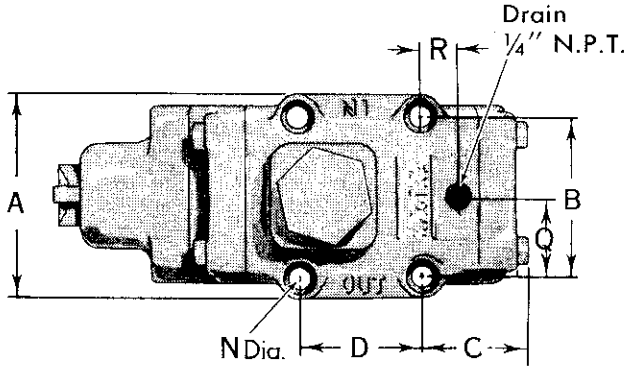
CAM OPERATED
SPRING RETURN
INTEGRAL CHECK
¾"—1¼"

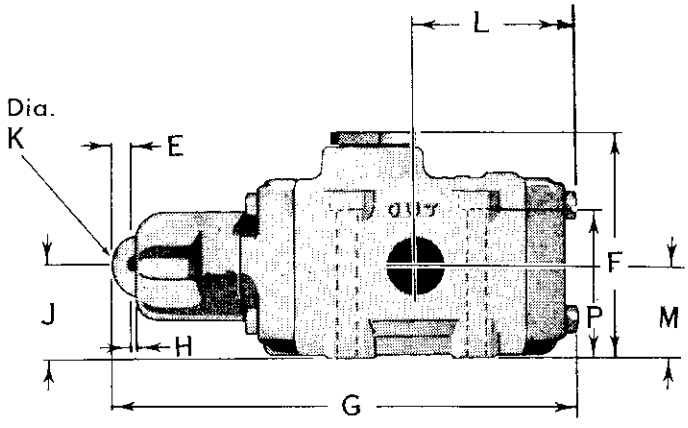




Sub-Plate Mounted
OD2 · RTES · ***H

Valve Size	A	B	C	D	E	F	G	H	J	K	L	M	N Dia.	P	Q	R	S		T	
																	ID	CS	ID	CS
¾	4	3 1/8	2 1/16	2 3/8	5/8	4 5/8	9 1/2	1/8	1 7/8	1 3/16	3 1/4	1 7/8	7/16	2 15/16	1 9/16	19/32	1	1/8	1/4	1/16
1¼	5 1/4	4 1/8	2	4 1/2	15/16	5 11/16	11 3/4	1/8	1 7/8	1 3/16	4 1/4	1 5/8	9/16	2 5/8	2 1/16	1/8	1 5/8	1/8	7/16	3/32





Foot Mounted
OD2 · RTET · ***H

SPECIFICATIONS

MOUNTING SUB-PLATE—Refer to Sheet Number for details of dimensions.
MOUNTING POSITION—Not restricted.

END CAPS—Rotation in 90° increments is possible.
LEFT HAND ASSEMBLY—When supplied, will provide for the roller at the opposite end of the body from the position shown.

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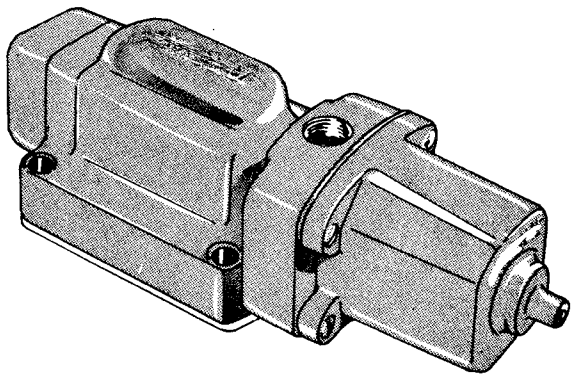
OD4 • DTE••03S

DIRECTIONAL CONTROL
FOUR-WAY VALVE
SINGLE SOLENOID OPERATED
SPRING RETURN
⅜"

Foot Mounted Valves		Neutral Porting Arrangement	Sub-Plate Mounted Valves	
Max. Flow GPM	⅜" Size		⅜" Size	Max. Flow GPM
12.0	OD4 • DTET • 103S	1C	OD4 • DTES • 103S	12.0
12.0	OD4 • DTET • 203S	2C	OD4 • DTES • 203S	12.0
12.0	OD4 • DTET • 703S	7C	OD4 • DTES • 703S	12.0
	.141	AREA	.141	
	11	WEIGHT	12	
	10.7	GPM @ 10 psi DROP	9.2	



OPERATION

Solenoid Operated, Spring Return Four-Way valves provide directional control of oil flow by electrical control of a spool to two available positions.

The spool slides within a body having machined recesses to allow the desired flow pattern.

A spring return arrangement provides automatic positioning of the valve spool to the "Normal" position when the solenoid is de-energized.

When the solenoid is energized the spool moves to the Opposite position against light spring force.

The solenoid must remain energized to hold the valve spool in position.

APPLICATION

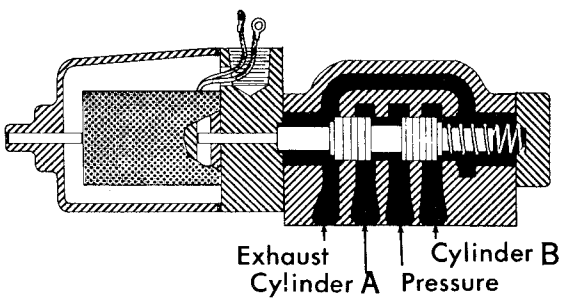
Electric control for automatic hydraulic application is achieved by the selection of this valve type.

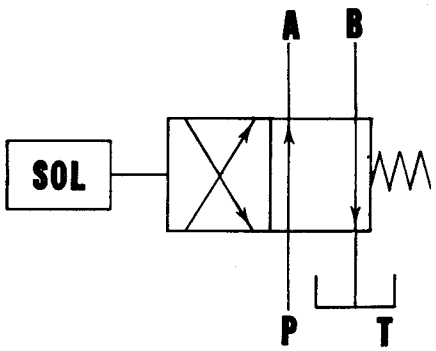
The spring return arrangement is often used as a safety device to instantly reverse the direction of movement of a cylinder or fluid motor in event of electric power failure, or when desired.

Four-way valves are used to control movements of double acting cylinders or reversible fluid motors.

Three-way valve action is obtained by plugging one of either cylinder ports and is used with single acting cylinders or non-reversing fluid motors.

Various spool designs are available to minimize shock while the spool is reversing.





SPECIFICATIONS

J.I.C.—Design conforms to specifications of the Joint Industry Conference.
PRESSURE RATING—1500 pounds per square inch.
BACK PRESSURE—Exhaust port pressure should not exceed 30 psi.
FLOW RATE—For complete information of flow rate by pressure drop, refer to curves.
RESPONSE TIME—Reversal speed of valve spool is less than .07 second to shift to the end position and .1 second to spring return the spool.
CYCLES/MINUTE—Maximum continuous rating is 80 cycles/minute.
SOLENOIDS—The inrush current required for 115 volt, 60 cycle, AC service is 4.6 amps. The holding current is .57 amps. Other standard and special solenoid characteristics are available on request. Solenoids will not operate properly on less than 90% voltage.
TEMPERATURE—Under normal conditions of continuous operation, fluid temperature should not exceed 130° F. In no instance should the temperature exceed 160°F.
OIL RECOMMENDATION—Premium grade hydraulic oil with 200 to 250 SSU viscosity at 100° F for use at normal ambient temperatures.

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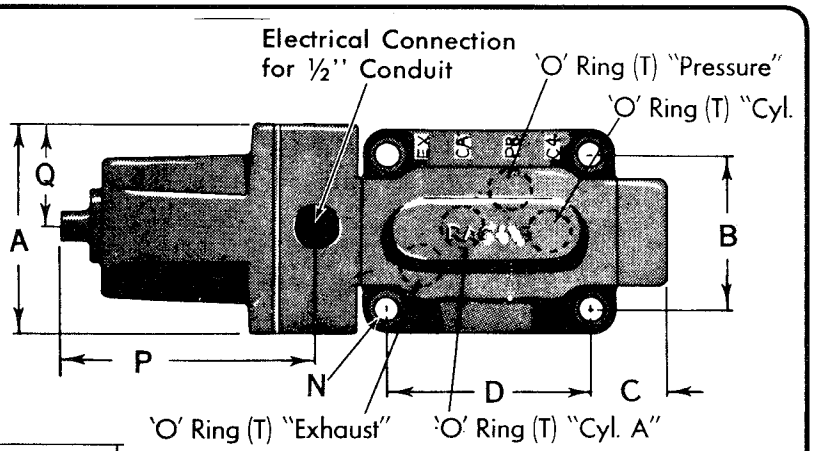
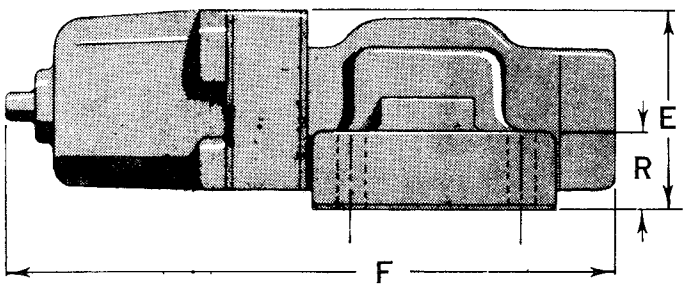
OD4 • DTE••03S

DIRECTIONAL CONTROL

FOUR WAY VALVE

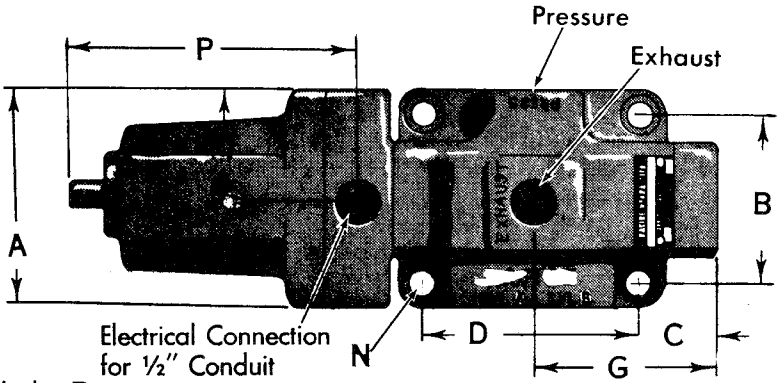
SINGLE SOLENOID OPERATED
SPRING RETURN
⅜"

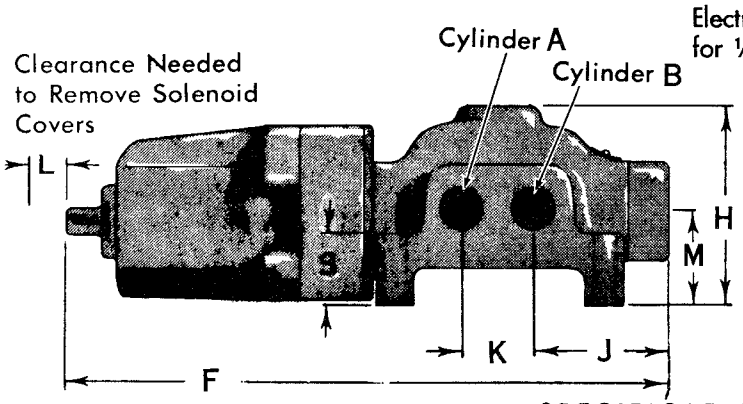




Sub-Plate Mounted
OD4 · DTES · *03S

Valve Size	A	B	C	D	E	F	G	H	J	K	L	M	N Dia.	P	Q	R	S	T ID	T CS
⅜	3 5/8	2 3/4	1 1/16	3 1/2	3 5/16	10 5/16	2 13/16	3 1/2	2 3/16	1 1/4	3/4	1 5/8	13/32	4 11/16	1 13/16	59/64	1 7/32	11/16	3/32





Foot-Mounted
OD4 · DTET · *03S

SPECIFICATIONS

MOUNTING SUB-PLATE—Refer to Sheet Number for details of dimensions.

MOUNTING POSITION—The valve must be mounted so that longitudinal axis is horizontal.

END CAPS—Rotation in 90° increments is possible if clearance is provided.

LEFT HAND ASSEMBLY—When supplied, will provide for the solenoid at the opposite end of the body from the position shown.

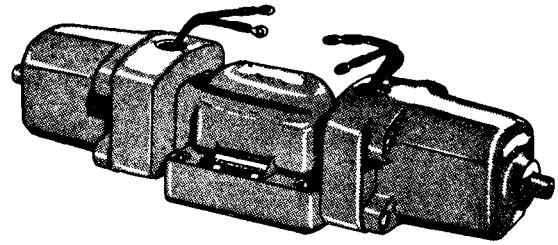
Burton Hydraulics, Inc.

7875 DIVISION DRIVE MENTOR, OHIO 44060 (440) 974-8868 FAX - (440) 974-0951

OD4 • DWE***03S

DIRECTIONAL CONTROL
FOUR-WAY VALVE
DOUBLE SOLENOID OPERATED
STANDARD ACTION
⅜"

Foot Mounted Valves		Neutral Porting Arrangement	Sub-Plate Mounted Valves	
Max. Flow GPM	⅜" Size		⅜" Size	Max. Flow GPM
12.0	OD4 • DWET • 103S	1C	OD4 • DWES • 103S	12.0
12.0	OD4 • DWET • 203S	2C	OD4 • DWES • 203S	7.0
12.0	OD4 • DWET • 703S	7C	OD4 • DWES • 703S	9.0
	.141	AREA	.141	
	16	WEIGHT	17	
	10.7	GPM @ 10 psi DROP	8.0	



OPERATION

Solenoid Operated, Standard Action Four-way Valves provide directional control of oil flow by electrical actuation of the valve spool to two available positions.

The spool slides within a body having machined recesses to provide the desired flow pattern.

By alternately energizing the two solenoids, the direction of oil flow can be reversed.

The valve spool will remain in position even though the solenoid is not held energized.

APPLICATION

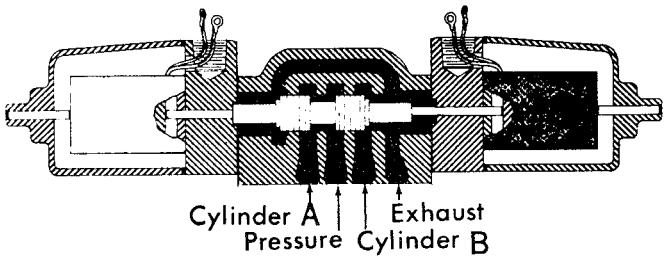
Momentary electric control for automatic hydraulic applications is achieved by the selection of this valve type.

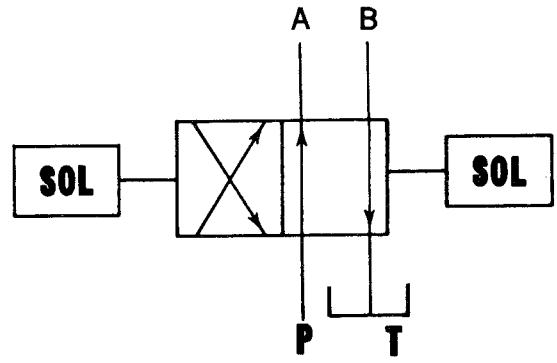
It is recommended the solenoids be held energized to insure the valve spool remaining in position.

Four-way valves are used to control movements of double acting cylinders or reversible fluid motors.

Three-way valve action is obtained by plugging one of either cylinder ports and is used with single acting cylinders or non-reversing fluid motors.

Various spool designs are available to minimize shock while the spool is reversing.





SPECIFICATIONS

J.I.C.—Design conforms to specifications of the Joint Industry Conference.
PRESSURE RATING—1500 pounds per square inch.
BACK PRESSURE—Exhaust port pressure should not exceed 30 pounds per square inch.
FLOW RATE—For complete information of flow rate by pressure drop, refer to curves.
RESPONSE TIME—Reversal speed of valve spool is less than .07 second.
CYCLES/MINUTE—Maximum continuous rating is 80 cycles/minute.
SOLENOIDS—The inrush current required for 115 volt, 60 cycle, Ac service is 3.6 amps. The holding current is .45 amps. Other standard and special solenoid characteristics are available on request. Solenoids will not operate properly on less than 90% voltage.
TEMPERATURE—Under normal conditions of continuous operation, fluid temperature should not exceed 130° F. In no instance should the temperature exceed 160°F.
OIL RECOMMENDATION—Premium grade hydraulic oil with 200 to 250 SSU viscosity at 100° F for use at normal ambient temperatures.

Burton Hydraulics, Inc.
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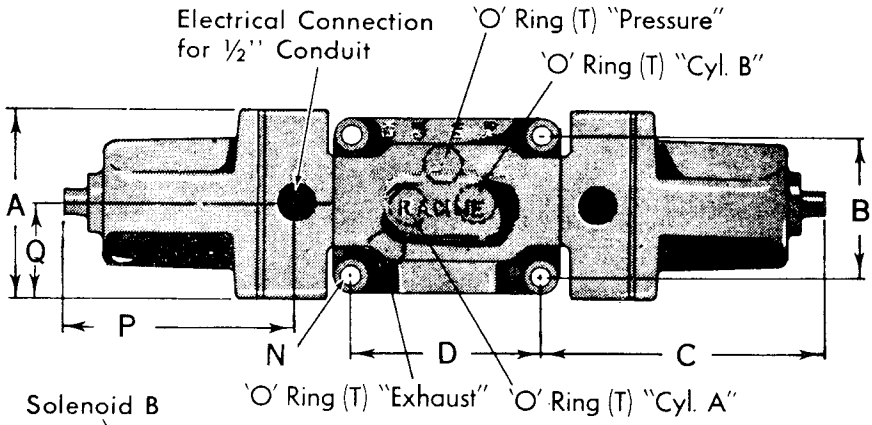
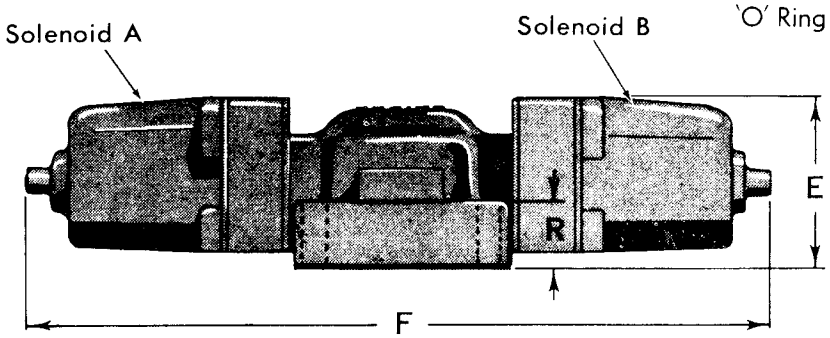
OD4 • DWE**03S

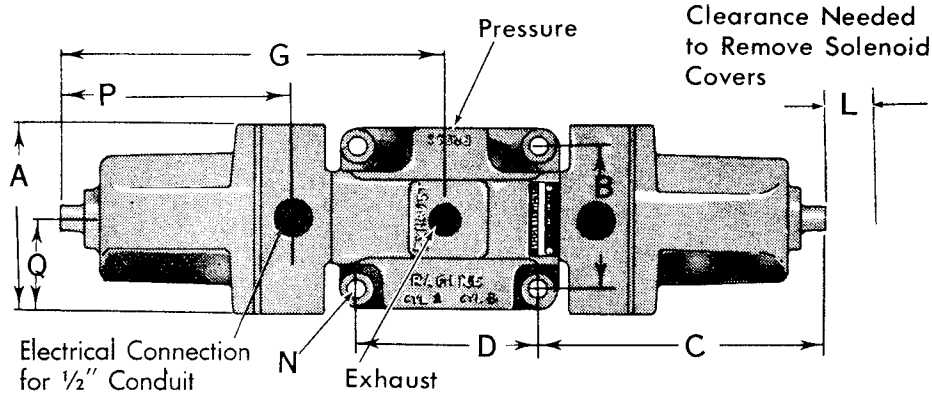
DIRECTIONAL CONTROL
FOUR-WAY VALVE
DOUBLE SOLENOID OPERATED
STANDARD ACTION
⅜"

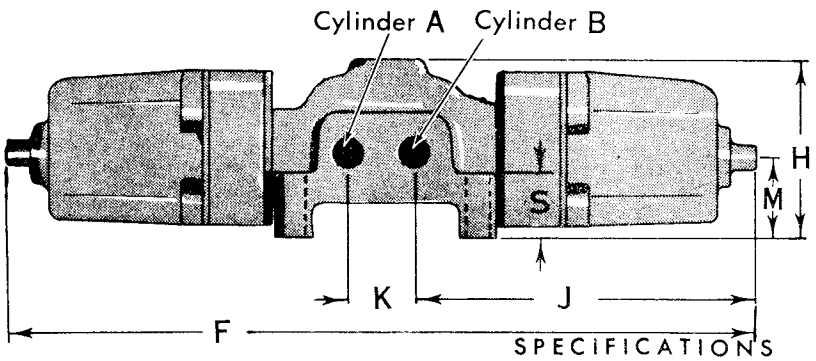




Sub-Plate Mounted
OD4 · DWES · *03S

Valve Size	A	B	C	D	E	F	G	H	J	K	L	M	N Dia.	P	Q	R	S	T ID	T CS
⅜	3 21/32	2¾	5¾	3½	3 5/16	15	7½	3½	6⅞	1¼	¾	1⅝	13/32	4 11/16	1 13/16	1"	1 17/32	11/16	3/32





Foot Mounted
OD4 · DWET · *03S

SPECIFICATIONS

MOUNTING POSITION—When used with momentary contact, valve must be mounted with longitudinal axis horizontal.
END CAPS—Rotation in 90° increments is possible if clearance is provided.

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OD4 • DSE••03S

DIRECTIONAL CONTROL

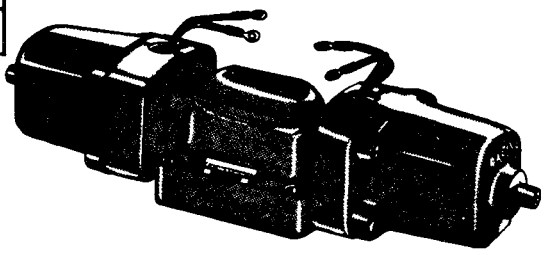
FOUR-WAY VALVE

DOUBLE SOLENOID OPERATED

SPRING CENTER

⅜"

Foot Mounted Valves		Neutral Porting Arrangement	Sub-Plate Mounted Valves	
Max. Flow GPM	⅜" Size		⅜" Size	Max. Flow GPM
12.0	OD4 • DSET • 103S	1C	OD4 • DSES • 103S	12.0
12.0	OD4 • DSET • 203S	2C	OD4 • DSES • 203S	12.0
11.0	OD4 • DSET • 403S	4C	OD4 • DSES • 403S	12.0
11.0	OD4 • DSET • 503S	5C	OD4 • DSES • 503S	12.0
12.0	OD4 • DSET • 603S	6C	OD4 • DSES • 603S	12.0
12.0	OD4 • DSET • 703S	7C	OD4 • DSES • 703S	12.0
12.0	OD4 • DSET • 803S	8C	OD4 • DSES • 803S	12.0
12.0	OD4 • DSET • 903S	9C	OD4 • DSES • 903S	12.0
	.141	AREA	.141	
	16	WEIGHT	17	
	10.7	GPM @ 10 psi DROP	9.2	



OPERATION

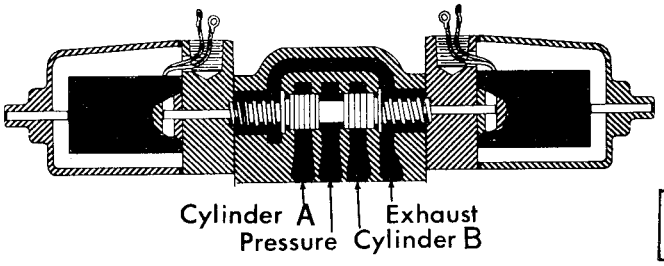
Solenoid Operated Spring Centered Four-Way Valves provide directional control of oil flow by electrical actuation of a valve spool to three available positions.

The spool slides within a body having machined recesses to allow the desired flow pattern.

A spring centering arrangement automatically positions the valve spool to "Neutral" when both solenoids are de-energized.

When either solenoid is energized the spool moves to the desired position against light spring force.

The solenoid must remain energized to hold the valve spool in position.



APPLICATION

Electric control for automatic hydraulic applications is achieved by the selection of this valve type.

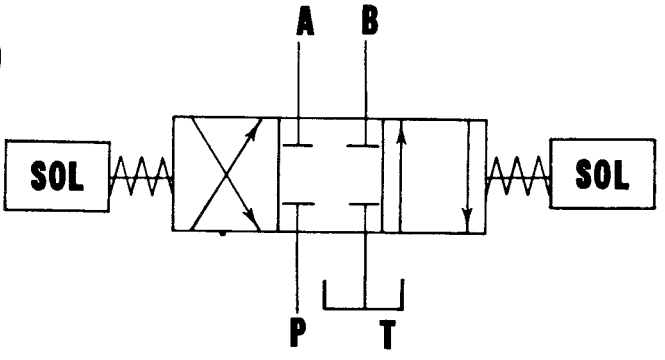
The spring centering arrangement is often used as a safety device to immediately stop the operation of a machine at any place in the cycle, in the event of electric power failure, or when desired for short stroking a cylinder.

Four-way valves are used to control movements of double acting cylinders or reversible fluid motors.

Three-way valve action is obtained by plugging one of either cylinder ports and is used with single acting cylinders or non-reversing fluid motors.

A "Neutral" position is provided between the two extreme operating positions.

Various spool designs are available to obtain desired circuit results such as blocking and unloading.



SPECIFICATIONS

J.I.C.—Design conforms to specifications of the Joint Industry Conference.
PRESSURE RATING—1500 pounds per square inch.
BACK PRESSURE—Exhaust port pressure should not exceed 30 pounds per square inch.
FLOW RATE—For complete information of flow rate by pressure drop, refer to curves.
RESPONSE TIME—Reversal speed of valve spool is less than .07 second to shift from center to end position and .1 second to spring center the spool.
CYCLES/MINUTE—Maximum continuous rating is 80 cycles/minute.
SOLENOIDS—The inrush current required for 115 volt, 60 cycle, AC service is 4.6 amps. The holding current is .57 amps. Other standard and special solenoid characteristics are available on request. Solenoids will not operate properly on less than 90% voltage.
TEMPERATURE—Under normal conditions of continuous operation, fluid temperature should not exceed 130° F. In no instance should the temperature exceed 160°F.
OIL RECOMMENDATION—Premium grade hydraulic oil with 200 to 250 SSU viscosity at 100° F for use at normal ambient temperatures.

Burton Hydraulics, Inc.

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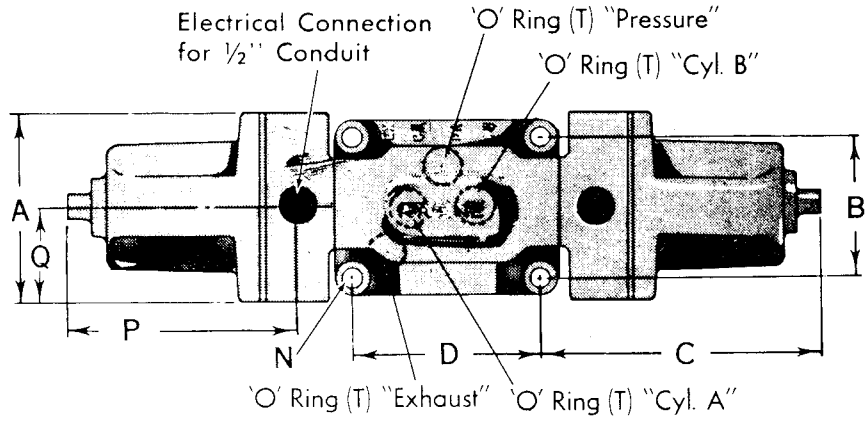
OD4 • DSE**03S

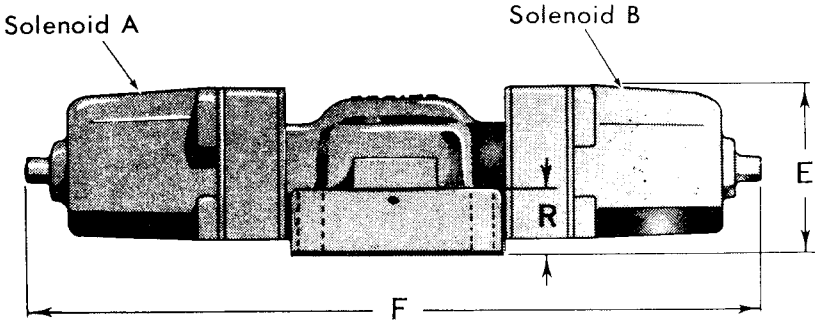
DIRECTIONAL CONTROL

FOUR-WAY VALVE

DOUBLE SOLENOID OPERATED SPRING CENTER

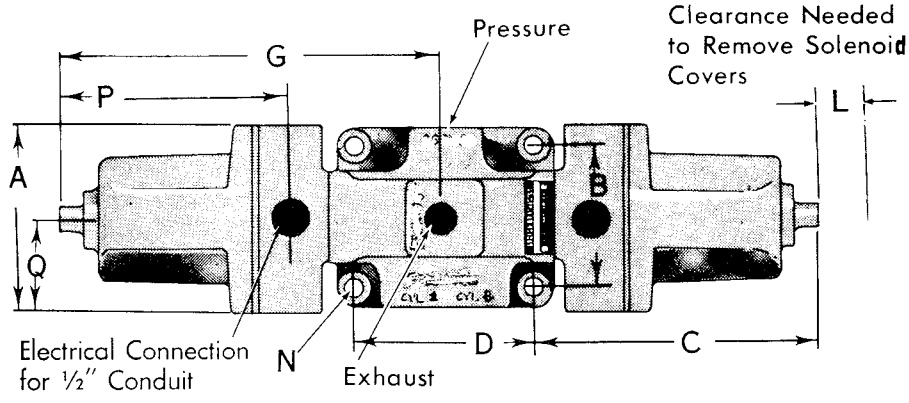
⅜"

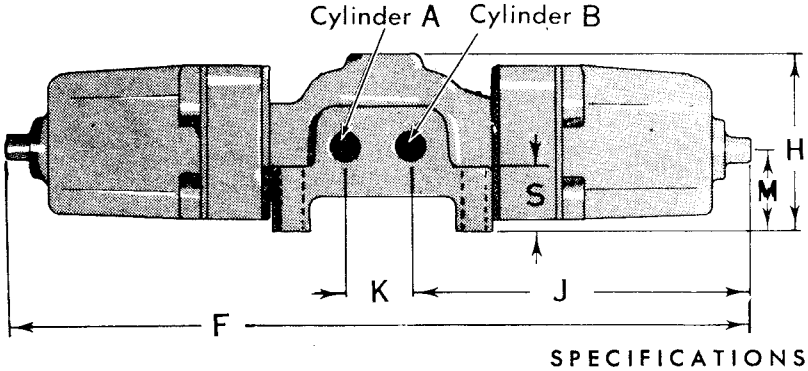




Sub-Plate Mounted
OD4 · DSES · *03S

Valve Size	A	B	C	D	E	F	G	H	J	K	L	M	N Dia.	P	Q	R	S	T ID	T CS
⅜	3 2/32	2¾	5¾	3½	3¼	15	7½	3½	6⅞	1¼	¾	1⅝	13/32	4 11/16	1 13/16	59/64	1 7/32	11/16	3/32





Foot Mounted
OD4 · DSET · *03S

SPECIFICATIONS

Burton Hydraulics, Inc.

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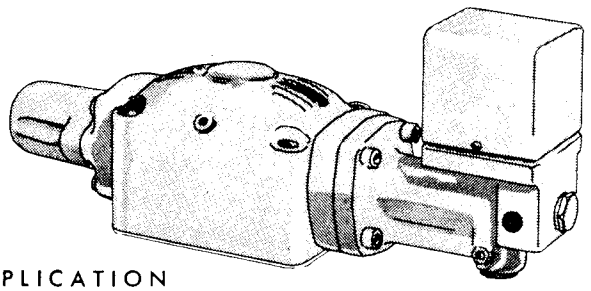
OD4 • * TE * • ****

DIRECTIONAL CONTROL

FOUR-WAY VALVE

SINGLE SOLENOID PILOT OPERATED
SPRING RETURN
¾"—1¼"—1½"

Foot Mounted Valves			Neutral Porting Arrangement
¾" Size	1¼" Size	1½" Size	
OD4 • BTET • 106S	OD4 • BTET • 110S	OD4 • BTET • 112S	1C
OD4 • FTET • 206S	OD4 • FTET • 210S	OD4 • FTET • 212S	2C
OD4 • BTET • 706S	OD4 • BTET • 710S	OD4 • BTET • 712S	7C
.425	1.271	1.753	AREA
32	53	66	WEIGHT
26	68	77	GPM @ 10 psi DROP



APPLICATION

Electric control for Automatic Hydraulic Applications is achieved by the selection of this valve type.

The Spring Return arrangement is often used as a safety device to instantly reverse the direction of movement of a cylinder or fluid motor in event of electric power failure, or when desired.

Four-way valves are used to control movements of double acting cylinders or reversible fluid motors.

Three-way valve action is obtained by plugging one of either cylinder ports and are used with single acting cylinders or non-reversing fluid motors.

Various spool designs are available to minimize shock while the spool is reversing.

OPERATION

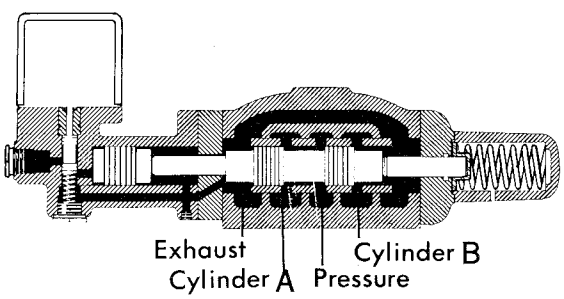
Solenoid Controlled Pilot Operated, Spring Return Four-Way Valve provides directional control of oil flow in two available positions.

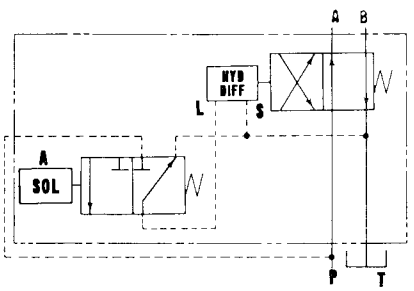
The valve spool, hydraulically positioned and controlled electrically, slides within a sleeve having round drilled holes to allow the desired flow pattern and smooth opening and closing of valve ports.

A spring return arrangement automatically positions the valve spool to the "Normal" position when the solenoid is de-energized.

When the solenoid is energized, hydraulic pilot pressure moves the spool in position against light spring force.

The solenoid must remain energized to hold the valve spool in position.





SPECIFICATIONS

J.I.C.—Design conforms to specifications of the Joint Industry Conference.
PRESSURE RATING—1500 pounds per square inch.
PILOT PRESSURE—A pilot pressure of approximately 65 psi minimum must be available for pilot operation of the valve. Pilot pressure should not exceed 1500 psi maximum. Internal pilot connection is normally supplied except for open center valves. If a pilot line installed on the valve is not desired, specify OD4 • FTE* • ***S.
VOLUME OF OIL—Hydraulic pilot operation requires following maximum oil displacements to shift to the end position: ¾" valve—1.38 cubic inches. 1¼" valve—2.08 cubic inches. 1½" valve—2.32 cubic inches.
BACK PRESSURE—Exhaust port pressure should not exceed 500 psi, non-shock. If back pressure is in excess of 30 psi provision must be made for external drain of the solenoid pilot valves. Specify OD4 • ATE* • ***S for internal pilot and external drain. Specify OD4 • ETE* • ***S—for external pilot and external drain.
FLOW RATE—For complete information of flow rate by pressure drop, refer to curves

RESPONSE TIME—Reversal speed of valve spool with pilot pressure in excess of 250 psi will be less than .1 second to shift to the end position and .2 second to spring return the spool.
CYCLES/MINUTE—Maximum continuous rating is 30 cycles/minute.
PILOT CHOKE ADJUSTMENT—A pilot choke is available for controlling speed of valve spool reversal. This pilot choke will only control speed of reversal when solenoid is energized and spool is moving by hydraulic pressure. Specify OD4 • BTE* • ***K.
SOLENOIDS—The inrush current required for 115 volt, 60 cycle, AC service is 3.6 amps. The holding current is .45 amps. Other standard and special solenoid characteristics are available on request. Solenoids will not operate properly on less than 90% voltage.
TEMPERATURE—Under normal conditions of continuous operation, fluid temperature should not exceed 130° F. In no instance should the temperature exceed 160° F.
OIL RECOMMENDATION—Premium grade hydraulic oil with 200 to 250 SSU viscosity at 100° F for use at normal ambient temperatures.
THROTTLING SLEEVE—To provide for extremely smooth opening and closing of valve ports. Specify OD4 • BTE* • ***D.

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OD4••TE••••••

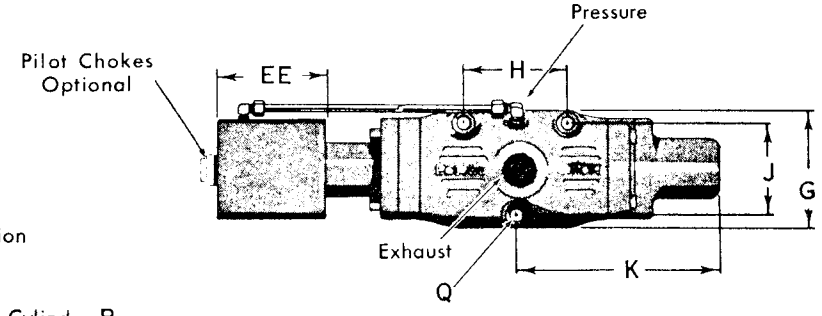
DIRECTIONAL CONTROL

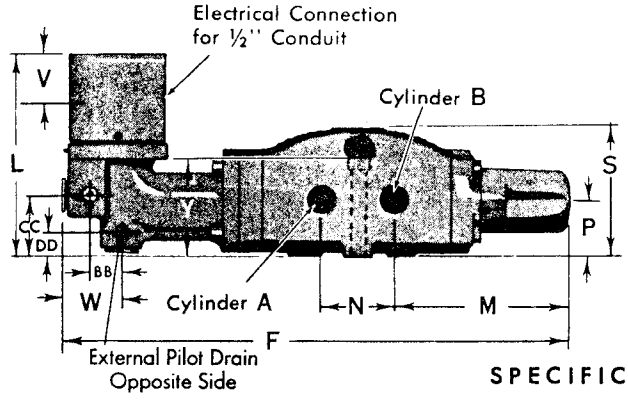
FOUR-WAY VALVE

SINGLE SOLENOID PILOT OPERATED
SPRING RETURN
¾"—1¼"—1½"

Valve Size	F	G	H	J	K	L	M	N	P	Q Dia.	S	V	W	Y
¾	17 9/16	4	3½	3	7½	6 13/16	6⅜	2⅜	1 15/16	7/16	4 7/16	1⅝	2 1/16	3 11/32
1¼	16 15/16	5⅜	5½	4¼	5 11/16	7	3⅞	3 11/16	2⅛	9/16	5⅝	1⅝	2 1/16	3 13/16
1½	18¼	5⅞	6¼	4¾	6 5/16	7 1/16	4⅛	4⅜	2 5/32	9/16	6 1/16	1⅝	2 1/16	3 31/32

AA	BB	CC	DD	EE
1	15/16	2⅛	15/16	3 5/16
1⅞	15/16	2 5/16	1⅛	3 5/16
	15/16	2 11/32	1 5/32	3 5/16





Foot Mounted
OD4••TE•• ••••

SPECIFICATIONS

MOUNTING POSITION—Not restricted.

END CAPS—Rotation in 90° increments is possible.

LEFT HAND ASSEMBLY—When supplied, will provide for the solenoid at the opposite end of the body from the position shown.

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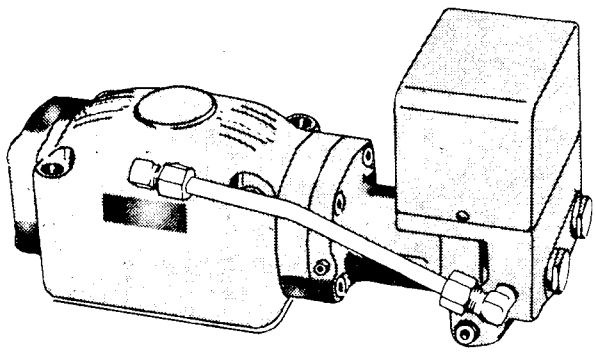
OD4••WE ••••

DIRECTIONAL CONTROL

FOUR-WAY VALVE

DOUBLE SOLENOID PILOT OPERATED
STANDARD ACTION
¾"—1¼"—1½"

Foot Mounted Valves			Neutral Porting Arrangement
¾" Size	1¼" Size	1½" Size	
OD4 • BWET • 106S	OD4 • BWET • 110S	OD4 • BWET • 112S	1C
OD4 • FWET • 206S	OD4 • FWET • 210S	OD4 • FWET • 212S	2C
OD4 • BWET • 706S	OD4 • BWET • 710S	OD4 • BWET • 712S	7C
.425	1.271	1.753	AREA
35	60	71	WEIGHT
26	68	77	GPM @ 10 psi DROP



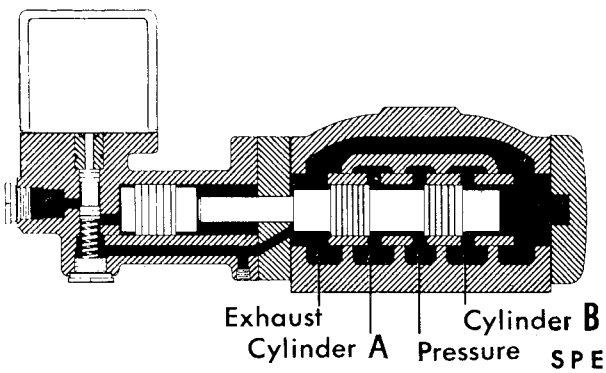
OPERATION

Solenoid controlled Pilot Operated, Standard Action Four-way Valves provide directional control of oil flow in two available positions.

A Valve spool hydraulically positioned and controlled electrically, slides within a sleeve having round drilled holes to allow the desired flow pattern and smooth opening and closing of valve ports.

By alternately energizing the two solenoids, the direction of oil flow can be reversed.

The valve spool will remain in position even though the solenoid is not held energized.



APPLICATION

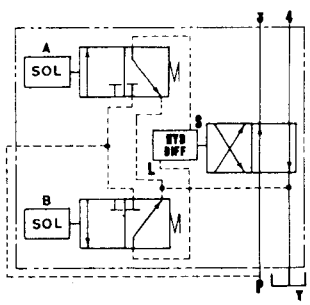
Momentary electric control for automatic hydraulic applications is achieved by the selection of this valve type.

It is recommended the solenoids be held energized to insure the valve spool remaining in position.

Four-way valves are used to control movements of double acting cylinders or reversible fluid motors.

Three-way valve action is obtained by plugging one of either cylinder ports and is used with single acting cylinders or non-reversing fluid motors.

Various spool designs are available to minimize shock while the spool is reversing.



SPECIFICATIONS

J.I.C.—Design conforms to specifications of the Joint Industry Conference.
PRESSURE RATING—1500 pounds per square inch.
PILOT PRESSURE—A pilot pressure of approximately 65 psi minimum must be available for pilot operation of the valve. Pilot pressure should not exceed 1500 psi maximum. Internal pilot connection is normally supplied except for open center valves. If a pilot line installed on a valve is not desired, specify OD4 • FWE• • •••S.
VOLUME OF OIL—Hydraulic pilot operation requires following maximum oil displacement to shift the spool to either end position: ¾" valve—1.38 cubic inches. 1¼" valve—2.08 cubic inches. 1½" valve—2.18 cubic inches.
BACK PRESSURE—Exhaust port pressure should not exceed 500 psi, non-shock. If back pressure is in excess of 30 psi provision must be made for external drain of the solenoid pilot valves. Specify OD4 • AWE• • •••S—for internal pilot, external drain. Specify OD4 • EWE• • •••S—for external pilot and external drain.
FLOW RATE—For complete information of flow rate by pressure drop, refer to curves
RESPONSE TIME—Reversal speed of the valve spool with pilot pressure in excess of 250 psi will be less than .1 second to shift to either end position.
CYCLES/MINUTE—Maximum continuous rating is 30 cycles/minute.
PILOT CHOKE ADJUSTMENTS—Pilot chokes are available for controlling speed of valve spool reversal. These pilot chokes will control speed of reversal in both directions. Up to five seconds time delay can be obtained. Specify OD4 • BWE• • •••M.
SOLENOIDS—The inrush current required for 115 volt, 60 cycle, AC service is 3.6 amps. The holding current is .45 amps. Other standard and special solenoid characteristics are available on request. Solenoids will not operate properly on less than 90% voltage.
TEMPERATURE—Under normal conditions of continuous operation, fluid temperature should not exceed 130° F. In no instance should the temperature exceed 160°F.
OIL RECOMMENDATION—Premium grade hydraulic oil with 200 to 250 SSU viscosity at 100° F for use at normal ambient temperatures.
THROTTLING SLEEVE—To provide for extremely smooth opening and closing of valve ports. Specify OD4 • BWE• • •••D.

Burton Hydraulics, Inc.
7875 DIVISION DRIVE MENTOR, OHIO 44060 (440) 974-8868 FAX - (440) 974-0951

OD4 • BWE** *** S

DIRECTIONAL CONTROL

FOUR-WAY VALVE

DOUBLE SOLENOID PILOT OPERATED

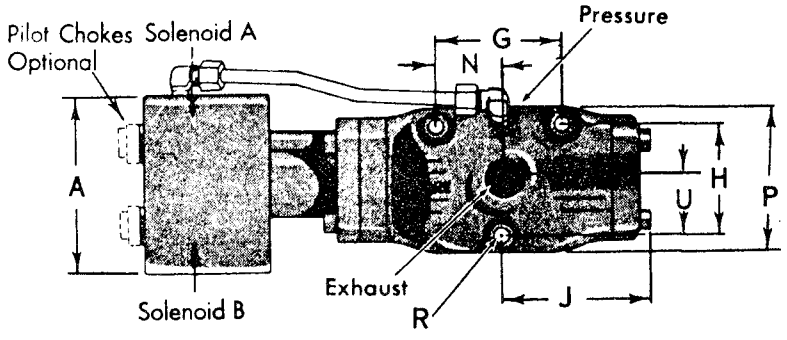
STANDARD ACTION

¾"—1¼"—1½"

Valve Size	A
¾	4¾
1¼	4¾
1½	4¾

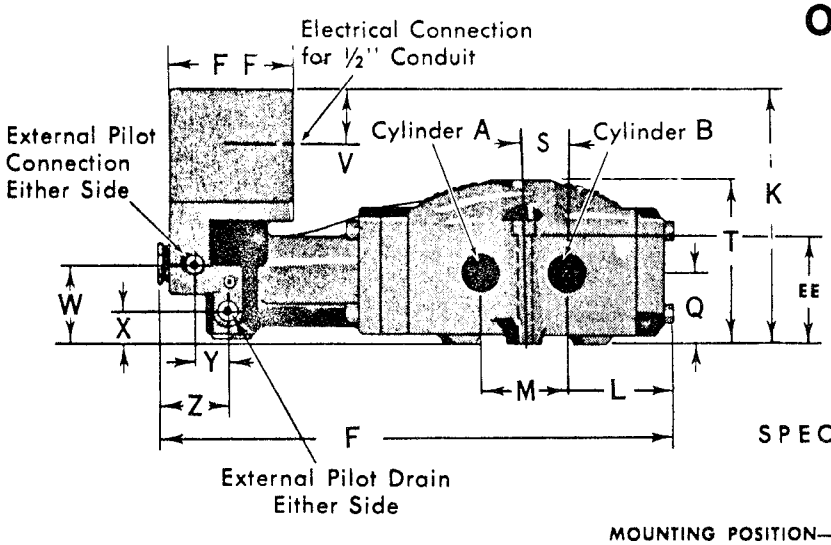
F	G	H	J	K	L	M	N	P	Q	R Dia.	S	T	U	V	W	X	Y	Z
14 1/8	3 1/2	3	4 3/16	6 13/16	3	2 3/8	1 3/4	4	1 15/16	7/16	1 3/16	4 7/16	1 1/2	1 5/8	2 1/8	15/16	15/16	2
16 15/16	5 1/2	4 1/4	5 11/16	7	3 13/16	3 11/16	2 3/4	5 3/8	2 1/8	9/16	1 27/32	5 5/8	2 1/8	1 5/8	2 5/16	1 1/8	15/16	2
18 1/4	6 1/4	4 3/4	6 5/16	7 1/16	4 1/8	4 3/8	3 1/8	5 7/8	2 5/32	9/16	2 3/16	6 1/16	2 3/8	1 5/8	2 11/32	1 5/32	15/16	2

EE	FF
3 11/32	3 5/16
3 13/16	3 5/16
3 31/32	3 5/16



Foot Mounted

OD4 • * WET • **



SPECIFICATIONS

MOUNTING POSITION—When used with momentary contact, valve must be mounted with longitudinal axis horizontal.

END CAPS—Rotation in 90° increments is possible.
LEFT HAND ASSEMBLY—When supplied, will provide for the solenoid head at the opposite end of the body from the position shown.

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Foot Mounted Valves			Neutral Porting Arrangement
¾" Size	1¼" Size	1½" Size	
OD4 • BSET • 106S	OD4 • BSET • 110S	OD4 • BSET • 112S	1C
OD4 • FSET • 206S	OD4 • FSET • 210S	OD4 • FSET • 212S	2C
OD4 • FSET • 306S	OD4 • FSET • 310S	OD4 • FSET • 312S	3C
OD4 • FSET • 406S	OD4 • FSET • 410S	OD4 • FSET • 412S	4C
OD4 • FSET • 506S	OD4 • FSET • 510S	OD4 • FSET • 512S	5C
OD4 • BSET • 606S	OD4 • BSET • 610S	OD4 • BSET • 612S	6C
OD4 • BSET • 706S	OD4 • BSET • 710S	OD4 • BSET • 712S	7C
OD4 • BSET • 806S	OD4 • BSET • 810S	OD4 • BSET • 812S	8C
OD4 • BSET • 906S	OD4 • BSET • 910S	OD4 • BSET • 912S	9C
.425	1.271	1.753	AREA
37	62	78	WEIGHT
26	68	77	GPM @ 10psi DROP

OD4•*SE*•****

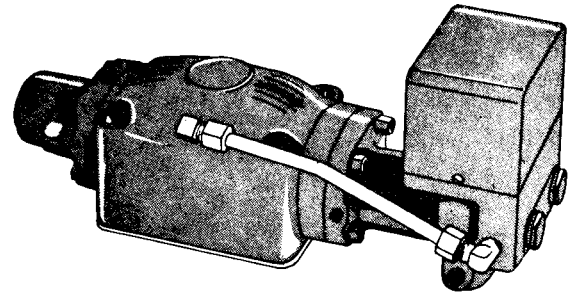
DIRECTIONAL CONTROL

FOUR-WAY VALVE

DOUBLE SOLENOID PILOT OPERATED

SPRING CENTER

¾"—1¼"—1½"



OPERATION

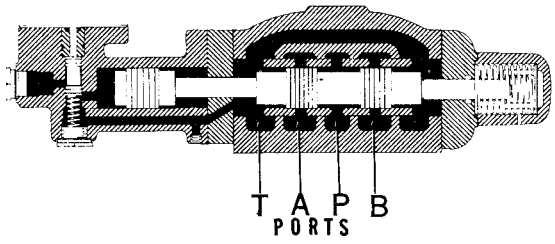
Solenoid Controlled Pilot Operated, Spring Centered Four-Way Valves provide directional control of oil flow in three available positions.

A valve spool hydraulically positioned and controlled electrically, slides within a sleeve having round drilled holes to allow the desired flow pattern and smooth opening and closing of the valve ports.

The spring centering arrangement automatically positions the valve spool to "Neutral" when both solenoids are de-energized.

When either one of the solenoids is energized, pilot pressure moves the spool in position against light spring force.

The solenoid must remain energized to hold the valve spool in position.



APPLICATION

Three-way valve action is obtained by plugging one of either cylinder ports and is used with single acting cylinders or non-reversing fluid motors.

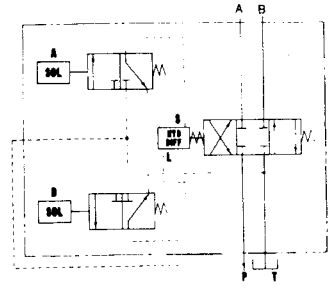
A "Neutral" position is provided between the two extreme operating positions.

Various spool designs are available to obtain desired circuit results such as blocking and unloading.

Electric control for automatic hydraulic applications is achieved by the selection of this valve type.

The spring centering arrangement is often used as a safety device to immediately stop the operation of a machine at any place in the cycle, in the event of electric power failure, or when desired for short stroking a cylinder.

Four-way valves control movements of double acting cylinders or reversible fluid motors.



SPECIFICATIONS

J.I.C.—Design conforms to specifications of the Joint Industry Conference.

PRESSURE RATING—1500 pounds per square inch.

PILOT PRESSURE—A pilot pressure of approximately 65 psi minimum must be available for pilot operation of the valve. Pilot pressure should not exceed 1500 psi maximum. Internal pilot connection is normally supplied except for open center valves. If a pilot line installed on the valve is not desired, specify OD4 • BSE• • •••S.

VOLUME OF OIL—Hydraulic pilot operation requires following maximum oil displacements to shift spool from neutral to either end position: ¾" valve —.69 cubic inches. 1¼" valve—1.04 cubic inches. 1½" valve—1.09 cubic inches.

BACK PRESSURE—Exhaust port pressure should not exceed 500 psi, non-shock. If back pressure is in excess of 30 psi provision must be made for external drain of the solenoid pilot valves. Specify OD4 • ASE• • •••S —for internal pilot, external drain. Specify OD4 • ESE• • •••S —for external pilot and external drain.

FLOW RATE—For complete information of flow rate by pressure drop, refer to curves

CYCLES/MINUTE—Maximum continuous rating is 30 cycles/minute.

PILOT CHOKE ADJUSTMENTS—Pilot chokes are available for controlling speed of valve spool reversal. These pilot chokes will only control speed of reversal from "Neutral" to "In" position and from "Neutral" to "Out" position. Up to five seconds time delay can be obtained. Specify OD4 • BSE• • •••M.

SOLENOIDS—The inrush current required for 115 volt, 60 cycle, AC service is 3.6 amps. The holding current is .45 amps. Other standard and special solenoid characteristics are available on request. Solenoids will not operate properly on less than 90% voltage.

TEMPERATURE—Under normal conditions of continuous operation, fluid temperature should not exceed 130° F. In no instance should the temperature exceed 160°F.

OIL RECOMMENDATION—Premium grade hydraulic oil with 200 to 250 SSU viscosity at 100° F for use at normal ambient temperatures.

THROTTLING SLEEVE—To provide for extremely smooth opening and closing of valve ports. Specify OD4 • BSE• • •••D.

RESPONSE TIME—Reversal speed of the valve spool with pilot pressure in excess of 250 psi will be less than .1 second to shift from center to end position and .2 second to spring center the spool.

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OD4•*SE**•****

DIRECTIONAL CONTROL

FOUR-WAY VALVE

DOUBLE SOLENOID PILOT OPERATED

SPRING CENTER

$^{3}/_{4}$"—$1^{1}/_{4}$"—$1^{1}/_{2}$"

Valve Size	A
$^{3}/_{4}$	$4^{3}/_{4}$
$1^{1}/_{4}$	$4^{3}/_{4}$
$1^{1}/_{2}$	$4^{3}/_{4}$

F	G	H	J	K	L	M	N
$1^{15}/_{16}$	$16^{1}/_{2}$	$3^{1}/_{2}$	3	$6^{7}/_{16}$	$6^{13}/_{16}$	$5^{1}/_{4}$	$2^{3}/_{8}$
$2^{1}/_{8}$	$19^{31}/_{32}$	$5^{1}/_{2}$	$4^{1}/_{4}$	$8^{3}/_{4}$	7	$6^{29}/_{32}$	$3^{11}/_{16}$
$2^{5}/_{32}$	$21^{9}/_{32}$	$6^{1}/_{4}$	$4^{3}/_{4}$	$9^{13}/_{32}$	$7^{1}/_{16}$	$7^{7}/_{32}$	$4^{3}/_{8}$

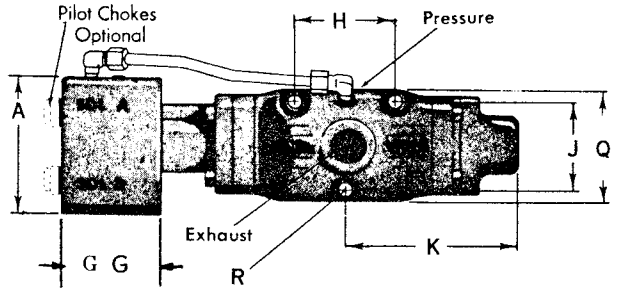
Q	R Dia.
4	$^{7}/_{16}$
$5^{3}/_{8}$	$^{9}/_{16}$
$5^{7}/_{8}$	$^{9}/_{16}$

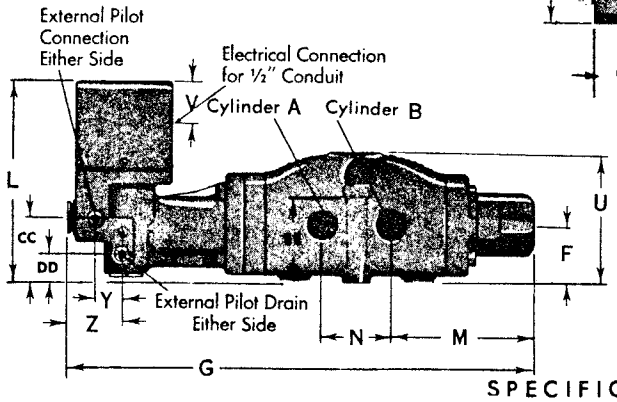
U	V
$4^{7}/_{16}$	$1^{5}/_{8}$
$5^{5}/_{8}$	$1^{5}/_{8}$
$6^{1}/_{16}$	$1^{5}/_{8}$

Y	Z
$^{15}/_{16}$	2
$^{15}/_{16}$	2
$^{15}/_{16}$	2

CC	DD	EE
$2^{1}/_{8}$	$^{15}/_{16}$	$3^{11}/_{32}$
$2^{5}/_{16}$	$1^{1}/_{8}$	$3^{13}/_{16}$
$2^{11}/_{32}$	$1^{5}/_{32}$	$3^{31}/_{32}$

GG
$3^{5}/_{16}$
$3^{5}/_{16}$
$3^{5}/_{16}$





Foot-Mounted

OD4 • * SET•****

SPECIFICATIONS

MOUNTING POSITION—Not restricted.

END CAPS—Rotation in 90° increments is possible.
LEFT HAND ASSEMBLY—When supplied, will provide for the solenoid head at the opposite end of the body from the position shown.

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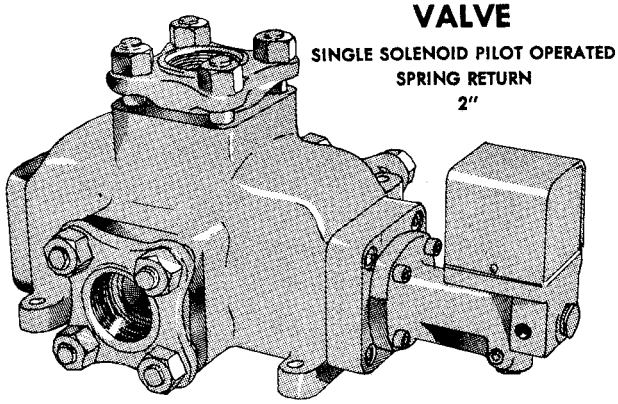
OD4 • FTEF • • 16S

DIRECTIONAL CONTROL

FOUR-WAY VALVE

SINGLE SOLENOID PILOT OPERATED
SPRING RETURN
2"

Foot Mounted Valves	Neutral Porting Arrangement
2" Size	
OD4 • FTEF • 116S	1C
OD4 • FTEF • 216S	2C
OD4 • FTEF • 716S	7C
2.935	AREA
135	WEIGHT
115	GPM @ 10 psi DROP



OPERATION

Solenoid Controlled Pilot Operated, Spring Return Four-way Valves provide directional control of oil flow in two available positions.

The valve spool, hydraulically positioned and controlled electrically, slides within a sleeve having round drilled holes to allow the desired flow pattern and smooth opening and closing of valve ports.

A Spring return arrangement automatically positions the valve spool to the "Normal" position when the solenoid is de-energized.

When the solenoid is energized, hydraulic pilot pressure moves the spool in position against light spring force.

The solenoid must remain energized to hold the valve spool in position.

APPLICATION

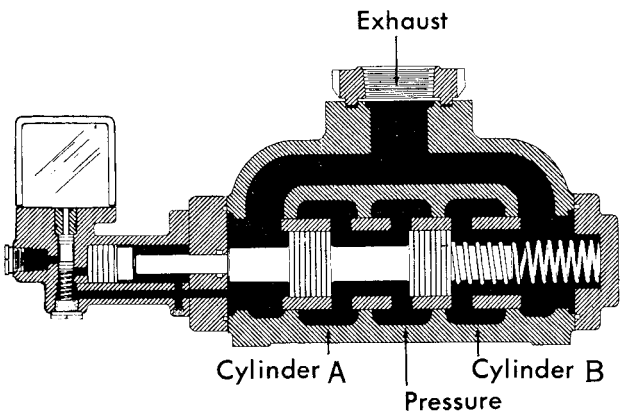
Electric control for automatic hydraulic applications is achieved by the selection of this valve type.

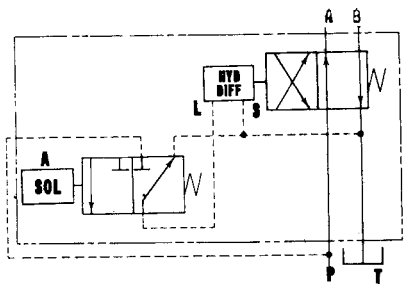
The spring return arrangement is often used as a safety device to instantly reverse the direction of movement of a cylinder or fluid motor in event of electric power failure, or when desired.

Four-way valves are used to control movements of double acting cylinders or reversible fluid motors.

Three-way valve action is obtained by plugging one of either cylinder ports and is used with single acting cylinders or non-reversing fluid motors.

Various spool designs are available to minimize shock while the spool is reversing.





SPECIFICATIONS

J.I.C.—Design conforms to specifications of the Joint Industry Conference.
PRESSURE RATING—1500 pounds per square inch.
PILOT PRESSURE—A pilot pressure of approximately 65 psi minimum must be available for pilot operation of the valve. Pilot pressure should not exceed 1500 psi maximum. Only external pilot connection is supplied.
VOLUME OF OIL—Hydraulic pilot operation requires maximum of 2.47 cubic inches of oil displacement to shift the spool to the end position.
BACK PRESSURE—Exhaust port pressure should not exceed 500 psi, non-shock. If back pressure is in excess of 30 psi provision must be made for external drain of the solenoid pilot valve. Specify OD4 • ETEF • • 16S.
FLOW RATE—For complete information of flow rate by pressure drop, refer to curves.
RESPONSE TIME—Reversal speed of valve spool with pilot pressure in excess of 250 psi will be less than .15 second to shift to the end position and .2 second to spring return the spool.
CYCLES/MINUTE—Maximum continuous rating is 30 cycles/minute.
PILOT CHOKE ADJUSTMENT—Pilot chokes are available for controlling speed of valve spool reversal. These pilot chokes will only control speed of reversal when solenoid is energized and spool is moving by hydraulic pressure. Specify OD4 • FTEF • • 16K.
SOLENOIDS—The inrush current required for 115 volt, 60 cycle, AC service is 3.6 amps. The holding current is .45 amps. Other standard and special solenoid characteristics are available on request. Solenoids will not operate properly on less than 90% voltage.
TEMPERATURE—Under normal conditions of continuous operation, fluid temperature should not exceed 130° F. In no instance should the temperature exceed 160°F.
OIL RECOMMENDATION—Premium grade hydraulic oil with 200 to 250 SSU viscosity at 100° F for use at normal ambient temperatures.
THROTTLING SLEEVE—To provide for extremely smooth opening and closing of valve ports. Specify OD4 • FTEF • • 16D.

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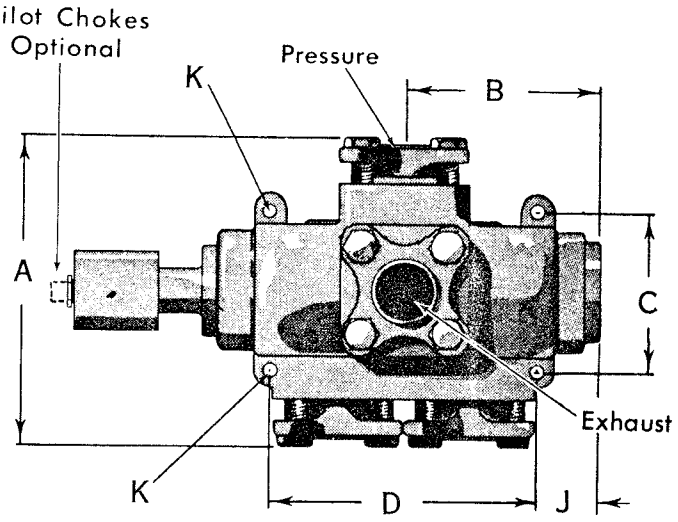
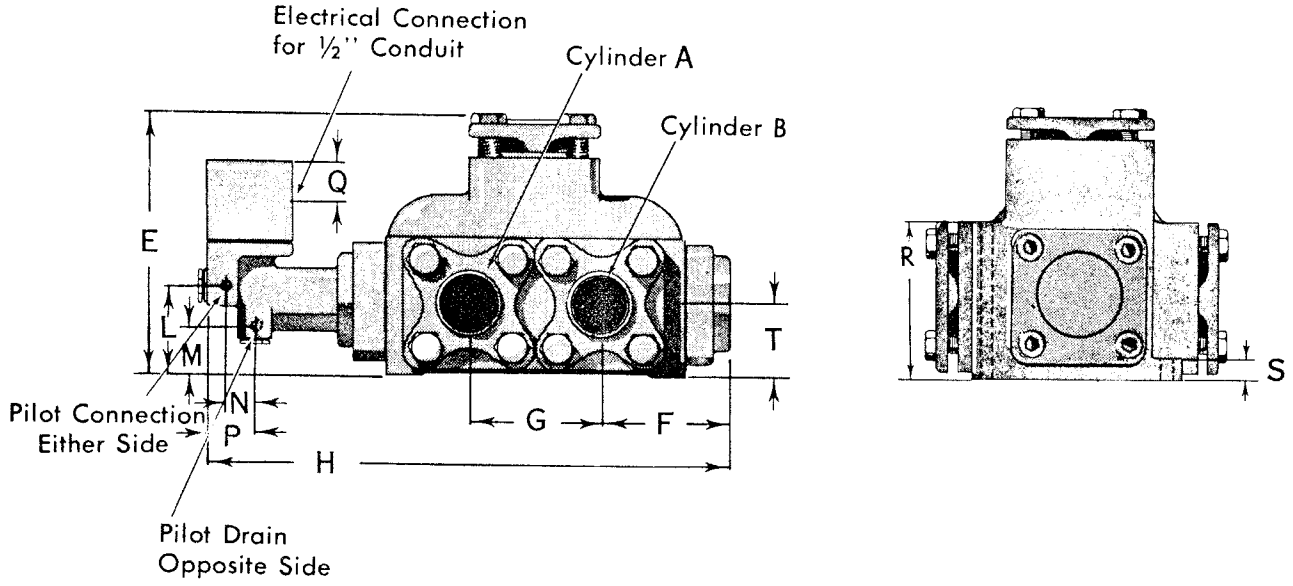
OD4 • FTEF • * 16S

DIRECTIONAL CONTROL
FOUR-WAY VALVE
SINGLE SOLENOID PILOT
OPERATED
SPRING RETURN
2"



Flange Connections



Valve Size	A	B	C	D	E	F	G	H	J	K Dia.	L	M	N	P	Q	R	S	T
2	12	7 3/16	5 7/8	10	10	4 3/4	4 7/8	20 1/4	2 3/16	17/32	2 7/8	1 11/16	15/16	2 1/16	1 5/8	5 1/8	3/4	2 11/16

SPECIFICATIONS

MOUNTING POSITION—Valve must be mounted with the longitudinal axis horizontal.
END CAPS—Rotation in 90° increments is possible.

LEFT HAND ASSEMBLY—When supplied, will provide for the solenoid head at the opposite end of the body from the position shown.

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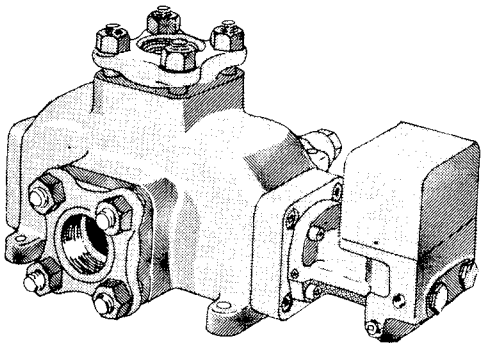
OD4 • FWEF-••*16S

DIRECTIONAL CONTROL

FOUR-WAY VALVE

DOUBLE SOLENOID PILOT OPERATED
STANDARD ACTION
2″

Foot Mounted Valves 2″ Size	Neutral Porting Arrangement
OD4 • FWEF-116S	1C
OD4 • FWEF-216S	2C
OD4 • FWEF-716S	7C
2.935	AREA
136	WEIGHT
115	GPM @ 10 psi DROP



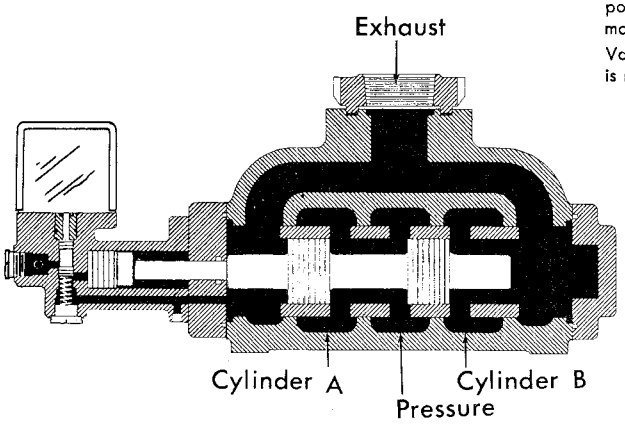
OPERATION.

Solenoid controlled Pilot Operated, Standard Action Four-way Valves provide directional control of oil flow in two available positions.

A Valve spool hydraulically positioned and controlled electrically, slides within a sleeve having round drilled holes to allow the desired flow pattern and smooth opening and closing of valve ports.

By alternately energizing the two solenoids, the direction of oil flow can be reversed.

The valve spool will remain in position even though the solenoid is not held energized.



APPLICATION

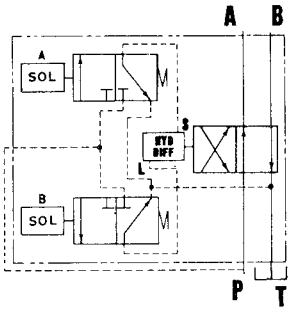
Momentary electric control for automatic hydraulic applications is achieved by the selection of this valve type.

It is recommended the solenoids be held energized to insure the valve spool remaining in position.

Four-way valves are used to control movements of double acting cylinders or reversible fluid motors.

Three-way valve action is obtained by plugging one of either cylinder ports and is used with single acting cylinders or non-reversing fluid motors.

Various spool designs are available to minimize shock while the spool is reversing.



SPECIFICATIONS

J.I.C.—Design conforms to specifications of the Joint Industry Conference.

PRESSURE RATING—1500 pounds per square inch.

PILOT PRESSURE—A pilot pressure of approximately 65 psi minimum must be available for pilot operation of the valve. Pilot pressure should not exceed 1500 psi maximum. Only external pilot connection is supplied.

VOLUME OF OIL—Hydraulic pilot operation requires maximum of 2.46 cubic inches of oil displacement to shift the spool to either end position.

BACK PRESSURE—Exhaust port pressure should not exceed 500 psi, non-shock. If back pressure is in excess of 30 psi provision must be made for external drain of the solenoid pilot valves. **Specify OD4 •EWEF• •16S.**

FLOW RATE—For complete information of flow rate by pressure drop, refer to curves.

RESPONSE TIME—Reversal speed of valve spool with pilot pressure in excess of 250 psi will be less than .1 second to shift to either end position.

CYCLES/MINUTE—Maximum continuous rating is **30** cycles/minute.

PILOT CHOKE ADJUSTMENTS—Pilot chokes are available for controlling speed of valve spool reversal. These pilot chokes will control speed of reversal in both directions. Up to five seconds time delay can be obtained. **Specify OD4 •FWEF-• •16M.**

SOLENOIDS—The inrush current required for 115 volt, 60 cycle, AC service is 3.6 amps. The holding current is .45 amps. Other standard and special solenoid characteristics are available on request. Solenoids will not operate properly on less than 90% voltage.

TEMPERATURE—Under normal conditions of continuous operation, fluid temperature should not exceed 130° F. In no instance should the temperature exceed 160° F.

OIL RECOMMENDATION—Premium grade hydraulic oil with 200 to 250 SSU viscosity at 100° F for use at normal ambient temperatures.

THROTTLING SLEEVE—To provide for extremely smooth opening and closing of valve ports. **Specify OD4 •FWEF• •16D.**

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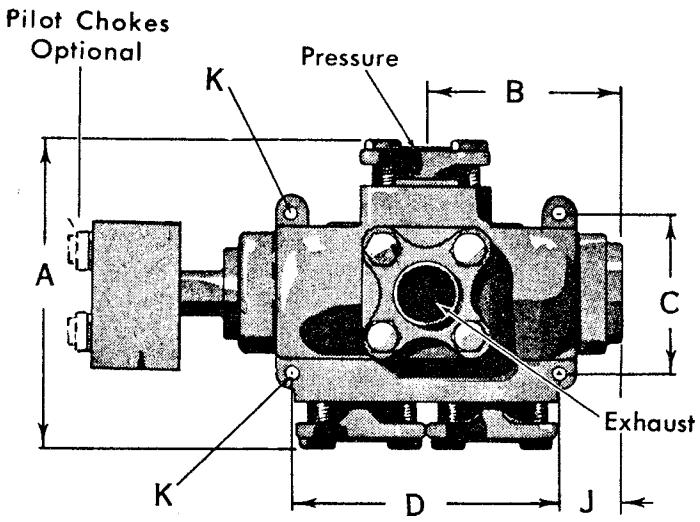
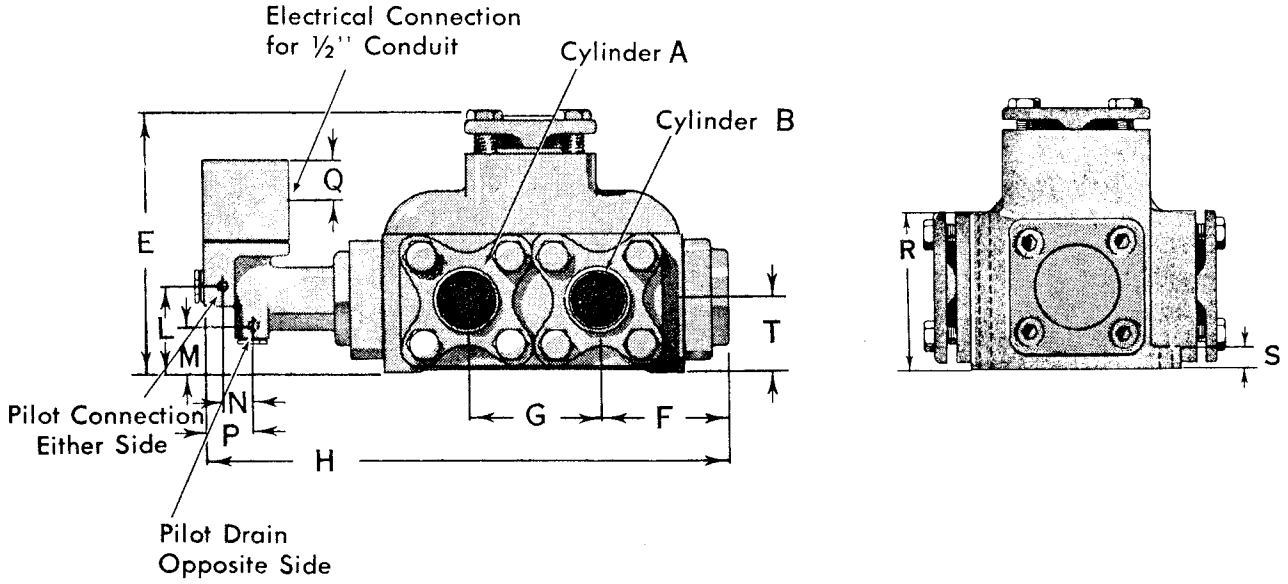
OD4 • FWEF • * 16S

DIRECTIONAL CONTROL
FOUR-WAY VALVE
DOUBLE SOLENOID PILOT
OPERATED
STANDARD ACTION
2"



Flange Connections



Valve Size	A	B	C	D	E	F	G	H	J	K Dia.	L	M	N	P	Q	R	S	T
2	12	7 3/16	5 7/8	10	10	4 3/4	4 1/8	20 1/4	2 3/16	17/32	2 7/8	1 11/16	15/16	2 1/16	1 5/8	5 1/8	3/4	2 11/16

SPECIFICATIONS

MOUNTING POSITION—Valve must be mounted with the longitudinal axis horizontal.
END CAPS—Rotation in 90° increments is possible.

LEFT HAND ASSEMBLY—When supplied, will provide for the solenoid head at the opposite end of the body from the position shown.

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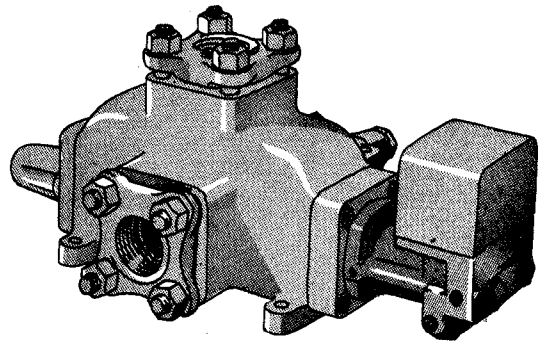
OD4 • FSEF •*16S

DIRECTIONAL CONTROL

FOUR-WAY VALVE

DOUBLE SOLENOID
PILOT OPERATED
SPRING CENTER
2"

Foot Mounted Valves 2" Size	Neutral Porting Arrangement
OD4 • FSEF • 116S	1C
OD4 • FSEF • 216S	2C
OD4 • FSEF • 416S	4C
OD4 • FSEF • 516S	5C
OD4 • FSEF • 616S	6C
OD4 • FSEF • 716S	7C
OD4 • FSEF • 816S	8C
OD4 • FSEF • 916S	9C
2.935	AREA
141	WEIGHT
115	GPM @ 10 psi DROP



OPERATION

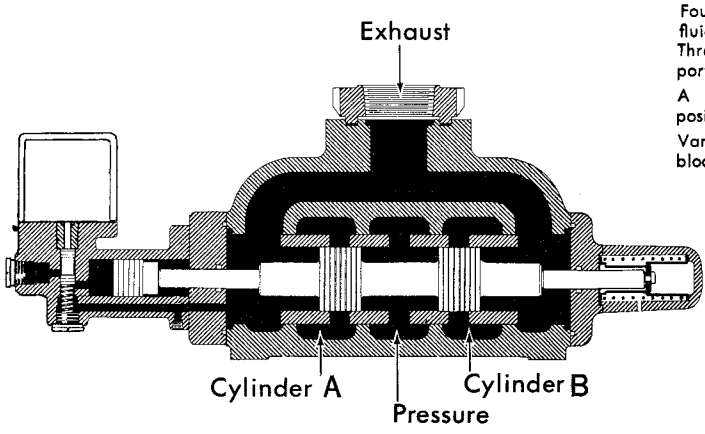
Solenoid Controlled Pilot Operated, Spring Centered Four-Way Valves provide directional control of oil flow in three available positions.

A valve spool hydraulically positioned and controlled electrically, slides within a sleeve having round drilled holes to allow the desired flow pattern and smooth opening and closing of the valve ports.

The spring centering arrangement automatically positions the valve spool to "Neutral" when both solenoids are de-energized.

When either one of the solenoids is energized, pilot pressure moves the spool in position against light spring force.

The solenoid must remain energized to hold the valve spool in position.



APPLICATION

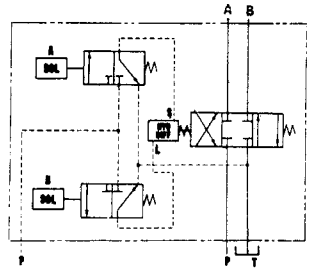
Electric control for Automatic Hydraulic Applications is achieved by the selection of this valve type.

The spring centering arrangement is often used as a safety device to immediately stop the operation of a machine at any place in the cycle, in the event of electric power failure, or when desired for short stroking a cylinder.

Four-way valves control movements of double acting cylinders or reversible fluid motors.
Three-way valve action is obtained by plugging one of either cylinder ports and is used with single acting cylinders or non-reversing fluid motors.

A "Neutral" position is provided between the two extreme operating positions.

Various spool designs are available to obtain desired circuit results such as blocking and unloading.



SPECIFICATIONS

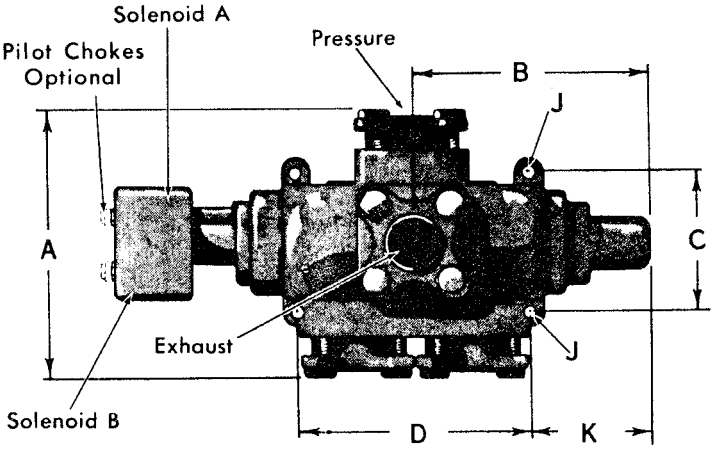
J.I.C.—Design conforms to specifications of the Joint Industry Conference.
PRESSURE RATING—1500 pounds per square inch.
PILOT PRESSURE—A pilot pressure of approximately 65 psi minimum must be available for pilot operation of the valve. Pilot pressure should not exceed 1500 psi maximum. Only external pilot connection is supplied.
VOLUME OF OIL—Hydraulic pilot operation requires maximum of 1.227 cubic inches of oil displacement to shift spool from neutral to either end position.
BACK PRESSURE—Exhaust port pressure should not exceed 500 psi, non-shock. If back pressure is in excess of 30 psi provision must be made for external drain of the solenoid pilot valves. Specify OD4 • ESEF • •16*.
FLOW RATE—For complete information of flow rate by pressure drop, refer to curves
RESPONSE TIME—Reversal speed of the valve spool with pilot pressure in excess of 250 psi will be less than .1 second to shift from center to end position and .2 second to spring center the valve.
CYCLES/MINUTE—Maximum continuous rating is 30 cycles/minute.
PILOT CHOKE ADJUSTMENTS—Pilot chokes are available for controlling speed of valve spool reversal. These pilot chokes will only control speed of reversal from "Neutral" to "In" position and from "Neutral" to "Out" position. Up to five seconds time delay can be obtained. Specify OD4 • FSEF • •16M.
SOLENOIDS—The inrush current required for 115 volt, 60 cycle, AC service is 3.6 amps. The holding current is .45 amps. Other standard and special solenoid characteristics are available on request. Solenoids will not operate properly on less than 90% voltage.
TEMPERATURE—Under normal conditions of continuous operation, fluid temperature should not exceed 130° F. In no instance should the temperature exceed 160°F.
OIL RECOMMENDATION—Premium grade hydraulic oil with 200 to 250 SSU viscosity at 100° F for use at normal ambient temperatures.
THROTTLING SLEEVE—To provide for extremely smooth opening and closing of valve ports. Specify OD4 • FSEF • •16D.

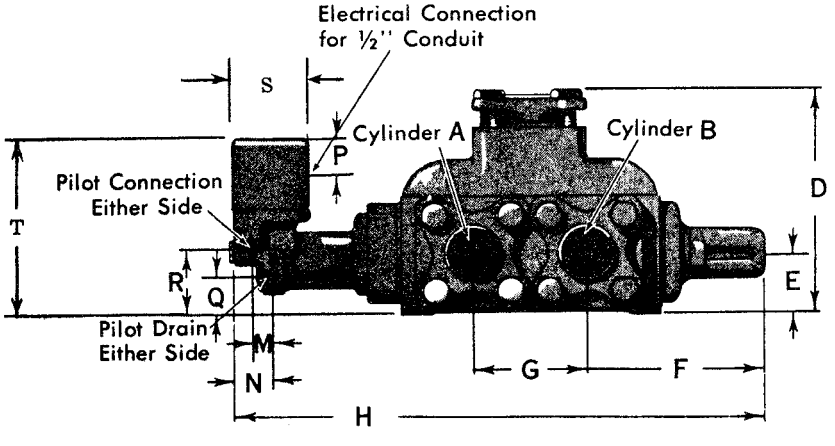
Burton Hydraulics, Inc.
7875 DIVISION DRIVE MENTOR, OHIO 44060 (440) 974-8868 FAX - (440) 974-0951

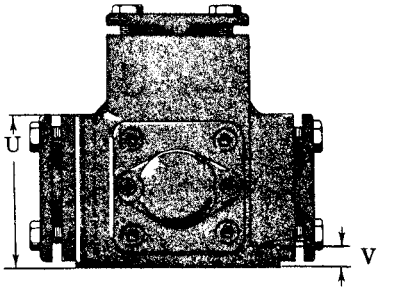
OD4 • FSEF • *16S

DIRECTIONAL CONTROL
FOUR-WAY VALVE
DOUBLE SOLENOID PILOT
OPERATED
SPRING CENTER
2"

Flange Connections







Valve Size	A	B	C	D	E	F	G	H	J Dia.	K	L	M	N	P	Q	R	S	T	U	V
2	12	10⅛	5⅞	10	2¹¹⁄₁₆	7¹¹⁄₁₆	4⅞	23⅜	¹⁷⁄₃₂	5⅛	¾	¹⁵⁄₁₆	2¹⁄₁₆	1⅝	1¹¹⁄₁₆	2⅞	3¹⁄₁₆	7¹⁷⁄₃₂	5¼	¾

SPECIFICATIONS

MOUNTING POSITION—Valve must be mounted with the longitudinal axis horizontal.
END CAPS—Rotation in 90° increments is possible.

LEFT HAND ASSEMBLY—When supplied, will provide for the solenoid head at the opposite end of the body from the position shown.

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Foot Mounted Valves	Neutral Porting Arrangement	Sub-Plate Mounted Valves
⅜" Size		⅜"
OD4 • LNET • 103S	1C	OD4 • LNES • 103S
OD4 • LNET • 203S	2C	OD4 • LNES • 203S
OD4 • LNET • 403S	4C	OD4 • LNES • 403S
OD4 • LNET • 503S	5C	OD4 • LNES • 503S
OD4 • LNET • 603S	6C	OD4 • LNES • 603S
OD4 • LNET • 703S	7C	OD4 • LNES • 703S
OD4 • LNET • 803S	8C	OD4 • LNES • 803S
OD4 • LNET • 903S	9C	OD4 • LNES • 903S
.141	AREA	.141
9	WEIGHT	10
10.7	GPM @ 10 psi DROP	9.2

OD4 • LNE**03S

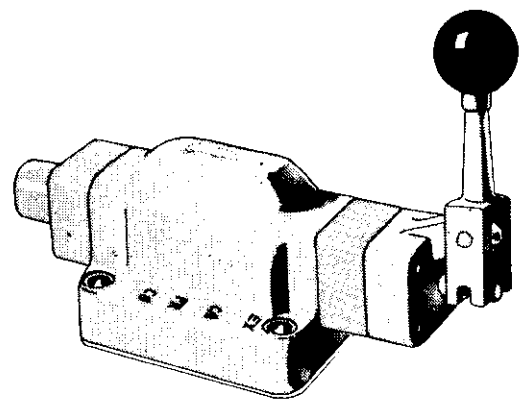
DIRECTIONAL CONTROL

FOUR-WAY VALVE

LEVER OPERATED

DETENT POSITIONED

⅜"

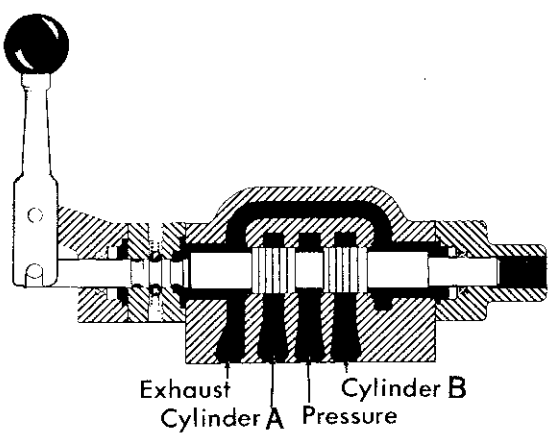


OPERATION

Manually Operated Detent Positioned Four-way Valves provide directional control of oil flow by lever actuation to three available positions.

A valve spool positioned by the lever linkage slides within a body having machined recesses to allow the desired flow pattern.

The detent arrangement holds the valve spool in any of the desired positions.



APPLICATION

Manual control for hydraulic applications is achieved by the selection of this valve type.

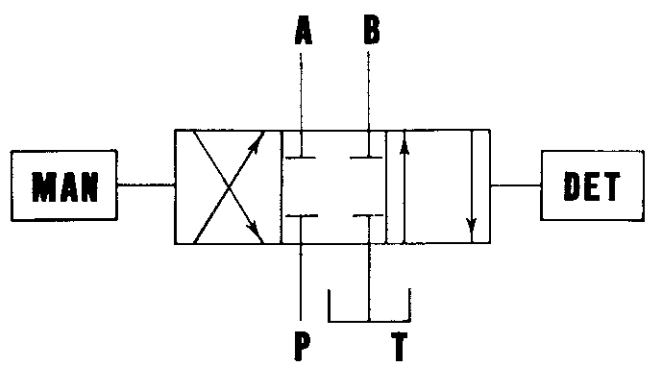
The detent arrangement frees the hands of the operator to perform other duties at the machine.

Four-way valves are used to control movements of double acting cylinders or reversible fluid motors.

Three-way valve action is obtained by plugging one of either cylinder ports and is used with single acting cylinders or non-reversing fluid motors.

A "Neutral" position is provided between the two extreme operating positions.

Various spool designs are available to obtain desired circuit results such as blocking and unloading.



SPECIFICATIONS

J.I.C.—Design conforms to specifications of the Joint Industry Conference.
PRESSURE RATING—1500 pounds per square inch.
BACK PRESSURE—Exhaust port pressure should not exceed 500 pounds per square inch, non shock.

FLOW RATE—For complete information of flow rate by pressure drop, refer to curves
TEMPERATURE—Under normal conditions of continuous operation, fluid temperature should not exceed 130° F. In no instance should the temperature exceed 160°F.
OIL RECOMMENDATION—Premium grade hydraulic oil with 200 to 250 SSU viscosity at 100° F for use at normal ambient temperatures.

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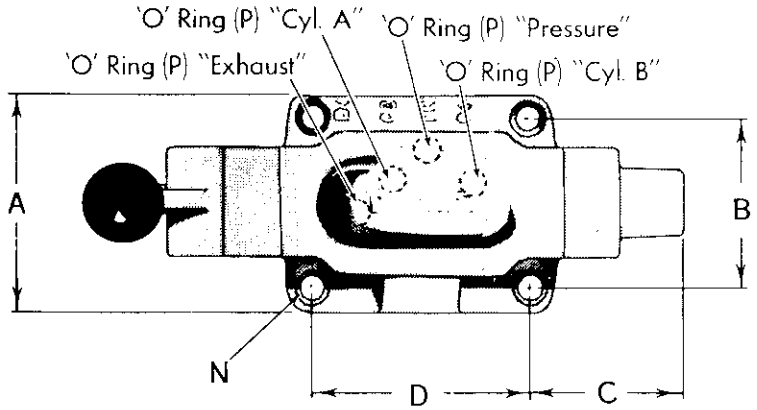
OD4 • LNE***03S

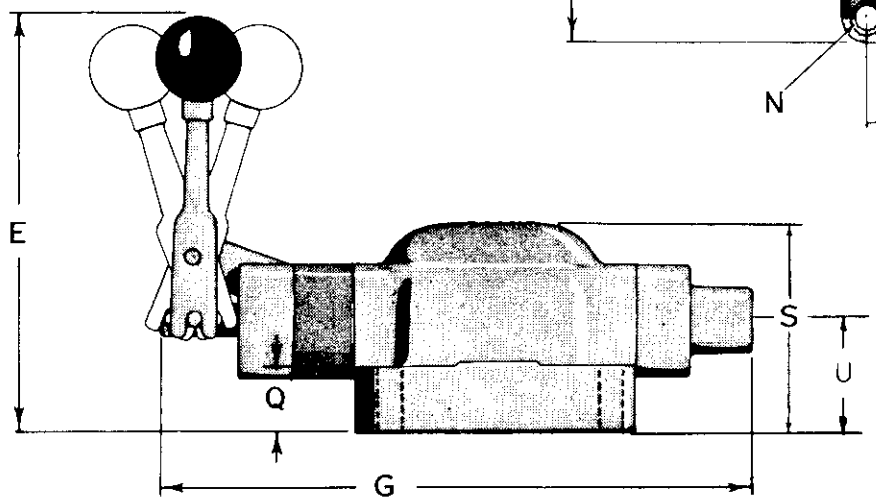
DIRECTIONAL CONTROL

FOUR-WAY VALVE

LEVER OPERATED
DETENT POSITIONED

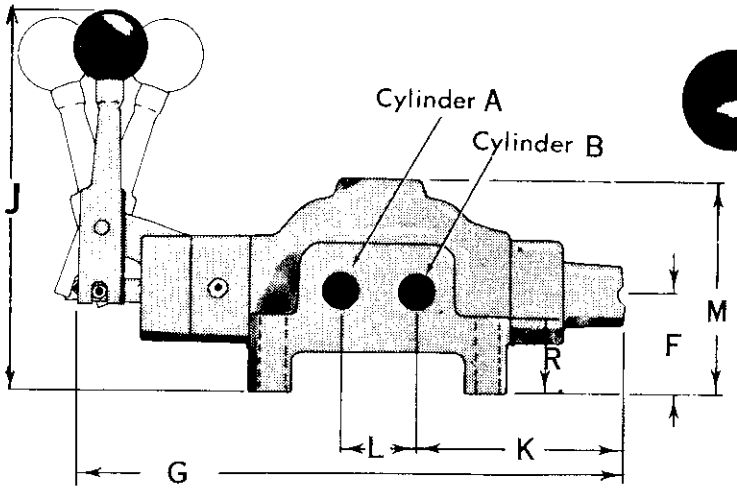
⅜"

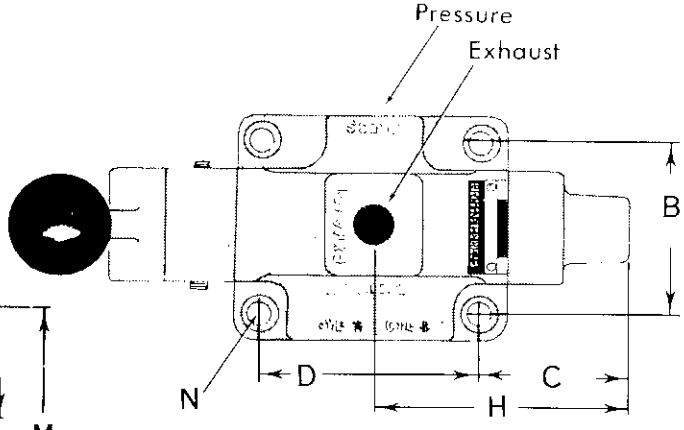




Sub-Plate Mounted
OD4 • LNES • *03S

Valve Size	A	B	C	D	E	F	G	H	J	K	L	M	N Dia.	P ID	P CS	Q	R	S	U
3/8	3½	2¾	2⅜	3½	6⅜	1⅝	9 5/16	4 1/8	6 5/16	3½	1¼	3 1/2	13/32	11/16	3/32	1	1 7/32	3 3/16	1⅝





Foot Mounted
OD4 • LNET • *03S

SPECIFICATIONS

MOUNTING SUB-PLATE—Refer to Sheet Number for details of dimensions.
MOUNTING POSITION—Not restricted.
END CAPS—Rotation in 90° increments is possible.
LEFT HAND ASSEMBLY—When supplied, will provide for the lever at the opposite end of the body from the position shown.

Burton Hydraulics, Inc.

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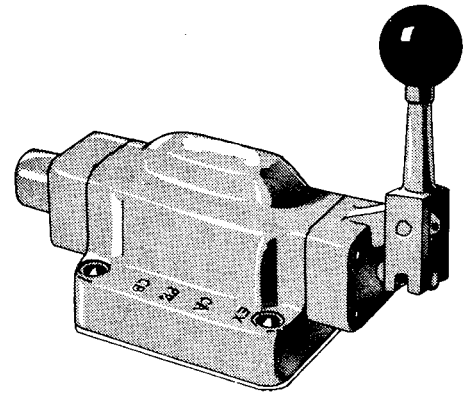
OD4 • LSE•••03S

DIRECTIONAL CONTROL
FOUR-WAY VALVE
LEVER OPERATED
SPRING CENTER
⅜"

Foot Mounted Valves	Neutral Porting Arrangement	Sub-Plate Mounted Valves
⅜" Size		⅜" Size
OD4 • LSET • 103S	1C	OD4 • LSES • 103S
OD4 • LSET • 203S	2C	OD4 • LSES • 203S
OD4 • LSET • 403S	4C	OD4 • LSES • 403S
OD4 • LSET • 503S	5C	OD4 • LSES • 503S
OD4 • LSET • 603S	6C	OD4 • LSES • 603S
OD4 • LSET • 703S	7C	OD4 • LSES • 703S
OD4 • LSET • 803S	8C	OD4 • LSES • 803S
OD4 • LSET • 903S	9C	OD4 • LSES • 903S
.141	AREA	.141
9	WEIGHT	10
10.7	GPM @ 10 psi DROP	9.2



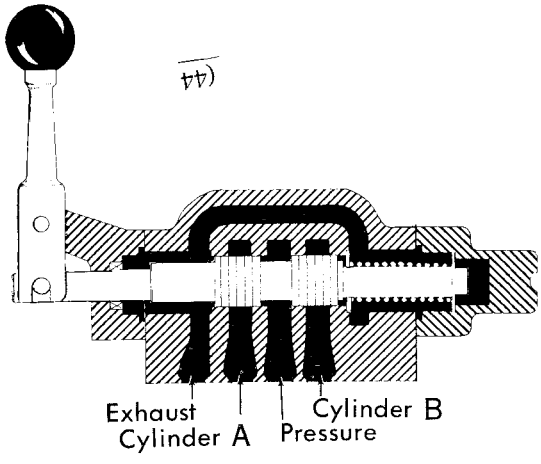
OPERATION

Manually Operated Spring Centered Four-way Valves provide directional control of oil flow by lever actuation to three available positions.

A valve spool slides within a body having machined recesses to allow the desired flow pattern.

The spring centering arrangement automatically positions the valve spool to "Neutral" when the lever is released.

To maintain flow in either of the two extreme positions, the operator must hold the lever against light spring force.



APPLICATION

Manual control for hydraulic applications is achieved by the selection of this valve type.

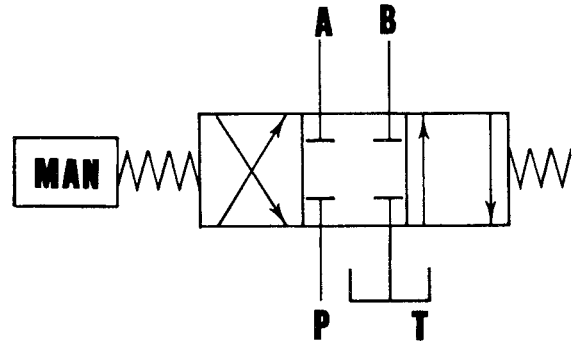
The spring centering arrangement is often used as a safety device to immediately stop the operation of a machine by releasing the lever in an emergency or when desired.

Four-way valves are used to control movements of double acting cylinders or reversible fluid motors.

Three-way valve action is obtained by plugging one of either cylinder ports and is used with single acting cylinders or non-reversing fluid motors.

A "Neutral" position is provided between the two extreme operating positions.

Various spool designs are available to obtain desired circuit results such as blocking and unloading.



SPECIFICATIONS

J.I.C.—Design conforms to specifications of the Joint Industry Conference.
PRESSURE RATING—1500 pounds per square inch.
BACK PRESSURE—Exhaust port pressure should not exceed 90 pounds per square inch, otherwise the spring centering will not function properly.
FLOW RATE—For complete information of flow rate by pressure drop, refer to curves.

SPRING FORCE—Approximately 12 pounds of force is required to stroke the spool by means of a 3:1 ratio lever linkage. For every 10 psi of back pressure add .7 pounds to the spring force.
OIL RECOMMENDATION—Premium grade hydraulic oil with 200 to 250 SSU viscosity at 100° F for use at normal ambient temperatures.
TEMPERATURE—Under normal conditions of continuous operation, fluid temperature should not exceed 130° F. In no instance should the temperature exceed 160° F.

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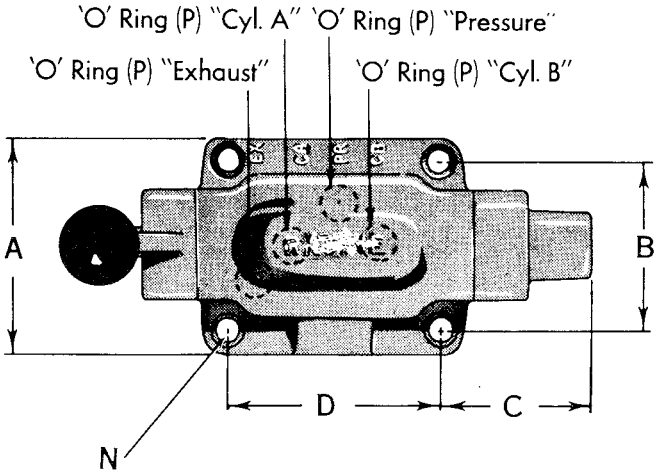
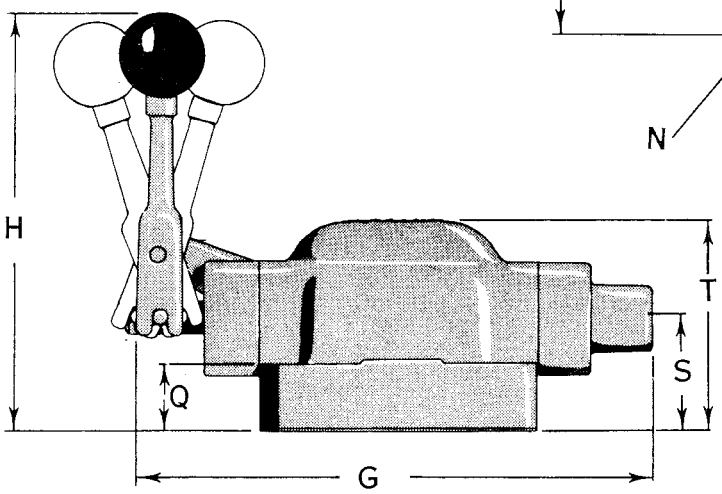
OD4 • LSE**03S

DIRECTIONAL CONTROL
FOUR-WAY VALVE
LEVER OPERATED
SPRING CENTER
⅜"

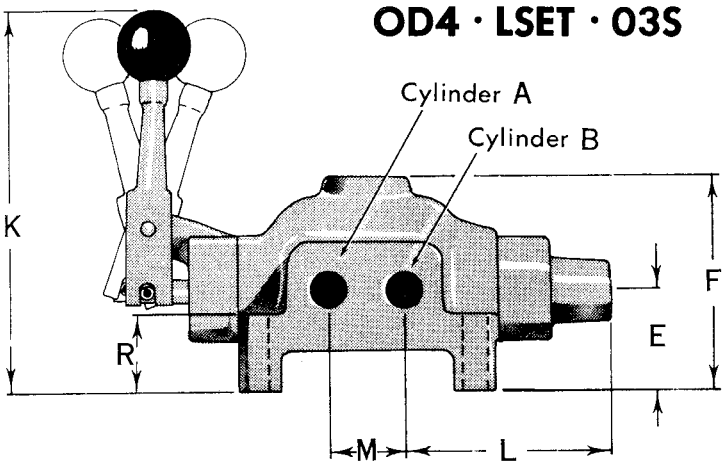


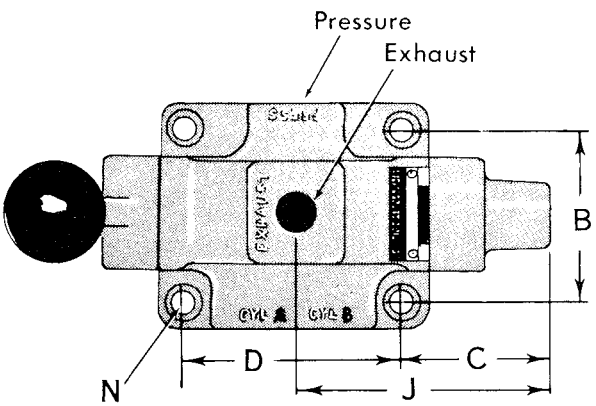


Sub-Plate Mounted
OD4 · LSES · *03S

Valve Size	A	B	C	D	E	F	G	H	J	K	L	M	N Dia.	P ID	P CS	Q	R	S	T
⅜	3½	2¾	2⅜	3½	1⅝	3½	8 5/16	6⅜	4⅛	6 5/16	3½	1¼	13/32	1/16	3/32	1	1 7/32	1⅝	3 3/16

Foot Mounted
OD4 · LSET · 03S





SPECIFICATIONS

MOUNTING SUB-PLATE—Refer to Sheet No. for details of dimensions.
MOUNTING POSITION—Not restricted.

END CAPS—Rotation in 90° increments is possible.
LEFT HAND ASSEMBLY—When supplied, will provide for the lever at the opposite end of the body from the position shown.

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OD4 • LTE • • • 03S

DIRECTIONAL CONTROL

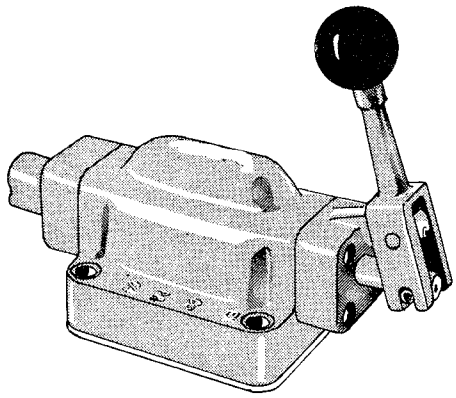
FOUR-WAY VALVE

LEVER OPERATED

SPRING RETURN STEM OUT

⅜"

Foot Mounted Valves	Neutral Porting Arrangement	Sub-Plate Mounted Valves
⅜" Size		⅜" Size
OD4 • LTET • 103S	1C	OD4 • LTES • 103S
OD4 • LTET • 203S	2C	OD4 • LTES • 203S
OD4 • LTET • 703S	7C	OD4 • LTES • 703S
.141	AREA	.141
9	WEIGHT	10
10.7	GPM @ 10 psi DROP	9.2



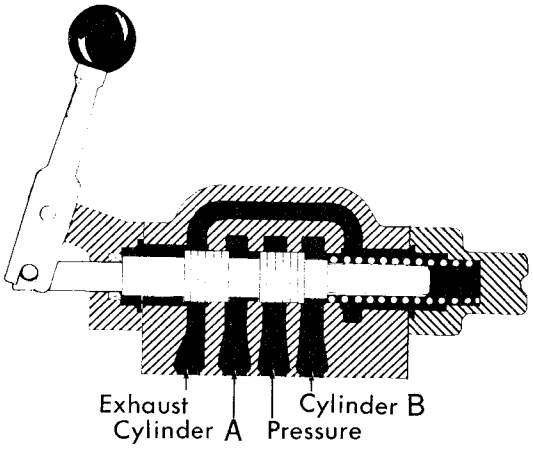
OPERATION

Manually Operated Spring Return Four-way Valves provide directional control of oil flow by lever actuation in two available positions.

A valve spool positioned by lever linkage slides within a body having machined recesses to allow the desired flow pattern.

The spring return arrangement provides automatic positioning of the valve spool to the "Normal" position when the lever is released.

The operator must pull and hold the lever against light spring force to reverse the pattern of oil flow.



APPLICATION

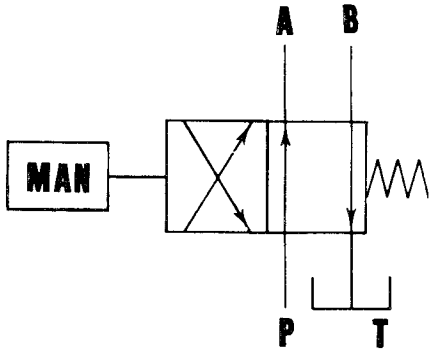
Manual control for hydraulic applications is achieved by the selection of this valve type.

The spring return arrangement is often used as a safety device to instantly reverse the direction of movement of a cylinder or fluid motor in an emergency, or when desired.

Four-way valves are used to control movements of double acting cylinders or reversible fluid motors.

Three-way valve action is obtained by plugging one of either cylinder ports and is used with single acting cylinders or non-reversing fluid motors.

Various spool designs are available to minimize shock while the spool is reversing.



SPECIFICATIONS

J.I.C.—Design conforms to specifications of the Joint Industry Conference.
PRESSURE RATING—1500 pounds per square inch.
BACK PRESSURE—Exhaust port pressure should not exceed 500 pounds per square inch non-shock.
FLOW RATE—For complete information of flow rate by pressure drop, refer to curves.

SPRING FORCE—Approximately 10 pounds of force is required to stroke the spool by means of a 3:1 ratio lever linkage. For every 100 psi of back pressure add 7 pounds to the spring force.
OIL RECOMMENDATION—Premium grade hydraulic oil with 200 to 250 SSU viscosity at 100° F for use at normal ambient temperatures.
TEMPERATURE—Under normal conditions of continuous operation, fluid temperature should not exceed 130° F. In no instance should the temperature exceed 160° F.

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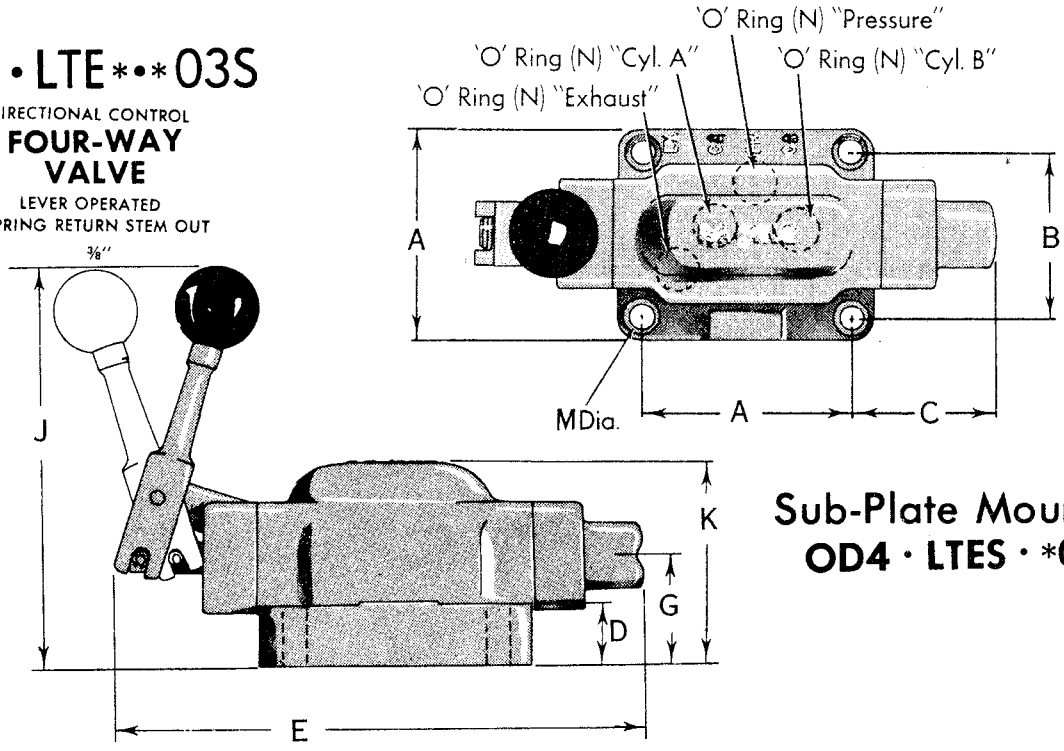
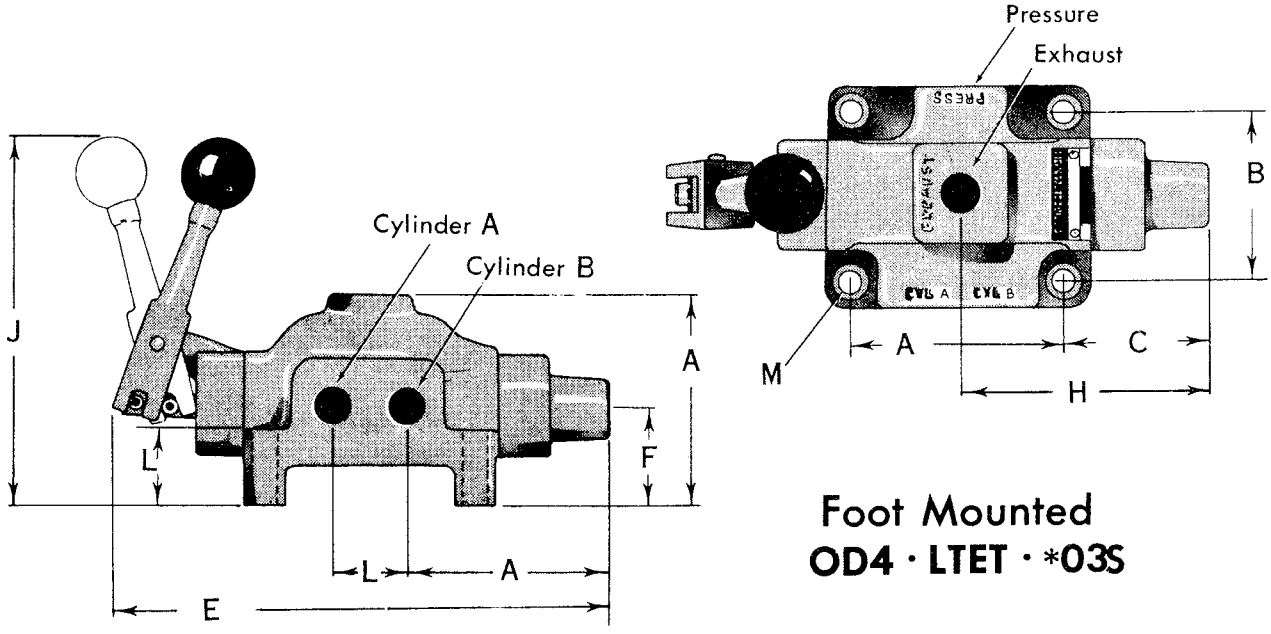
OD4 • LTE••03S

DIRECTIONAL CONTROL
FOUR-WAY VALVE
LEVER OPERATED
SPRING RETURN STEM OUT



Sub-Plate Mounted
OD4 · LTES · *03S

Valve Size	A	B	C	D	E	F	G	H	J	K	L	M Dia.	N ID	N CS
3/8	3 1/2	2 3/4	2 3/8	1	8 3/4	1 5/8	1 5/8	4 1/8	6 3/8	3 1/8	1 1/4	13/32	11/16	3/32



Foot Mounted
OD4 · LTET · *03S

SPECIFICATIONS

MOUNTING SUB-PLATE—Refer to Sheet No. for details of dimensions.
MOUNTING POSITION—Not restricted.
END CAPS—Rotation in 90° increments is possible.

LEFT HAND ASSEMBLY—When supplied, will provide for the lever at the opposite end of the body from the position shown.

Burton Hydraulics, Inc.
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OD4 • LNE * • *** S

DIRECTIONAL CONTROL

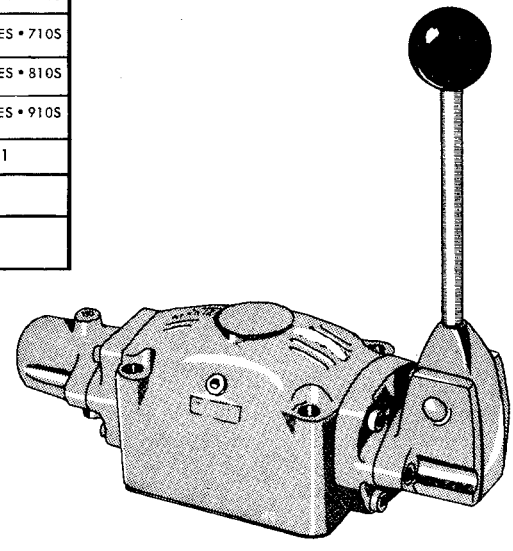
FOUR-WAY VALVE

LEVER OPERATED

DETENT POSITIONED

¾"—1¼"—1½"

Foot Mounted Valves			Neutral Porting Arrangement	Sub-Plate Mounted Valves	
¾" Size	1¼" Size	1½" Size		¾" Size	¼" Size
OD4 • LNET • 106S	OD4 • LNET • 110S	OD4 • LNET • 112S	1C	OD4 • LNES • 106S	OD4 • LNES • 110S
OD4 • LNET • 206S	OD4 • LNET • 210S	OD4 • LNET • 212S	2C	OD4 • LNES • 206S	OD4 • LNES • 210S
OD4 • LNET • 306S	OD4 • LNET • 310S	OD4 • LNET • 312S	3C	OD4 • LNES • 306S	OD4 • LNES • 310S
OD4 • LNET • 406S	OD4 • LNET • 410S	OD4 • LNET • 412S	4C	OD4 • LNES • 406S	OD4 • LNES • 410S
OD4 • LNET • 506S	OD4 • LNET • 510S	OD4 • LNET • 512S	5C	OD4 • LNES • 506S	OD4 • LNES • 510S
OD4 • LNET • 606S	OD4 • LNET • 610S	OD4 • LNET • 612S	6C	OD4 • LNES • 606S	OD4 • LNES • 610S
OD4 • LNET • 706S	OD4 • LNET • 710S	OD4 • LNET • 712S	7C	OD4 • LNES • 706S	OD4 • LNES • 710S
OD4 • LNET • 806S	OD4 • LNET • 810S	OD4 • LNET • 812S	8C	OD4 • LNES • 806S	OD4 • LNES • 810S
OD4 • LNET • 906S	OD4 • LNET • 910S	OD4 • LNET • 912S	9C	OD4 • LNES • 906S	OD4 • LNES • 910S
.425	1.271	1.753	AREA	.425	1.271
28	53	66	WEIGHT	32	70
26	68	77	GPM @ 10psi DROP	22	43

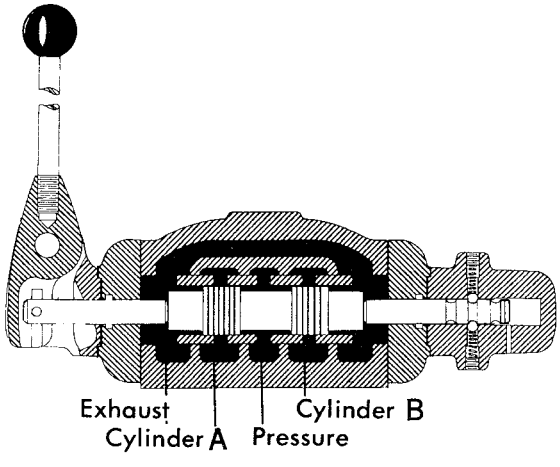


OPERATION

Manually Operated Detent Positioned Four-way Valves provide directional control of oil flow by lever actuation to three available positions.

A valve spool positioned by the lever linkage slides within a sleeve having round drilled holes to allow the desired flow pattern and provide smooth opening and closing of valve ports.

The detent arrangement holds the valve spool in any of the desired positions.



APPLICATION

Manual control for hydraulic applications is achieved by the selection of this valve type.

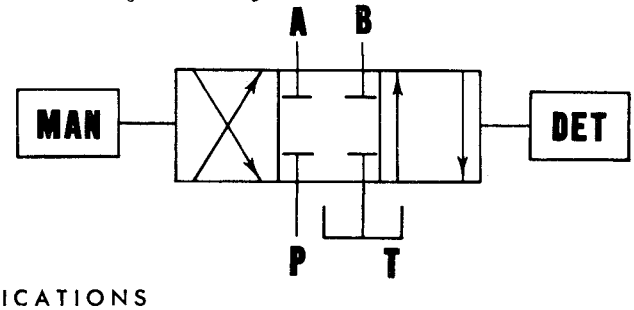
The detent arrangement frees the hands of the operator to perform other duties at the machine.

Four-way valves are used to control movements of double acting cylinders or reversible fluid motors.

Three-way valve action is obtained by plugging one of either cylinder ports and is used with single acting cylinders or non-reversing fluid motors.

A "Neutral" position is provided between the two extreme operating positions.

Various spool designs are available to obtain desired circuit results such as blocking and unloading.



SPECIFICATIONS

J.I.C.—Design conforms to specifications of the Joint Industry Conference.
PRESSURE RATING—1500 pounds per square inch.
BACK PRESSURE—Exhaust port pressure should not exceed 500 pounds per square inch, non-shock.
FLOW RATE—For complete information of flow rate by pressure drop, refer to curves

OIL RECOMMENDATION—Premium grade hydraulic oil with 200 to 250 SSU viscosity at 100° F for use at normal ambient temperatures.
THROTTLING SLEEVE—To provide for extremely smooth opening and closing of valve ports. Specify OD4 • LNE* • ***D.
TEMPERATURE—Under normal conditions of continuous operation, fluid temperature should not exceed 130° F. In no instance should the temperature exceed 160° F.

Burton Hydraulics, Inc.

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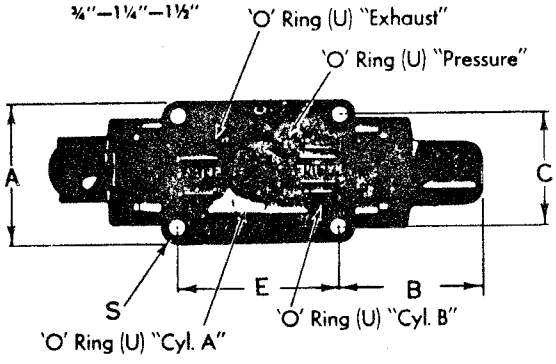
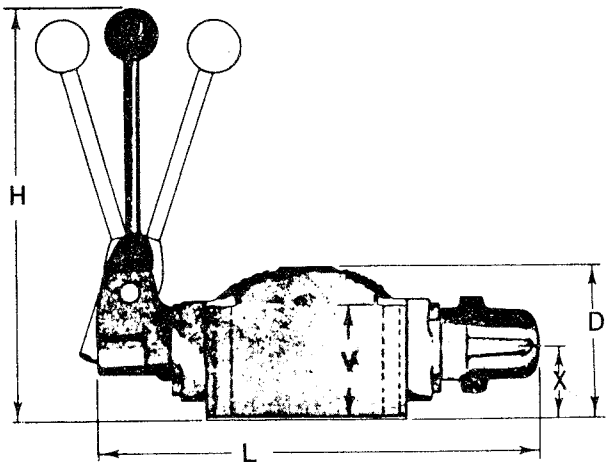
OD4 • LNE••***S

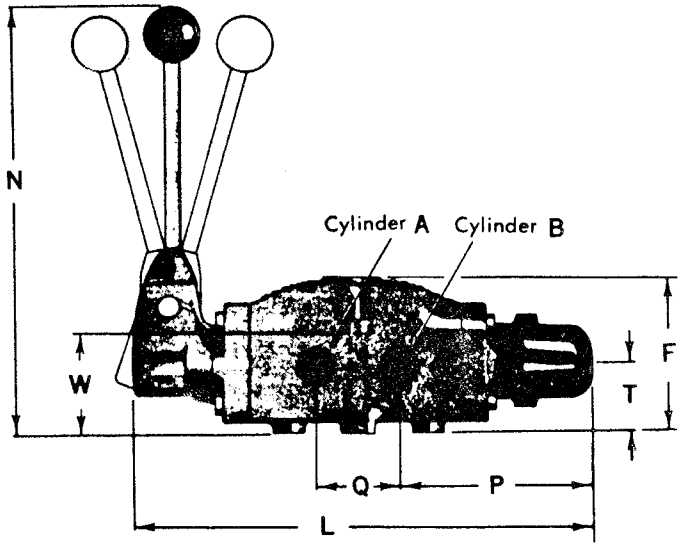
DIRECTIONAL CONTROL
FOUR-WAY VALVE
LEVER OPERATED
DETENT POSITIONED
¾"—1¼"—1½"

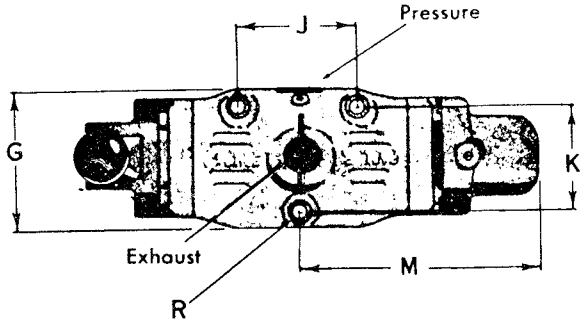




Sub-Plate Mounted
OD4 • LNES • ***S

Valve Size	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R Dia.	S Dia.	T	U ID	U CS	V	W	X
¾	4 9/16	4 13/16	3 5/8	4 1/2	5 1/8	4 7/16	4	13 1/4	3 1/2	3	14	7 3/8	13 3/16	6 3/16	2 3/8	7/16	9/16	1 15/16	1	1/8	3 5/16	3 11/32	2"
1¼	7 9/16	6 7/16	6 1/4	6 5/8	7 1/2	5 5/8	5 3/8	15 7/8	5 1/2	4 1/4	18 3/8	10 3/16	15 1/8	8 11/32	3 11/16	9/16	25/32	2 1/8	1 5/8	1/8	1 3/4	3 13/16	2 7/8
1½						6 1/16	5 7/8		6 1/4	4 3/4	19 3/4	10 7/8	15 1/8	8 11/16	4 3/8	9/16		2 5/32				3 31/32	





Foot Mounted
OD4 • LNET • ***S

SPECIFICATIONS

MOUNTING SUB-PLATE—Refer to Sheet No. and for details of dimensions.
MOUNTING POSITION—Not restricted.

END CAPS—Rotation in 90° increments is possible.
LEFT HAND ASSEMBLY—When supplied, will provide for the lever at opposite end of the body from the position shown.

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Foot Mounted Valves			Neutral Porting Arrangement	Sub-Plate Mounted Valves	
¾" Size	1¼" Size	1½" Size		¾" Size	1¼" Size
OD4 • LSET • 106S	OD4 • LSET • 110S	OD4 • LSET • 112S	1C	OD4 • LSES • 106S	OD4 • LSES • 110S
OD4 • LSET • 206S	OD4 • LSET • 210S	OD4 • LSET • 212S	2C	OD4 • LSES • 206S	OD4 • LSES • 210S
OD4 • LSET • 306S	OD4 • LSET • 310S	OD4 • LSET • 312S	3C	OD4 • LSES • 306S	OD4 • LSES • 310S
OD4 • LSET • 406S	OD4 • LSET • 410S	OD4 • LSET • 412S	4C	OD4 • LSES • 406S	OD4 • LSES • 410S
OD4 • LSET • 506S	OD4 • LSET • 510S	OD4 • LSET • 512S	5C	OD4 • LSES • 506S	OD4 • LSES • 510S
OD4 • LSET • 606S	OD4 • LSET • 610S	OD4 • LSET • 612S	6C	OD4 • LSES • 606S	OD4 • LSES • 610S
OD4 • LSET • 706S	OD4 • LSET • 710S	OD4 • LSET • 712S	7C	OD4 • LSES • 706S	OD4 • LSES • 710S
OD4 • LSET • 806S	OD4 • LSET • 810S	OD4 • LSET • 812S	8C	OD4 • LSES • 806S	OD4 • LSES • 810S
OD4 • LSET • 906S	OD4 • LSET • 910S	OD4 • LSET • 912S	9C	OD4 • LSES • 906S	OD4 • LSES • 910S
.425	1.271	1.753	AREA	.425	1.271
26	50	60	WEIGHT	30	66
26	68	77	GPM @ 10psi DROP	22	43

OD4 • LSE••***S

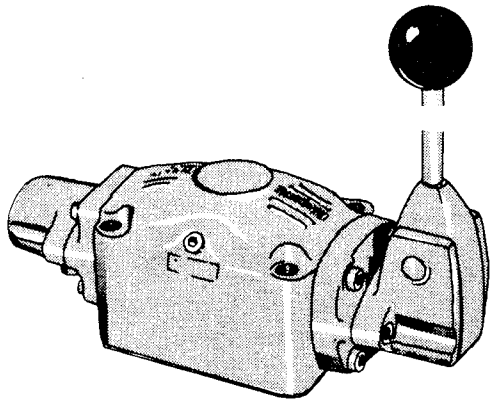
DIRECTIONAL CONTROL

FOUR-WAY VALVE

LEVER OPERATED

SPRING CENTER

¾"—1¼"—1½"



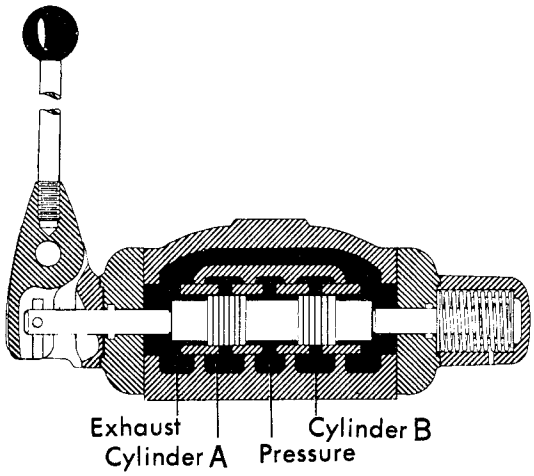
OPERATION

Manually Operated Spring Centered Four-way Valves provide directional control of oil flow by lever actuation to three available positions.

A valve spool positioned by the lever linkage slides within a sleeve having round drilled holes to allow the desired flow pattern and provide smooth opening and closing of valve ports.

The spring centering arrangement automatically positions the valve spool to "Neutral" when the lever is released.

To maintain flow in either of the two extreme positions, the operator must hold the lever against light spring force.



APPLICATION

Manual control for hydraulic applications is achieved by the selection of this valve type.

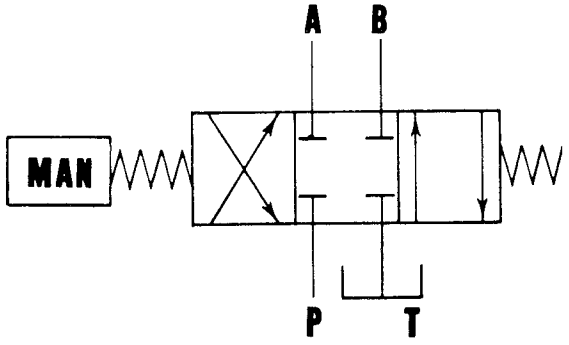
The spring centering arrangement is often used as a safety device to immediately stop the operation of a machine by releasing the lever in an emergency or when desired.

Four-way valves are used to control movements of double acting cylinders or reversible fluid motors.

Three-way valve action is obtained by plugging one of either cylinder ports and is used with single acting cylinders or non-reversing fluid motors.

A "Neutral" position is provided between the two extreme operating positions.

Various spool designs are available to obtain desired circuit results such as blocking and unloading.



SPECIFICATIONS

J.I.C.—Design conforms to specifications of the Joint Industry Conference.
PRESSURE RATING—1500 pounds per square inch.
BACK PRESSURE—Exhaust port pressure should not exceed 500 pounds per square inch, non-shock.
FLOW RATE—For complete information of flow rate by pressure drop, refer to curves.

SPRING FORCE—Approximately 12 pounds of force is required to stroke the spool by means of a 4.5:1 ratio lever linkage.
OIL RECOMMENDATION—Premium grade hydraulic oil with 200 to 250 SSU viscosity at 100° F for use at normal ambient temperatures.
THROTTLING SLEEVE—To provide for extremely smooth opening and closing of valve ports. Specify OD4 • LSE• • •••D.
TEMPERATURE—Under normal conditions of continuous operation, fluid temperature should not exceed 130° F. In no instance should the temperature exceed 160° F.

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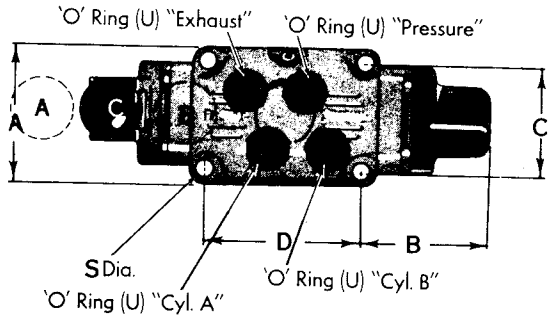
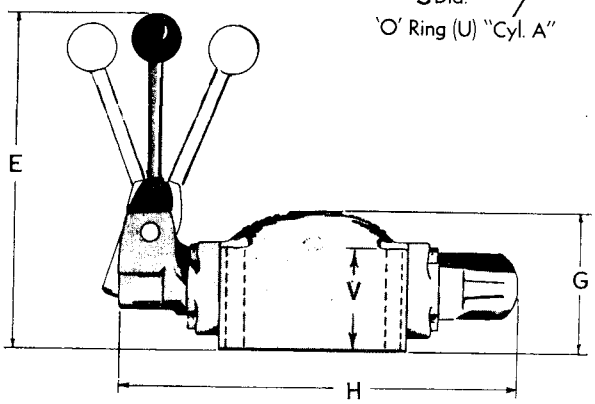
OD4 • LSE* • *** S

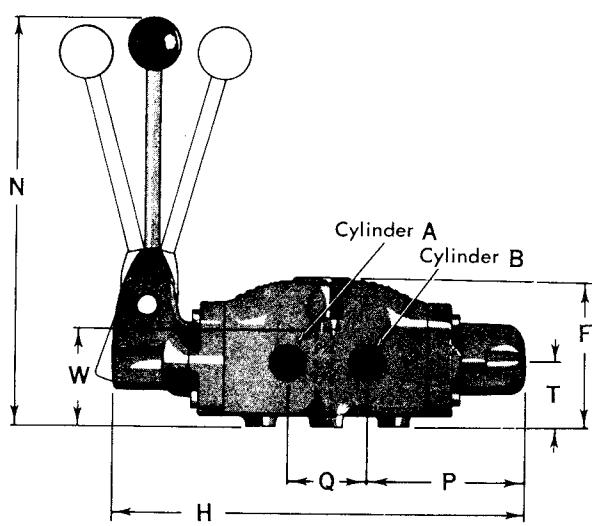
DIRECTIONAL CONTROL
FOUR-WAY VALVE
LEVER OPERATED
SPRING CENTER
¾"—1¼"—1½"

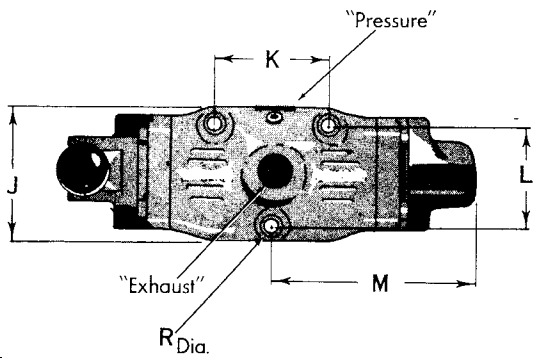




Sub-Plate Mounted
OD4 · LSES · ***S

Valve Size	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T	U ID	U CS	V	W
¾	4 9/16	3 7/8	3 5/8	5 1/8	13 1/4	4 7/16	4 1/2	13 1/32	4	3 1/2	3	6 7/16	13 3/16	5 1/4	2 3/8	7/16	9/16	1 15/16	1	1/8	3 5/16	3 11/32
1¼	7 9/16	5 1/16	6 1/4	7 1/2	15 7/8	5 5/8	6 5/8	16 3 1/32	5 3/8	5 1/2	4 1/4	8 13/16	15 1/8	6 31/32	3 11/16	9/16	25/32	2 1/8	1 5/8	1/8	1 3/4	3 13/16
1½						6 1/32		18 9/32	5 7/8	6 1/4	4 3/4	9 15/32	15 5/32	7 9/32	4 3/8	9/16		2 5/32				3 31/32





Foot Mounted
OD4 · LSET · ***S

SPECIFICATIONS

MOUNTING SUB-PLATE—Refer to Sheet No. and for details of dimensions.
MOUNTING POSITION—Not restricted.

END CAPS—Rotation in 90° increments is possible.
LEFT HAND ASSEMBLY—When supplied, will provide for the lever at the opposite end of the body from the position shown.

Burton Hydraulics, Inc.
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OD4 • LTE • • ***S

DIRECTIONAL CONTROL

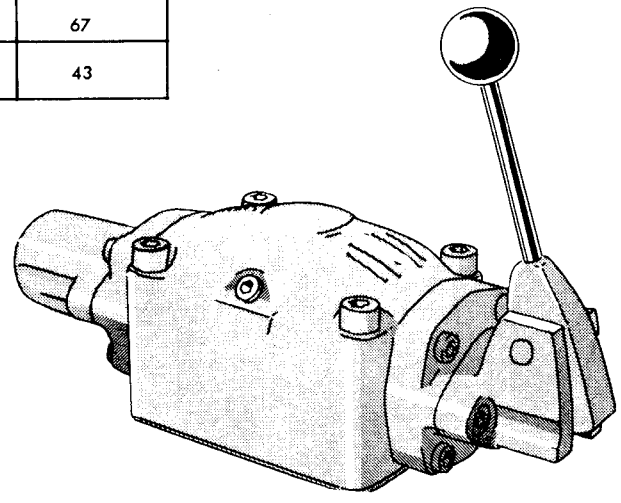
FOUR-WAY VALVE

LEVER OPERATED

SPRING RETURN STEM OUT

¾"—1¼"—1½"

Foot Mounted Valves			Neutral Porting Arrangement	Sub-Plate Mounted Valves	
¾" Size	1¼" Size	1½" Size		¾" Size	1¼" Size
OD4 • LTET • 106S	OD4 • LTET • 110S	OD4 • LTET • 112S	1C	OD4 • LTES • 106S	OD4 • LTES • 110S
OD4 • LTET • 206S	OD4 • LTET • 210S	OD4 • LTET • 212S	2C	OD4 • LTES • 206S	OD4 • LTES • 210S
OD4 • LTET • 706S	OD4 • LTET • 710S	OD4 • LTET • 712S	7C	OD4 • LTES • 706S	OD4 • LTES • 710S
.425	1.271	1.753	AREA	.425	1.271
26	51	62	WEIGHT	30	67
26	68	77	GPM @ 10 psi DROP	22	43



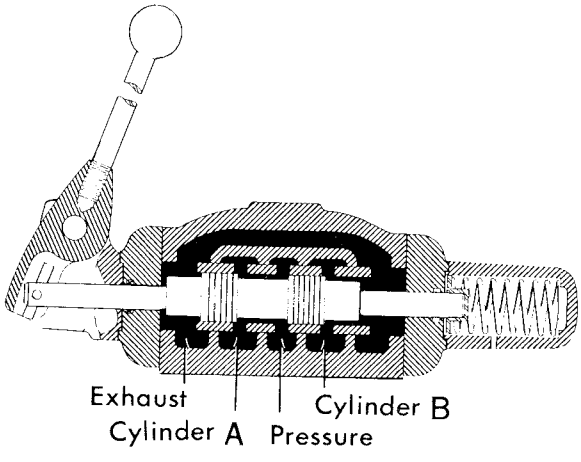
OPERATION

Manually Operated Spring Return Four-way Valves provide directional control of oil flow by lever actuation in two available positions.

A valve spool positioned by lever linkage slides within a sleeve having round drilled holes to allow the desired flow pattern and smooth opening and closing of valve ports.

The spring return arrangement provides automatic positioning of the valve spool to the "Normal" position when the lever is released.

The operator must pull and hold the lever against light spring force to reverse the pattern of oil flow.



APPLICATION

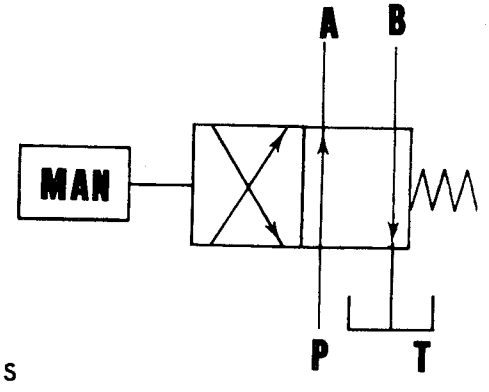
Manual control for hydraulic applications is achieved by the selection of this valve type.

The spring return arrangement is often used as a safety device to instantly reverse the direction of movement of a cylinder or fluid motor in an emergency, or when desired.

Four-way valves are used to control movements of double acting cylinders or reversible fluid motors.

Three-way valve action is obtained by plugging one of either cylinder ports and is used with single acting cylinders or non-reversing fluid motors.

Various spool designs are available to minimize shock while the spool is reversing.



SPECIFICATIONS

J.I.C.—Design conforms to specifications of the Joint Industry Conference.
PRESSURE RATING—1500 pounds per square inch.
BACK PRESSURE—Exhaust port pressure should not exceed 500 pounds per square inch.
FLOW RATE—For complete information of flow rate by pressure drop, refer to curves.
TEMPERATURE—Under normal conditions of continuous operation, fluid temperature should not exceed 130° F. In no instance should the temperature exceed 160° F.
SPRING FORCE—Approximately 20 pounds of force is required to stroke the spool by means of a 4.5:1 ratio lever linkage. On 1¼" valves and larger, for every 100 psi of back pressure add 7 pounds to the spring force.
OIL RECOMMENDATION—Premium grade hydraulic oil with 200 to 250 SSU viscosity at 100° F for use at normal ambient temperatures.
THROTTLING SLEEVE—To provide for extremely smooth opening and closing of valve ports. Specify OD4 • LTE• • •••D.

Burton Hydraulics, Inc.

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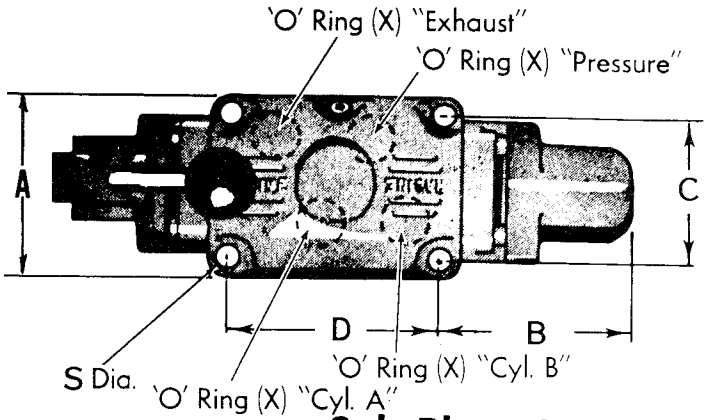
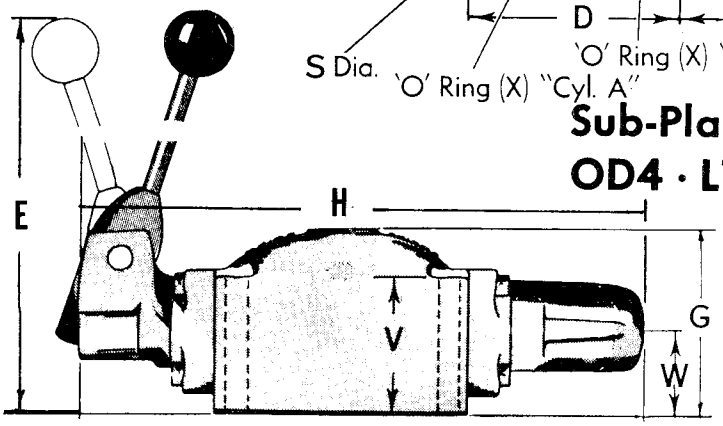
OD4 • LTE**•***S

DIRECTIONAL CONTROL
FOUR-WAY VALVE
LEVER OPERATED
SPRING RETURN STEM OUT
¾"—1¼"—1½"

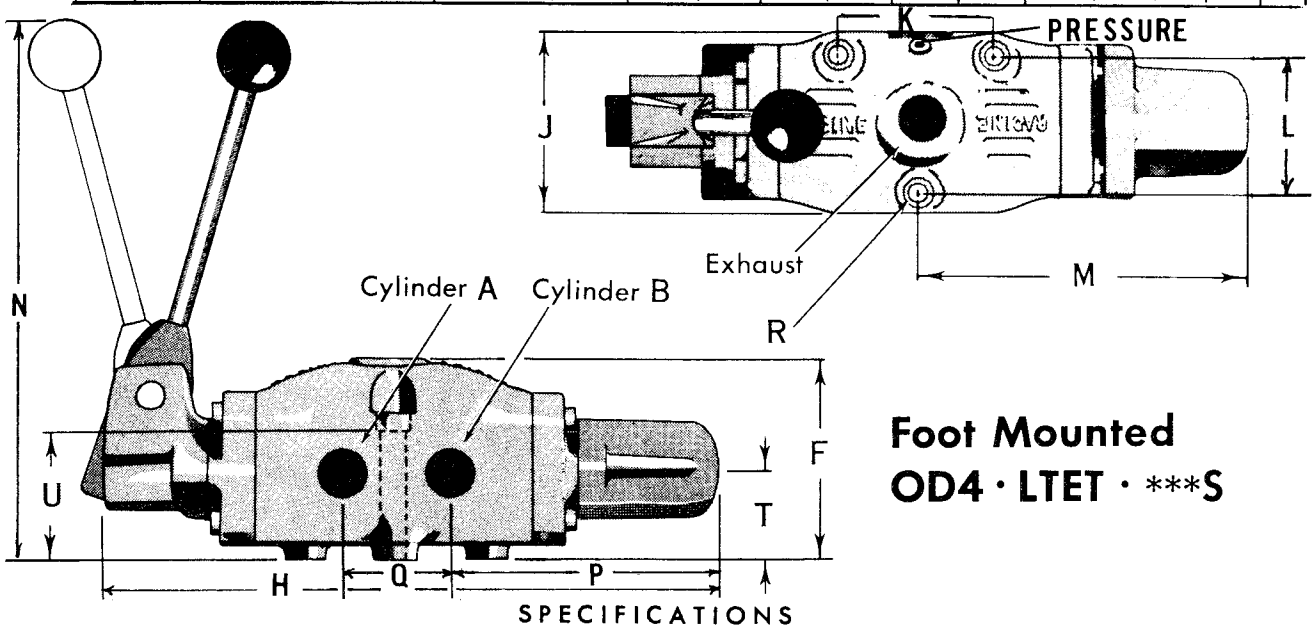


Sub-Plate Mounted
OD4 • LTES • ***S



Valve Size	A	B	C
¾	4 9/16	4 15/16	3 5/8
1¼	7 9/16	1 15/16	6¼
1½			

D	E	F	G	H	J	K	L	M	N	P	Q	R Dia.	S Dia.	T	U	V	W	X ID	X CS
5⅛	13¼	4 7/16	4½	14⅛	4	3½	3	7½	13 3/16	6 5/16	2⅜	7/16	9/16	1 15/16	3 11/32	3 5/16	2	1	⅛
7½	15⅞	5⅝	6⅝	13⅞	5⅜	5½	4¼	5 11/16	15⅛	3 13/16	3 11/16	9/16	25/32	2⅛	3 13/16	1¾	2⅞	1⅝	⅛
		6 1/16		15⅛	5⅞	6¼	4¾	6 5/16	15⅛	4⅛	4⅜	9/16		2 5/32	4				



Foot Mounted
OD4 • LTET • ***S

SPECIFICATIONS

MOUNTING SUB-PLATE—Refer to Sheet No. and for details of dimensions.
MOUNTING POSITION—Not restricted.
END CAPS—Rotation in 90° increments is possible.
LEFT HAND ASSEMBLY—When supplied, will provide for the lever at the opposite end of the body from the position shown.

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OD4 • LOE••••S

DIRECTIONAL CONTROL

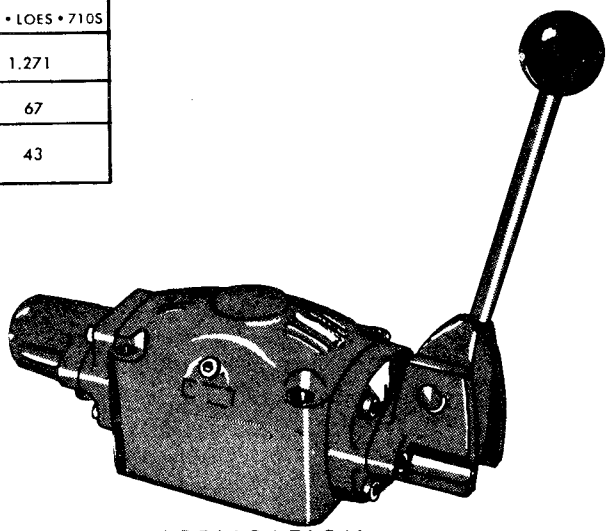
FOUR-WAY VALVE

LEVER OPERATED

SPRING RETURN STEM IN

¾"—1¼"—1½"

Foot Mounted Valves			Neutral Porting Arrangement	Sub-Plate Mounted Valves	
¾" Size	1¼" Size	1½" Size		¾" Size	1¼" Size
OD4 • LOET • 106S	OD4 • LOET • 110S	OD4 • LOET • 112S	1C	OD4 • LOES • 106S	OD4 • LOES • 110S
OD4 • LOET • 206S	OD4 • LOET • 210S	OD4 • LOET • 212S	2C	OD4 • LOES • 206S	OD4 • LOES • 210S
OD4 • LOET • 706S	OD4 • LOET • 710S	OD4 • LOET • 712S	7C	OD4 • LOES • 706S	OD4 • LOES • 710S
.425	1.271	1.753	AREA	.425	1.271
26	51	62	WEIGHT	30	67
26	68	77	GPM @ 10psi DROP	22	43



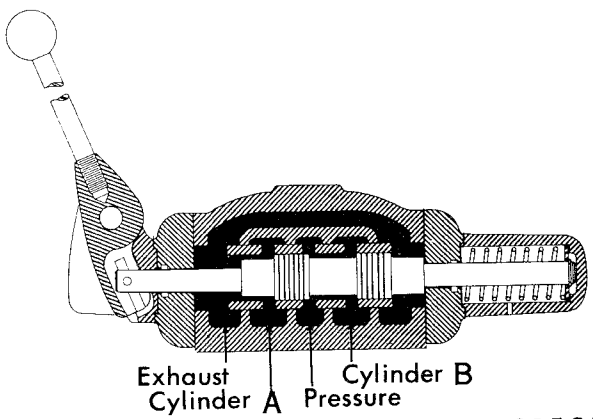
OPERATION

Manually Operated Spring Return Four-way Valves provide directional control of oil flow by lever actuation in two available positions.

A valve spool positioned by lever linkage slides within a sleeve having round drilled holes to allow the desired flow pattern and provide smooth opening and closing of valve ports.

The spring return arrangement automatically positions the valve spool to the "Normal" position when the lever is released.

The operator must push and hold the lever against light spring force to reverse the pattern of oil flow.



APPLICATION

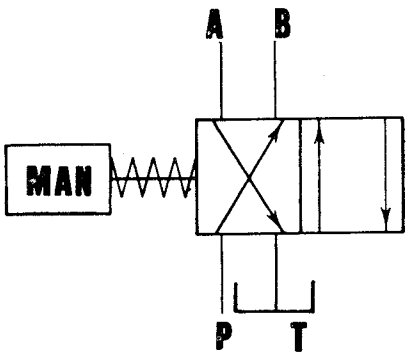
Manual control for hydraulic applications is achieved by the selection of this valve type.

The spring return arrangement is often used as a safety device to instantly reverse the direction of movement of a cylinder or fluid motor in an emergency, or when desired.

Four-way valves are used to control movements of double acting cylinders or reversible fluid motors.

Three-way valve action is obtained by plugging one of either cylinder ports and is used with single acting cylinders or non-reversing fluid motors

Various spool designs are available to minimize shock while the spool is reversing.



SPECIFICATIONS

J.I.C.—Design conforms to specifications of the Joint Industry Conference.

PRESSURE RATING—1500 pounds per square inch.

BACK PRESSURE—Exhaust port pressure should not exceed 500 pounds per square inch, non-shock.

FLOW RATE—For complete information of flow rate by pressure drop, refer to curves.

TEMPERATURE—Under normal conditions of continuous operation, fluid temperature should not exceed 130° F. In no instance should the temperature exceed 160° F.

OIL RECOMMENDATION—Premium grade hydraulic oil with 200 to 250 SSU viscosity at 100° F for use at normal ambient temperatures.

THROTTLING SLEEVE—To provide for extremely smooth opening and closing of valve ports. Specify OD4 • LOE• • •••D.

SPRING FORCE—Approximately 12 pounds of force is required to stroke the spool by means of a 4.5:1 ratio lever linkage. On 1¼" valves and larger, for every 100 psi of back pressure add seven pounds to the spring force.

Burton Hydraulics, Inc.

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OD4 • LOE * • *** S

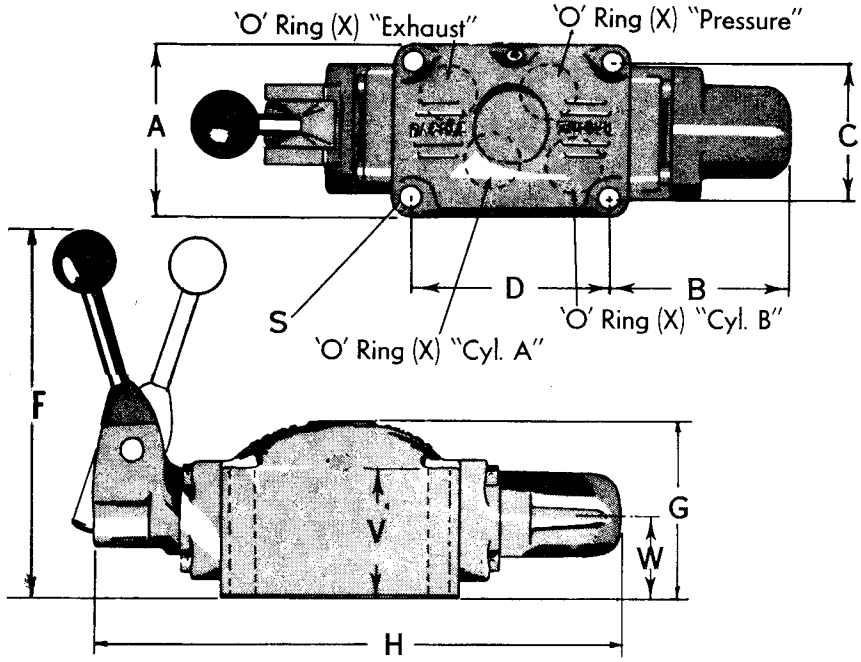
DIRECTIONAL CONTROL

FOUR-WAY VALVE

LEVER OPERATED

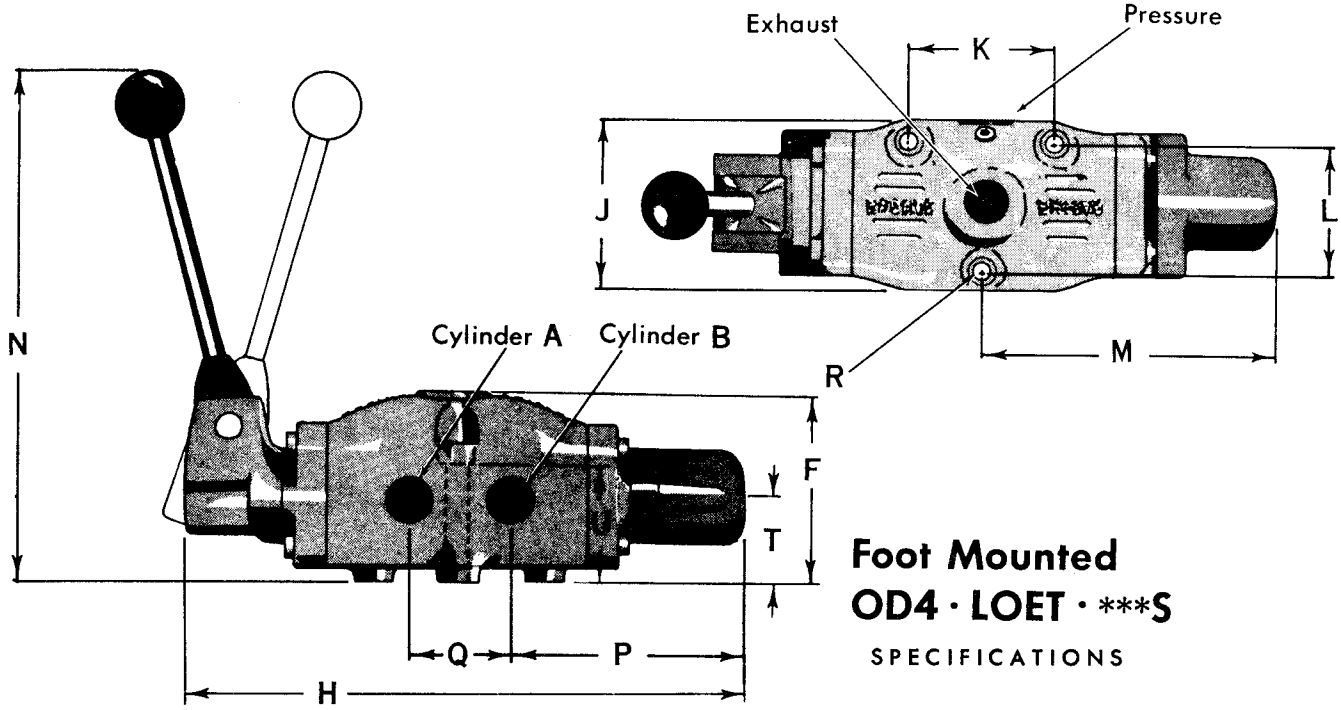
SPRING RETURN STEM IN

¾"—1¼"—1½"



Sub-Plate Mounted OD4 · LOES · ***S

Valve Size	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R Dia.	S Dia.	T	U	V	W	X ID	X CS
¾	4 9/16	4 15/16	3 5/8	5 1/8	13 1/4	4 7/16	4 1/2	14 1/8	4	3 1/2	3	7 1/2	13 3/16	6 5/16	2 3/8	7/16	9/16	1 15/16	3 11/32	3 5/16	2	1	1/8
1¼	7 9/16	5 5/8	6 1/4	7 1/2	15 7/8	5 5/8	6 5/8	17 9/16	5 3/8	5 1/2	4 1/4	9 3/8	15 1/8	7 9/16	3 11/16	9/16	25/32	2 1/8	3 13/16	1 3/4	2 7/8	1 5/8	1/8
1½						6 1/16		18 7/8	5 7/8	6 1/4	4 3/4	10 1/16	15 1/8	7 7/8	4 3/8	9/16		2 5/32	4				



Foot Mounted OD4 · LOET · ***S

SPECIFICATIONS

MOUNTING SUB-PLATE—Refer to Sheet No. and for details of dimensions.
MOUNTING POSITION—Not restricted.

END CAPS—Rotation in 90° increments is possible.
LEFT HAND ASSEMBLY—When supplied, will provide for the lever at the opposite end of the body from the position shown.

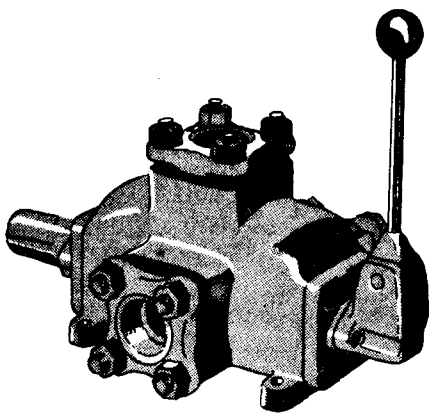
Burton Hydraulics, Inc.

7875 DIVISION DRIVE MENTOR, OHIO 44060 (440) 974-8868 FAX - (440) 974-0951

OD4 • LSEF • *16S

DIRECTIONAL CONTROL
FOUR-WAY VALVE
LEVER OPERATED
SPRING CENTER
2"

Foot Mounted Valve 2" Size	Neutral Porting Arrangement
OD4 • LSEF • 116S	1C
OD4 • LSEF • 216S	2C
OD4 • LSEF • 416S	4C
OD4 • LSEF • 516S	5C
OD4 • LSEF • 616S	6C
OD4 • LSEF • 716S	7C
OD4 • LSEF • 816S	8C
OD4 • LSEF • 916S	9C
2.935	AREA
97	WEIGHT
115	GPM @ 10 psi DROP



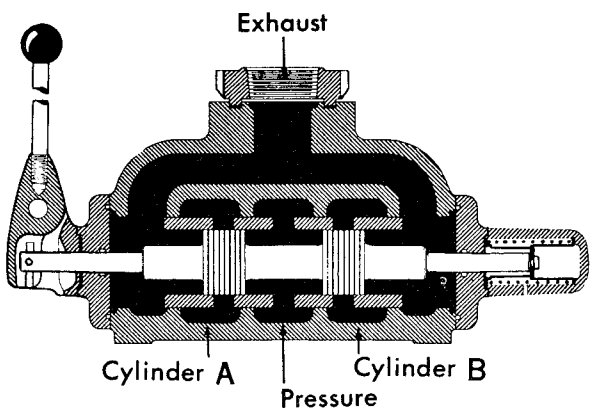
OPERATION

Manually Operated Spring Centered Four-way Valves provide directional control of oil flow by lever actuation to three available positions.

A valve spool positioned by the lever linkage slides within a sleeve having round drilled holes to allow the desired flow pattern and provide smooth opening and closing of valve ports.

The spring centering arrangement automatically positions the valve spool to "Neutral" when the lever is released.

To maintain flow in either of the two extreme positions, the operator must hold the lever against light spring force.



APPLICATION

Manual control for hydraulic applications is achieved by the selection of this valve type.

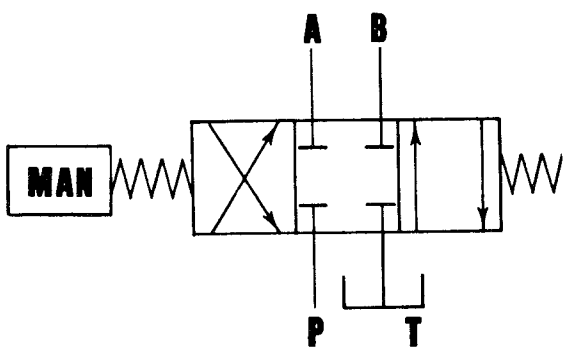
The spring centering arrangement is often used as a safety device to immediately stop the operation of a machine by releasing the lever in an emergency or when desired.

Four-way valves are used to control movements of double acting cylinders or reversible fluid motors.

Three-way valve action is obtained by plugging one of either cylinder ports and is used with the single acting cylinders or non-reversing fluid motors.

A "Neutral" position is provided between the two extreme operating positions.

Various spool designs are available to obtain desired circuit results such as blocking and unloading.



SPECIFICATIONS

J.I.C.—Design conforms to specifications of the Joint Industry Conference.
PRESSURE RATING—1500 pounds per square inch.
BACK PRESSURE—Exhaust port pressure should not exceed 500 pounds per square inch, non-shock.
FLOW RATE—For complete information of flow rate by pressure drop, refer to curves.
SPRING FORCE—Approximately 12 pounds of force is required to stroke the spool by means of a 4.5:1 ratio lever linkage.
OIL RECOMMENDATION—Premium grade hydraulic oil with 200 to 250 SSU viscosity at 100° F for use at normal ambient temperatures.
THROTTLING SLEEVE—To provide for extremely smooth opening and closing of valve ports. Specify OD4 • LSEF • •16D.
TEMPERATURE—Under normal conditions of continuous operation, fluid temperature should not exceed 130° F. In no instance should the temperature exceed 160°F.

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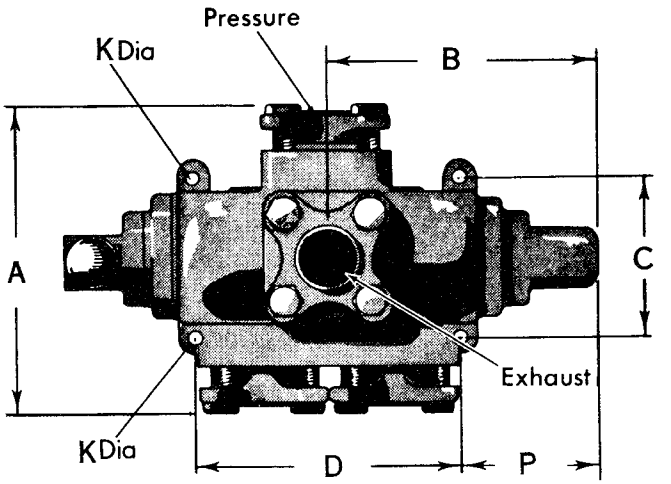
OD4 • LSEF • * 16S

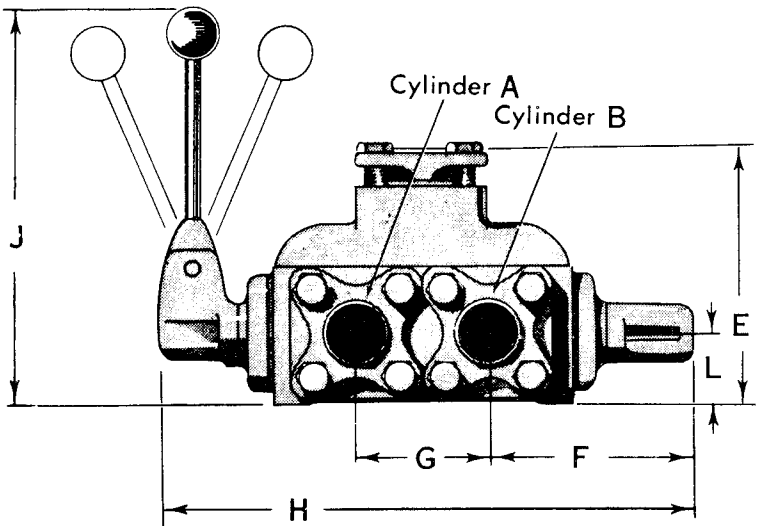
DIRECTIONAL CONTROL

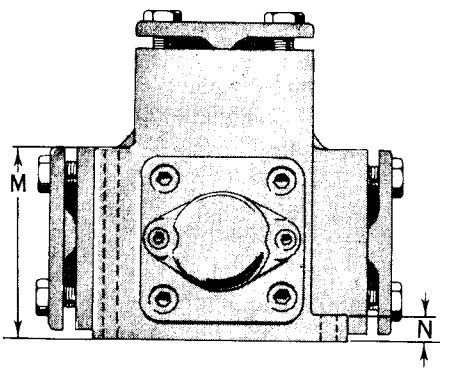
FOUR-WAY VALVE

LEVER OPERATED
SPRING CENTER
2"



Flange Connections





Valve Size	A	B	C	D	E	F	G	H	J	K	L	M	N	P
2	12	10 1/8	5 7/8	10	10	7 11/16	4 7/8	19 5/8	15 7/16	17/32	2 11/16	5 1/8	3/4	5 1/8

SPECIFICATIONS

MOUNTING POSITION—Not restricted.
END CAPS—Rotation in 90° increments is possible.

LEFT HAND ASSEMBLY—When supplied, will provide for the lever at the opposite end of the body from the position shown.

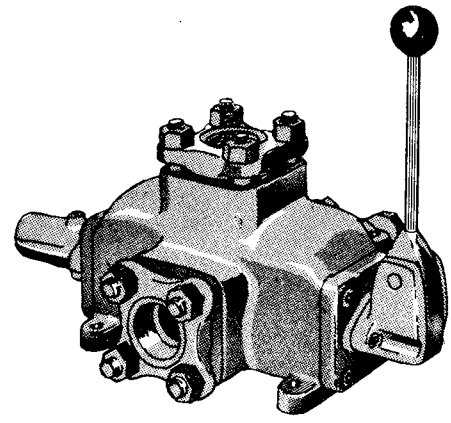
Burton Hydraulics, Inc.

7875 DIVISION DRIVE MENTOR, OHIO 44060 (440) 974-8868 FAX - (440) 974-0951

OD4 • LNEF • * 16S

DIRECTIONAL CONTROL
FOUR-WAY VALVE
LEVER OPERATED
DETENT POSITIONED
2"

Foot Mounted Valves 2" Size	Neutral Porting Arrangement
OD4 • LNEF • 116S	1C
OD4 • LNEF • 216S	2C
OD4 • LNEF • 416S	4C
OD4 • LNEF • 516S	5C
OD4 • LNEF • 616S	6C
OD4 • LNEF • 716S	7C
OD4 • LNEF • 816S	8C
OD4 • LNEF • 916S	9C
2.935	AREA
100	WEIGHT
115	GPM @ 10 psi DROP

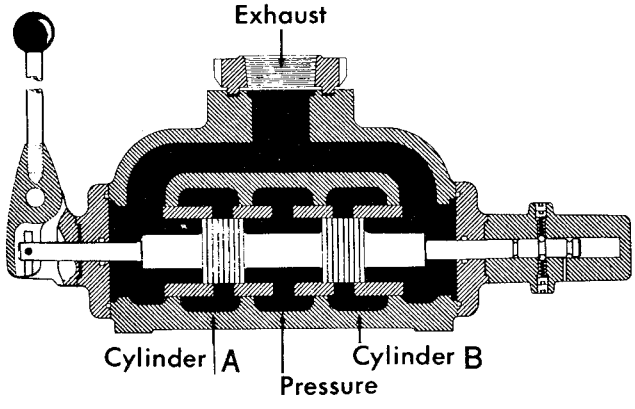


OPERATION

Manually Operated Detent Positioned Four-way Valves provide directional control of oil flow by lever actuation to three available positions.

A Valve spool positioned by the lever linkage slides within a sleeve having round drilled holes to allow the desired flow pattern and provide smooth opening and closing of valve ports.

The detent arrangement holds the valve spool in any of the desired positions.



APPLICATION

Manual control for hydraulic applications is achieved by the selection of this valve type.

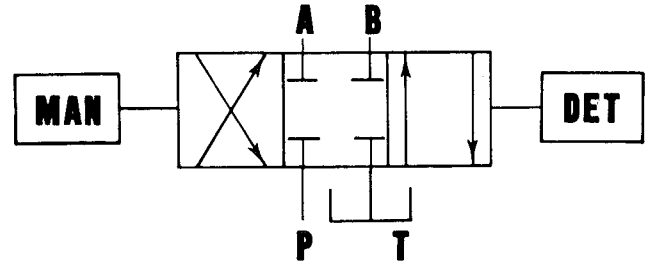
The detent arrangement frees the hands of the operator to perform other duties at the machine.

Four-way valves are used to control movements of double acting cylinders or reversible fluid motors.

Three-way valve action is obtained by plugging one of either cylinder ports and is used with single acting cylinders or non-reversing fluid motors.

A "Neutral" position is provided between the two extreme operating positions.

Various spool designs are available to obtain desired circuit results such as blocking and unloading.



SPECIFICATIONS

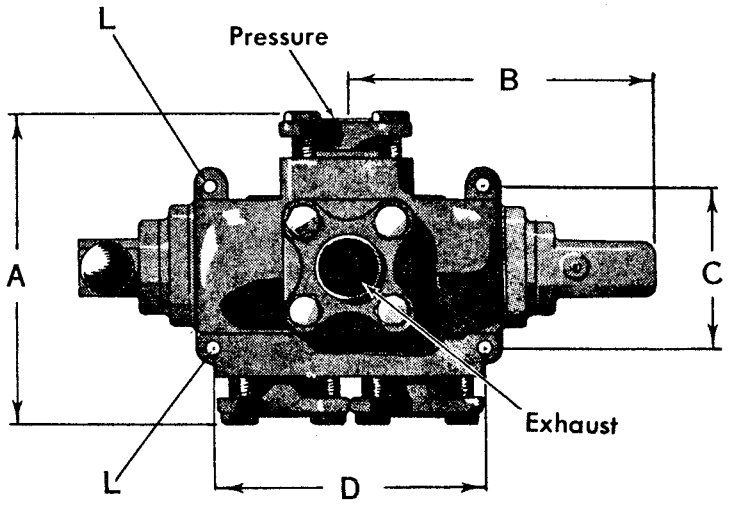
J.I.C.—Design conforms to specifications of the Joint Industry Conference.
PRESSURE RATING—1500 pounds per square inch.
BACK PRESSURE—Exhaust port pressure should not exceed 500 pounds per square inch.
FLOW RATE—For complete information of flow rate by pressure drop, refer to curves

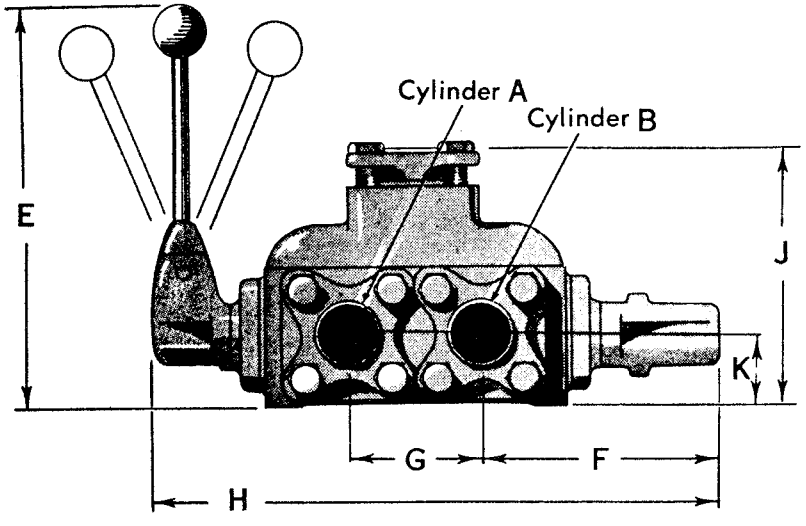
OIL RECOMMENDATION—Premium grade hydraulic oil with 200 to 250 SSU viscosity at 100° F for use at normal ambient temperatures.
THROTTLING SLEEVE—To provide for extremely smooth opening and closing of valve ports. Specify OD4 • LNEF • • 16D.
TEMPERATURE—Under normal conditions of continuous operation, fluid temperature should not exceed 130° F. In no instance should the temperature exceed 160°F.

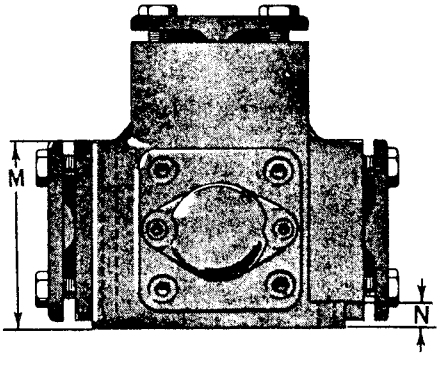
Burton Hydraulics, Inc.
7875 DIVISION DRIVE MENTOR, OHIO 44060 (440) 974-8868 FAX - (440) 974-0951

OD4 • LNEF • * 16S

DIRECTIONAL CONTROL
FOUR-WAY VALVE
LEVER OPERATED
DETENT POSITIONED
2"







Valve Size	A	B	C	D	E	F	G	H	J	K	L Dia.	M	N	
2	12	11½	5⅞	10	15⁷⁄₁₆	9⅛	4⅞	21	10	2¹¹⁄₁₆	¹⁷⁄₃₂	5⅛	¾	

SPECIFICATIONS

MOUNTING POSITION—Not restricted.
END CAPS—Rotation in 90° increments is possible.

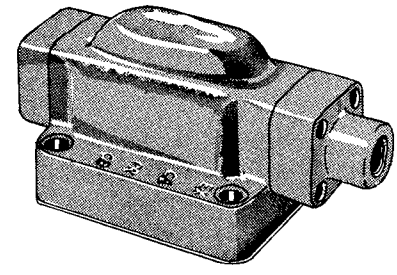
LEFT HAND ASSEMBLY—When supplied, will provide for the lever at the opposite end of the body from the position shown.

Burton Hydraulics, Inc.
7875 DIVISION DRIVE MENTOR, OHIO 44060 (440) 974-8868 FAX - (440) 974-0951

OD4 • PTE ••03S

DIRECTIONAL CONTROL
FOUR-WAY VALVE
FOUR-WAY VALVE
SINGLE PILOT OPERATED
SPRING RETURN
⅜"

Foot Mounted Valves	Neutral Porting Arrangement	Sub-Plate Mounted Valves
⅜" Size		⅜" Size
OD4 • PTET • 103S	1C	OD4 • PTES • 103S
OD4 • PTET • 203S	2C	OD4 • PTES • 203S
OD4 • PTET • 703S	7C	OD4 • PTES • 703S
.141	AREA	.141
8	WEIGHT	9
10.7	GPM @ 10 psi DROP	9.2



OPERATION

Pilot Operated Spring Return Four-way Valves provide directional control of oil flow by hydraulic actuation to two available positions.

The spool slides within a body having machined recesses to allow the desired flow pattern.

The spring return arrangement provides automatic positioning of the valve spool to the "Normal" position when hydraulic pilot pressure is exhausted from the pilot port.

By applying hydraulic pilot pressure to the pilot port, the valve spool will move against light spring force to the opposite position.

Position of the valve spool will be held as long as pilot pressure is maintained.

APPLICATION

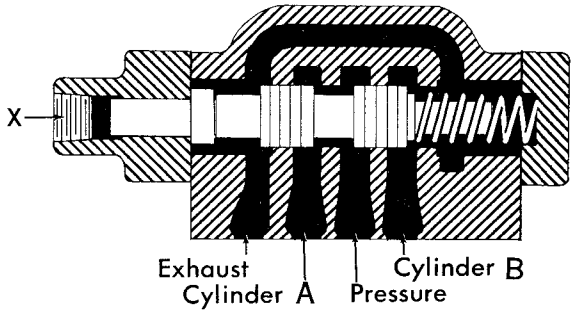
Hydraulic control for automatic hydraulic applications is achieved by the selection of this valve type.

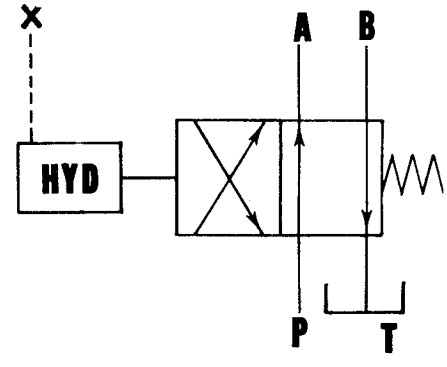
The spring return arrangement is often used as a safety device to instantly reverse the direction of movement of a cylinder or fluid motor in event of hydraulic pilot pressure failure, or when desired.

Four-way valves are used to control movements of double acting cylinders or reversible fluid motors.

Three-way valve action is obtained by plugging one of either cylinder ports and is used with single acting cylinders or non-reversing fluid motors.

Various spool designs are available to minimize shock while the spool is reversing.





SPECIFICATIONS

J.I.C.—Design conforms to specifications of the Joint Industry Conference.
PRESSURE RATING—1500 pounds per square inch.
PILOT PRESSURE—A pilot pressure of approximately 50 psi minimum must be available for pilot operation of the valve. Pilot pressure should not exceed 1500 psi maximum.
VOLUME OF OIL—Hydralic pilot operation requires maximum of .098 cubic inches of oil displacement to shift the spool to the end position.
FLOW RATE—For complete information of flow rate by pressure drop, refer to curves.
TEMPERATURE—Under normal conditions of continuous operation, fluid temperature should not exceed 130° F. In no instance should the temperature exceed 160° F.
OIL RECOMMENDATION—Premium grade hydraulic oil with 200 to 250 SSU viscosity at 100° F for use at normal ambient temperatures.
BACK PRESSURE—Exhaust port pressure should not exceed 500 pounds per square inch, non-shock. Back pressure must be at least 50 psi lower than pilot pressure at all times.

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OD4 • PTE**03S

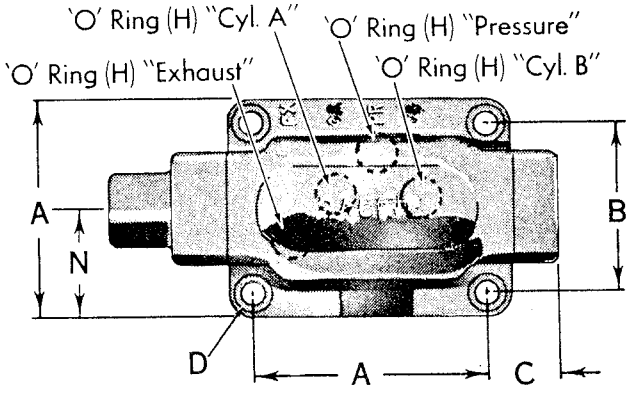
DIRECTIONAL CONTROL

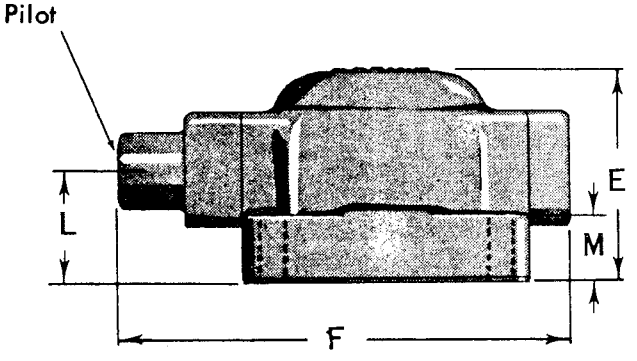
FOUR-WAY VALVE

SINGLE PILOT OPERATED

SPRING RETURN

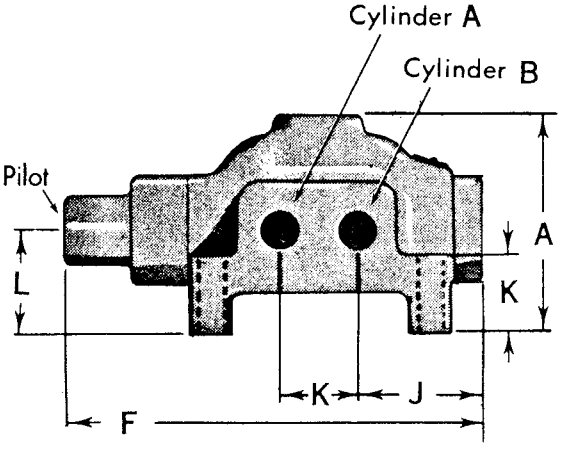
⅜"

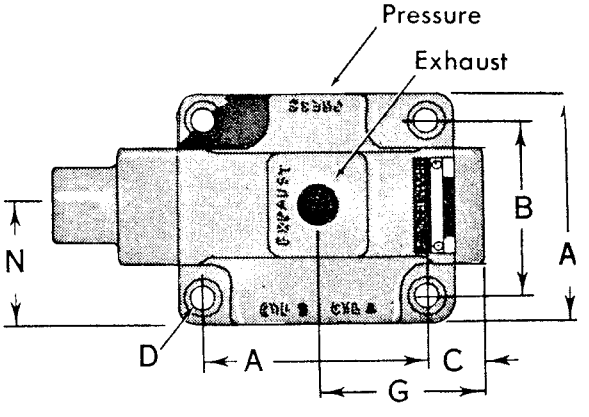




Sub-Plate Mounted
OD4 · PTES · *03S

Valve Size	A	B	C	D Dia.	E	F	G	H ID	H CS	J	K	L	M	N
⅜	3 1/2	2 3/4	1 1/16	13/32	3 1/8	6 13/16	2 13/16	11/16	3/32	2 3/16	1 1/4	1 5/8	1	1 13/16





Foot Mounted
OD4 · PTET · *03S

SPECIFICATIONS

MOUNTING SUB-PLATE—Refer to Sheet Number for details of dimensions.

MOUNTING POSITION—Not restricted.

LEFT HAND ASSEMBLY—When supplied, will provide for the pilot port at the opposite end of the body from the position shown.

Burton Hydraulics, Inc.

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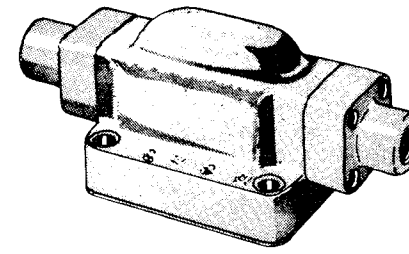
OD4 • PWE••03S

DIRECTIONAL CONTROL
FOUR-WAY VALVE
DOUBLE PILOT OPERATED
STANDARD ACTION
⅜"

Foot Mounted Valves	Neutral Porting Arrangement	Sub-Plate Mounted Valves
⅜" Size		⅜" Size
OD4 • PWET • 103S	1C	OD4 • PWES • 103S
OD4 • PWET • 203S	2C	OD4 • PWES • 203S
OD4 • PWET • 703S	7C	OD4 • PWES • 703S
.141	AREA	.141
7	WEIGHT	8
8 MAX.	GPM @ 10 psi DROP	9.2



OPERATION

Pilot Operated Standard Action Four-way Valves provide directional control of oil flow by hydraulic actuation to two available positions.

The spool slides within a body having machined recesses to allow the desired flow pattern.

By alternately supplying hydraulic pilot pressure to the two pilot ports, the direction of oil flow can be reversed.

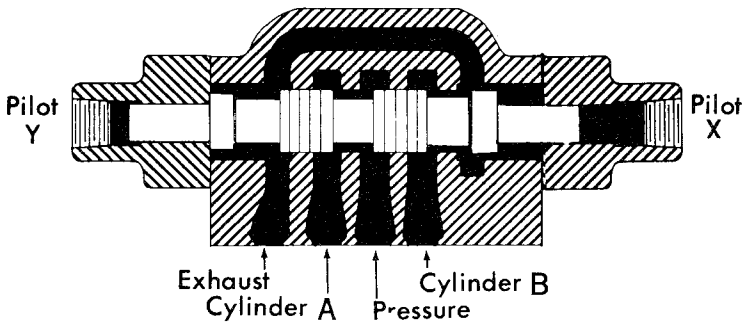
The valve spool should remain in position even though pilot pressure is not held on the pilot port. To insure the valve spool remaining in position it is recommended hydraulic pilot pressure be held on the pilot port desired.

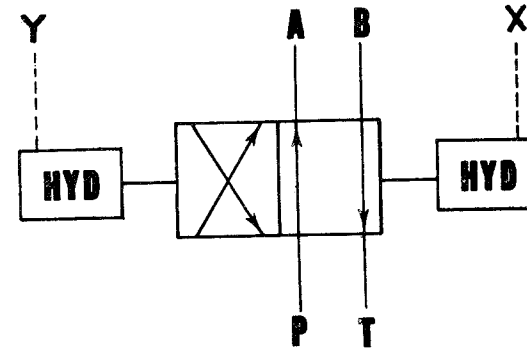
APPLICATION

Momentary hydraulic control for automatic hydraulic applications is achieved by the selection of this valve type.

Three-way valve action is obtained by plugging one of either cylinder ports and is used with single acting cylinders or non-reversing fluid motors.

Various spool designs are available to minimize shock while the spool is reversing.





SPECIFICATIONS

J.I.C.—Design conforms to specifications of the Joint Industry Conference.
PRESSURE RATING—1500 pounds per square inch.
PILOT PRESSURE—A pilot pressure of approximately 50 psi minimum must be available for pilot operation of the valve. Pilot pressure should not exceed 1500 psi maximum.
VOLUME OF OIL—Hydraulic pilot operation requires maximum of .098 cubic inches of oil displacement to stroke the spool to either end position.
BACK PRESSURE—Exhaust port pressure should not exceed 500 pounds per square inch.
FLOW RATE—For complete information of flow rate by pressure drop, refer to curves.
TEMPERATURE—Under normal conditions of continuous operation, fluid temperature should not exceed 130° F. In no instance should the temperature exceed 160° F.
OIL RECOMMENDATION—Premium grade hydraulic oil with 200 to 250 SSU viscosity at 100° F for use at normal ambient temperatures.

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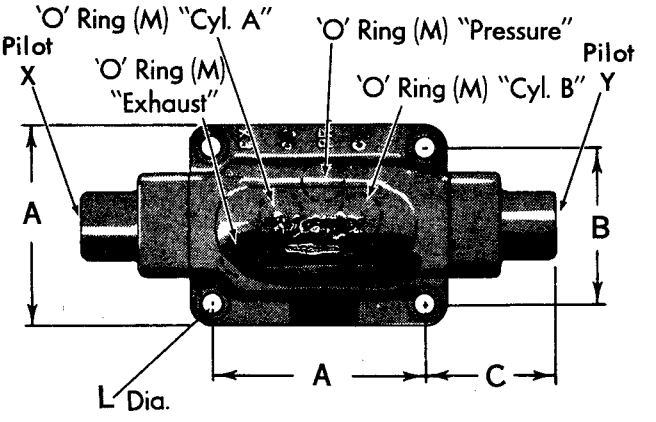
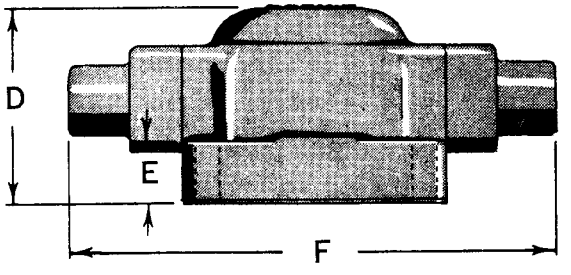
OD4 • PWE••*03S

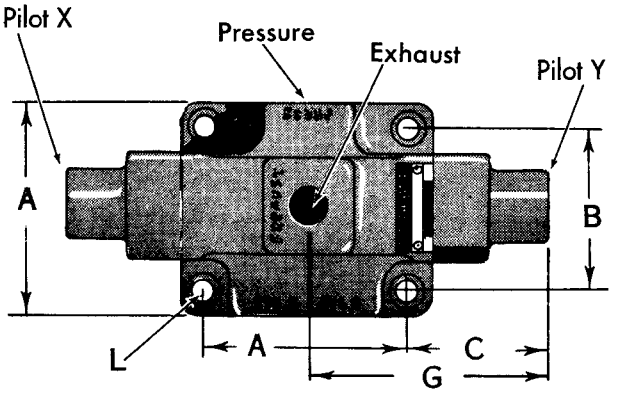
DIRECTIONAL CONTROL
FOUR-WAY VALVE
DOUBLE PILOT OPERATED
STANDARD ACTION
⅜"

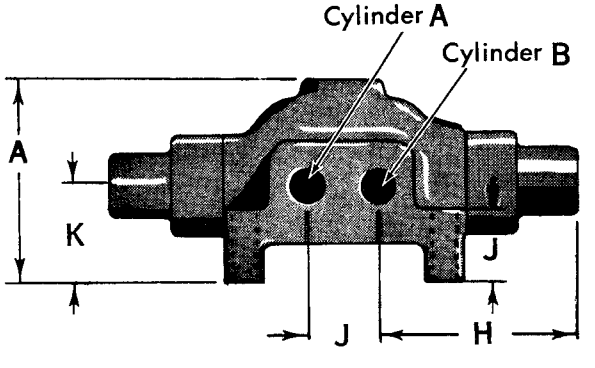




Sub-Plate Mounted
OD4 · PWES · *03S

Valve Size	A	B	C	D	E	F	G	H	J	K	L Dia.	M ID	M CS
⅜	3½	2¾	2¼	3⅛	1	8	4	3⅜	1¼	1⅝	13/32	11/16	3/32





Foot Mounted
OD4 · PWET · *03S

SPECIFICATIONS

MOUNTING SUB-PLATE—Refer to Sheet Number for details of dimensions.

MOUNTING POSITION—The valve must be mounted so that longitudinal axis is horizontal.

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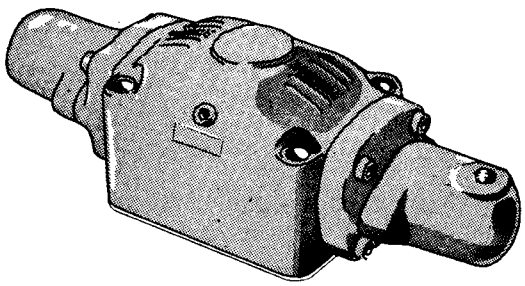
OD4•PTET• *** S

DIRECTIONAL CONTROL

FOUR-WAY VALVE

SINGLE PILOT OPERATED
SPRING RETURN
¾"—1¼"—1½"

Foot Mounted Valves			Normal Porting Arrangement
¾" Size	1¼" Size	1½" Size	
OD4 • PTET • 106S	OD4 • PTET • 110S	OD4 • PTET • 112S	1C
OD4 • PTET • 206S	OD4 • PTET • 210S	OD4 • PTET • 212S	2C
OD4 • PTET • 706S	OD4 • PTET • 710S	OD4 • PTET • 712S	7C
.425	1.271	1.753	AREA
26	48	60	WEIGHT
26	68	77	GPM @ 10 psi DROP



OPERATION

Pilot Operated Spring Return Four-way Valves provide directional control of oil flow by hydraulic actuation to two available positions.

A valve spool hydraulically positioned slides within a sleeve having round drilled holes to allow the desired flow pattern and provide smooth opening and closing of the valve ports.

The spring return arrangement provides automatic positioning of the valve spool to the "Normal" position when hydraulic pilot pressure is exhausted from the pilot port.

By applying hydraulic pilot pressure to the pilot port, the valve spool will move against light spring force to the opposite position.

Position of the valve spool will be held as long as pilot pressure is maintained.

APPLICATION

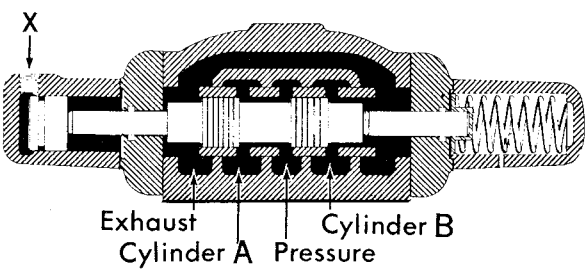
Hydraulic control for automatic hydraulic applications is achieved by the selection of this valve type.

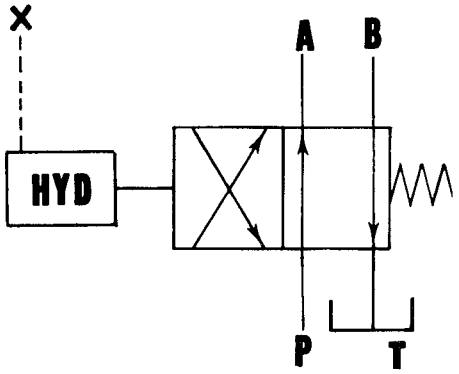
The spring return arrangement is often used as a safety device to instantly reverse the direction of movement of a cylinder or fluid motor in event of hydraulic pilot pressure failure, or when desired.

Four-way valves are used to control movements of double acting cylinders or reversible fluid motors.

Three-way valve action is obtained by plugging one of either cylinder ports and is used with single acting cylinders or non-reversing fluid motors.

Various spool designs are available to minimize shock while the spool is reversing.





SPECIFICATIONS

J.I.C.—Design conforms to specifications of the Joint Industry Conference.
PRESSURE RATING—1500 pounds per square inch.
PILOT PRESSURE—A pilot pressure of approximately 65 psi minimum must be available for pilot operation of the valve. Pilot pressure should not exceed 1500 psi maximum.
VOLUME OF OIL—Hydraulic pilot operation requires following maximum oil displacements to shift the spool to the end position: ¾" valve—1.66 cubic inches. 1¼" valve—2.51 cubic inches. 1½" valve—2.87 cubic inches.
TEMPERATURE—Under normal conditions of continuous operation, fluid temperature should not exceed 130° F. In no instance should the temperature exceed 160° F.
OIL RECOMMENDATION—Premium grade hydraulic oil with 200 to 250 SSU viscosity at 100° F for use at normal ambient temperatures.
THROTTLING SLEEVE—To provide for extremely smooth opening and closing of valve ports. Specify OD4 • PTET • ***D.
BACK PRESSURE—Exhaust port pressure should not exceed 500 psi non-shock. Back pressure must be at least 65 psi lower than pilot pressure at all times.
FLOW RATE—For complete information of flow rate by pressure drop, refer to curves.

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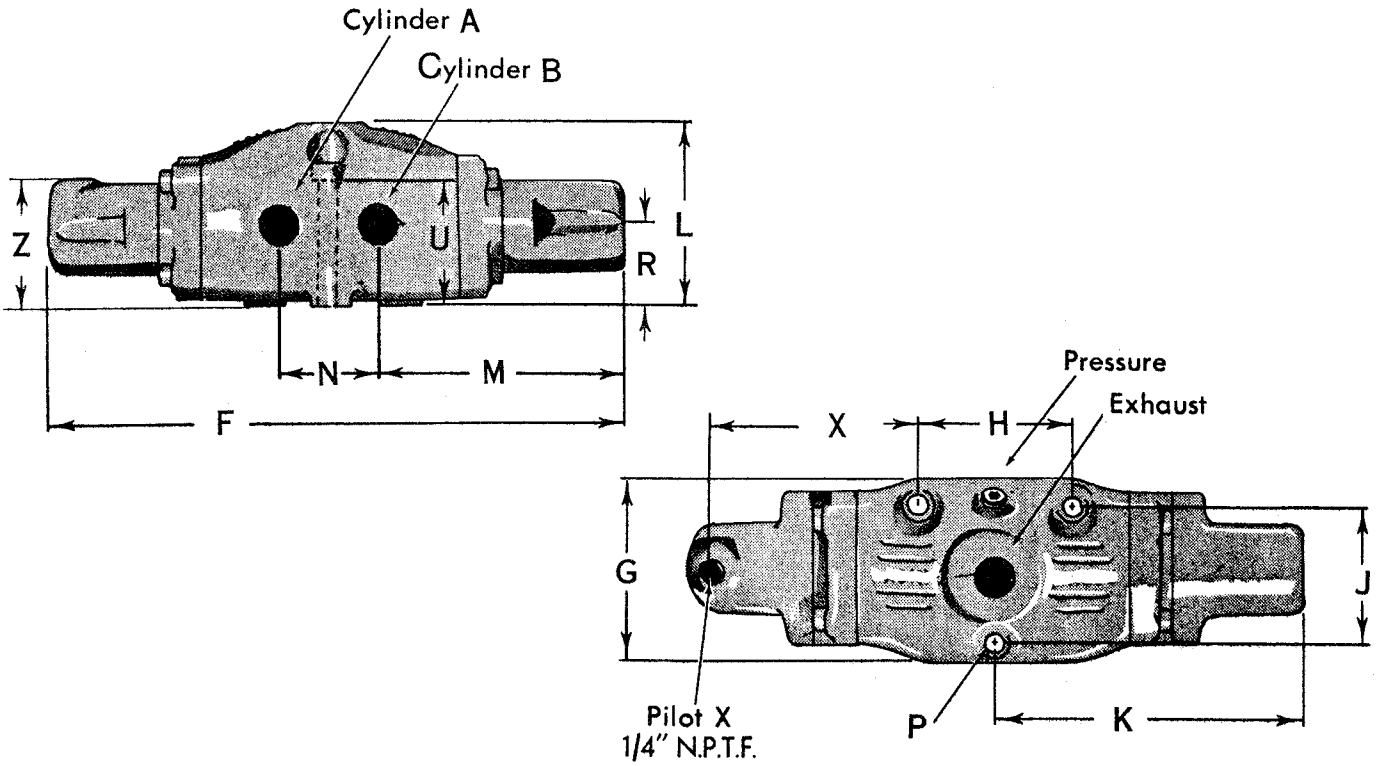
OD4•PTET• *** S

DIRECTIONAL CONTROL

FOUR-WAY VALVE

SINGLE PILOT OPERATED
SPRING RETURN
¾"—1¼"—1½"

Valve Size	F	G	H	J	K	L	M	N	P Dia.	R	U	X	Z
¾	14¾	4	3½	3	7½	4 7/16	6 5/16	2⅜	7/16	1 15/16	3 11/32	4 13/16	3 3/16
1¼	14½	5⅜	5½	4¼	5 11/16	5⅝	3 13/16	3 11/16	9/16	2⅛	3 13/16	5 7/16	3⅜
1½	16½	5⅞	6¼	4¾	6 5/16	6 1/16	4⅛	4⅜	9/16	2 5/32	4	6⅜	3 13/32



Foot Mounted
OD4 · PTET · ***S

SPECIFICATIONS

MOUNTING POSITION—Not restricted.

END CAPS—Rotation in 90° increments is possible.
LEFT HAND ASSEMBLY—When supplied, will provide for the pilot port at the opposite end of the body from the position shown.

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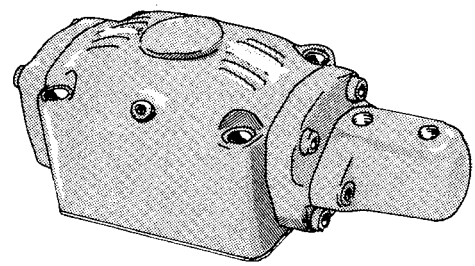
OD4•PWET• *** S

DIRECTIONAL CONTROL
FOUR-WAY VALVE
DOUBLE PILOT OPERATED
STANDARD ACTION
¾"—1¼"—1½"

Foot Mounted Valves			Neutral Porting Arrangement
¾" Size	1¼" Size	1½" Size	
OD4 • PWET • 106S	OD4 • PWET • 110S	OD4 • PWET • 112S	1C
OD4 • PWET • 206S	OD4 • PWET • 210S	OD4 • PWET • 212S	2C
OD4 • PWET • 706S	OD4 • PWET • 710S	OD4 • PWET • 712S	7C
.425	1.271	1.753	AREA
22	45	58	WEIGHT
26	68	77	GPM @ 10 psi DROP



OPERATION

Pilot Operated Standard Action Four-way Valves provide directional control of oil flow by hydraulic actuation to two available positions.

A valve spool hydraulically positioned slides within a sleeve having round drilled holes to allow the desired flow pattern and provide smooth opening and closing of valve ports.

By alternately supplying hydraulic pilot pressure to the two pilot ports, the direction of oil flow can be reversed.

The valve spool will remain in position even though pilot pressure is not held on the pilot port.

APPLICATION

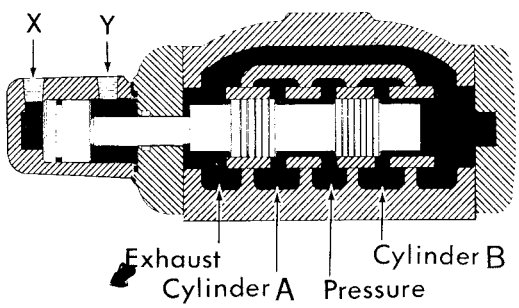
Momentary hydraulic control for automatic hydraulic applications is achieved by the selection of this valve type.

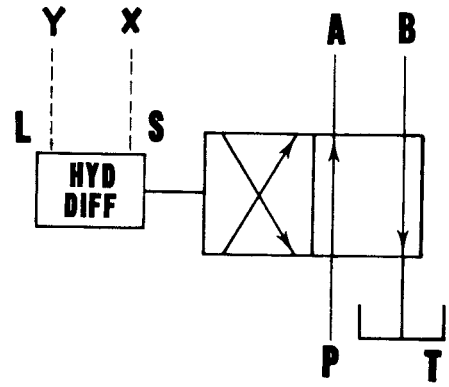
It is ommended hydraulic pilot pressure be held on the pilot port desired to insure the valve spool remaining in position.

Four way valves are used to control movements of double acting cylinders or reversible fluid motors.

Three-way valve action is obtained by plugging one of either cylinder ports and is used with single acting cylinders or non-reversing fluid motors.

Various spool designs are available to minimize shock while the spool is reversing.





SPECIFICATIONS

J.I.C.—Design conforms to specifications of the Joint Industry Conference.
PRESSURE RATING—1500 pounds per square inch.
PILOT PRESSURE—A pilot pressure of approximately 25 psi minimum must be available for pilot operation of the valve. Pilot pressure should not exceed 1500 psi maximum.
VOLUME OF OIL—Hydraulic pilot operation requires following maximum oil displacements to stroke the spool to either end position: ¾" valve—1.68 cubic inches. 1¼" valve—2.52 cubic inches. 1½" valve—2.78 cubic inches.
FLOW RATE—For complete information of flow rate by pressure drop, refer to curves
TEMPERATURE—Under normal conditions of continuous operation, fluid temperature should not exceed 130° F. In no instance should the temperature exceed 160° F.
OIL RECOMMENDATION—Premium grade hydraulic oil with 200 to 250 SSU viscosity at 100° F for use at normal ambient temperatures.
THROTTLING SLEEVE—To provide for extremely smooth opening and closing of valve ports. Specify OD4 • PWET • ***D.
BACK PRESSURE—Exhaust port pressure should not exceed 500 pounds per square inch, non-shock. Pilot pressure equal to one-half of the back pressure must be held on pilot port when back pressure exists.

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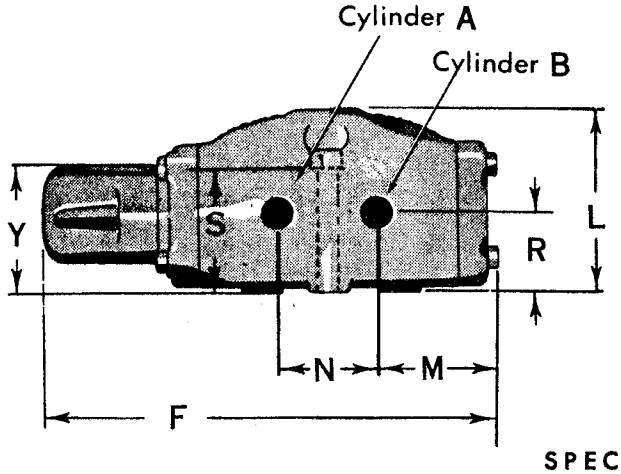
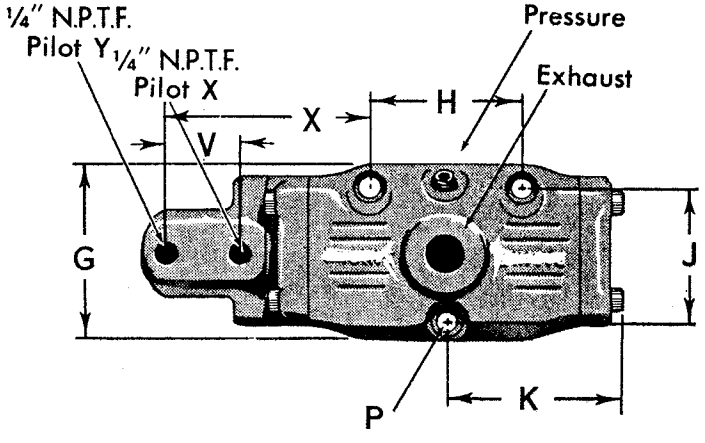
OD4•PWET• *** S

DIRECTIONAL CONTROL
FOUR-WAY VALVE
DOUBLE PILOT OPERATED
STANDARD ACTION
¾"—1¼"—1½"

Valve Size	F	G	H	J	K	L	M	N	P	R	S	V	X	Y
¾	12 5/16	4	3½	3	4 1/16	4 7/16	2 7/8	2 3/8	7/16	1 15/16	3 11/32	1¾	4 13/16	3 3/16
1¼	15 1/8	5 3/8	5½	4¼	5 11/16	5 5/8	3 13/16	3 11/16	9/16	2⅛	3 13/16	2 13/16	6⅛	3⅜
1½	16½	5⅞	6¼	4¾	6 5/16	6 1/16	4⅛	4 3/8	9/16	2 5/32	3 31/32	2 13/16	6⅜	3 13/32





Foot Mounted
OD4 · PWET ·***S

SPECIFICATIONS

MOUNTING POSITION—The valve must be mounted so that longitudinal axis is horizontal.

END CAPS—Rotation in 90° increments is possible.
LEFT HAND ASSEMBLY—When supplied, will provide for the pilot ports at the opposite end of the body from the position shown.

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Foot Mounted Valves			Neutral Porting Arrangement
¾" Size	1¼" Size	1½" Size	
OD4 • PSET • 106S	OD4 • PSET • 110S	OD4 • PSET • 112S	1C
OD4 • PSET • 206S	OD4 • PSET • 210S	OD4 • PSET • 212S	2C
OD4 • PSET • 306S	OD4 • PSET • 310S	OD4 • PSET • 312S	3C
OD4 • PSET • 406S	OD4 • PSET • 410S	OD4 • PSET • 412S	4C
OD4 • PSET • 506S	OD4 • PSET • 510S	OD4 • PSET • 512S	5C
OD4 • PSET • 606S	OD4 • PSET • 610S	OD4 • PSET • 612S	6C
OD4 • PSET • 706S	OD4 • PSET • 710S	OD4 • PSET • 712S	7C
OD4 • PSET • 806S	OD4 • PSET • 810S	OD4 • PSET • 812S	8C
OD4 • PSET • 906S	OD4 • PSET • 910S	OD4 • PSET • 912S	9C
.425	1.271	1.753	AREA
23	48	60	WEIGHT
26	68	77	GPM @ 10 psi DROP

OD4•PSET•*** S

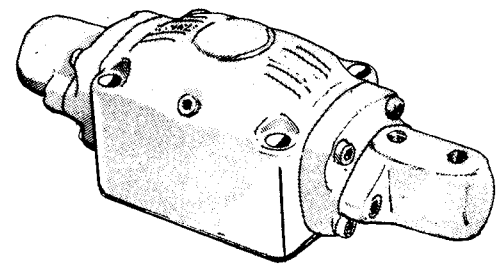
DIRECTIONAL CONTROL

FOUR-WAY VALVE

DOUBLE PILOT OPERATED

SPRING CENTER

¾"—1¼"—1½"



OPERATION

Pilot Operated Spring Centered Four-way Valves provide directional control of oil flow by hydraulic actuation to three available positions.

A valve spool hydraulically positioned slides within a sleeve having round drilled holes to allow the desired flow pattern and provide smooth opening and closing of valve ports.

The spring centering arrangement automatically positions the valve spool to "Neutral" when hydraulic pilot pressure is exhausted from both pilot connections.

By applying hydraulic pilot pressure to one or the other of the pilot ports, the valve spool will move against light spring force to the desired extreme position.

Position of the valve spool will be held as long as pilot pressure is maintained.

APPLICATION

Hydraulic control for automatic hydraulic applications is achieved by the selection of this valve type.

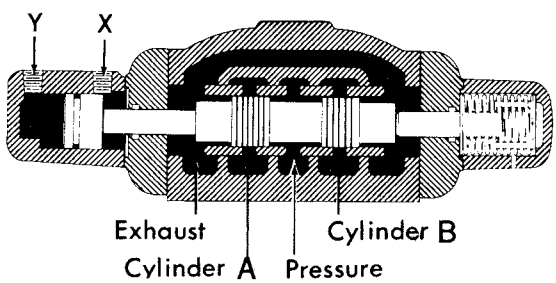
The spring centering arrangement is often used as a safety device to immediately stop the operation of a machine at any place in the cycle, in the event of pilot pressure failure, or when desired to short stroke a cylinder.

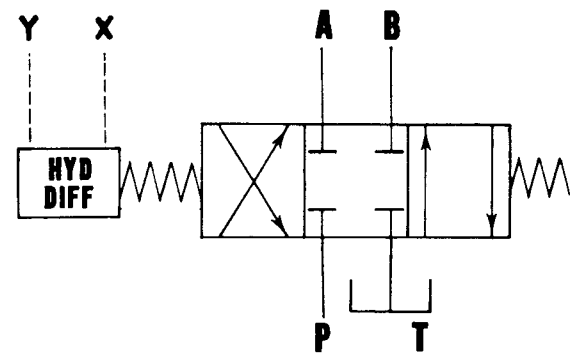
Four-way valves are used to control movements of double acting cylinders or reversible fluid motors.

Three-way valve action is obtained by plugging one of either cylinder ports and is used with single acting cylinders or non-reversing fluid motors.

A "Neutral" position is provided between the two extreme operating positions.

Various spool designs are available to obtain desired circuit results such as blocking and unloading.





SPECIFICATIONS

J.I.C.—Design conforms to specifications of the Joint Industry Conference.

PRESSURE RATING—1500 pounds per square inch.

PILOT PRESSURE—A pilot pressure of approximately 65 psi minimum must be available for pilot operation of the valve. Pilot pressure should not exceed 1500 psi maximum.

VOLUME OF OIL—Hydraulic pilot operation requires following maximum oil displacements to shift the spool from "Neutral" to either end position: ¾" valve—.84 cubic inches. 1¼" valve—1.26 cubic inches. 1½" valve—1.39 cubic inches.

TEMPERATURE—Under normal conditions of continuous operation, fluid temperature should not exceed 130° F. In no instance should the temperature exceed 160° F.

OIL RECOMMENDATION—Premium grade hydraulic oil with 200 to 250 SSU viscosity at 100° F for use at normal ambient temperatures.

THROTTLING SLEEVE—To provide for extremely smooth opening and closing of valve ports. Specify OD4 • PSET • ***D.

BACK PRESSURE—Exhaust port pressure should not exceed 500 pounds per square inch, non-shock.

FLOW RATE—For complete information of flow rate by pressure drop, refer to curves.

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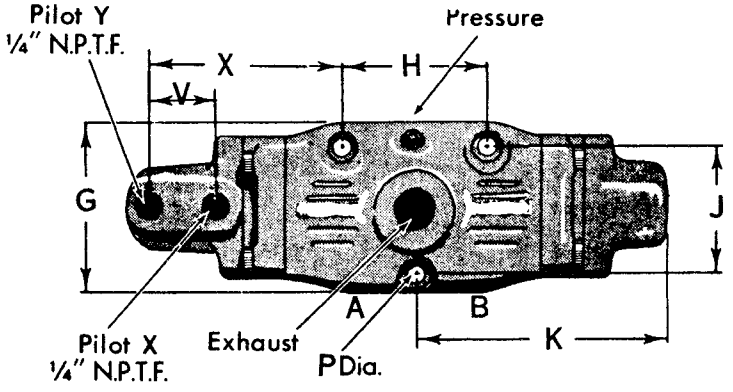
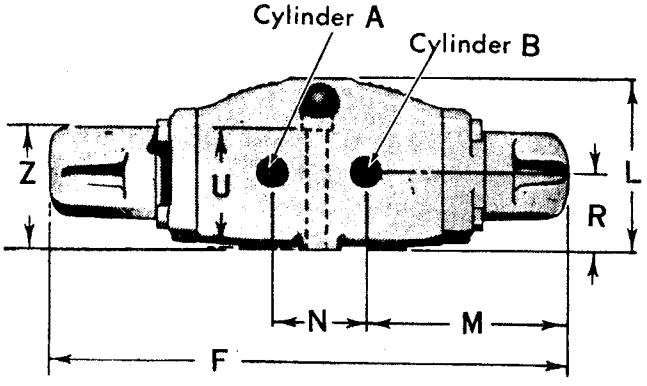
OD4•PSET• *** S

DIRECTIONAL CONTROL
FOUR-WAY VALVE
DOUBLE PILOT OPERATED
SPRING CENTER
¾"—1¼"—1½"

Valve Size	F	G	H	J	K	L	M	N	P Dia.	R	U	V	X	Z
¾	13 5/8	4	3½	3	6 7/16	4 7/16	5¼	2⅝	7/16	1 15/16	3 5/16	1¾	4 13/16	3 3/16
1¼	18¼	5⅜	5½	4¼	8¾	5⅝	6 29/32	3 11/16	9/16	2⅛	3 13/16	2 13/16	6 1/8	3⅜
1½	19 15/32	5⅞	6¼	4¾	9 13/32	6 1/32	7 7/32	4⅜	9/16	2 5/32	3 31/32	2 13/16	6 13/32	3 13/32





Foot Mounted
OD4 · PSET · ***S

SPECIFICATIONS

MOUNTING POSITION—Not restricted

END CAPS—Rotation in 90° increments is possible.
LEFT HAND ASSEMBLY—When supplied, will provide for the pilot ports at the opposite end of the body from the position shown.

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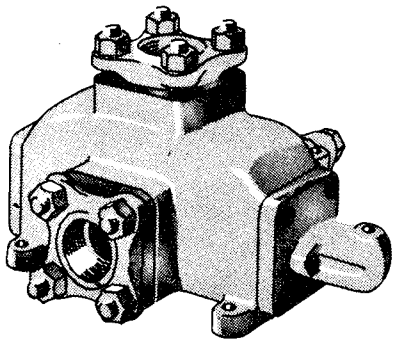
OD4 • PTEF • * 16S

DIRECTIONAL CONTROL
FOUR-WAY VALVE
SINGLE PILOT OPERATED
SPRING RETURN
2"

Foot Mounted Valves 2" Size	Neutral Porting Arrangement
OD4 • PTEF • 116S	1C
OD4 • PTEF • 216S	2C
OD4 • PTEF • 716S	7C
2.935	AREA
93	WEIGHT
115	GPM @ 10 psi DROP



OPERATION

Pilot Operated Spring Return Four-way Valves provide directional control of oil flow by hydraulic actuation to two available positions.

A valve spool hydraulically positioned slides within a sleeve having round drilled holes to allow the desired flow pattern and provide smooth opening and closing of the valve ports.

The spring return arrangement provides automatic positioning of the valve spool to the "Normal" position when hydraulic pilot pressure is exhausted from the pilot port.

By applying hydraulic pilot pressure to the pilot port, the valve spool will move against light spring force to the opposite position.

Position of the valve spool will be held as long as pilot pressure is maintained.

APPLICATION

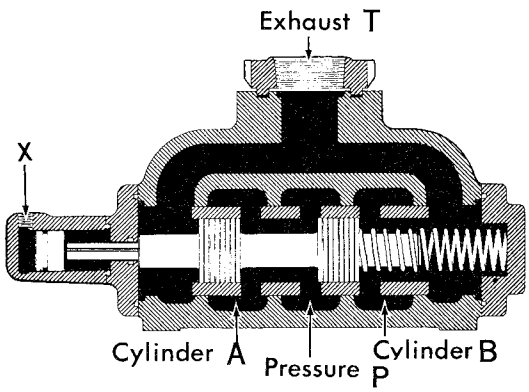
Hydraulic control for automatic hydraulic applications is achieved by the selection of this valve type.

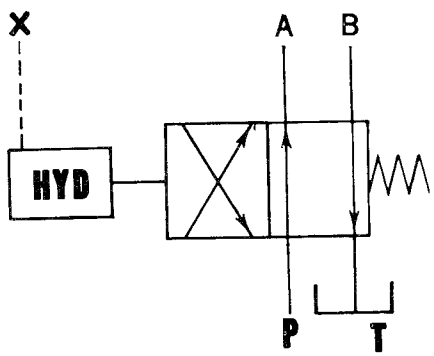
The spring return arrangement is often used as a safety device to instantly reverse the direction of movement of a cylinder or fluid motor in event of hydraulic pilot pressure failure, or when desired.

Four-way valves are used to control movements of double acting cylinders or reversible fluid motors.

Three-way valve action is obtained by plugging one of either cylinder ports and is used with single acting cylinders or non-reversing fluid motors.

Various spool designs are available to minimize shock while the spool is reversing.





SPECIFICATIONS

J.I.C.—Design conforms to specifications of the Joint Industry Conference.
PRESSURE RATING—1500 pounds per square inch.
PILOT PRESSURE—A pilot pressure of approximately 65 psi minimum must be available for pilot operation of the valve. Pilot pressure should not exceed 1500 psi maximum.
VOLUME OF OIL—Hydraulic pilot operation requires maximum of 2.97 cubic inches of oil displacement to shift the spool to the end position.
TEMPERATURE—Under normal conditions of continuous operation, fluid temperature should not exceed 130° F. In no instance should the temperature exceed 160° F.
OIL RECOMMENDATION—Premium grade hydraulic oil with 200 to 250 SSU viscosity at 100° F for use at normal ambient temperatures.
THROTTLING SLEEVE—To provide for extremely smooth opening and closing of valve ports. Specify OD4 • PTEF • •16D.
BACK PRESSURE—Exhaust port pressure should not exceed 500 pounds per square inch, non-shock. Back pressure must be at least 65 psi lower than pilot pressure at all times.
FLOW RATE—For complete information of flow rate by pressure drop, refer to curves.

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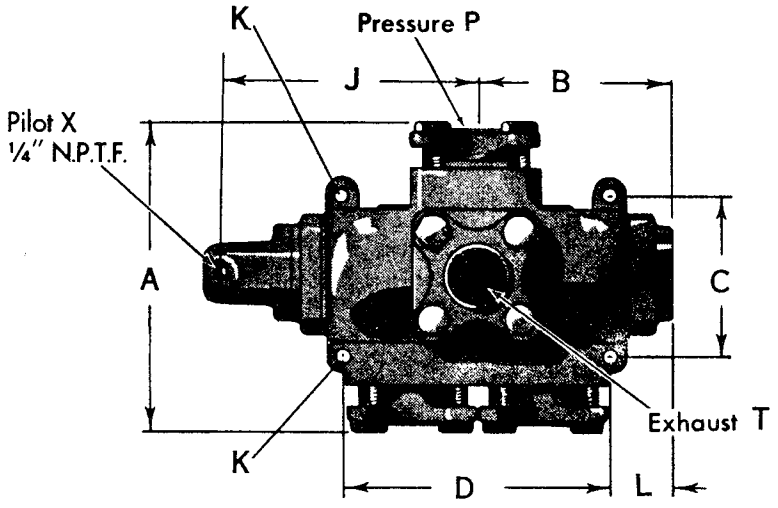
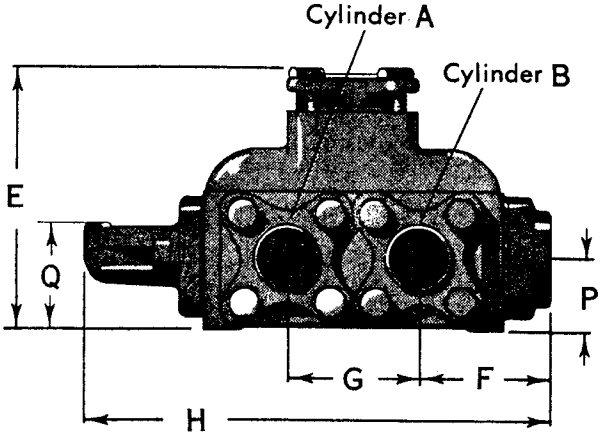
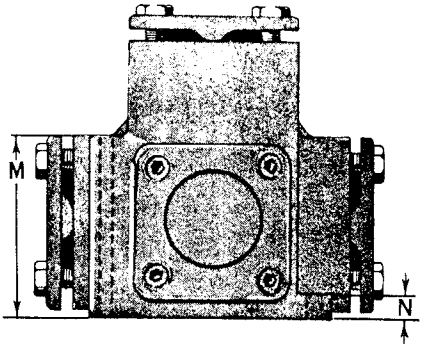
OD4 • PTEF •*16S

DIRECTIONAL CONTROL
FOUR-WAY
VALVE
SINGLE PILOT OPERATED
SPRING RETURN
2"







Valve Size	A	B	C	D	E	F	G	H	J	K Dia.	L	M	N	P	Q
2	12	7 3/16	5 7/8	10	10	4 3/4	4 7/8	17 3/8	9 9/16	1 7/32	2 3/16	5 1/8	3/4	2 11/16	3 15/16

SPECIFICATIONS

MOUNTING POSITION—Not restricted.
END CAPS—Rotation in 90° increments is possible.

LEFT HAND ASSEMBLY—When supplied, will provide for the pilot port at the opposite end of the body from the position shown.

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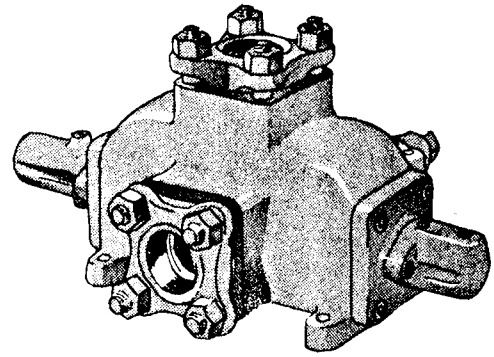
OD4•PWEF•—16

DIRECTIONAL CONTROL
FOUR-WAY VALVE
DOUBLE PILOT OPERATED
STANDARD ACTION
2″

OD4 • PWEF • — 16

Foot Mounted Valves 2″ Size	Neutral Porting Arrangement
OD4 • PWEF • 116	1C
OD4 • PWEF • 216	2C
OD4 • PWEF • 716	7C
2.935	AREA
93	WEIGHT
115	GPM @ 10 psi DROP



OPERATION

Pilot Operated Standard Action Four-way Valves provide directional control of oil flow by hydraulic actuation to two available positions.

A valve spool hydraulically positioned slides within a sleeve having round drilled holes to allow the desired flow pattern and provide smooth opening and closing of valve ports.

By alternately supplying hydraulic pilot pressure to the two pilot ports, the direction of oil flow can be reversed.

The valve spool will remain in position even though pilot pressure is not held on the pilot port.

APPLICATION

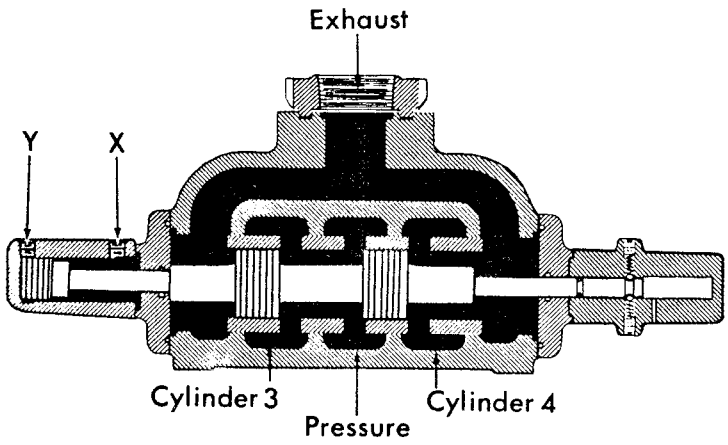
Momentary hydraulic control for automatic hydraulic applications is achieved by the selection of this valve type.

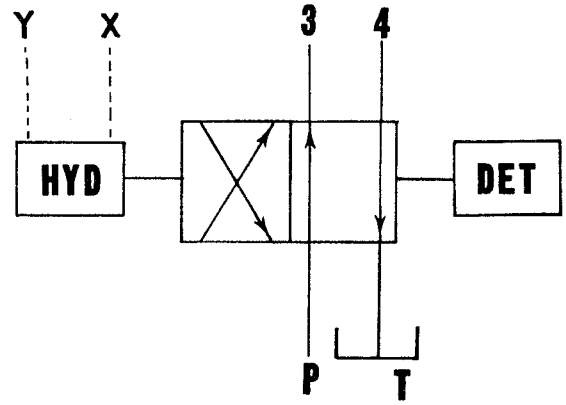
It is recommended hydraulic pilot pressure be held on the pilot port desired to insure the valve spool remaining in position.

Four-way valves are used to control movements of double acting cylinders or reversible fluid motors.

Three-way valve action is obtained by plugging one of either cylinder ports and is used with single acting cylinders or non-reversing fluid motors.

Various spool designs are available to minimize shock while the spool is reversing.





SPECIFICATIONS

J.I.C.—Design conforms to specifications of the Joint Industry Conference.
PRESSURE RATING—1500 pounds per square inch.
PILOT PRESSURE—A pilot pressure of approximately 250 psi minimum must be available for pilot operation of the valve. Pilot pressure should not exceed 1500 psi maximum.
VOLUME OF OIL—Hydraulic pilot operation requires maximum of 2.96 cubic inches of oil displacement to stroke the spool to either end position.
TEMPERATURE—Under normal conditions of continuous operation, fluid temperature should not exceed 130° F. In no instance should the temperature exceed 160° F.
OIL RECOMMENDATION—Premium grade hydraulic oil with 200 to 250 SSU viscosity at 100° F for use at normal ambient temperatures.
THROTTLING SLEEVE—To provide for extremely smooth opening and closing of valve ports. Specify OD4PWEF-16D.
BACK PRESSURE—Exhaust port pressure should not exceed 500 pounds per square inch, non-shock. Pilot pressure equal to one-half of the back pressure must be held on pilot port when back pressure exists.
FLOW RATE—For complete information of flow rate by pressure drop, refer to curves.

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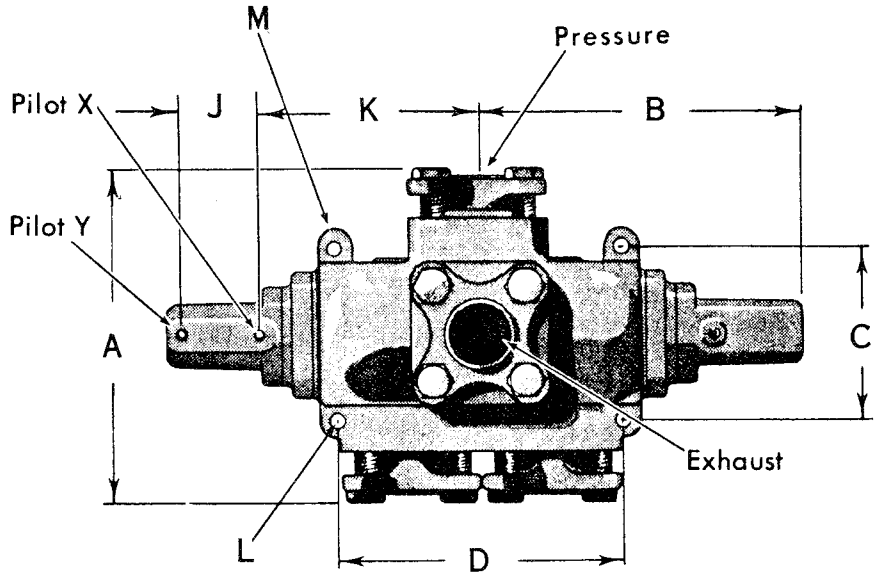
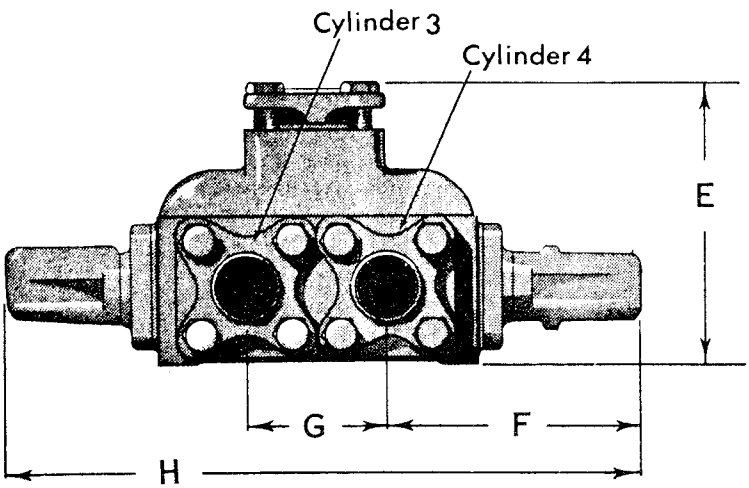
OD4•PWEF•—16

DIRECTIONAL CONTROL
FOUR-WAY VALVE
DOUBLE PILOT OPERATED
STANDARD ACTION
2"





Flange Connections

Valve Size	A	B	C	D	E	F	G	H	J	K	L	M
2	10½	11 9/16	5⅞	10	9 5/16	9⅛	4⅞	22 7/16	2 13/16	7 7/16	½-13 x 6 lg	½-13 x 1½ lg

SPECIFICATIONS

MOUNTING POSITION—The valve must be mounted so that longitudinal axis is horizontal.
END CAPS—Rotation in 90° increments is possible.
LEFT HAND ASSEMBLY—When supplied, will provide for the pilot ports at the opposite end of the body from the position shown.

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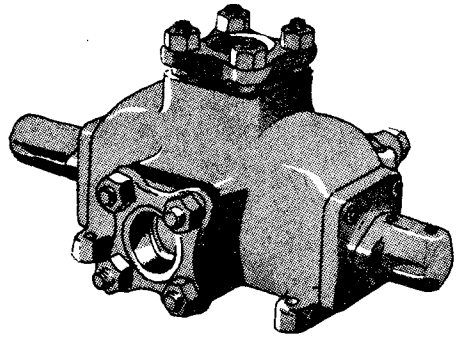
OD4 • PSEF • *16S

DIRECTIONAL CONTROL

FOUR-WAY VALVE

DOUBLE PILOT OPERATED
SPRING CENTER
2"

Foot Mounted Valves	Neutral Porting Arrangement
2" Size	
OD4 • PSEF • 116S	1C
OD4 • PSEF • 216S	2C
OD4 • PSEF • 416S	4C
OD4 • PSEF • 516S	5C
OD4 • PSEF • 616S	6C
OD4 • PSEF • 716S	7C
OD4 • PSEF • 816S	8C
OD4 • PSEF • 916S	9C
2.935	AREA
95	WEIGHT
115	GPM @ 10 psi DROP



OPERATION

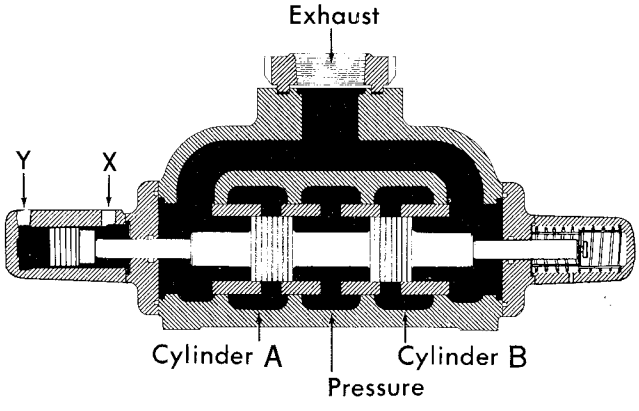
Pilot Operated Spring Centered Four-way Valves provide directional control of oil flow by hydraulic actuation to three available positions.

A valve spool hydraulically positioned slides within a sleeve having round drilled holes to allow the desired flow pattern and provide smooth opening and closing of valve ports.

The spring centering arrangement automatically positions the valve spool to "Neutral" when hydraulic pilot pressure is exhausted from both pilot connections.

By applying hydraulic pilot pressure to one or the other of the pilot ports, the valve spool will move against light spring force to the desired extreme position.

Position of the valve spool will be held as long as pilot pressure is maintained.



APPLICATION

Three-way valve action is obtained by plugging one of either cylinder ports and is used with single acting cylinders or non-reversing fluid motors.

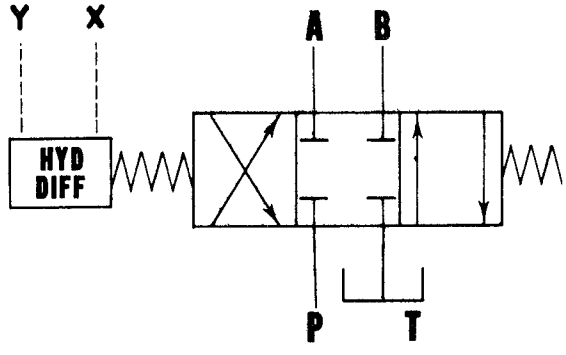
A "Neutral" position is provided between the two extreme operating positions.

Various spool designs are available to obtain desired circuit results such as blocking and unloading.

Hydraulic control for automatic hydraulic applications is achieved by the selection of this valve type.

The spring centering arrangement is often used as a safety device to immediately stop the operation of a machine at any place in the cycle, in the event of pilot pressure failure or when desired to short stroke a cylinder.

Four-way valves are used to control movements of double acting cylinders or reversible fluid motors.



SPECIFICATIONS

J.I.C.—Design conforms to specifications of the Joint Industry Conference.
PRESSURE RATING—1500 pounds per square inch.
PILOT PRESSURE—A pilot pressure of approximately 65 psi minimum must be available for pilot operation of the valve. Pilot pressure should not exceed 1500 psi maximum.
VOLUME OF OIL—Hydraulic pilot operation requires maximum of 1.227 cubic inches of oil displacement to shift the spool from "Neutral" to either end position.

TEMPERATURE—Under normal conditions of continuous operation, fluid temperature should not exceed 130° F. In no instance should the temperature exceed 160°F.
OIL RECOMMENDATION—Premium grade hydraulic oil with 200 to 250 SSU viscosity at 100° F for use at normal ambient temperatures.
THROTTLING SLEEVE—To provide for extremely smooth opening and closing of valve ports. Specify OD4 • PSEF • *16D.
BACK PRESSURE—Exhaust port pressure should not exceed 500 pounds per square inch, non-shock.
FLOW RATE—For complete information of flow rate by pressure drop, refer to curves

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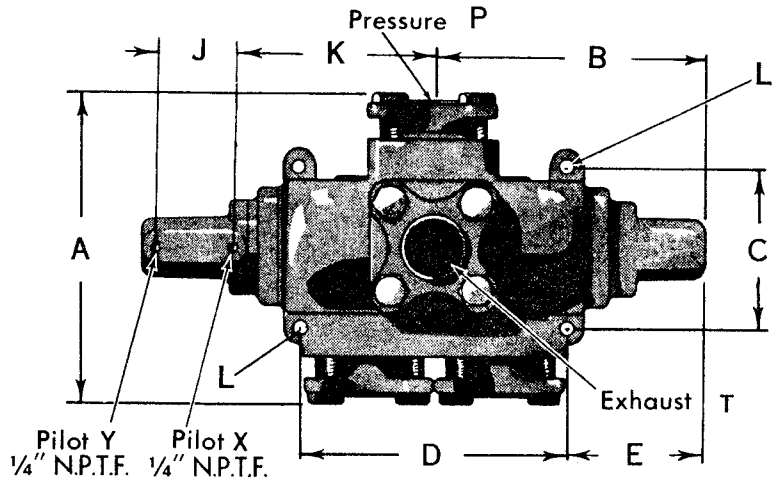
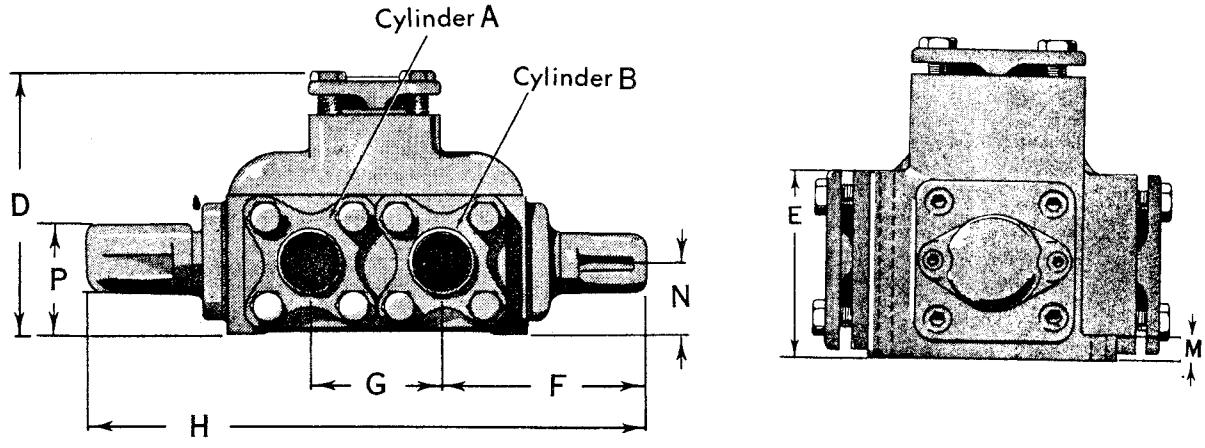
OD4 • PSEF • * 16S

DIRECTIONAL CONTROL
FOUR-WAY VALVE
DOUBLE PILOT OPERATED
SPRING CENTER
2"



Flange Connections



Valve Size	A	B	C	D	E	F	G	H	J	K	L Dia.	M	N	P
2	12	10 1/8	5 7/8	10	5 1/8	7 11/16	4 7/8	20 15/16	2 13/16	7 3/8	17/32	3/4	2 11/16	3 15/16

SPECIFICATIONS

MOUNTING POSITION—Not restricted.
END CAPS—Rotation in 90° increments is possible.

LEFT HAND ASSEMBLY—When supplied, will provide for the pilot ports at the opposite end of the body from the position shown.

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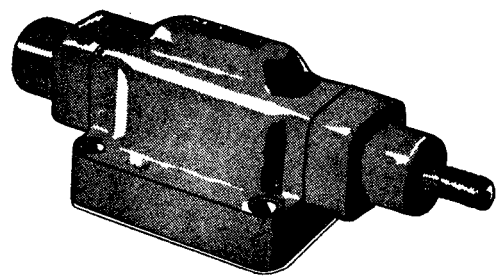
OD4 • SWE**03S

DIRECTIONAL CONTROL
FOUR-WAY
VALVE
MECHANICALLY OPERATED
STANDARD ACTION
⅜"

Foot Mounted Valves	Neutral Porting Arrangement	Sub-Plate Mounted Valves
⅜" Size		⅜" Size
OD4 • SWET • 103S	1C	OD4 • SWES • 103S
OD4 • SWET • 203S	2C	OD4 • SWES • 203S
OD4 • SWET • 403S	4C	OD4 • SWES • 403S
OD4 • SWET • 503S	5C	OD4 • SWES • 503S
OD4 • SWET • 603S	6C	OD4 • SWES • 603S
OD4 • SWET • 703S	7C	OD4 • SWES • 703S
OD4 • SWET • 803S	8C	OD4 • SWES • 803S
OD4 • SWET • 903S	9C	OD4 • SWES • 903S
.141	AREA	.141
9	WEIGHT	10
10.7	GPM @ 10 psi DROP	9.2



OPERATION

Mechanically Operated Standard Action Four-way Valves provide directional control of oil flow by stem movement to three available positions.

A spool positioned by the stem slides within a body having machined recesses to allow the desired flow pattern.

There are no springs or detents in the valve.

Positioning and holding of the valve spool in any desired position is dependent on the operating device attached to the stem.

APPLICATION

Mechanical control for hydraulic applications is achieved by the selection of this valve type.

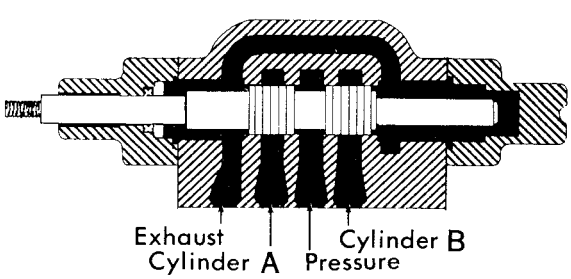
Standard action valves allow the use of servo and follower mechanisms to obtain desired circuit results.

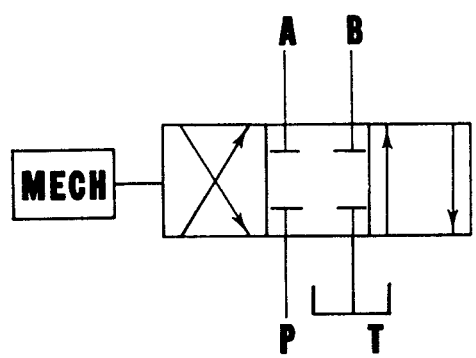
Four-way valves are used to control movements of double acting cylinders or reversible fluid motors.

Three-way valve action is obtained by plugging one of either cylinder ports and is used with single acting cylinders or non-reversing fluid motors.

A "Neutral" position is provided between the two extreme operating positions.

Various spool designs are available to obtain desired circuit results such as blocking and unloading.





SPECIFICATIONS

J.I.C.—Design conforms to specifications of the Joint Industry Conference.
PRESSURE RATING—1500 pounds per square inch.
BACK PRESSURE—Exhaust port pressure should not exceed 500 pounds per square inch, non-shock. For every 100 psi of back pressure, 19 pounds will be tending to push the stem out.

FLOW RATE—For complete information of flow rate by pressure drop, refer to curves.
TEMPERATURE—Under normal conditions of continuous operation, fluid temperature should not exceed 130° F. In no instance should the temperature exceed 160°F.
OIL RECOMMENDATION—Premium grade hydraulic oil with 200 to 250 SSU viscosity at 100° F for use at normal ambient temperatures.

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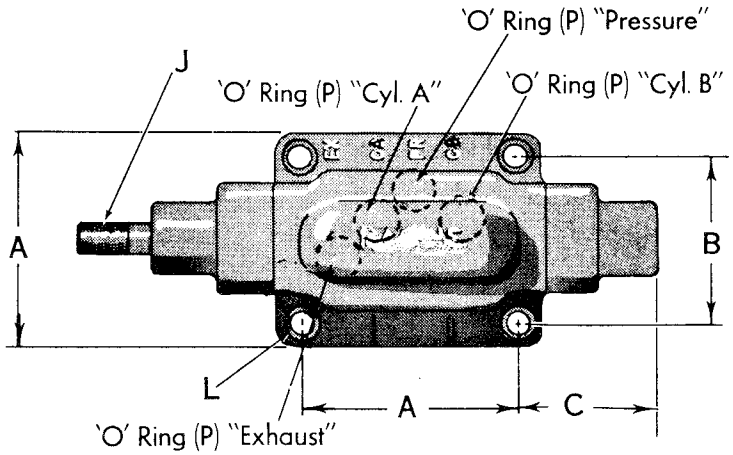
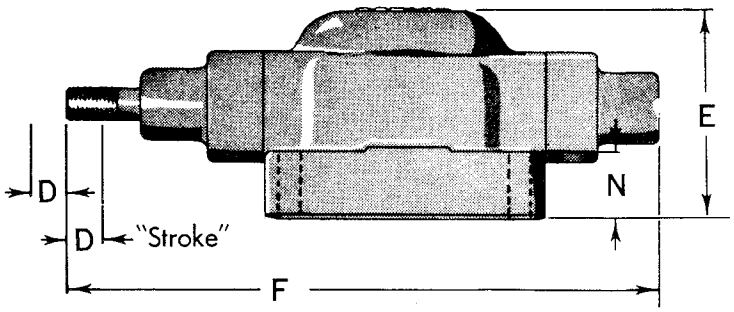
OD4 • SWE**03S

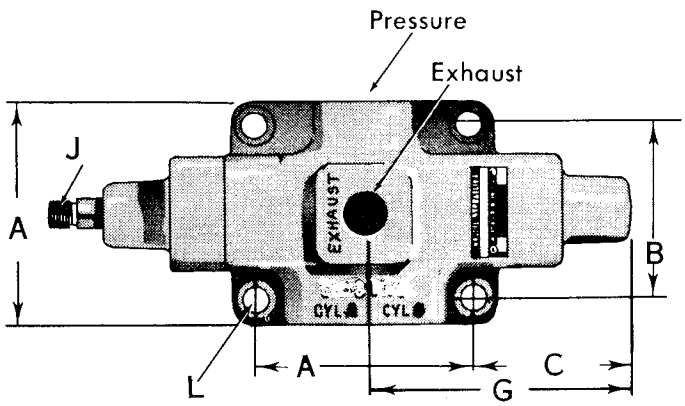
DIRECTIONAL CONTROL
TWO-WAY VALVE
MECHANICALLY OPERATED
STANDARD ACTION
3/8"

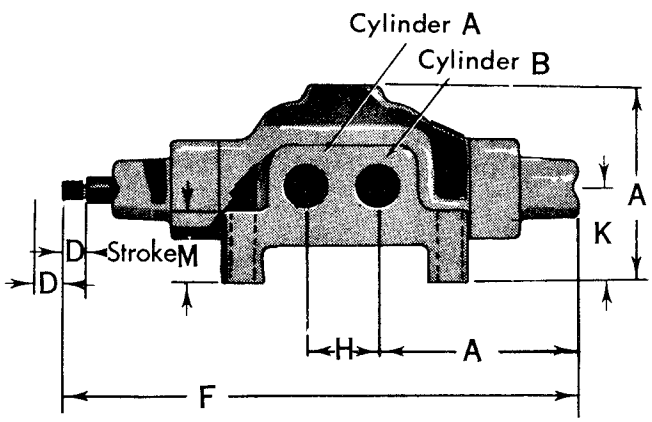




Sub-Plate Mounted
OD4 · SWES · *03S

Valve Size	A	B	C	D	E	F	G	H	J	K	L Dia.	M	N	P ID	P CS
3/8	3 1/2	2 3/4	2 3/8	5/16	3 3/16	9 5/16	4 1/8	1 1/4	3/8-16 x 1/2 lg	1 5/8	13/32	1 1/4	1	11/16	3/32





Foot Mounted
OD4 · SWET · *03S

SPECIFICATIONS

LEFT HAND ASSEMBLY—When supplied, will provide for the stem at the opposite end of the body from the position shown.

MOUNTING POSITION—Not restricted.

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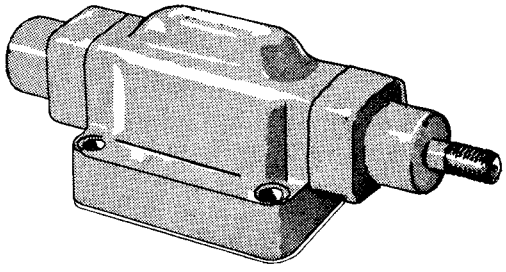
OD4 • SSE••03S

DIRECTIONAL CONTROL

FOUR-WAY VALVE

MECHANICALLY OPERATED
SPRING CENTER
⅜"

Foot Mounted Valves	Neutral Porting Arrangement	Sub-Plate Mounted Valves
⅜" Size		⅜" Size
OD4 • SSET • 103S	1C	OD4 • SSES • 103S
OD4 • SSET • 203S	2C	OD4 • SSES • 203S
OD4 • SSET • 403S	4C	OD4 • SSES • 403S
OD4 • SSET • 503S	5C	OD4 • SSES • 503S
OD4 • SSET • 603S	6C	OD4 • SSES • 603S
OD4 • SSET • 703S	7C	OD4 • SSES • 703S
OD4 • SSET • 803S	8C	OD4 • SSES • 803S
OD4 • SSET • 903S	9C	OD4 • SSES • 903S
.141	AREA	.141
9	WEIGHT	10
10.7	GPM @ 10 psi DROP	9.2



OPERATION

Mechanically Operated Spring Centered Four-way Valves provide directional control of oil flow by stem movement to three available positions.

A spool positioned by stem movement slides within a body having machined recesses to allow the desired flow pattern.

The spring centering arrangement automatically positions the valve spool to "Neutral" when the stem is released.

To maintain flow in either of the two extreme operating positions, the linkage must hold the stem against light spring force.

APPLICATION

Mechanical control for hydraulic applications is achieved by the selection of this valve type.

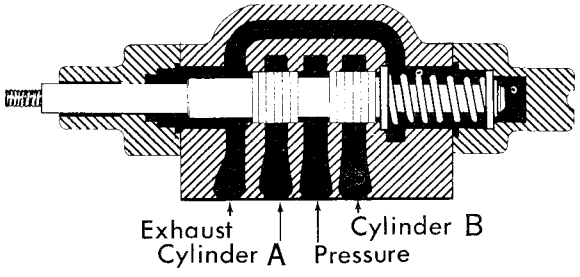
The spring centering arrangement is often used as a safety device to immediately stop the operation of a machine by releasing the stem in an emergency or when desired to short stroke a cylinder.

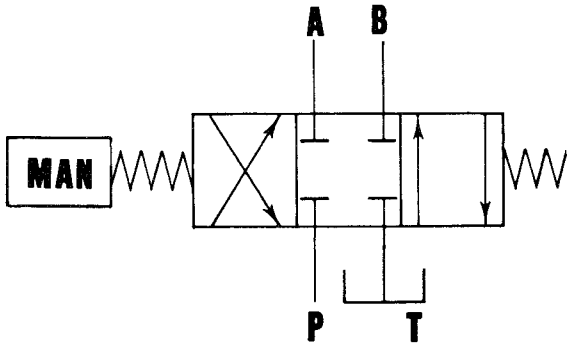
Four-way valves are used to control movements of double acting cylinders or reversible fluid motors.

Three-way valve action is obtained by plugging one of either cylinder ports and is used with single acting cylinders or non-reversing fluid motors.

A "Neutral" position is provided between the two extreme operating positions.

Various spool designs are available to obtain desired circuit results such as blocking and unloading.





SPECIFICATIONS

J.I.C.—Design conforms to specifications of the Joint Industry Conference.
PRESSURE RATING—1500 pounds per square inch.
BACK PRESSURE—Exhaust port pressure should not exceed 90 pounds per square inch, otherwise the valve spring centering will not function properly.
FLOW RATE—For complete information of flow rate by pressure drop, refer to curves.

SPRING FORCE—Approximately 30 pounds of exertion is required to stroke the stem to either side of "Neutral". For every 10 psi of back pressure add two pounds to the spring force.
OIL RECOMMENDATION—Premium grade hydraulic oil with 200 to 250 SSU viscosity at 100° F for use at normal ambient temperatures.
TEMPERATURE—Under normal conditions of continuous operation, fluid temperature should not exceed 130° F. In no instance should the temperature exceed 160° F.

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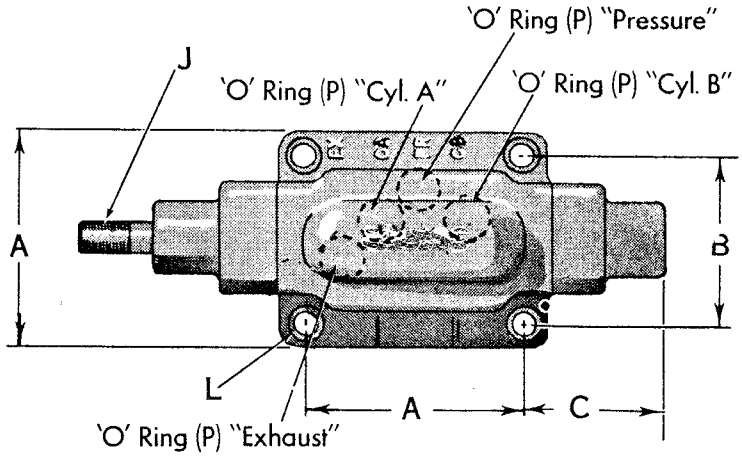
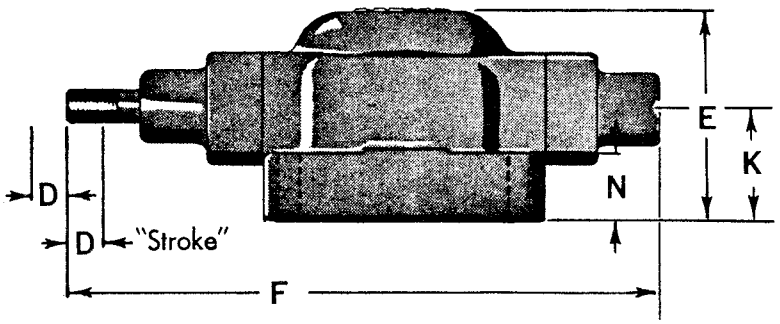
OD4 • SSE••03S

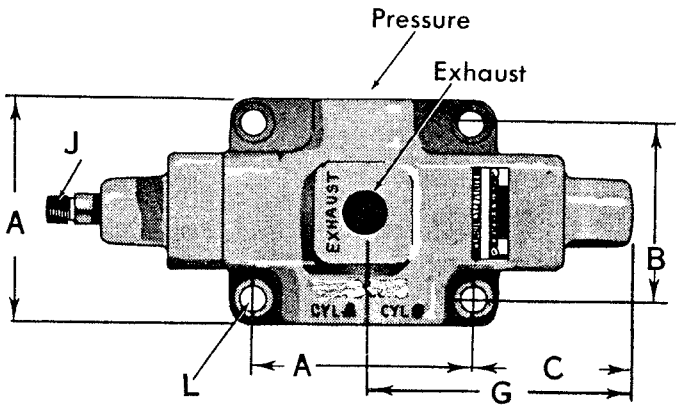
DIRECTIONAL CONTROL
FOUR-WAY VALVE
MECHANICALLY OPERATED
SPRING CENTERED
⅜"

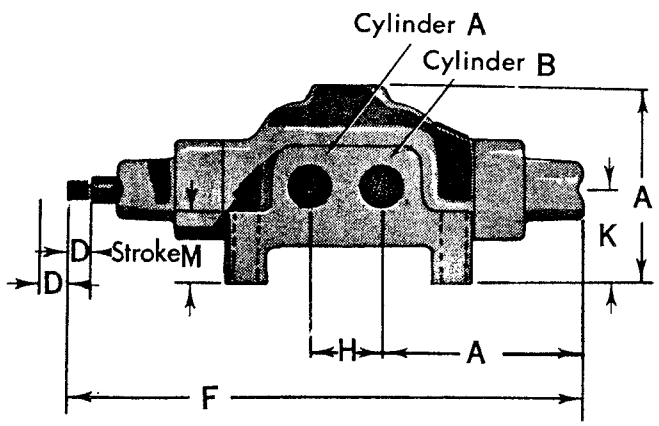




Sub-Plate Mounted
OD4 · SSES · *03S

Valve Size	A	B	C	D	E	F	G	H	J	K	L Dia.	M	N	P ID	P CS
⅜	3½	2¾	2⅜	5/16	3⅛	10	4⅛	1¼	⅜-16 x½ lg	1⅝	13/32	1¼	1	11/16	3/32





Foot Mounted
OD4 · SSET · *03S

SPECIFICATIONS

MOUNTING SUB-PLATE—Refer to Sheet Number for details of dimensions.
MOUNTING POSITION—Not restricted.

LEFT HAND ASSEMBLY—When supplied, will provide for the stem at the opposite end of the body from the position shown.

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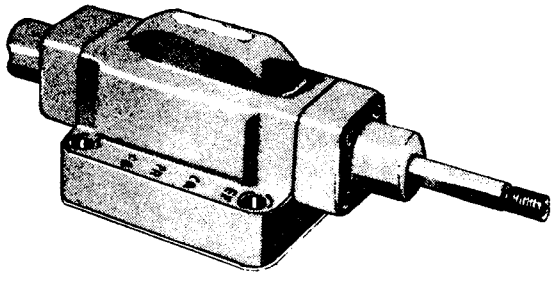
OD4 • STE••03S

DIRECTIONAL CONTROL

FOUR-WAY VALVE

MECHANICALLY OPERATED
SPRING OFFSET STEM OUT
⅜"

Foot Mounted Valves	Neutral Porting Arrangement	Sub-Plate Mounted Valves
⅜" Size		⅜" Size
OD4 • STET • 103S	1C	OD4 • STES • 103S
OD4 • STET • 203S	2C	OD4 • STES • 203S
OD4 • STET • 703S	7C	OD4 • STES • 703S
.141	AREA	.141
9	WEIGHT	10
10.7	GPM @ 10 psi DROP	9.2



OPERATION

Mechanically Operated Spring Return Four-way Valves provide directional control of oil flow by stem movement to two available positions.

A spool positioned by stem movement slides within a body having machined recesses to allow the desired flow pattern.

The spring return arrangement automatically positions the valve spool to the "Normal" position when the stem is released.

External linkage must push and hold the stem against light spring force to reverse the pattern of oil flow.

APPLICATION

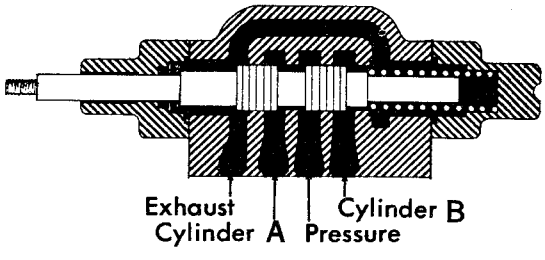
Mechanical control for hydraulic applications is achieved by the selection of this valve type.

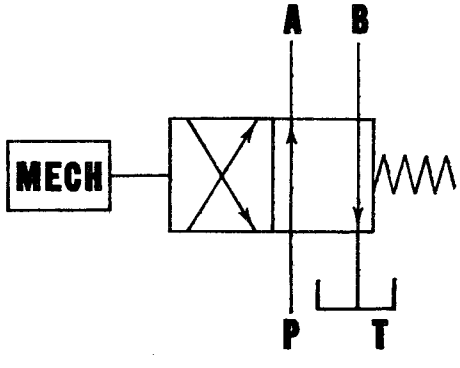
The spring return arrangement is often used as a safety device to instantly reverse the direction of movement of a cylinder or fluid motor in an emergency, or when desired.

Four-way valves are used to control movements of double acting cylinders or reversible fluid motors.

Three-way valve action is obtained by plugging one of either cylinder ports and is used with single acting cylinders or non-reversing fluid motors.

Various spool designs are available to minimize shock while the spool is reversing.





SPECIFICATIONS

J.I.C.—Design conforms to specifications of the Joint Industry Conference.
PRESSURE RATING—1500 pounds per square inch.
BACK PRESSURE—Exhaust port pressure should not exceed 500 pounds per square inch, non-shock.
FLOW RATE—For complete information of flow rate by pressure drop, refer to curves.

SPRING FORCE—Approximately 20 pounds of exertion is required to stroke the stem to reverse position. For every 100 psi of back pressure, 19 pounds will be added to the spring force.
OIL RECOMMENDATION—Premium grade hydraulic oil with 200 to 250 SSU viscosity at 100° F for use at normal ambient temperatures.
TEMPERATURE—Under normal conditions of continuous operation, fluid temperature should not exceed 130° F. In no instance should the temperature exceed 160°F.

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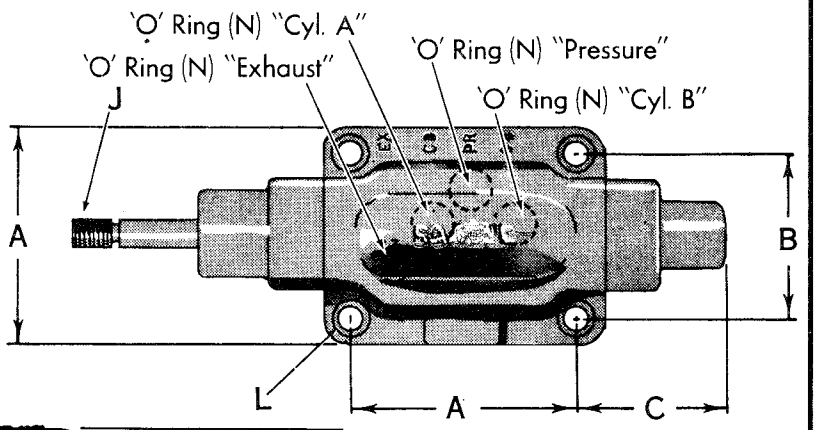
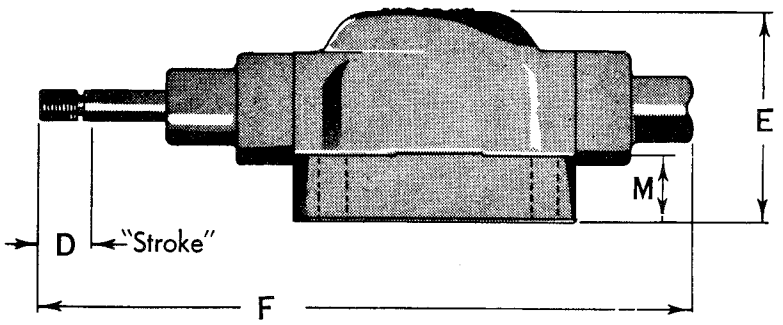
OD4 • STE••03S

DIRECTIONAL CONTROL

FOUR-WAY VALVE

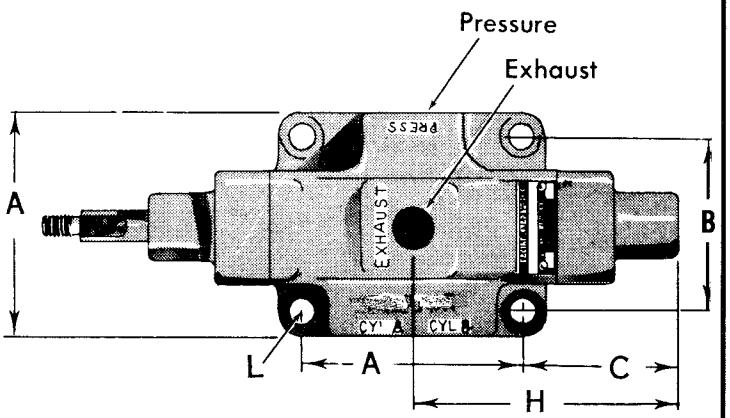
MECHANICALLY OPERATED
SPRING OFFSET STEM OUT
⅜"

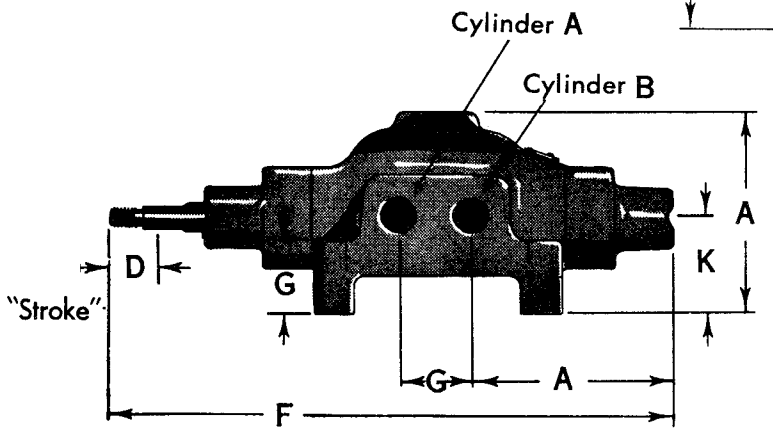




Sub-Plate Mounted
OD4 • STES • *03S

Valve Size	A	B	C	D	E	F	G	H	J	K	L	M	N	
													ID	CS
⅜	3½	2¾	2⅜	⅝	3 3/16	10¼	1¼	4⅛	⅜-16 x ½ lg	1⅝	13/32	1	11/16	3/32





Foot Mounted
OD4 • STET • *03S

SPECIFICATIONS

MOUNTING POSITION—Not restricted.

LEFT HAND ASSEMBLY—When supplied, will provide for the stem at the opposite end of the body from the position shown.

Burton Hydraulics, Inc.

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Foot Mounted Valves			Neutral Porting Arrangement	Sub-Plate Mounted Valves	
¾" Size	1¼" Size	1½" Size		¾" Size	1¼" Size
OD4 • SWET • 106S	OD4 • SWET • 110S	OD4 • SWET • 112S	1C	OD4 • SWES • 106S	OD4 • SWES • 110S
OD4 • SWET • 206S	OD4 • SWET • 210S	OD4 • SWET • 212S	2C	OD4 • SWES • 206S	OD4 • SWES • 210S
OD4 • SWET • 306S	OD4 • SWET • 310S	OD4 • SWET • 312S	3C	OD4 • SWES • 306S	OD4 • SWES • 310S
OD4 • SWET • 406S	OD4 • SWET • 410S	OD4 • SWET • 412S	4C	OD4 • SWES • 406S	OD4 • SWES • 410S
OD4 • SWET • 506S	OD4 • SWET • 510S	OD4 • SWET • 512S	5C	OD4 • SWES • 506S	OD4 • SWES • 510S
OD4 • SWET • 606S	OD4 • SWET • 610S	OD4 • SWET • 612S	6C	OD4 • SWES • 606S	OD4 • SWES • 610S
OD4 • SWET • 706S	OD4 • SWET • 710S	OD4 • SWET • 712S	7C	OD4 • SWES • 706S	OD4 • SWES • 710S
OD4 • SWET • 806S	OD4 • SWET • 810S	OD4 • SWET • 812S	8C	OD4 • SWES • 806S	OD4 • SWES • 810S
OD4 • SWET • 906S	OD4 • SWET • 910S	OD4 • SWET • 912S	9C	OD4 • SWES • 906S	OD4 • SWES • 910S
.425	1.271	1.753	AREA	.425	1.271
26	68	77	WEIGHT	26	61
24	44	56	GPM @ 10 psi DROP	22	43

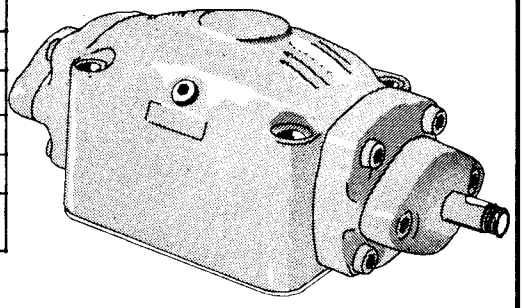
OD4 • SWE ••••S

DIRECTIONAL CONTROL

FOUR-WAY VALVE

MECHANICALLY OPERATED
STANDARD ACTION

¾"—1¼"—1½"



OPERATION

Mechanically Operated Standard Action Four-way Valves provide directional control of oil flow by stem movement to three available positions.

A spool positioned by the stem slides within a sleeve having round drilled holes to allow the desired flow pattern and smooth opening and closing of valve ports.

There are no springs or detents in the valve.

Positioning and holding of the valve spool in any desired position is dependent on the operating device attached to the stem.

APPLICATION

Mechanical control for hydraulic applications is achieved by the selection of this valve type.

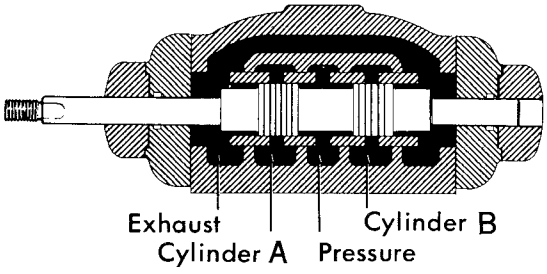
Standard action valves allow the use of servo and follower mechanisms to obtain desired circuit results.

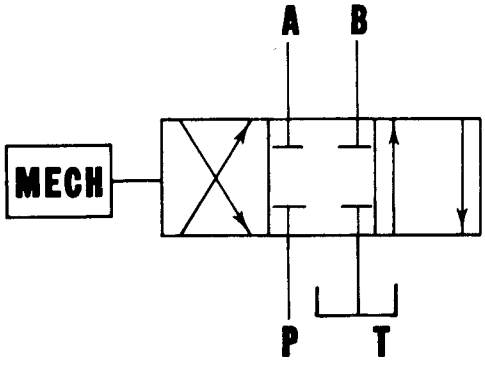
Four-way valves are used to control movements of double acting cylinders or reversible fluid motors.

Three-way valve action is obtained by plugging one of either cylinder ports and is used with single acting cylinders or non-reversing fluid motors.

A "Neutral" position is provided between the two extreme operating positions.

Various spool designs are available to obtain desired circuit results such as blocking and unloading.





SPECIFICATIONS

J.I.C.—Design conforms to specifications of the Joint Industry Conference.
PRESSURE RATING—1500 pounds per square inch.
BACK PRESSURE—Exhaust port pressure should not exceed 500 pounds per square inch, non-shock.
FLOW RATE—For complete information of flow rate by pressure drop, refer to curves.

SPRING FORCE—Approximately 40 pounds of exertion is required to stroke the stem to either side of "Neutral."
OIL RECOMMENDATION—Premium grade hydraulic oil with 200 to 250 SSU viscosity at 100° F for use at normal ambient temperatures.
THROTTLING SLEEVE—To provide for extremely smooth opening and closing of valve ports. Specify OD4 • SWE • • • • • D.
TEMPERATURE—Under normal conditions of continuous operation, fluid temperature should not exceed 130° F. In no instance should the temperature exceed 160° F.

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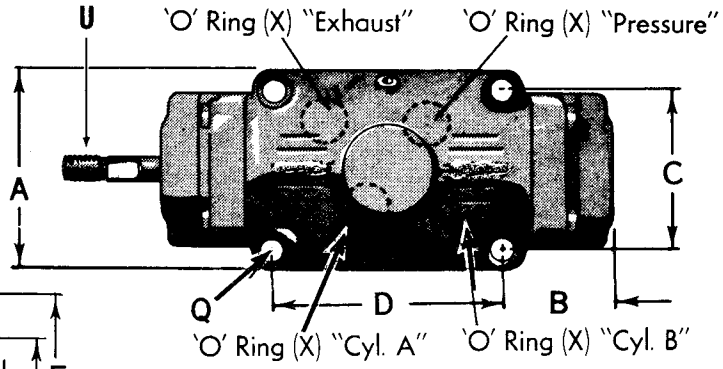
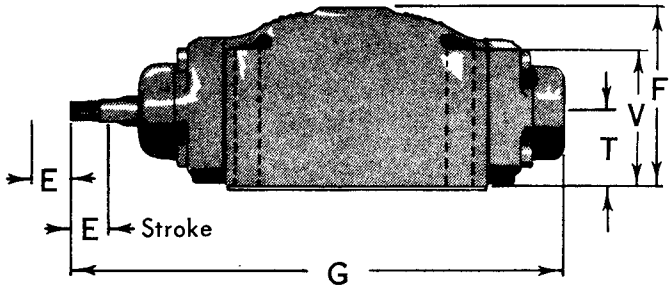
OD4 • SWE ** *** S

DIRECTIONAL CONTROL

FOUR-WAY VALVE

MECHANICALLY OPERATED
STANDARD ACTION
¾"—1¼"—1½"

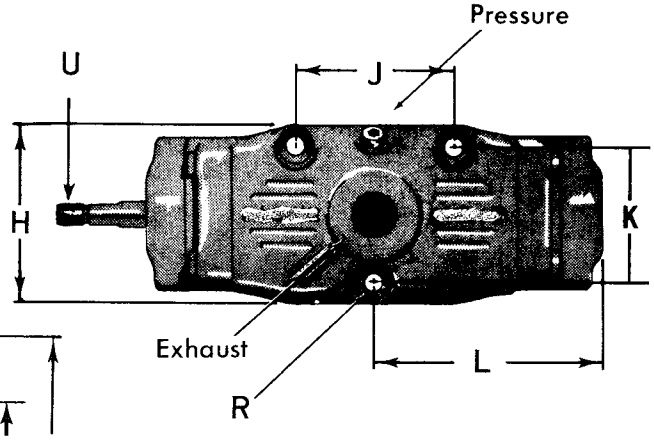


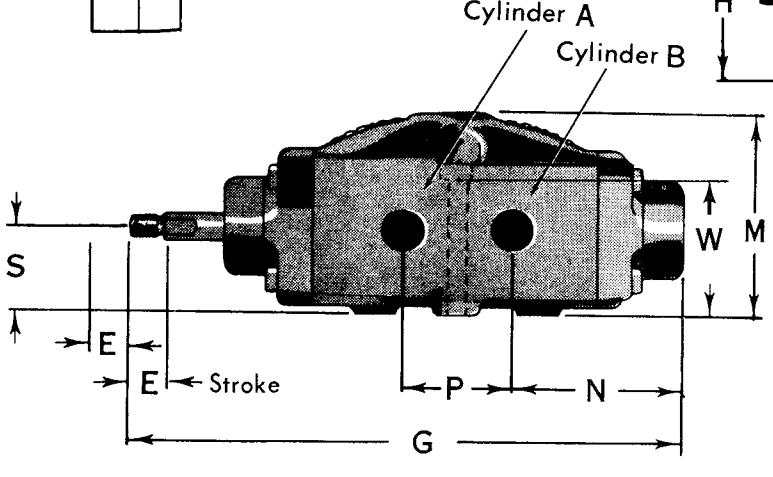


Sub-Plate Mounted
OD4 · SWES · ***S

Valve Size	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T	U	V	W
¾	4 9/16	2 5/8	3 5/8	5 1/8	9/16	4 1/2	12 7/16	4	3 1/2	3	5 3/16	4 7/16	4	2 3/8	9/16	7/16	1 15/16	2	1/2-20 x 5/8 lg	3 5/16	3 11/32
1¼	7 9/16	2 11/16	6 1/4	7 1/2	55/64	6 17/32	15 3/8	5 3/8	5 1/2	4 1/4	6 7/16	5 5/8	4 19/32	3 11/16	25/32	9/16	2 1/8	2 25/32	1/2-20 x 5/8 lg	1 3/4	3 13/16
1½					1		16 11/16	5 7/8	6 1/4	4 3/4	7 1/8	6 1/16	4 15/16	4 3/8		9/16	2 5/32		1/2-20 x 5/8 lg		3 31/32

X	
ID	CS
1	⅛
1⅝	⅛





Foot Mounted
OD4 · SWET · ***S

SPECIFICATIONS

MOUNTING POSITION—Not restricted.

LEFT HAND ASSEMBLY—When supplied, will provide for the stem at the opposite end of the body from the position shown.

Burton Hydraulics, Inc.

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OD4 • SSE• • ***S

DIRECTIONAL CONTROL

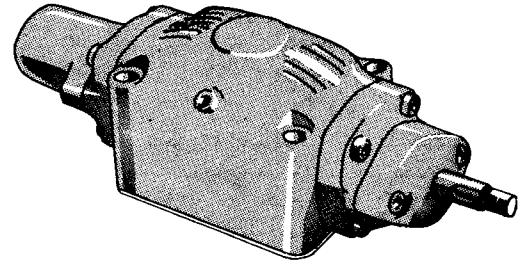
FOUR-WAY VALVE

MECHANICALLY OPERATED

SPRING CENTER

¾"—1¼"—1½"

Foot Mounted Valves			Neutral Porting Arrangement	Sub-Plate Mounted Valves	
¾" Size	1¼" Size	1½" Size		¾" Size	1¼" Size
OD4 • SSET • 106S	OD4 • SSET • 110S	OD4 • SSET • 112S	1C	OD4 • SSES • 106S	OD4 • SSES • 110S
OD4 • SSET • 206S	OD4 • SSET • 210S	OD4 • SSET • 212S	2C	OD4 • SSES • 206S	OD4 • SSES • 210S
OD4 • SSET • 306S	OD4 • SSET • 310S	OD4 • SSET • 312S	3C	OD4 • SSES • 306S	OD4 • SSES • 310S
OD4 • SSET • 406S	OD4 • SSET • 410S	OD4 • SSET • 412S	4C	OD4 • SSES • 406S	OD4 • SSES • 410S
OD4 • SSET • 506S	OD4 • SSET • 510S	OD4 • SSET • 512S	5C	OD4 • SSES • 506S	OD4 • SSES • 510S
OD4 • SSET • 606S	OD4 • SSET • 610S	OD4 • SSET • 612S	6C	OD4 • SSES • 606S	OD4 • SSES • 610S
OD4 • SSET • 706S	OD4 • SSET • 710S	OD4 • SSET • 712S	7C	OD4 • SSES • 706S	OD4 • SSES • 710S
OD4 • SSET • 806S	OD4 • SSET • 810S	OD4 • SSET • 812S	8C	OD4 • SSES • 806S	OD4 • SSES • 810S
OD4 • SSET • 906S	OD4 • SSET • 910S	OD4 • SSET • 912S	9C	OD4 • SSES • 906S	OD4 • SSES • 910S
.425	1.271	1.753	AREA	.425	1.271
22	45	57	WEIGHT	27	62
26	68	77	GPM @ 10 psi DROP	22	43



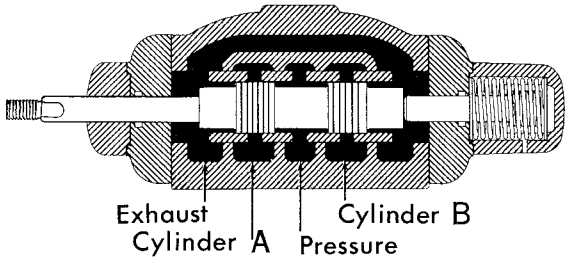
OPERATION

Mechanically Operated Spring Centered Four-way Valves provide directional control of oil flow by stem movement to three available positions.

A spool positioned by stem movement slides within a sleeve having round drilled holes to allow the desired flow pattern and smooth opening and closing of valve ports.

The spring centering arrangement automatically positions the valve spool to "Neutral" when the stem is released.

To maintain flow in either of the two extreme operating positions, the linkage must hold the stem against light spring force.



APPLICATION

Mechanical control for hydraulic applications is achieved by the selection of this valve type.

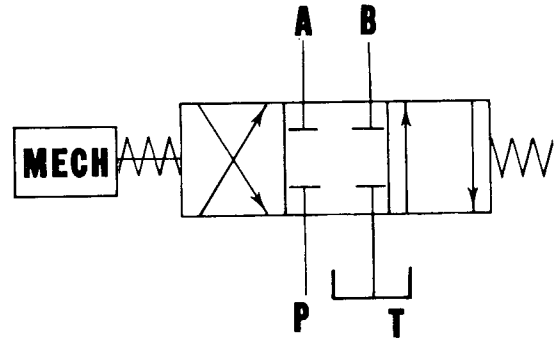
The spring centering arrangement is often used as a safety device to immediately stop the operation of a machine by releasing the stem in an emergency or when desired to short stroke a cylinder.

Four-way valves are used to control movements of double acting cylinders or reversible fluid motors.

Three-way valve action is obtained by plugging one of either cylinder ports and is used with single acting cylinders or non-reversing fluid motors.

A "Neutral" position is provided between the two extreme operating positions.

Various spool designs are available to obtain desired circuit results such as blocking and unloading.



SPECIFICATIONS

J.I.C.—Design conforms to specifications of the Joint Industry Conference.
PRESSURE RATING—1500 pounds per square inch.
BACK PRESSURE—Exhaust port pressure should not exceed 500 pounds per square inch, non-shock.
FLOW RATE—For complete information of flow rate by pressure drop, refer to curves.

SPRING FORCE—Approximately 40 pounds of exertion is required to stroke the stem to either side of "Neutral."
OIL RECOMMENDATION—Premium grade hydraulic oil with 200 to 250 SSU viscosity at 100° F for use at normal ambient temperatures.
THROTTLING SLEEVE—To provide for extremely smooth opening and closing of valve ports. Specify OD4 • SSE• • •••D.
TEMPERATURE—Under normal conditions of continuous operation, fluid temperature should not exceed 130° F. In no instance should the temperature exceed 160° F.

Burton Hydraulics, Inc.

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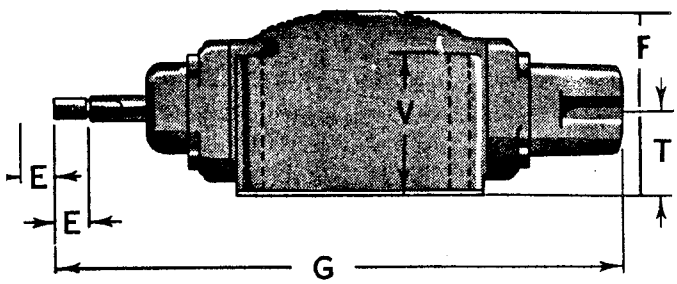
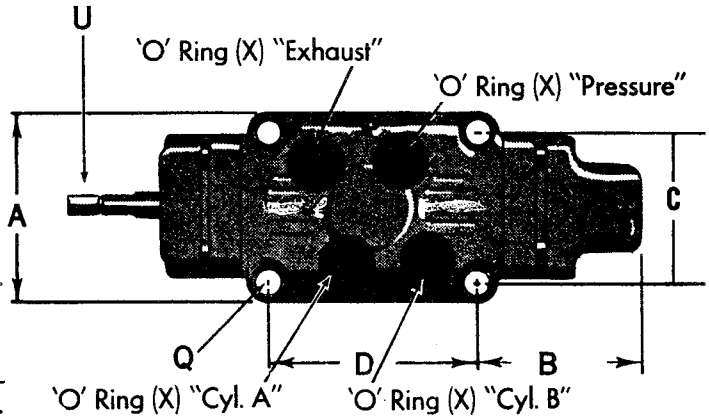
OD4 • SSE••***S

DIRECTIONAL CONTROL
FOUR-WAY VALVE
MECHANICALLY OPERATED
SPRING CENTER

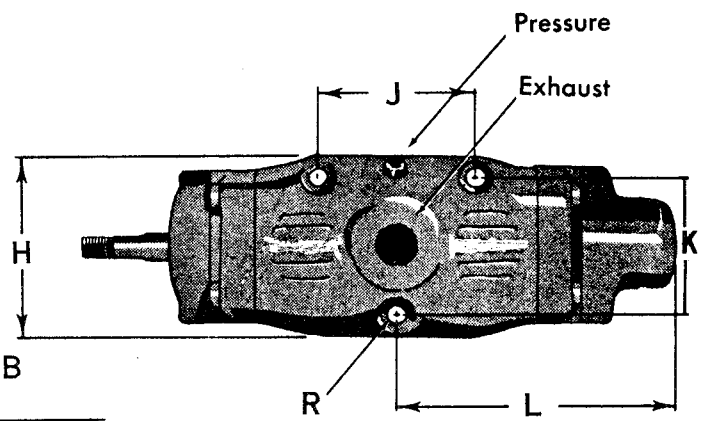


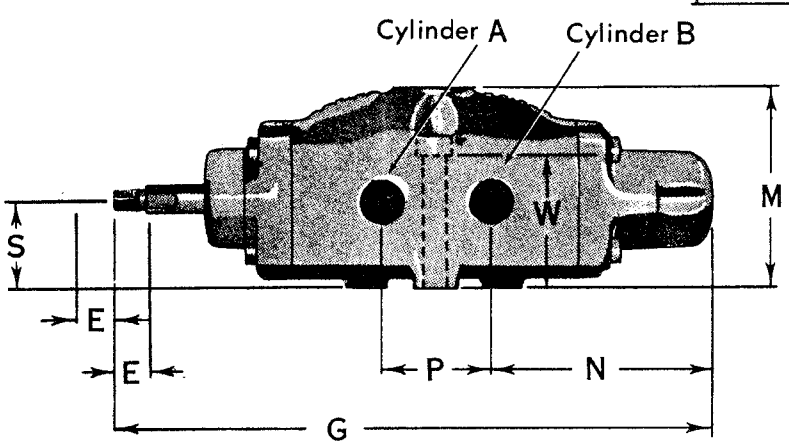


Sub-Plate Mounted
OD4 • SSES • ***S

Valve Size	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T	U	V	W
¾	4 9/16	3 ⅞	3 ⅝	5 ⅛	9/16	4 ½	13 11/16	4	3 ½	3	6 7/16	4 7/16	5 ¼	2 ⅝	9/16	7/16	1 15/16	2	½-20 x ⅝ lg	3 5/16	3 5/16
1¼	7 9/16	5 1/16	6 ¼	7 ½	5/64	6 ⅝	17 11/16	5 ⅜	5 ½	4 ¼	8 ¾	5 ⅝	6 19/32	3 11/16	25/32	9/16	2 ⅛	2 ⅞	½-20 x ⅝ lg	1 ¾	3 13/16
1½					1		19 1/16	5 ⅞	6 ¼	4 ¾	9 13/32	6 ½	7 7/32	4 ⅜		9/16	2 5/32		½-20 x ⅝ lg		3 31/32

X	
ID	CS
1	⅛
1⅝	⅛





Foot Mounted
OD4 • SSET • ***S

SPECIFICATIONS

MOUNTING SUB-PLATE—Refer to Sheet No. and for details of dimensions.
MOUNTING POSITION—Not restricted.

LEFT HAND ASSEMBLY—When supplied, will provide for the stem at opposite end of the body from the position shown.

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OD4 • STE ••••S

DIRECTIONAL CONTROL

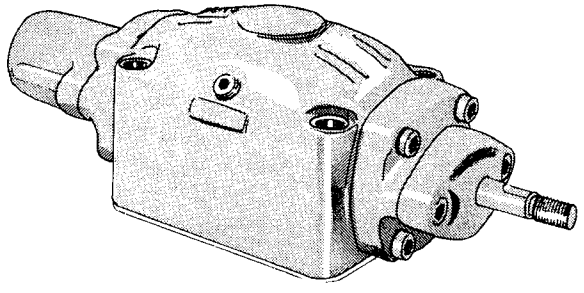
FOUR-WAY VALVE

MECHANICALLY OPERATED

SPRING RETURN STEM OUT

¾"—1¼"—1½"

Foot Mounted Valves			Neutral Porting Arrangement	Sub-Plate Mounted Valves	
¾" Size	1¼" Size	1½" Size		¾" Size	1¼" Size
OD4 • STET • 106S	OD4 • STET • 110S	OD4 • STET • 112S	1C	OD4 • STES • 106S	OD4 • STES • 110S
OD4 • STET • 206S	OD4 • STET • 210S	OD4 • STET • 212S	2C	OD4 • STES • 206S	OD4 • STES • 210S
OD4 • STET • 706S	OD4 • STET • 710S	OD4 • STET • 712S	7C	OD4 • STES • 706S	OD4 • STES • 710S
.425	1.271	1.753	AREA	.425	1.271
22	45	57	WEIGHT	27	62
26	68	77	GPM @ 10 psi DROP	22	43



OPERATION

Mechanically Operated Spring Return Four-way Valves provide directional control of oil flow by stem movement to two available positions.

A spool positioned by stem movement slides within a sleeve having round drilled holes to allow the desired flow pattern and smooth opening and closing of valve ports.

The spring return arrangement automatically positions the valve spool to the "Normal" position when the stem is released.

External linkage must push and hold the stem against light spring force to reverse the pattern of oil flow.

APPLICATION

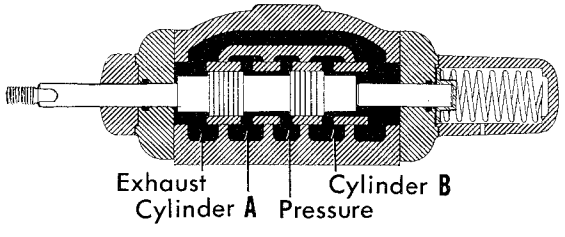
Mechanical control for hydraulic applications is achieved by the selection of this valve type.

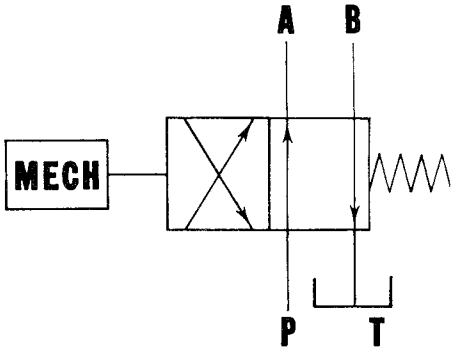
The spring return arrangement is often used as a safety device to instantly reverse the direction of movement of a cylinder or fluid motor in an emergency or when desired.

Four-way valves are used to control movements of double acting cylinders or reversible fluid motors.

Three-way valve action is obtained by plugging one of either cylinder ports and is used with single acting cylinders or non-reversing fluid motors.

Various spool designs are available to minimize shock while the spool is reversing.





SPECIFICATIONS

J.I.C.—Design conforms to specifications of the Joint Industry Conference.
PRESSURE RATING—1500 pounds per square inch.
BACK PRESSURE—Exhaust port pressure should not exceed 500 pounds per square inch, non-shock.
FLOW RATE—For complete information of flow rate by pressure drop, refer to curves

TEMPERATURE—Under normal conditions of continuous operation, fluid temperature should not exceed 130° F. In no instance should the temperature exceed 160° F.
SPRING FORCE—Approximately 55 pounds of exertion is required to stroke the stem to reverse position. On valves 1¼" and larger, for every 100 psi of back pressure add 31 pounds to the spring force.
OIL RECOMMENDATION—Premium grade hydraulic oil with 200 to 250 SSU viscosity at 100° F for use at normal ambient temperatures.
THROTTLING SLEEVE—To provide for extremely smooth opening and closing of valve ports. Specify OD4 • STE• • •••D.

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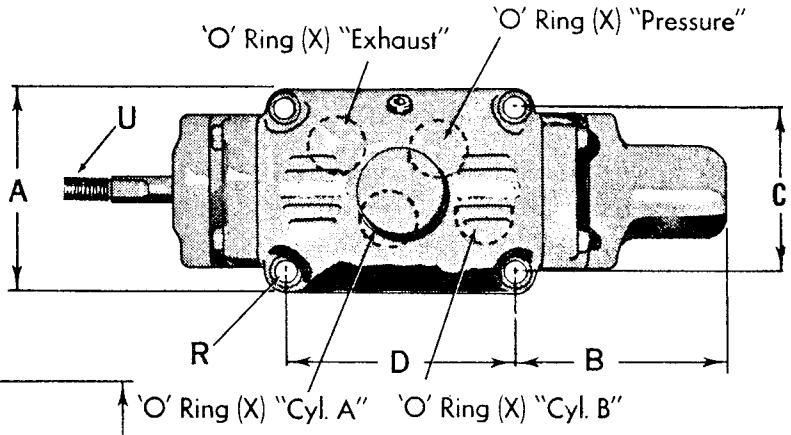
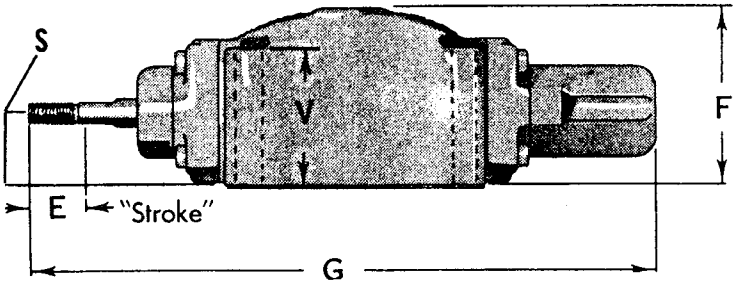
OD4 • STE••••S

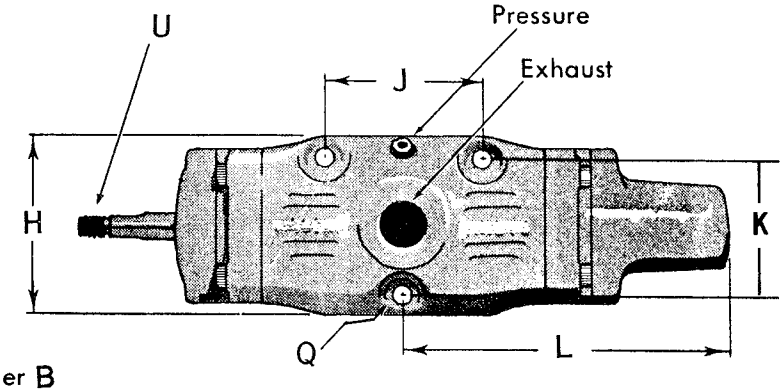
DIRECTIONAL CONTROL
FOUR-WAY VALVE
MECHANICALLY OPERATED
SPRING RETURN STEM OUT
¾"—1¼"—1½"

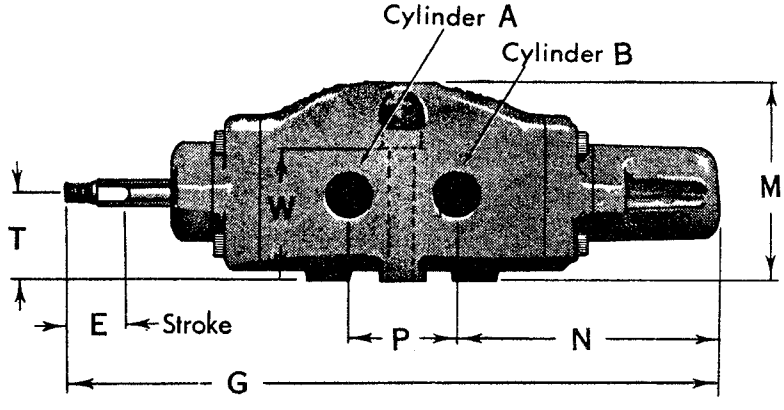




Sub-Plate Mounted
OD4 • STES • ***S

Valve Size	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T	U	V	W	X ID	X CS
¾	4 9/16	4 15/16	3 5/8	5 1/8	1 1/8	4 1/2	15 5/16	4	3 1/2	3	7 1/2	4 7/16	6 5/16	2 3/8	7/16	9/16	2	1 15/16	½-20 x 5/8 lg	3 5/16	3 5/16	1	1/8
1¼	7 9/16	1 29/32	6 1/4	7 1/2	1 3/4	6 5/8	15 7/16	5 3/8	5 1/2	4 1/4	5 21/32	5 5/8	3 13/16	3 11/16	9/16	25/32	2 7/8	2 1/8	½-20 x 5/8 lg	1 3/4	3 13/16	1 5/8	1/8
1½					2		16 7/8	5 7/8	6 1/4	4 3/4	6 5/16	6 1/32	4 1/8	4 3/8	9/16			2 5/32	½-20 x 5/8 lg		3 31/32		





Foot Mounted
OD4 • STET • ***S

SPECIFICATIONS

MOUNTING SUB-PLATE—Refer to Sheet No. and for details of dimensions.

LEFT HAND ASSEMBLY—When supplied, will provide for the stem at the opposite end of the body from the position shown.

Burton Hydraulics, Inc.
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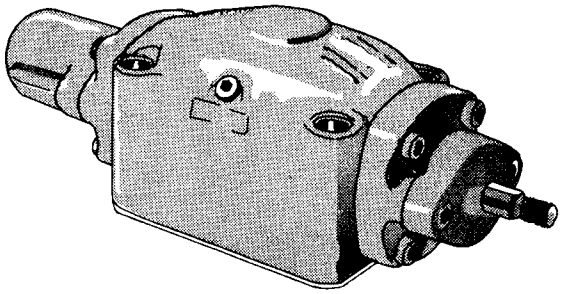
OD4 • SOE ••••S

DIRECTIONAL CONTROL

FOUR-WAY VALVE

MECHANICALLY OPERATED
SPRING RETURN STEM IN
¾"—1¼"—1½"

Foot Mounted Valves			Neutral Porting Arrangement	Sub-Plate Mounted Valves	
¾" Size	1¼" Size	1½" Size		¾" Size	1¼" Size
OD4 • SOET • 106S	OD4 • SOET • 110S	OD4 • SOET • 112S	1C	OD4 • SOES • 106S	OD4 • SOES • 110S
OD4 • SOET • 206S	OD4 • SOET • 210S	OD4 • SOET • 212S	2C	OD4 • SOES • 206S	OD4 • SOES • 210S
OD4 • SOET • 706S	OD4 • SOET • 710S	OD4 • SOET • 712S	7C	OD4 • SOES • 706S	OD4 • SOES • 710S
.425	1.271	1.753	AREA	.425	1.271
22	45	57	WEIGHT	27	62
26	68	77	GPM @ 10psi DROP	22	43



OPERATION

Mechanically Operated Spring Return Four-way Valves provide directional control of oil flow by stem movement to two available positions.

A spool positioned by stem movement slides within a sleeve having round drilled holes to allow the desired flow pattern and smooth opening and closing of valve ports.

The spring return arrangement automatically positions the valve spool to the "Normal" position when the stem is released.

External linkage must pull and hold the stem against light spring force to reverse the pattern of oil flow.

APPLICATION

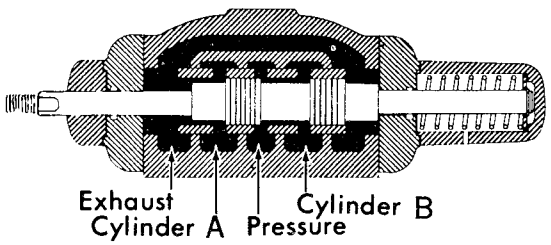
Mechanical control for hydraulic applications is achieved by the selection of this valve type.

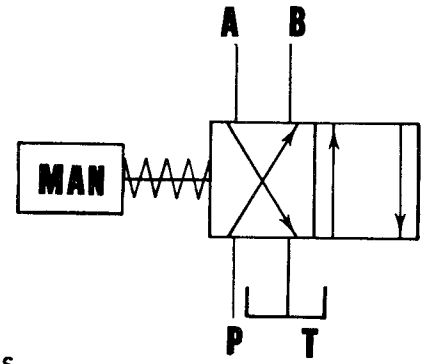
The spring return arrangement is often used as a safety device to instantly reverse the direction of movement of a cylinder or fluid motor in an emergency, or when desired.

Four-way valves are used to control movements of double acting cylinders or reversible fluid motors.

Three-way valve action is obtained by plugging one of either cylinder ports and is used with single acting cylinders or non-reversing fluid motors.

Various spool designs are available to minimize shock while the spool is reversing.





SPECIFICATIONS

J.I.C.—Design conforms to specifications of the Joint Industry Conference.
PRESSURE RATING—1500 pounds per square inch.
BACK PRESSURE—Exhaust port pressure should not exceed 500 pounds per square inch, non shock.
FLOW RATE—For complete information of flow rate by pressure drop, refer to curves

SPRING FORCE—Approximately 45 pounds of exertion is required to stroke the stem to reverse position.
OIL RECOMMENDATION—Premium grade hydraulic oil with 200 to 250 SSU viscosity at 100° F for use at normal ambient temperatures.
THROTTLING SLEEVE—To provide for extremely smooth opening and closing of valve ports. Specify OD4 • SOE• • •••D.
TEMPERATURE—Under normal conditions of continuous operation, fluid temperature should not exceed 130° F. In no instance should the temperature exceed 160° F.

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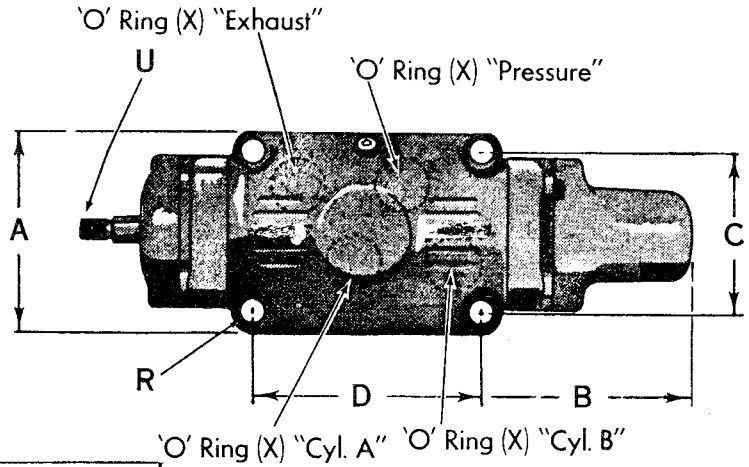
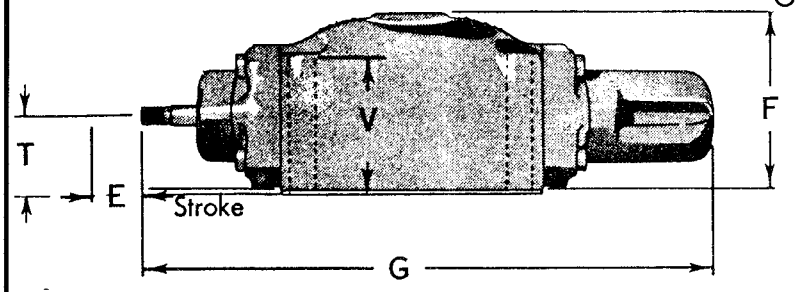
OD4 • SOE••***S

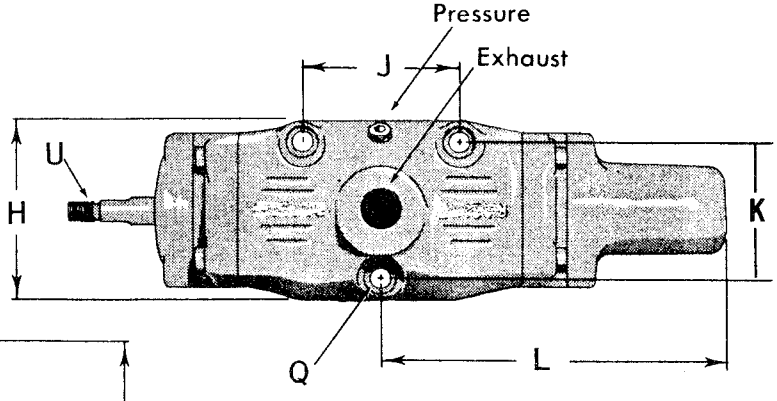
DIRECTIONAL CONTROL
FOUR-WAY VALVE
MECHANICALLY OPERATED
SPRING RETURN STEM IN
¾"—1¼"—1½"

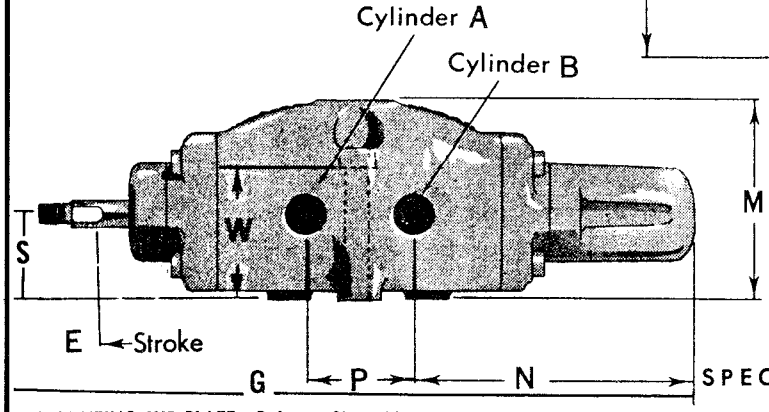




Sub-Plate Mounted
OD4 • SOES • ***S

Valve Size	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q Dia.	R Dia.	S	T	U	V	W	X ID	X CS
¾	4 9/16	4 15/16	3 5/8	5 1/8	1 1/8	4 1/2	14 3/16	4	3 1/2	3	7 1/2	4 7/16	6 5/16	2 3/8	7/16	9/16	1 15/16	2	1/2-20 x 5/8 lg	3 5/16	3 11/32	1	1/8
1¼	7 9/16	5 5/8	6 1/4	7 1/2	1 3/4	6 5/8	17 7/16	5 3/8	5 1/2	4 1/4	9 3/8	5 5/8	7 9/16	3 11/16	9/16	25/32	2 1/8	2 7/8	1/2-20 x 5/8 lg	1 3/4	3 15/16	1 5/8	1/8
1½					2		18 5/8	5 7/8	6 1/4	4 3/4	10 1/16	6 1/16	7 1/8	4 3/8	9/16		2 5/32		1/2-20 x 5/8 lg		4		





Foot-Mounted
OD4 • SOET • ***S

SPECIFICATIONS

MOUNTING SUB-PLATE—Refer to Sheet No. and for details of dimensions.
MOUNTING POSITION—Not restricted.

LEFT HAND ASSEMBLY—When supplied, will provide for the stem at the opposite end of the body from the position shown.

Burton Hydraulics, Inc.
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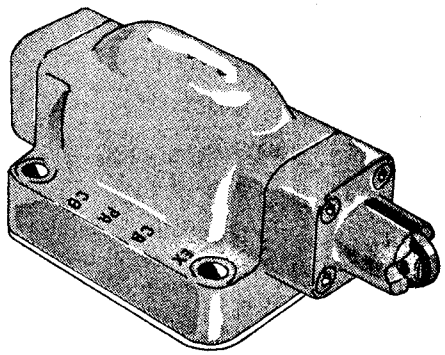
OD4 • RTE*•* 03S

DIRECTIONAL CONTROL

FOUR-WAY VALVE

CAM OPERATED
SPRING RETURN
⅜"

Foot Mounted Valves	Neutral Porting Arrangement	Sub-Plate Mounted Valves
⅜" Size		⅜" Size
OD4 • RTET • 103S	1C	OD4 • RTES • 103S
.141	AREA	.141
8	WEIGHT	9
10.7	GPM @ 10 psi DROP	9.2



OPERATION

Mechanically Operated Spring Return Four-way Valves provide directional control of oil flow by cam actuation to two available positions.

A spool positioned by a roller arrangement slides within a body having machined recesses to allow the desired flow pattern.

The spring return arrangement provides automatic positioning of the valve spool to the "Normal" position by following the cam design.

APPLICATION

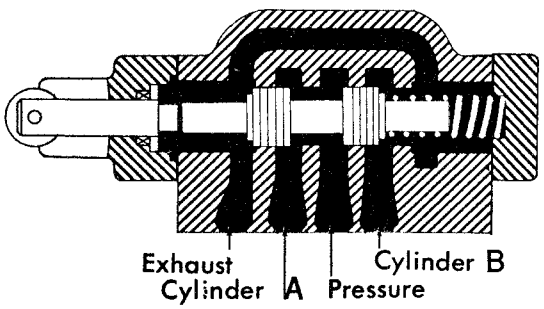
Mechanical control for automatic hydraulic applications is achieved by the selection of this valve type.

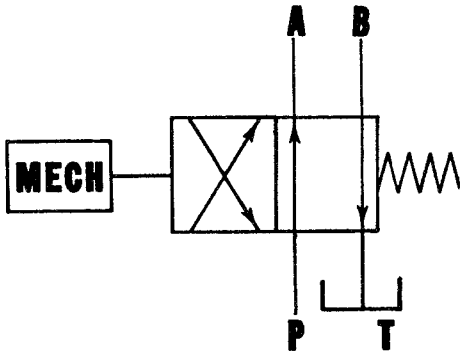
The design of the cam will allow controlled reversals of cylinders or fluid motors at a desired rate.

Four-way valves are used to control movements of double acting cylinders or reversible fluid motors.

Three-way valve action is obtained by plugging one of either cylinder ports and is used with single acting cylinders or non-reversing fluid motors.

Various spool designs are available to obtain desired circuit results.





SPECIFICATIONS

J.I.C.—Design conforms to specifications of the Joint Industry Conference.
PRESSURE RATING—1500 pounds per square inch.
BACK PRESSURE—Exhaust port pressure should not exceed 500 pounds per square inch.
FLOW RATE—For complete information of flow rate by pressure drop, refer to curves

SPRING FORCE—Approximately 15 pounds of force is required to stroke the roller to reverse position. For every 100 psi of back pressure add 19 pounds to the spring force.
OIL RECOMMENDATION—Premium grade hydraulic oil with 200 to 250 SSU viscosity at 100° F for use at normal ambient temperatures.
TEMPERATURE—Under normal conditions of continuous operation, fluid temperature should not exceed 130° F. In no instance should the temperature exceed 160° F.

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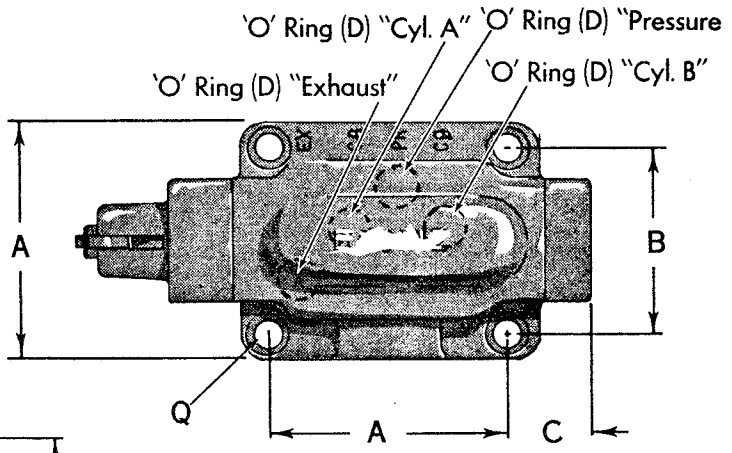
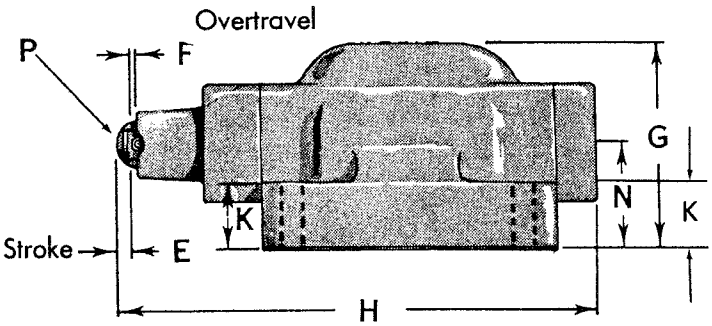
OD4 • RTE••03S

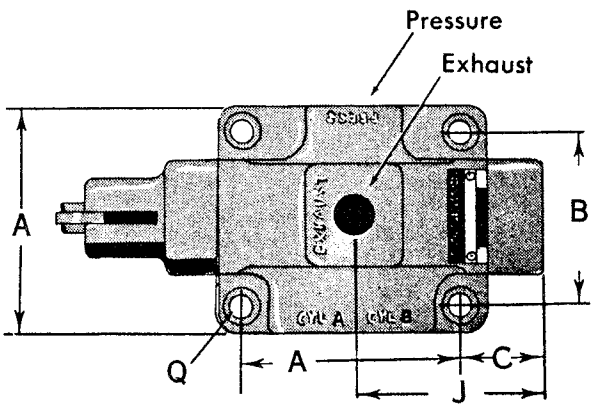
DIRECTIONAL CONTROL
FOUR-WAY
VALVE
CAM OPERATED
SPRING RETURN
⅜"

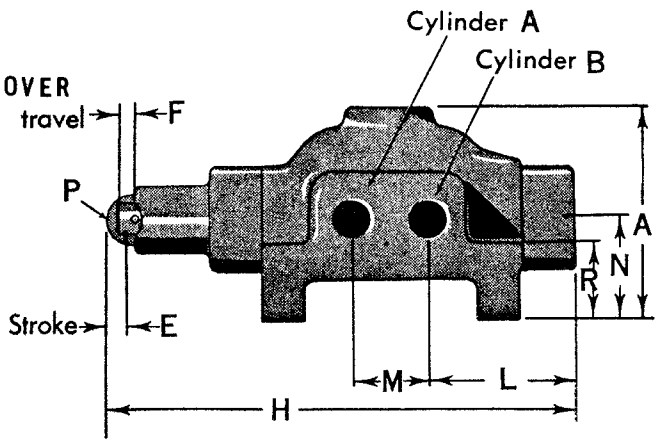




Sub-Plate Mounted
OD4 · RTES · *03S

Valve Size	A	B	C	D ID	D CS	E	F	G	H	J	K	L	M	N	P Dia.	Q Dia.	R
⅜	3½	2¾	1 1/16	11/16	3/32	5/16	⅛	3⅛	7⅜	2 13/16	1	2 3/16	1¼	1⅝	¾	13/32	1¼





Foot Mounted
OD4 · RTET · *03S

SPECIFICATIONS

MOUNTING SUB-PLATE—Refer to Sheet No. for details of dimensions.
MOUNTING POSITION—Not restricted.

END CAPS—Rotation in 90° increments is possible.
LEFT HAND ASSEMBLY—When supplied, will provide for the roller at the opposite end of the body from the position shown.

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OD4 • RTE • • ***S

DIRECTIONAL CONTROL

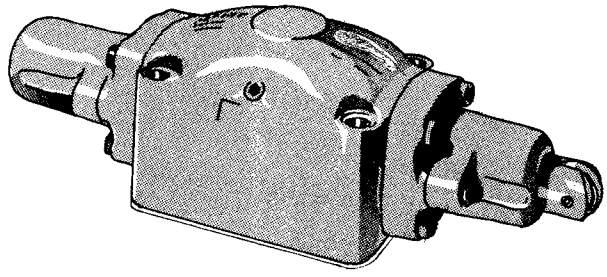
FOUR-WAY VALVE

CAM OPERATED

SPRING RETURN

¾"—1¼"—1½"

Foot Mounted Valves			Normal Porting Arrangement	Sub-Plate Mounted Valves	
¾" Size	1¼" Size	1½" Size		¾" Size	1¼" Size
OD4 • RTET • 106S	OD4 • RTET • 110S	OD4 • RTET • 112S	1C	OD4 • RTES • 106S	OD4 • RTES • 110S
.425	1.271	1.753	AREA	.425	1.271
25	46	59	WEIGHT	29	64
26	68	77	GPM @ 10 psi DROP	22	43



OPERATION

Mechanically Operated Spring Return Four-way Valves provide directional control of oil flow by cam actuation to two available positions.

A spool positioned by a roller arrangement slides within a sleeve having round drilled holes to allow the desired flow pattern and smooth opening and closing of valve ports.

The spring return arrangement provides automatic positioning of the valve spool to the "Normal" position by following the cam design.

APPLICATION

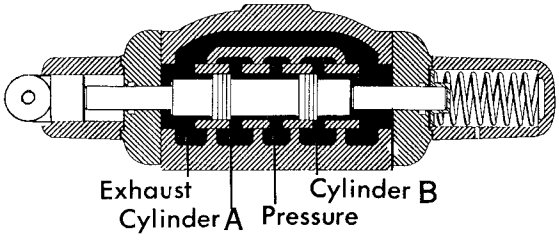
Mechanical control for automatic hydraulic applications is achieved by the selection of this valve type.

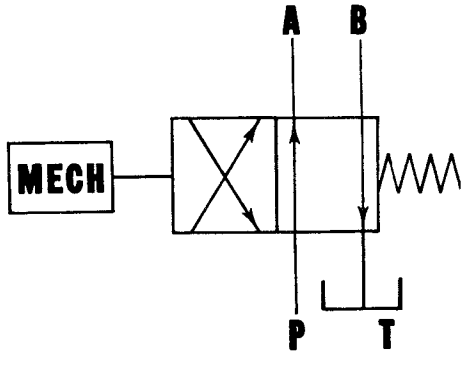
The design of the cam will allow controlled reversals of cylinders or fluid motors at a desired rate.

Four-way valves are used to control movements of double acting cylinders or reversible fluid motors.

Three-way valve action is obtained by plugging one of either cylinder ports and is used with single acting cylinders or non-reversing fluid motors.

Various spool designs are available to obtain desired circuit results.





SPECIFICATIONS

J.I.C.—Design conforms to specifications of the Joint Industry Conference.
PRESSURE RATING—1500 pounds per square inch.
BACK PRESSURE—Exhaust port pressure should not exceed 500 pounds per square inch.
FLOW RATE—For complete information of flow rate by pressure drop, refer to curves.

TEMPERATURE—Under normal conditions of continuous operation, fluid temperature should not exceed 130° F. In no instance should the temperature exceed 160° F.
SPRING FORCE—Approximately 40 pounds of force is required to stroke the roller to reverse position. On 1¼" valves and larger, for every 100 psi of back pressure add 30 pounds to the spring force.
OIL RECOMMENDATION—Premium grade hydraulic oil with 200 to 250 SSU viscosity at 100° F for use at normal ambient temperatures.
THROTTLING SLEEVE—To provide for extremely smooth opening and closing of valve ports. Specify OD4 • RTE• • •••D.

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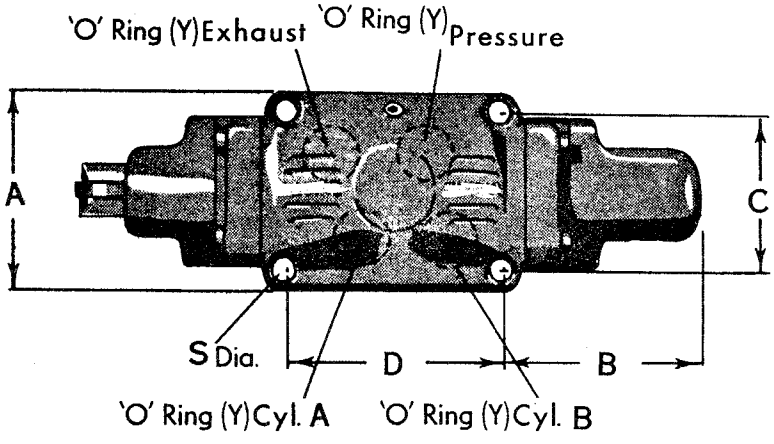
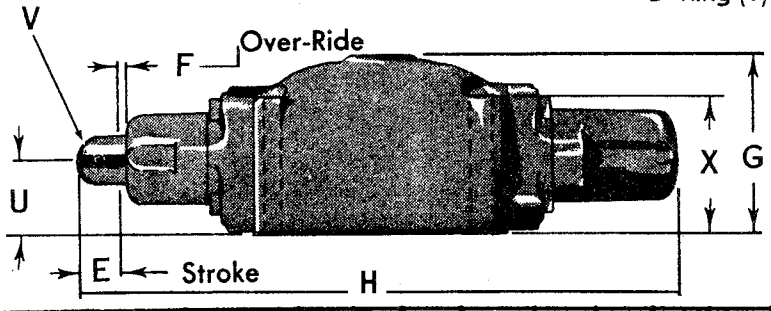
OD4 • RTE ** *** S

DIRECTIONAL CONTROL

FOUR-WAY VALVE

CAM OPERATED
SPRING RETURN
¾"—1¼"—1½"

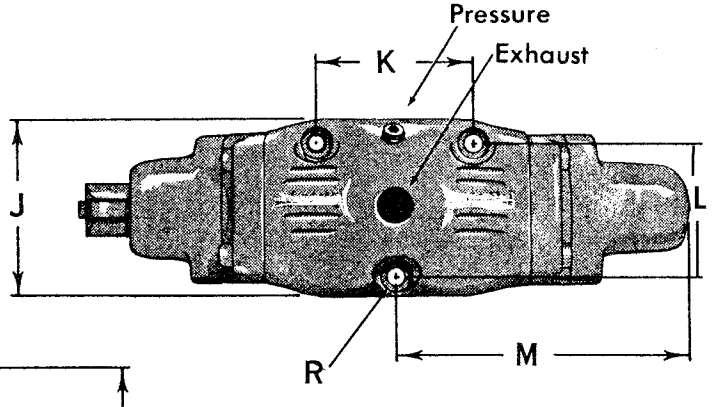


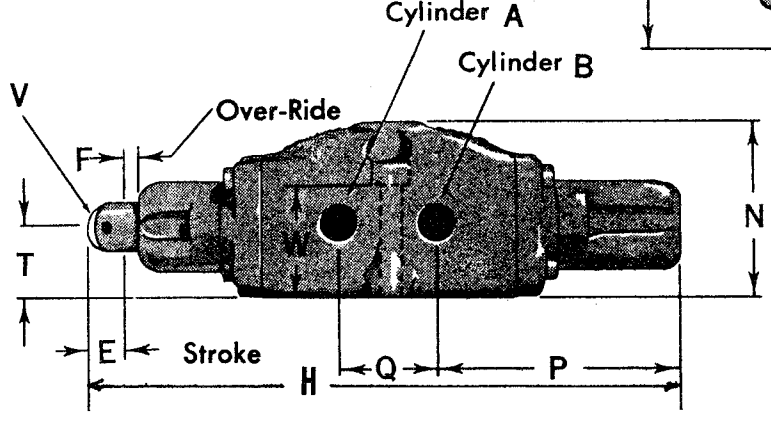


Sub-Plate Mounted
OD4 • RTES • ***S

Valve Size	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T	U	V
¾	4 9/16	4 15/16	3 5/8	5 1/8	13/16	1/8	4 1/2	14 15/16	4	3 1/2	3	7 1/2	4 7/16	6 5/16	2 3/8	7/16	9/16	1 15/16	2	1 3/16
1¼	7 9/16	1 29/32	6 1/4	7 1/2	15/16	1/8	6 5/8	15 3/8	5 3/8	5 1/2	4 1/4	5 21/32	5 5/8	3 13/16	3 11/16	9/16	25/32	2 1/8	2 7/8	1 3/16
1½					15/16	1/8		16 3/4	5 7/8	6 1/4	4 3/4	6 5/16	6 1/32	4 1/8	4 3/8	9/16		2 5/32		1 3/16

W	X	Y	
		ID	CS
3 5/16	3 5/16	1	1/8
3 13/16	1 3/4	1 5/8	1/8
3 31/32			





Foot Mounted
OD4 • RTET • ***S

SPECIFICATIONS

MOUNTING SUB-PLATE—Refer to Sheet of dimensions.
MOUNTING POSITION—Not restricted.

END CAPS—Rotation in 90° increments is possible.
LEFT HAND ASSEMBLY—When supplied, will provide for the roller at the opposite end of the body from the position shown.

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Type	GPM @ 10 psi Drop	Weight	Model No.	Action	
				Roller Out	Roller In
4-way	2	3	OD4 • RTET • 102S	Press. to Cyl. A Cyl. B to Exhaust	Press. to Cyl. B Cyl. A to Exhaust
3-way	2	3	OD3 • RTET • 902S	Press. Blocked Cyl. A to Exhaust	Press. to Cyl. A
2-way	2	3	OD2 • RTET • 102S	Ports Blocked	Ports Open
2-way	2	3	OD2 • RTET • 202S	Ports Open	Ports Blocked

OD •• RTET •• 02S

DIRECTIONAL CONTROL

PILOT VALVE

CAM OPERATED

SPRING RETURN

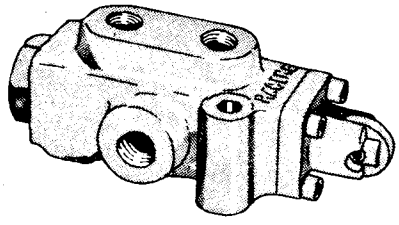
¼"

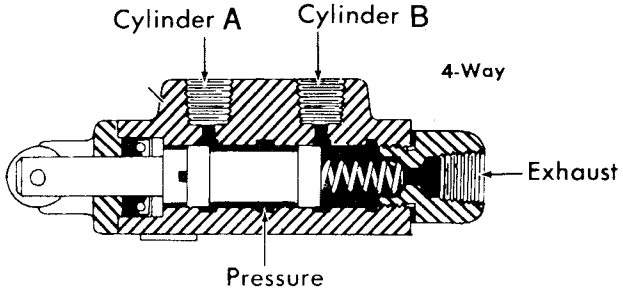
OPERATION

Mechanically Operated Spring Return Pilot Valves provide directional control of oil flow by cam actuation to two available positions.

A spool positioned by a roller arrangement slides within a body having machined recesses to allow the desired flow pattern.

The spring return arrangement provides automatic positioning of the valve spool to the "Normal" position by following the cam design.





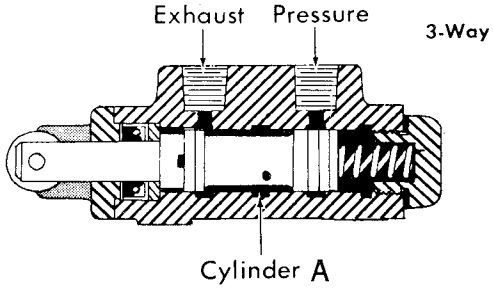
APPLICATION

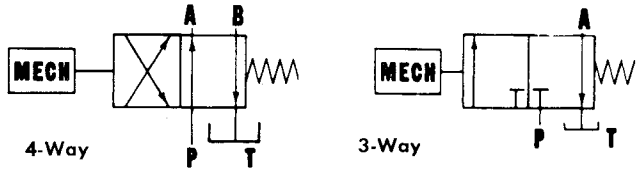
Mechanical pilot control for hydraulically actuated machines is achieved by the selection of this valve type.

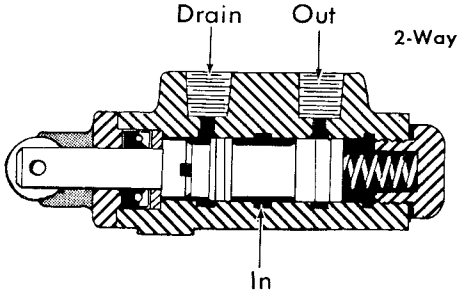
Four-way valves are used to control movements of double pilot operated valves.

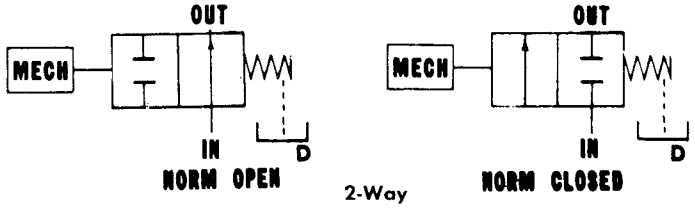
Three-way valves are used to control movements of single pilot operated valves.

Two-way valves are supplied as either normally open or normally closed types.









SPECIFICATIONS

PRESSURE RATING—1500 pounds per square inch.

BACK PRESSURE—Exhaust port pressure should not exceed 25 pounds per square inch.

FLOW RATE—For complete information of flow rate by pressure drop, refer to curves.

TEMPERATURE—Under normal conditions of continuous operation, fluid temperature should not exceed 130° F. In no instance should the temperature exceed 160°F.

SPRING FORCE—Approximately 40 pounds of force is required to stroke the roller to reverse position.

OIL RECOMMENDATION—Premium grade hydraulic oil with 200 to 250 SSU viscosity at 100° F for use at normal ambient temperatures.

MOUNTING POSITION—Not restricted.

END CAPS—Rotation in 90° increments is possible.

Burton Hydraulics, Inc.

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OD ** RTET **02S

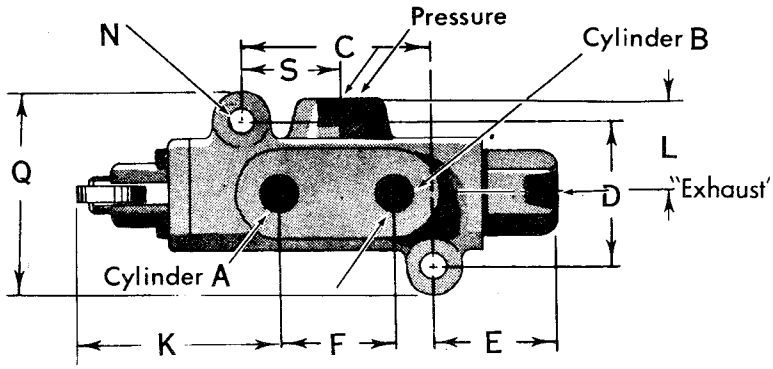
DIRECTIONAL CONTROL

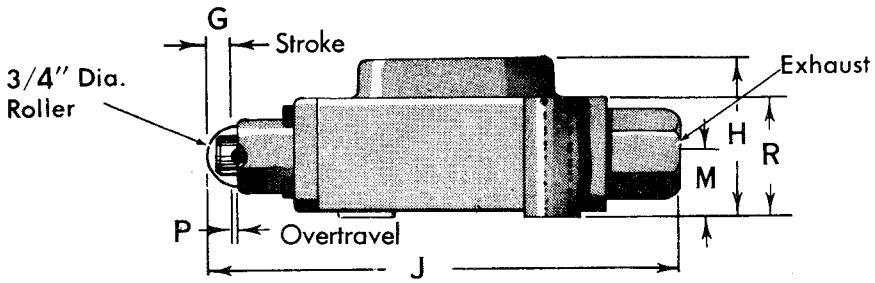
PILOT VALVE

CAM OPERATED

SPRING RETURN

1/4

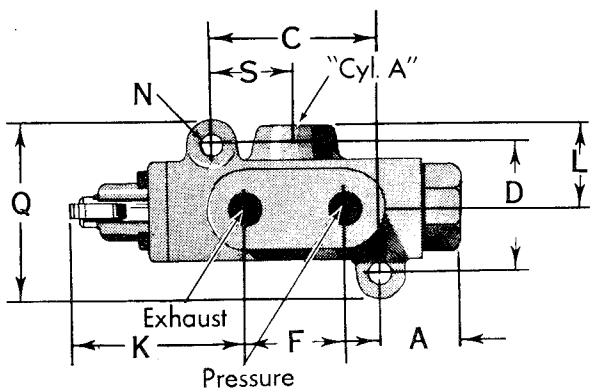


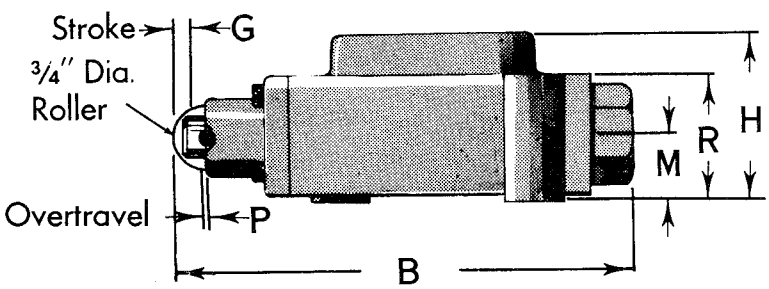


4-Way Valve
OD4 · RTET · 102S

Valve Size	A	B	C	D	E	F	G	H	J	K	L	M	N Dia.	P	Q	R	S
1/4	15/16	4 7/8	2 1/8	1 5/8	1 3/8	1 1/4	9/32	1 3/4	5 5/16	2 9/32	1 1/16	11/16	9/32	3/32	2 1/4	1 5/16	1 1/16

3-Way Valve
OD3 · RTET · 902S





2-Way Valve
OD2 · RTET · *02S

(Same as Illustrated Except:)

CYL. A — INLET
EXHAUST — DRAIN
PRESSURE — OUTLET

Burton Hydraulics, Inc.

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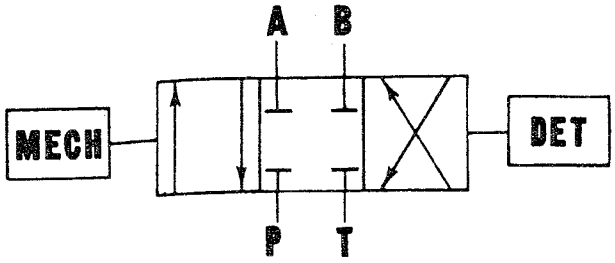
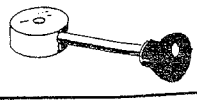
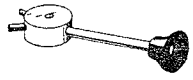
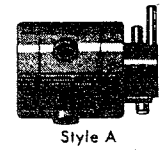
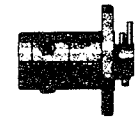
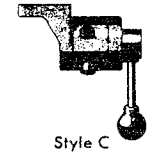
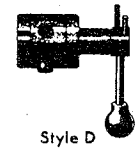


OR4 • * NE * • 102S

DIRECTIONAL CONTROL

ROTARY FOUR-WAY VALVE

¼"

Type C Lever	Type B Lever	Type A Lever	No Lever	Mounting Style
				
OR4 • LNED • 102S 5 Lbs.	OR4 • RNED • 102S 5 Lbs.	OR4 • NED • 102S 4 Lbs.	OR4 • SNED • 102S 4 Lbs.	 Style A
OR4 • LNEC • 102S 9 Lbs.	OR4 • RNEC • 102S 9 Lbs.	OR4 • NEC • 102S 8 Lbs.	OR4 • SNEC • 102S 8 Lbs.	 Style B
OR4 • LNEA • 102S 9 Lbs.	OR4 • RNEA • 102S 9 Lbs.	OR4 • NEA • 102S 8 Lbs.	OR4 • SNEA • 102S 8 Lbs.	 Style C
OR4 • LNET • 102S 6 Lbs.	OR4 • RNET • 102S 6 Lbs.	OR4 • NET • 102S 5 Lbs.	OR4 • SNET • 102S 5 Lbs.	 Style D

ORH-976193 Special

OPERATION

Rotary Four-Way Pilot Valves provide directional control of oil flow by cam dogs or manual actuation.

The spool rotates within the body to allow the desired flow pattern.

Detents are arranged to hold the valve spool in position.

APPLICATION

Mechanical or manual pilot control for hydraulically actuated machines is achieved by the selection of this valve type.

Four-way valves are used to control movements of double pilot operated valves.

Three-way valves are obtainable by plugging one of either cylinder ports for use with single pilot operated valves.

A "Neutral" position is provided which blocks the pressure port and connects both cylinder ports to exhaust for use with double pilot operated spring centered valves.

SPECIFICATIONS

PRESSURE RATING—1000 pounds per square inch.

FLOW RATE—For complete information of flow rate by pressure drop, refer to curves.

TEMPERATURE—Under normal conditions of continuous operation, fluid temperature should not exceed 130° F. In no instance should the temperature exceed 160° F.

OIL RECOMMENDATION—Premium grade hydraulic oil with 200 to 250 SSU viscosity at 100° F for use at normal ambient temperatures.

MOUNTING POSITION—Not restricted.

Burton Hydraulics, Inc.

7875 DIVISION DRIVE MENTOR, OHIO 44060 (440) 974-8868 FAX - (440) 974-0951

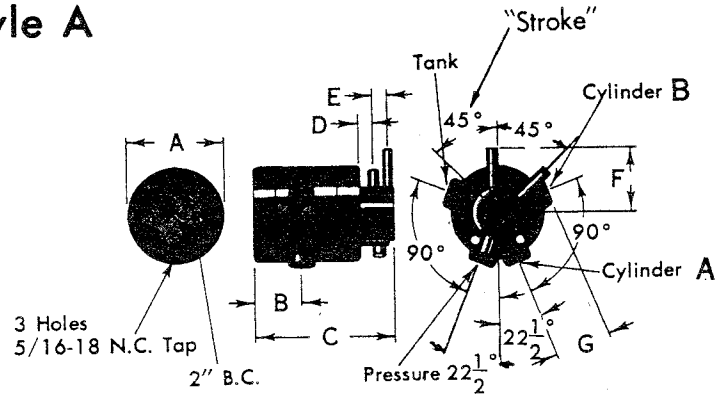
OR4••NE••102S

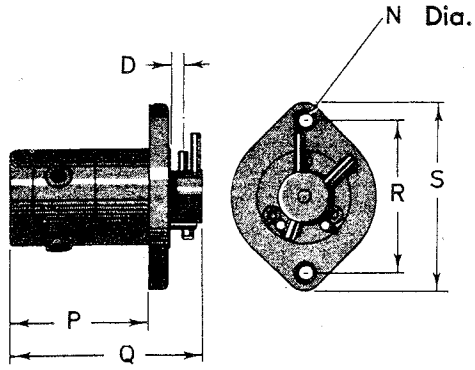
DIRECTIONAL CONTROL

FOUR-WAY VALVE

¼"

Style A

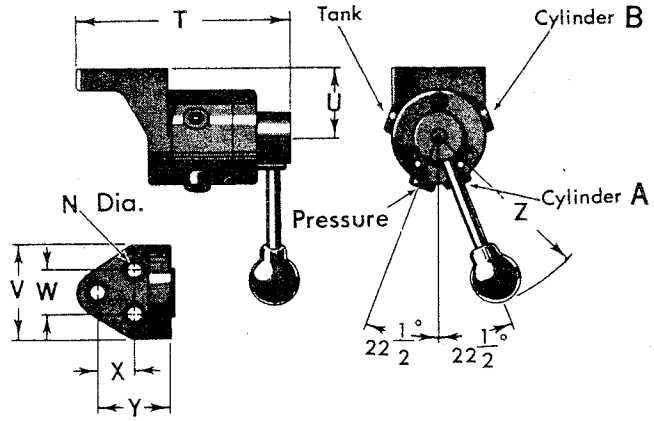


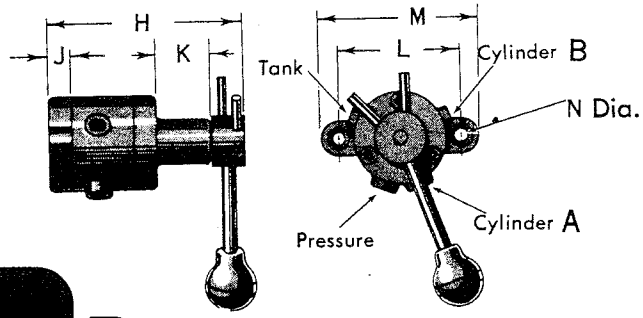


Style B

Valve Size	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T	U	V	W	X	Y	Z
¼	2 5/8	1 5/16	4	7/16	3/8	1 3/4	1 1/2	5 1/2	5/8	1 1/2	3 3/8	4 9/32	13/32	3/8	5 7/16	4 1/4	5 1/4	6 1/16	1 15/16	2 5/8	1 1/4	1	2 1/16	4 15/32

Style C





Style D

Burton Hydraulics, Inc.

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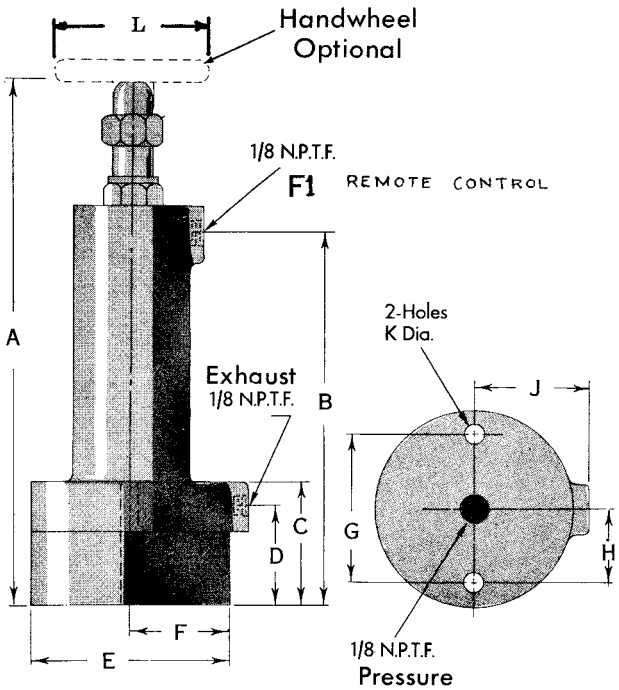
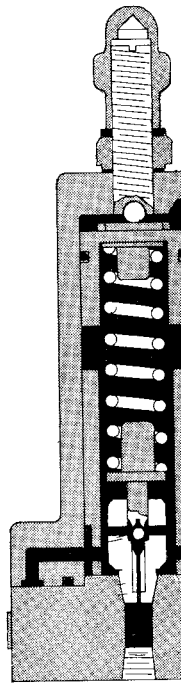
OE1 • SDAM • T01 *

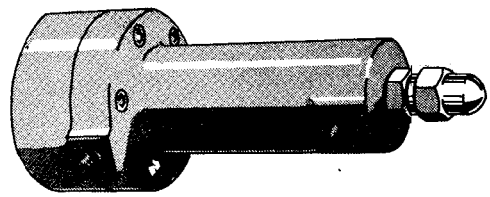
PRESSURE CONTROL

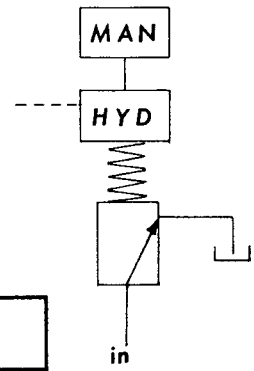
RELIEF

$\frac{1}{8}$









DIMENSIONS

Valve Size	A	B	C	D	E	F	G	H	J	K Dia	L
⅛	8 3/32	5 9/16	1 7/8	1 1/2	3	1 1/2	2 3/8	1 3/16	1 3/4	17/64	1 3/4

Valve Size	Type	Adjusting Range PSI	Rated Capacity @ 500 PSI	Type of Adjustment	Model No.	Code No.
⅛	Relief	500-10,000	2 GPM	Standard	RVQ-2-S	OE1 • SDAM • T01S
				Handknob	RVQ-2-PM	OE1 • SDAM • T01X

APPLICATION

Relief Valves are installed in a circuit to prevent damage due to over-pressure and also serve as a means to adjust the maximum circuit pressure.

The outlet port of this valve is connected to tank allowing excess oil to return to the reservoir while full adjusted pressure is maintained on the inlet port.

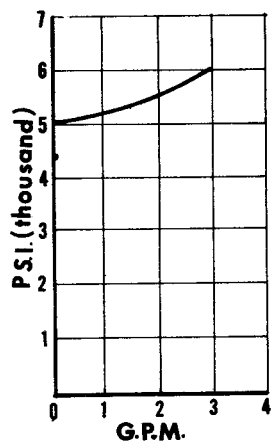
Remote control of line pressure can be accomplished by regulating the low pressure applied at port F1. For each 100 psi pilot pressure 5000 psi will be adjusted at the main valve.

OPERATION

Relief Valves are normally closed two port valves which will open when pressure in the inlet port builds up to the desired valve setting.

This valve can be adjusted to open at various inlet port pressures as desired by adjusting spring tension.

When pressure decreases on the inlet port below the valve setting, the poppet will start to close.



SPECIFICATIONS

J.I.C.—Design conforms to specifications of the Joint Industry Conference.
PRESSURE RATING—10,000 pounds per square inch.
PILOT RAM RATIO—50:1 ratio between line pressure and pilot pressure.
BACK PRESSURE—Exhaust port pressure should not exceed 25 pounds per square inch.
FLOW RATE—For complete information of flow rate by pressure drop refer to curve.
TEMPERATURE—Under normal conditions of continuous operation, fluid temperature should not exceed 130° F. In no instance should the temperature exceed 160° F.
OIL RECOMMENDATION—Premium grade hydraulic oil with 200 to 250 SSU viscosity at 100° F for use at normal ambient temperatures.
MOUNTING POSITION—Not restricted.

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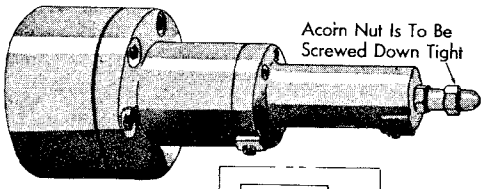
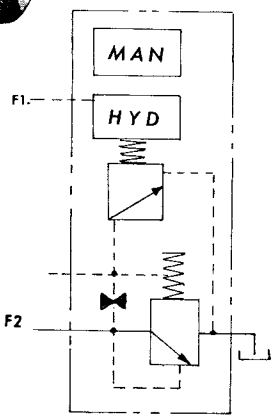
OE1 • PDAM • T06*

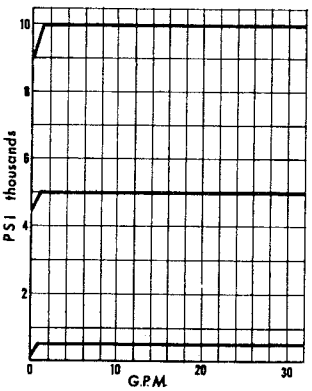
PRESSURE CONTROL

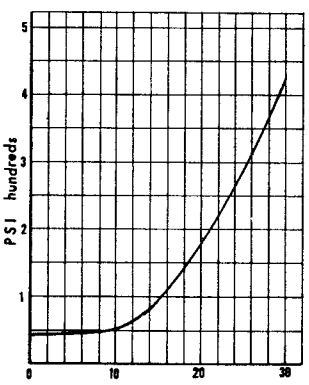
RELIEF

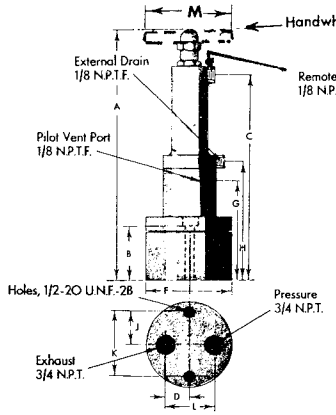
¾"

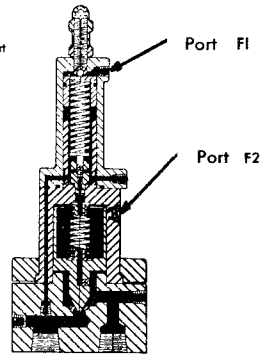












Valve Size	A	B	C	D	E	F Dia.	G	H	J	K	L	M
⅜	13 3/32	3 1/32	10 11/16	1¼		5	5 9/16	6 5/8	2 1/16	4 1/8	2½	1¾

Valve Size	Type	Adjusting Range PSI	Rated Capacity @ 500 PSI Drop	Type of Adjustment	Model No.	Code No.
¾"	Relief	500-10,000	30 GPM	Standard	RVQ-30-S	OE1 • PDAM • T06S
				Handknob	RVQ-30-PM	OE1 • PDAM • T06X

OPERATION

Relief Valves are normally closed two port valves which will open when pressure in the inlet port builds up to the desired valve setting.

This valve can be adjusted to open at various inlet port pressures as desired.

Hydraulic pilot pressure controlled by the small ball relief valve assists the spring to keep the valve in the closed position.

Pressure increasing on the inlet port which is opposed by the constant pressure maintained by the ball relief valve causes the valve to open.

When pressure decreases on the inlet port below the valve setting, the valve will start to close.

APPLICATION

Relief Valves are installed in a circuit to prevent damage due to over-pressure and also serve as a means to adjust the maximum circuit pressure.

The outlet port of this valve is connected to tank allowing excess oil to return to the reservoir while full adjusted pressure is maintained on the inlet port.

Venting of this valve for unloading the circuit can be obtained by opening port F2 to tank through suitable valving. Two pressure control can be obtained by applying an external pilot pressure to port F1. Adjustable low pressure and a specified fixed high pressure are available by three-way valve action of the low pressure pilot oil.

Remote control of line pressure can be accomplished by regulating the low pressure applied at port F1. For each 100 psi pilot pressure 5000 psi will be adjusted at the main valve.

SPECIFICATIONS

J.I.C.—Design conforms to specifications of the Joint Industry Conference.
PRESSURE RATING—10,000 pounds per square inch.
PILOT RAM RATIO—50:1 ratio between line pressure and pilot pressure.
BACK PRESSURE—Exhaust port pressure should not exceed 25 pounds per square inch.
FLOW RATE—For complete information of flow rate by pressure drop refer to curve.
TEMPERATURE—Under normal conditions of continuous operation, fluid temperature should not exceed 130° F. In no instance should the temperature exceed 160° F.
OIL RECOMMENDATION—Premium grade hydraulic oil with 200 to 250 SSU viscosity at 100° F for use at normal ambient temperatures.
MOUNTING POSITION—Not restricted.

Burton Hydraulics, Inc.
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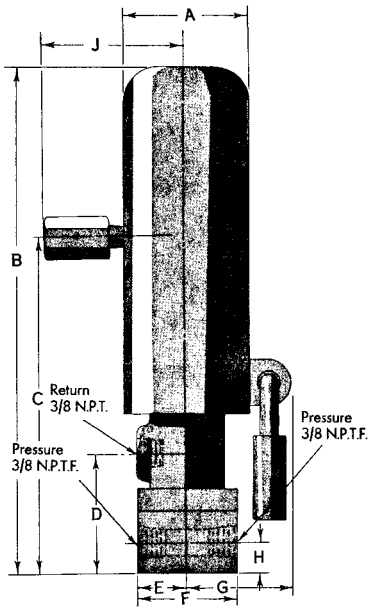
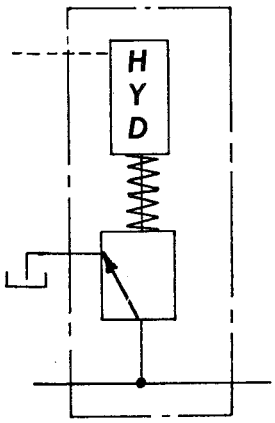
OE8 • PED*• T03S

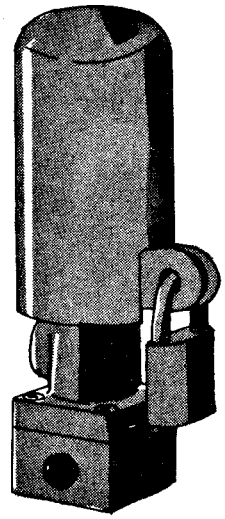
PRESSURE CONTROL

UNLOADING

3/8"







Valve Size	A	B	C	D	E	F	G	H	J
3/8	2 1/2	10 1/2	7 7/32	2 15/32	1	2	2 1/8	5/8	2 1/2

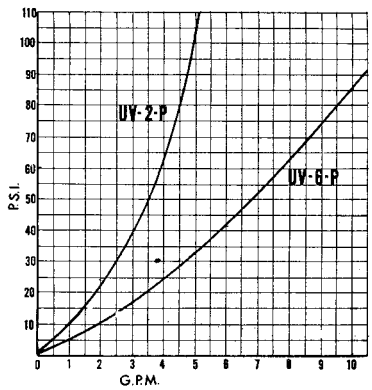
Valve Size	Maximum Pressure	Maximum Pilot Pressure	Pilot Ratio	Rated Capacity @ 40 psi Drop	Model No.	Code No.
3/8"	10,000 PSI	1000 PSI	40:1	3 GPM	UVB-2-P	OE8 • PEDM • T03S
			20:1	6 GPM	UVB-6-P	OE8 • PEDK • T03S

OPERATION

This Unloading Valve is a normally open three part valve which closes when pilot pressure is applied to the pilot port.

Utilizing poppet type construction with a spring return pilot cylinder, low pressure pilot oil will hold the valve closed against line pressures up to 10,000 psi.

Three-way pilot valve action is required at the pilot port to allow proper selection of open or closed position.



APPLICATION

Unloading Valves are installed in a circuit to allow full flow of oil from a pump to by-pass freely to tank when pressure oil is not required.

An external pilot connection, controlled by three-way valve action selects the open or closed position.

Low pressure oil is used to control unloading of high pressure oil.

SPECIFICATIONS

J.I.C.—Design conforms to specifications of the Joint Industry Conference.
PRESSURE RATING—10,000 pounds per square inch.
PILOT PRESSURE—1000 pounds per square inch maximum.
BACK PRESSURE—Exhaust port pressure should not exceed 25 pounds per square inch.
FLOW RATE—For complete information of flow rate by pressure drop refer to curve.
TEMPERATURE—Under normal conditions of continuous operation, fluid temperature should not exceed 130° F. In no instance should the temperature exceed 160° F.
OIL RECOMMENDATION—Premium grade hydraulic oil with 200 to 250 SSU viscosity at 100° F for use at normal ambient temperatures.
MOUNTING POSITION—Not restricted.

Burton Hydraulics, Inc.

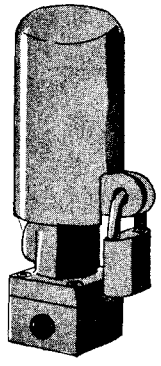
7875 DIVISION DRIVE MENTOR, OHIO 44060 (440) 974-8868 FAX - (440) 974-0951

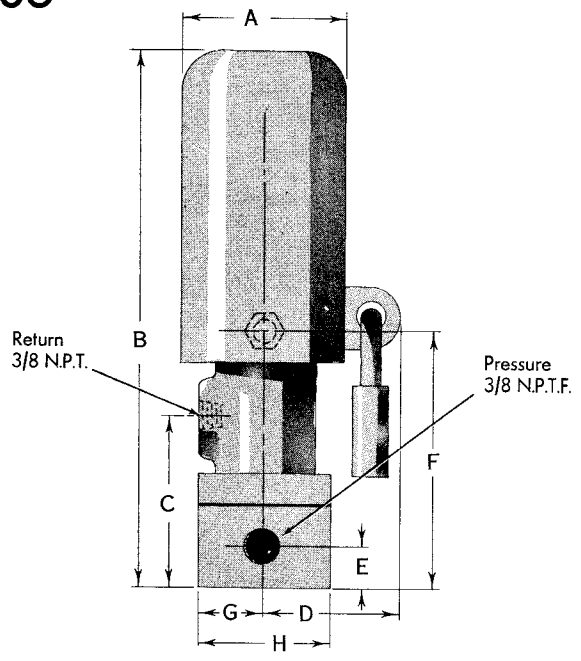
OE1 • SDC** • P03*

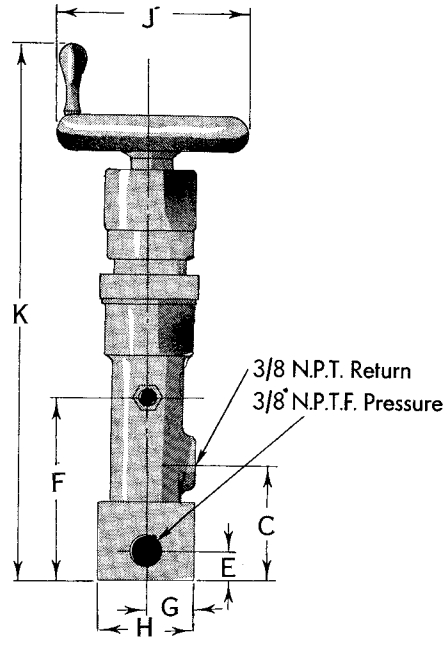
PRESSURE CONTROL

RELIEF

⅜"

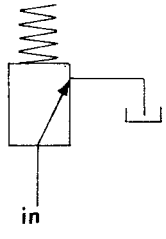






STANDARD **HANDWHEEL**

A	B	C	D	E	F	G	H	J	K
2½	8 5/32	2 15/32	2⅛	⅝	3 29/32	1	2	3½	11 5/32



Valve Size	Type	Adjusting Range PSI	Rated Capacity @ 500 PSI Vise	Type of Adjustment	Model No.	Code No.
⅜"	Relief	500-10,000	2 GPM	Standard	RVB-2-S	OE1 • SDCM • P03S
		500-10,000	2 GPM	Handwheel	RVB-2-PM	*OE1 • SDCM • P03X
		500-5000	6 GPM	Standard	RVB-6-S	OE1 • SDCK • P03S
		500-5000	6 GPM	Handwheel	RVB-6-PM	*OE1 • SDCK • P03X

* When mounting flange is desired, specify OE1 • SDC* • C03X.

APPLICATION

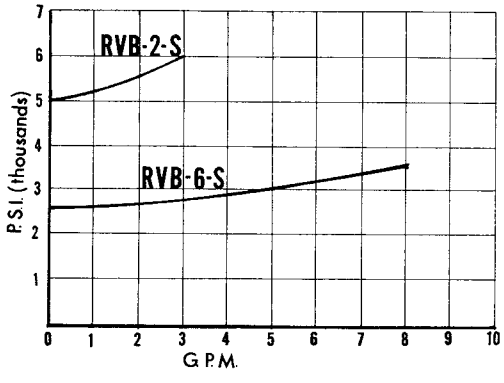
Relief Valves are installed in a circuit to prevent damage due to over-pressure and also serve as a means to adjust the maximum circuit pressure. The outlet port of this valve is connected to tank allowing excess oil to return to the reservoir while full adjusted pressure is maintained on the pressure port.

SPECIFICATIONS

J.I.C.—Design conforms to specifications of the Joint Industry Conference.
PRESSURE RATING—Refer to chart.
BACK PRESSURE—Exhaust port pressure should not exceed 25 pounds per square inch.
FLOW RATE—For complete information of flow rate by pressure drop refer to curve.
TEMPERATURE—Under normal conditions of continuous operation, fluid temperature should not exceed 130° F. In no instance should the temperature exceed 160° F.
OIL RECOMMENDATION—Premium grade hydraulic oil with 200 to 250 SSU viscosity at 100° F for use at normal ambient temperatures.
MOUNTING POSITION—Not restricted.

OPERATION

These Relief Valves are normally closed three port valves which open when system pressure reaches the setting determined by spring adjustment. Poppet construction is used with effective dampening to prevent chatter and offer stable valve operation.



Burton Hydraulics, Inc.

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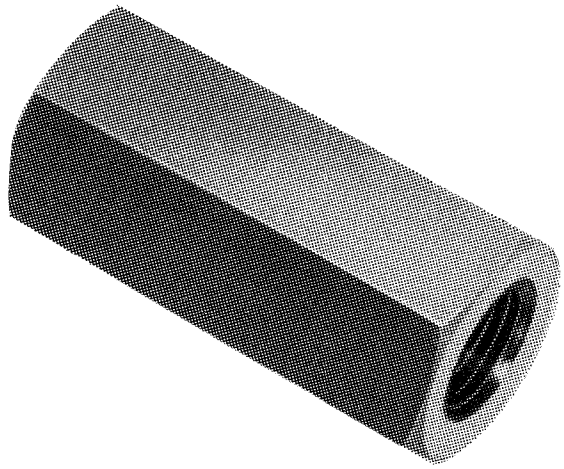
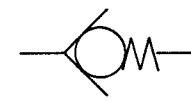
ENGINEERING DATA

OBI-XOMP-103N CHECK VALVES 3/8" - 1/2"

10,000 PSI

IN-LINE MOUNTED





SYMBOL

SPECIFICATIONS

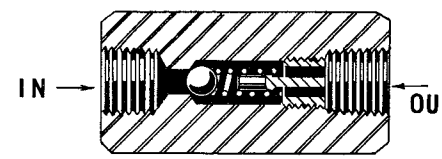
J. I. C. --Design conforms to specifications of the Joint Industry Conference.

PRESSURE RATING--10,000 psi maximum pressure.

TEMPERATURE--Under normal conditions of continuous operation fluid temperature should not exceed 130°F. In no instance should the temperature exceed 160°F.

OIL RECOMMENDED--Premium grade hydraulic oil with 200 to 250 SSU viscosity at 100°F. for use at normal ambient temperatures.

MOUNTING POSITION--Not restricted.



WEIGHTS--

SIZE	IN-LINE
3/8	14 OZ.
1/2	14 OZ.

PERFORMANCE CHARACTERISTICS

PRESSURE DROP - PSI	5	10	15	20	30	40	50
FLOW RATE - GPM IN-LINE MTD.	--	4	5.5	6.8	9	11	13

Burton Hydraulics, Inc.

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IN-LINE MOUNTED

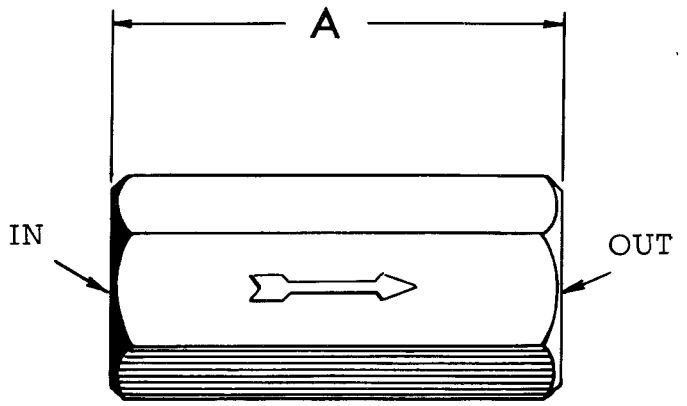
CHECK VALVE

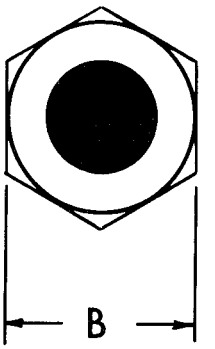
SPRING LOADED

10,000 PSI

10,000 P.S.I.

SIZE	A	B
3/8	3-1/4	1-1/4
1/2	3-1/2	1-1/4





IN-LINE MOUNTED

HOW TO ORDER

0 B I - X 0 M P - I 0 3 N

M--10,000 PSI

P--IN-LINE MOUNTED

03--3/8" PORT SIZE

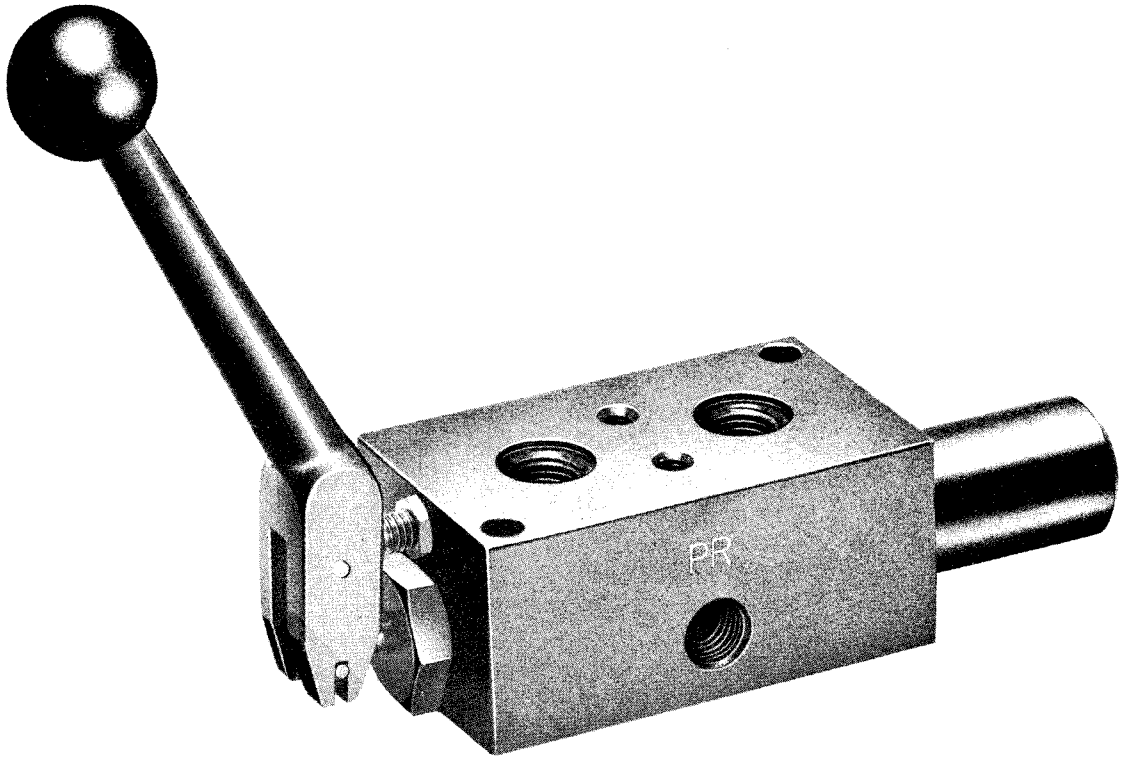
*04--1/2" PORT SIZE

Burton Hydraulics,Inc.

7875 DIVISION DRIVE MENTOR, OHIO 44060 (440) 974-8868 FAX - (440) 974-0951

ENGINEERING DATA

1/4" LEVER OPERATED 4-WAY VALVE



FEATURES

- Flow control manifold.
- Viton seals.
- Unrestricted mounting
- Spring centered, spring return or detents.
- Light weight.
- Double cylinder lock valve.

Burton Hydraulics,Inc.

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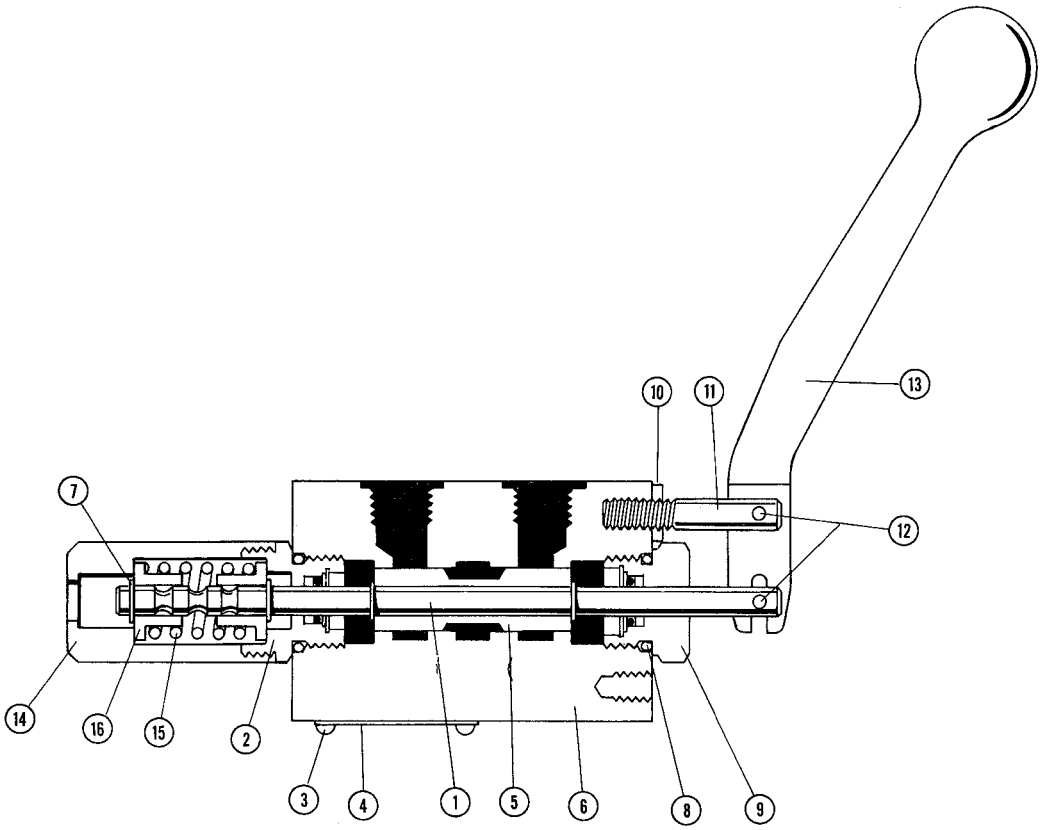
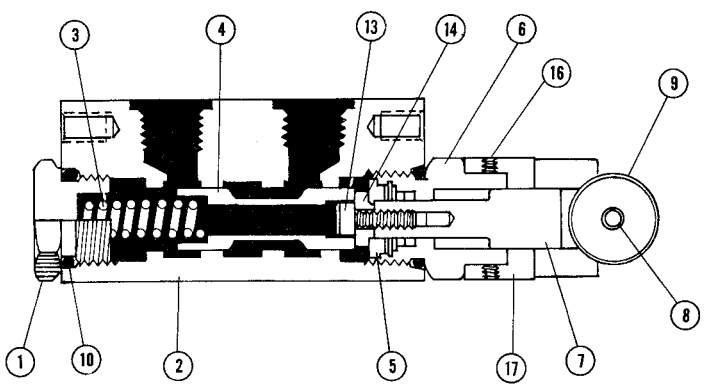
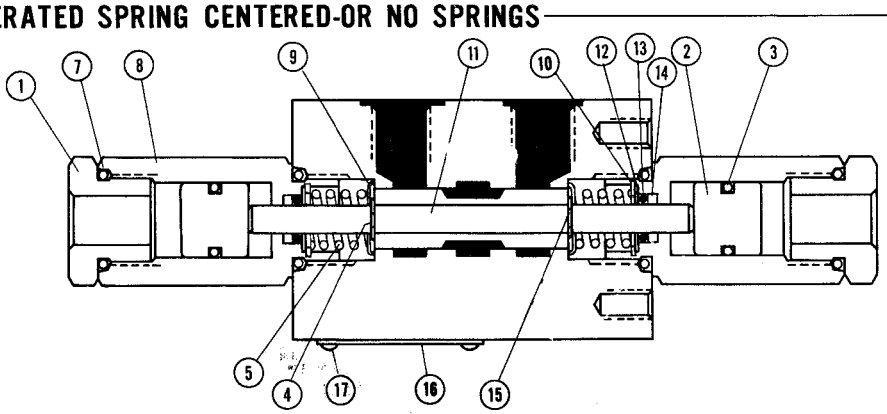
BASIC VALVE



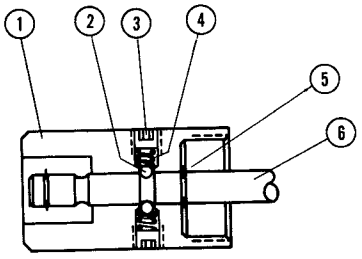
CAM OPERATED "C" SPRING OFFSET ONLY



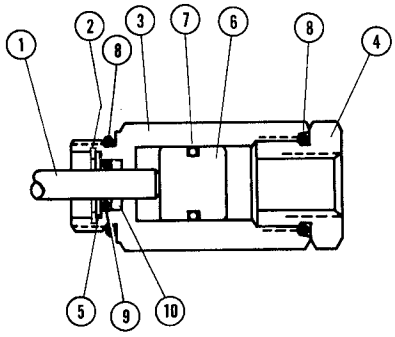
DOUBLE PILOT OPERATED SPRING CENTERED-OR NO SPRINGS



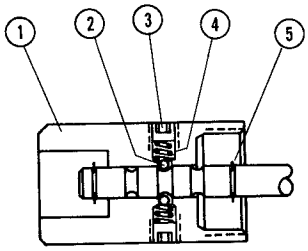
2 POSITION DETENT "N2"



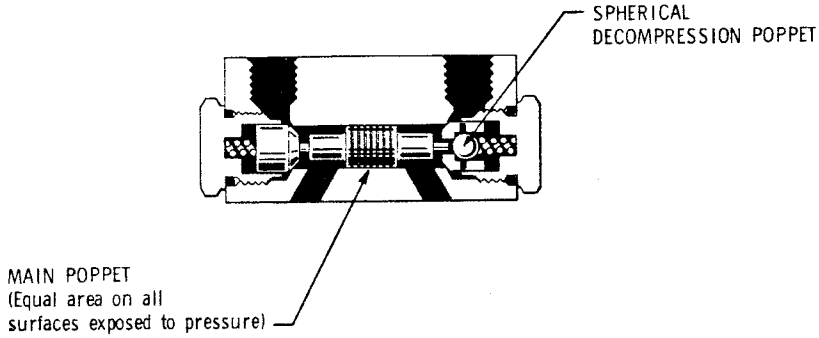
SINGLE PILOT OPERATION "P"



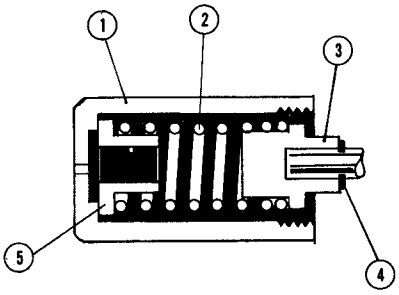
3 POSITION DETENT "N"



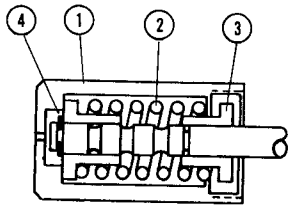
DOUBLE CYLINDER LOCK VALVE-



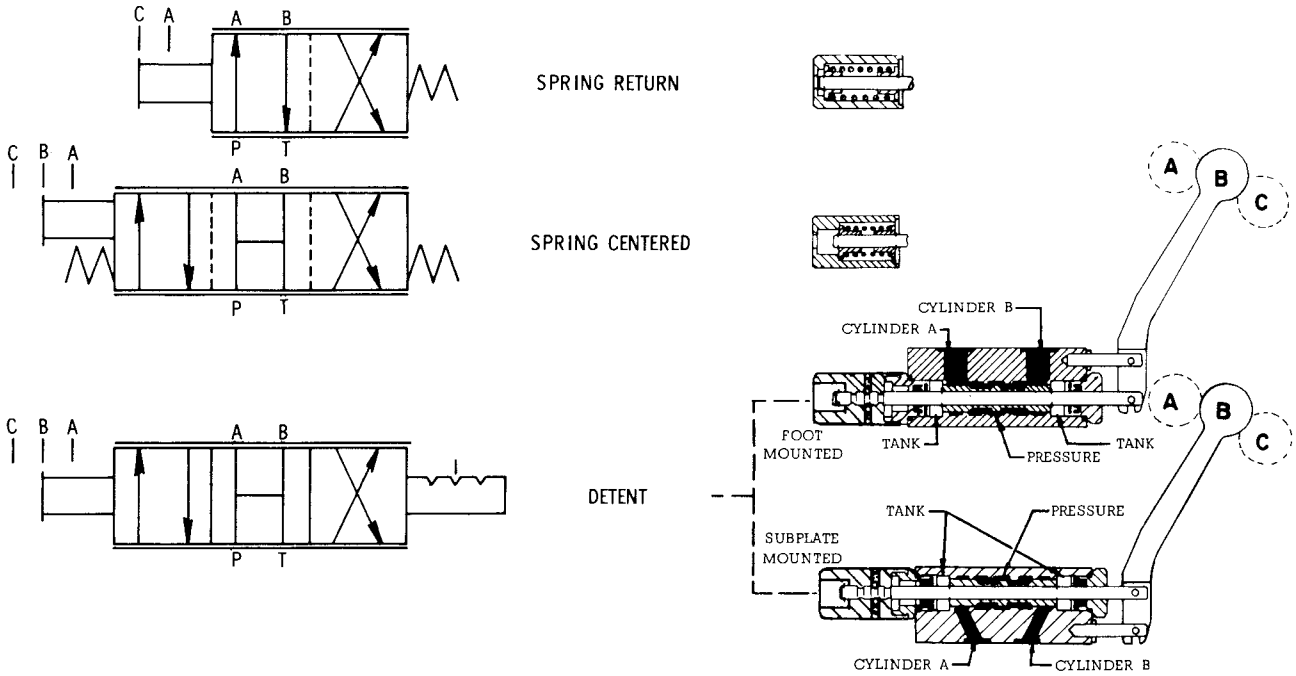
SPRING OFFSET, STEM OUT "00"



SPRING OFFSET, STEM IN "0"

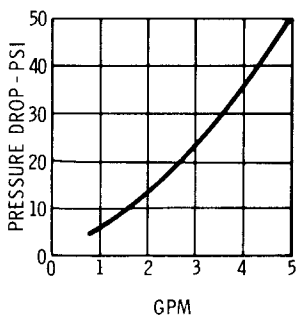


OPERATIONAL DATA



SPECIFICATIONS

PRESSURE RATING	3000 PSI
BACK PRESSURE	TANK PRESSURE SHOULD NOT EXCEED 25 PSI
CAPACITY	5 GPM
LEAKAGE RATE	9 in^3 @ 3000 PSI
MATERIAL	ALUMINUM BODY & HARD COATED ALUMINUM SPOOL
VALVE WEIGHT	1.75 LBS. (APPROXIMATE)
SUBPLATE WEIGHT	5 LBS.



FLOW CONTROL MANIFOLD--A manifold plate is available incorporating two non-compensated flow controls with integral return check ported to cylinder A & B. This device allows interdependent speed control of actuators in each direction of motion.

TEMPERATURE--Under normal conditions of continuous operation fluid temperature should not exceed 130° F. In no instance should the temperature exceed 160° F.

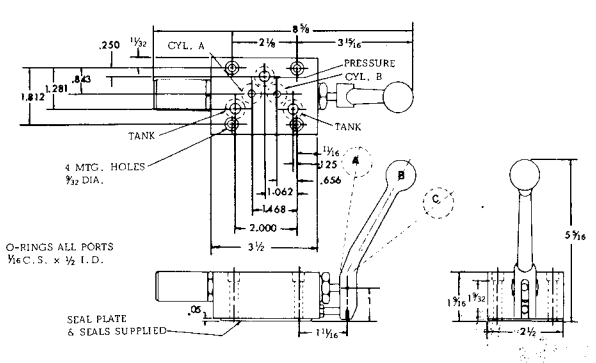
OIL RECOMMENDED--Premium grade hydraulic oil with 100 to 300 SSU viscosity at running temperature. Maximum recommended viscosity 2,000 SSU. Minimum recommended viscosity, 60 SSU.

MODIFICATIONS--Consult your local Racine engineering representative or the factory for deviations from these specifications, include use with fire-resistant fluids. When used with certain fluids, special seal components are required. Refer to "How to Order" section.

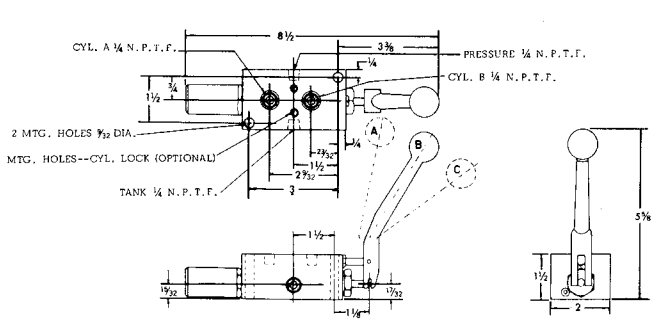
2 C & 3 C SPOOL PATTERN
CAPACITY – 5 G.P.M.
VALVE WEIGHT – 1.75 LBS.

DIMENSIONAL DATA

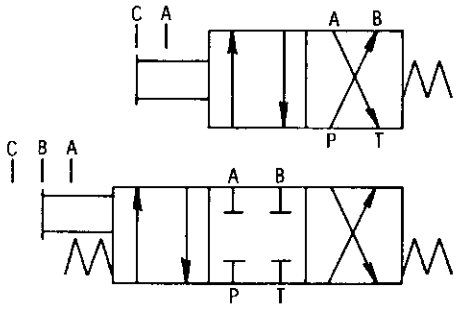
SUBPLATE MOUNTED



FOOT MOUNTED



OPERATIONAL DATA



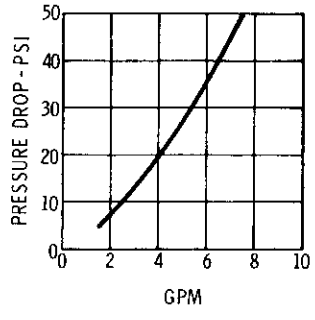
SPRING RETURN

SPRING CENTERED

DETENT

SPECIFICATIONS

PRESSURE RATING	3000 PSI
BACK PRESSURE	TANK PORT PRESSURE SHOULD NOT EXCEED 50 PSI
CAPACITY	7.5 GPM
LEAKAGE RATE	9 in^3 @ 3000 PSI
MATERIAL	ALUMINUM BODY & HARD COATED ALUMINUM SPOOL
VALVE WEIGHT	1.5 LBS. (APPROXIMATE)
SUBPLATE WEIGHT	5 LBS.



DOUBLE CYLINDER LOCK VALVE--This device can be mounted to the cylinder ports of a foot mounted valve. It is also available as a manifold to mount between the subplate mounted valve and subplate. This device consists of two pilot operated check valves blocking each cylinder port. When this device is used, type 7 spool must be specified.

FLOW CONTROL MANIFOLD--A manifold plate is available incorporating two non-compensated flow controls with integral return check ported to cylinder ports A & B. This device allows interdependent speed control of actuators in each direction of motion.

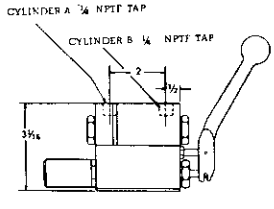
TEMPERATURE--Under normal conditions of continuous operation fluid temperature should not exceed 130° F. In no instance should the temperature exceed 160° F.

OIL RECOMMENDED--Premium grade hydraulic oil with 100 to 300 SSU viscosity at running temperature. Maximum recommended viscosity 2,000 SSU. Minimum recommended viscosity, 60 SSU.

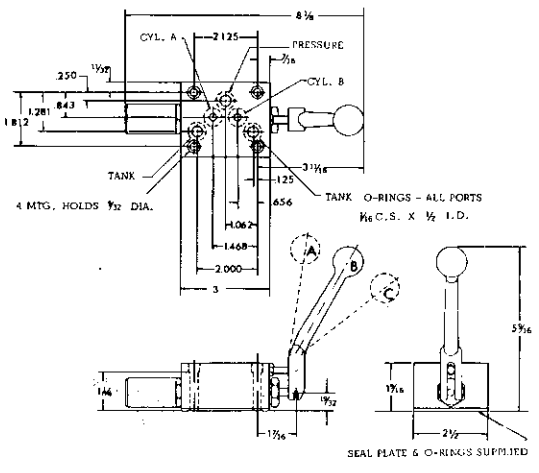
1 – 4 – 6 – 7 – 8 & 9 C SPOOL PATTERN
CAPACITY – 7.5 G.P.M.
VALVE WEIGHT – 1.5 LBS.

DIMENSIONAL DATA

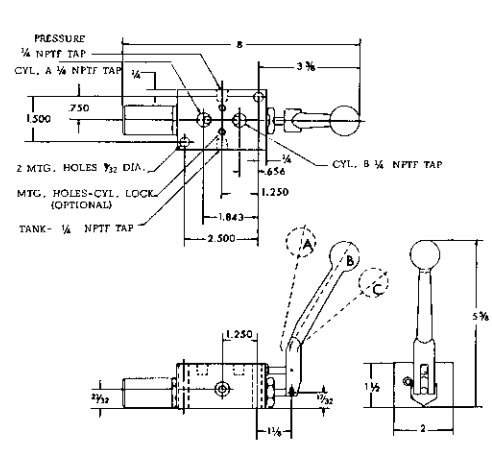
W/DOUBLE CYLINDER LOCK & THREADED CONNECTIONS



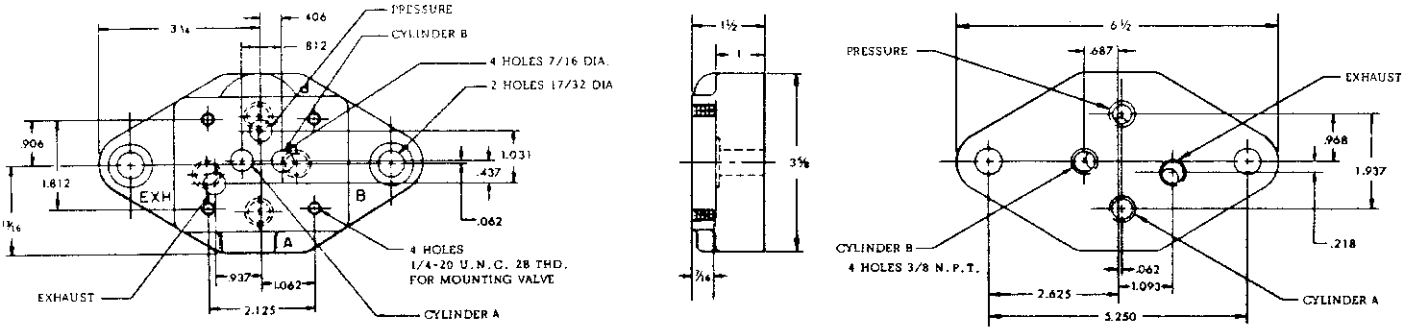
SUBPLATE MOUNTED



FOOT MOUNTED



DIMENSIONAL DATA — SUBPLATE



Mounting subplates and bolt kits are furnished by FRC but must be specified in addition to the model number of the unit selected.

SUBPLATES:
- 6 - D4H - 03D (3/8 NPT Ports)
- 6 - D4H - 04D (1/2 NPT Ports)

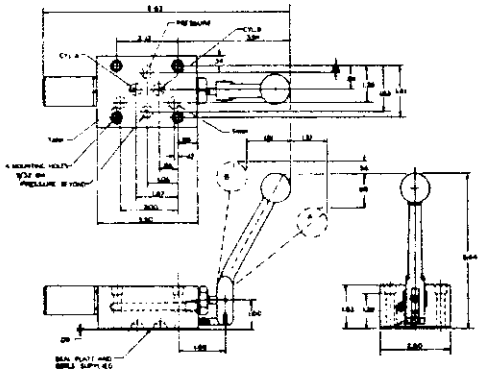
BOLT KITS:
- 6 - B49 (to mount valve only)
- 6 - B50 (to mount valve and clylinder locks)

When subplate is not used, a machined pad must be provided for mounting. Pad must be flat and smooth.

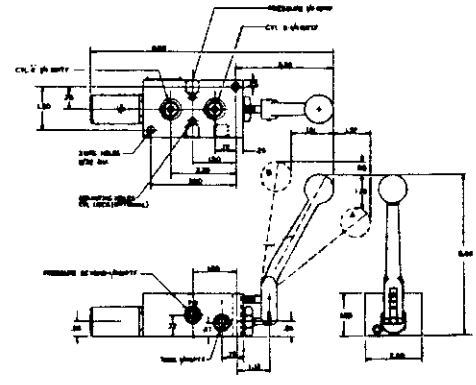
DIMENSIONAL DATA

P & R SPOOL PATTERN FOR PRESSURE BEYOND CAPACITY 5 G.P.M.
WEIGHT 1.75 LBS.

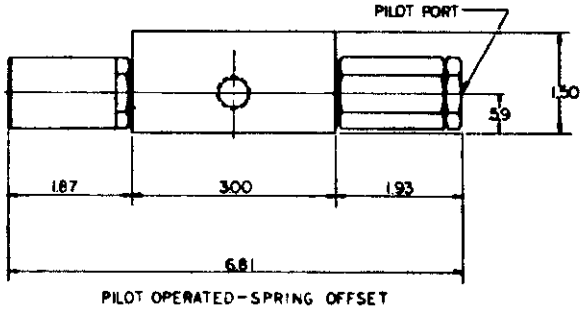
SUB PLATE MOUNTED



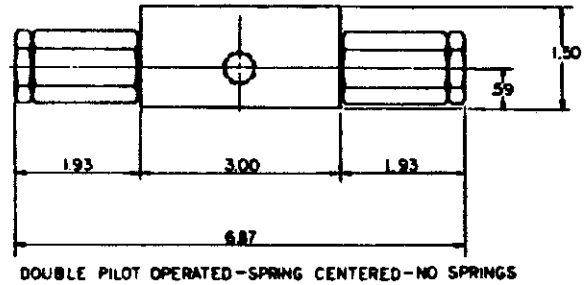
FOOT MOUNTED



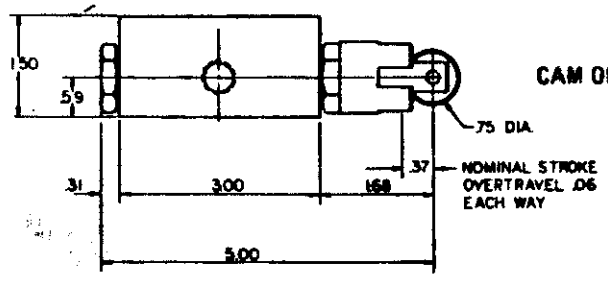
OPTIONS



PILOT OPERATED–SPRING OFFSET

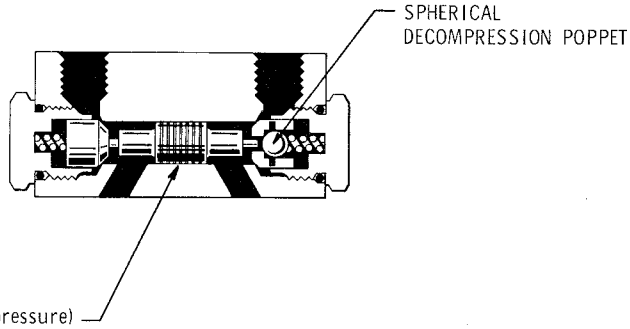


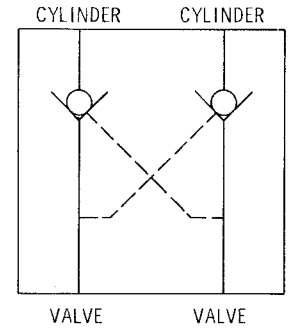
DOUBLE PILOT OPERATED–SPRING CENTERED–NO SPRINGS NO-DETENT



CAM OPERATED

OPERATIONAL DATA — MANIFOLD MOUNTED DOUBLE CYLINDER LOCK VALVE





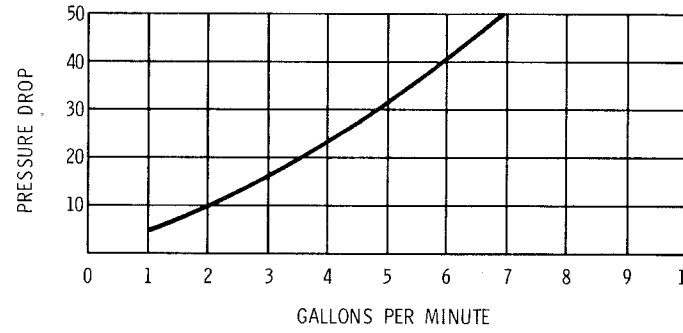
Manifold mounted to a four-way directional control valve or subplate for prolonged positive holding of cylinder position.

With directional control valve in neutral position, flow from both ends of a cylinder is blocked by the double cylinder lock valve. When the four-way valve is activated to direct flow to one side of the cylinder, pressure opens the poppet and simultaneously moves the piston over to the opposite poppet, opening this poppet and allowing free flow to the directional control valve.

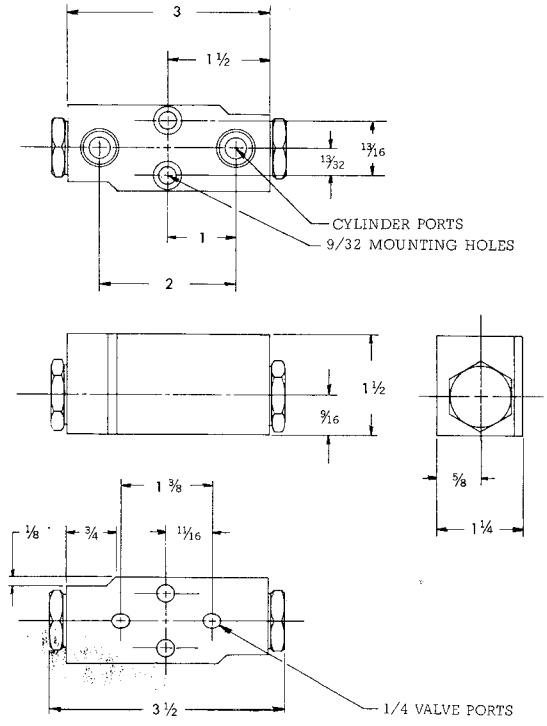
Manifold mounting saves piping expense.

SPECIFICATIONS

WEIGHT	9 OZS.
CAPACITY	6 GPM
PRESSURE RATING	3000 PSI
DECOMPRESSION RATIO	8:1
MATERIAL	EXTERNAL PARTS ANODIZED ALUMINUM INTERNAL PARTS HARDENED STEEL



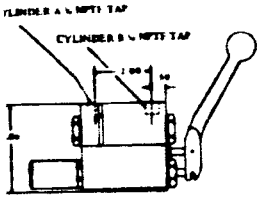
DIMENSIONAL DATA

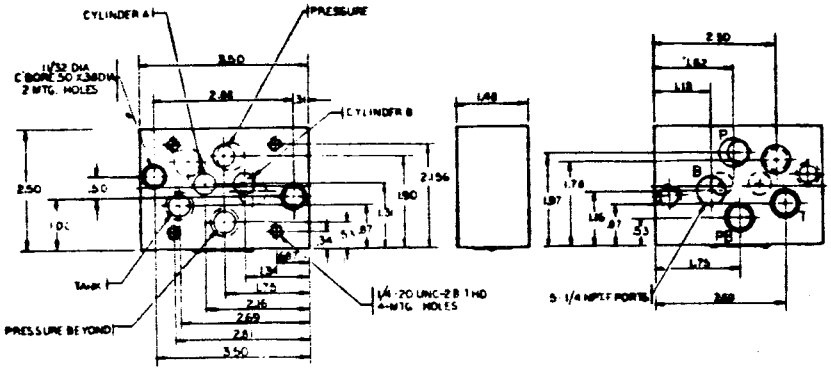


DIMENSIONAL DATA

SUB PLATE FOR ALL MODELS
INCLUDING PRESSURE BEYOND

W/DOUBLE CYLINDER LOCK & THREADED CONNECTIONS





DOUBLE CYLINDER LOCK VALVE – This device can be mounted to the cylinder ports of a foot mounted valve. It is also available as a manifold to mount between the subplate mounted valve and subplate. This device consists of two pilot operated check valves blocking each cylinder port. When this device is used, type 7 spool is recommended.

SUB PLATE & BOLT KITS ARE FURNISHED BY AND MUST BE SPECIFIED IN ADDITION TO THE MODEL OF VALVE ORDERED.

SUB PLATE –
P/N 988316 (¼ NPT PORTS)

BOLT KITS
6 – B49 (TO MOUNT VALVE ONLY)
6 – B50 (TO MOUNT VALVE & CYLINDER LOCK)

WHEN SUB PLATE IS NOT USED, A FLAT MACHINED PAD MUST BE PROVIDED FOR MOUNTING.

NOTE – VALVE WILL ALSO FIT RACINE INDUSTRIAL SUB PLATE D 4H–03A & D 4H–04A

HOW TO ORDER

F D4 – LNHT – 102S

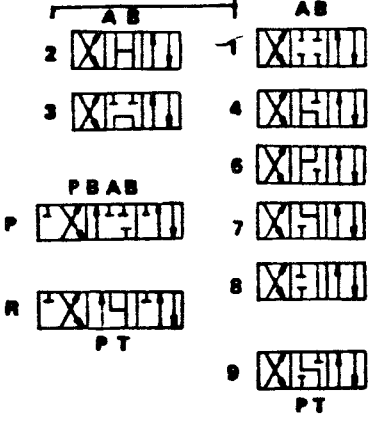
F – VITON

L – LEVER 30° OR 90°
P – PILOT
R – ROLLER OR CAM
S – STEM

T – FOOT MOUNTED – THREADED CONN.
S – SUB PLATE MOUNTED
L – FOOT MOUNTED – THREADED CONN. WITH DOUBLE CYL. LOCK VALVE

N – 3 POS. DETENT
S – SPRING CENTERED
T – SPRING RETURN – STEM OUT
O – SPRING RETURN – STEM IN
W – STD. ACTION – NO SPRINGS – NO DETENTS
X – 2 POS. DETENT

S – STD.
T – THROTTLE SPOOL



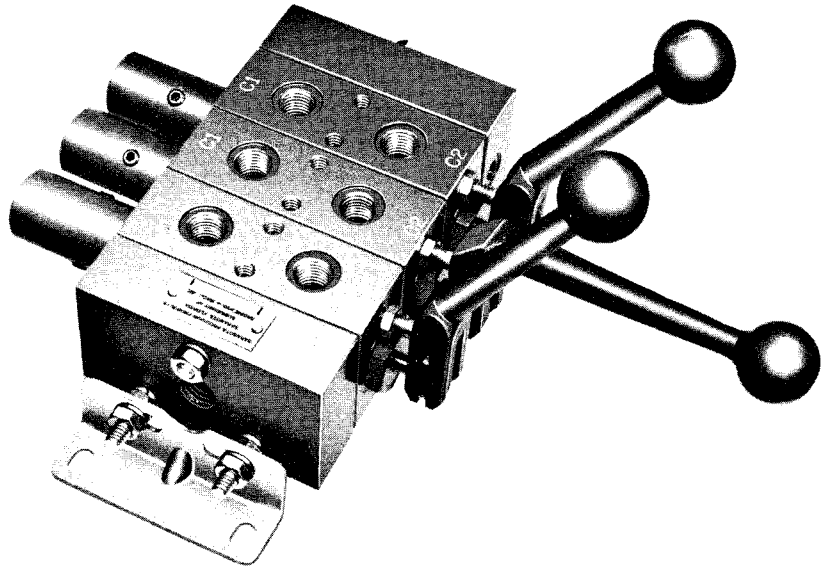
ALL MODELS SUPPLIED WITH VITON DYNAMIC SEALS.

ALL 6-FD4 SUB PLATE MOUNTED MODELS SUPPLIED WITH ALL VITON SEALS

Burton Hydraulics, Inc.
7875 DIVISION DRIVE MENTOR, OHIO 44060 (440) 974-8868 FAX - (440) 974-0951

ENGINEERING DATA

1/4" STACKABLE LEVER OPERATED 4-WAY VALVE



1254 & 1255 VALVE STACK

FEATURES

- To remote pilot operate larger valves.
- Small physical size & lightweight.
- Pressure rating 3000 psi.
- Cylinder lock valve can be mounted to individual valves.
- Up to 10 valves may be stacked in one unit.

Burton Hydraulics, Inc.
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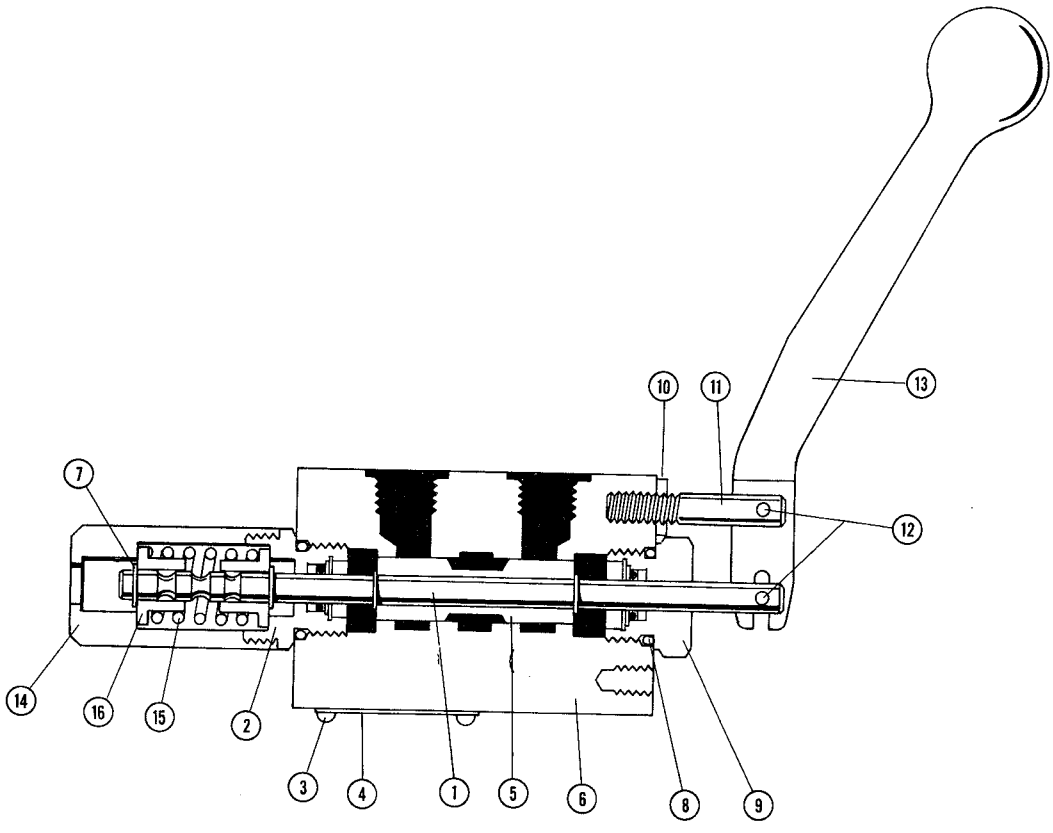
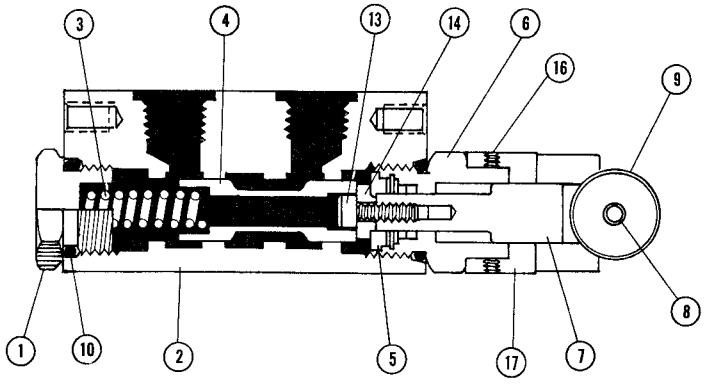
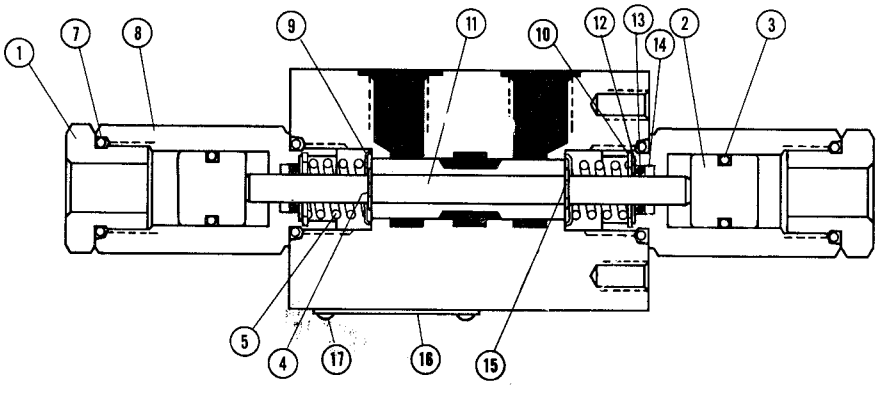
BASIC VALVE



CAM OPERATED "C" SPRING OFFSET ONLY

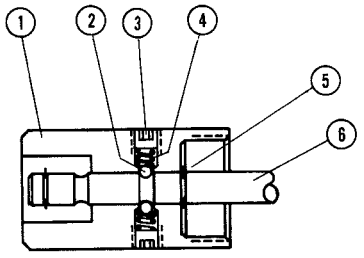


DOUBLE PILOT OPERATED SPRING CENTERED-OR NO SPRINGS

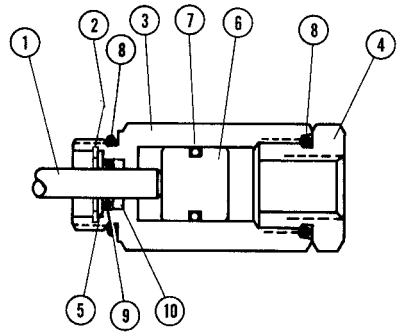


OPTIONS

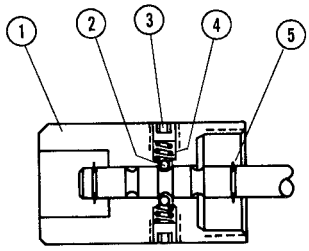
2 POSITION DETENT "N2"



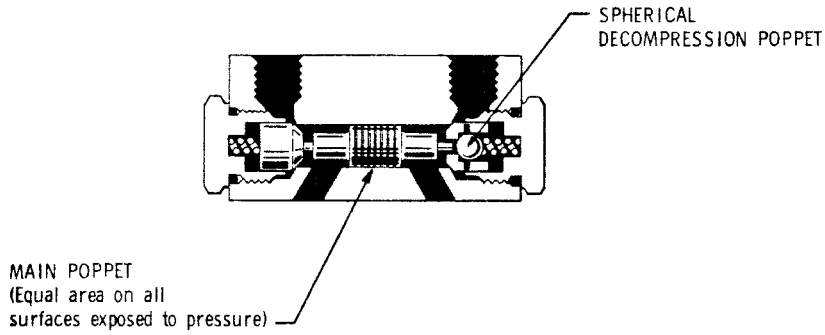
SINGLE PILOT OPERATION "P"



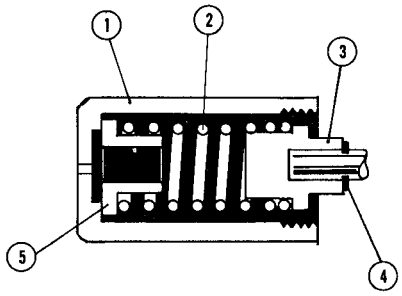
3 POSITION DETENT "N"



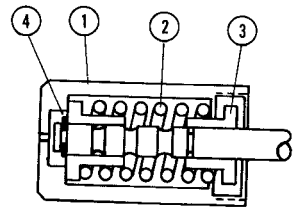
DOUBLE CYLINDER LOCK VALVE-

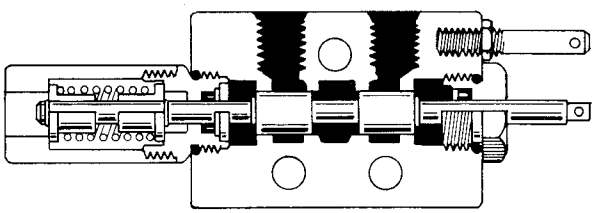


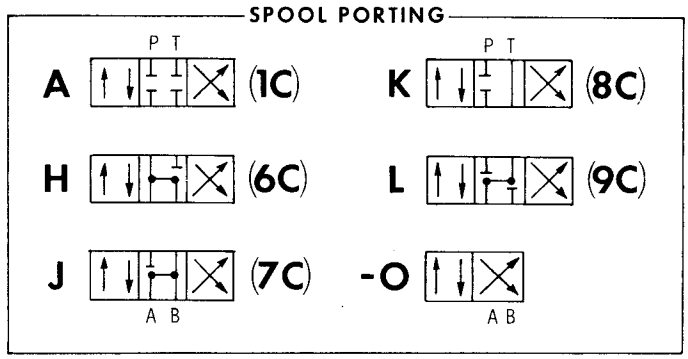
SPRING OFFSET, STEM OUT "00"



SPRING OFFSET, STEM IN "0"



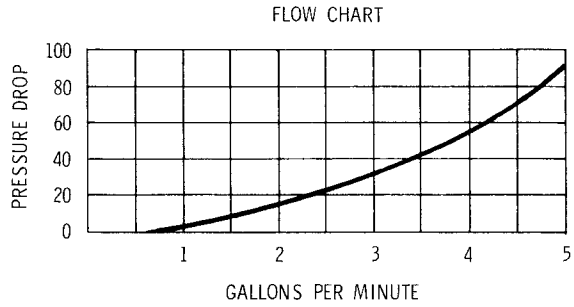




SPECIFICATIONS

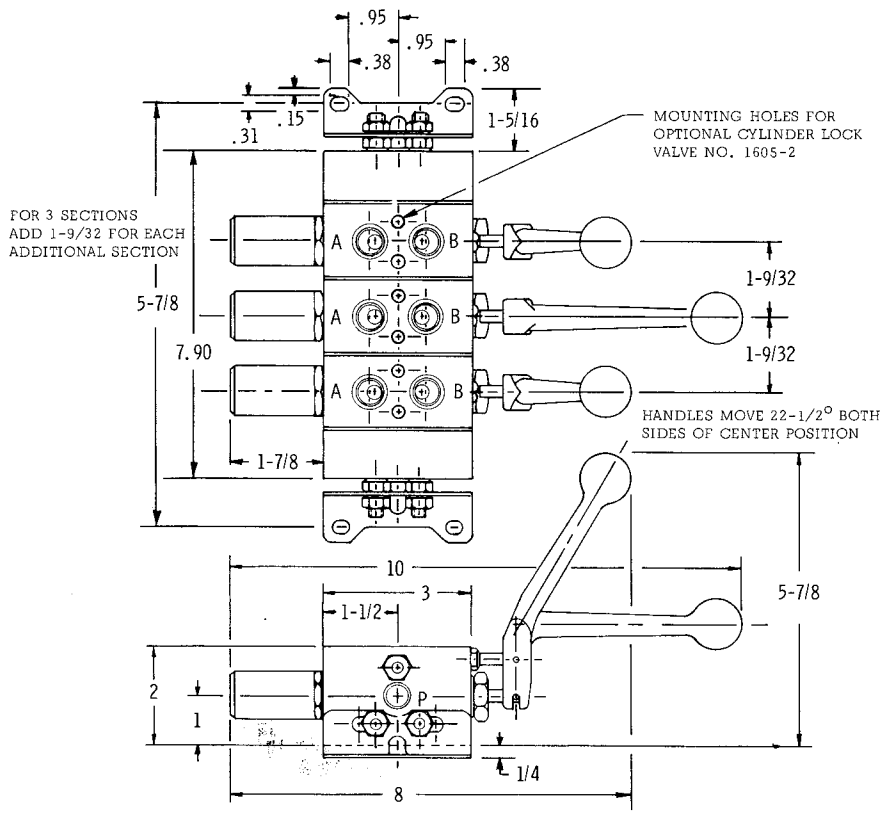
Weight	Single valve section - 18 ozs.; Bank of 3 valves with end plates accessories - 6 lbs.
Capacity	3 GPM
Pressure Rating	3000 psi
Port Size	#6 SAE & 1/4 N.P.T.F.
Mounting	Detent & spring centered types unrestricted
Material	Anodized aluminum body, alumalite hard coated spool & cadmium plated tie rods & mounting brackets
Leakage	10 in^3 per minute at 3000 psi

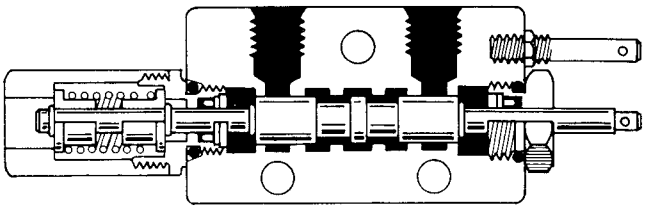
NOTE: All test data based on oil viscosity of 185 SSU.

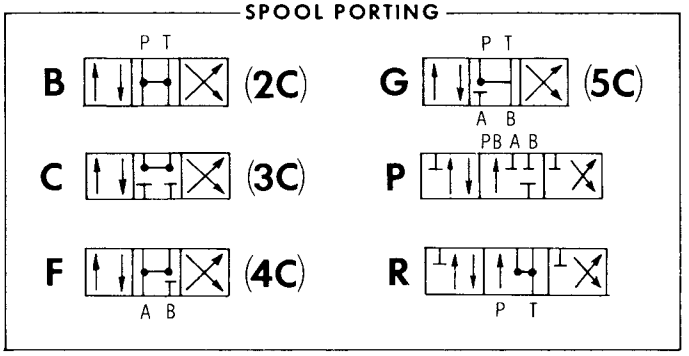


3 VALVE STACK P-A & B-T
NO MEASURABLE DIFFERENCE VALVES 1, 2 OR 3

DIMENSIONAL DATA







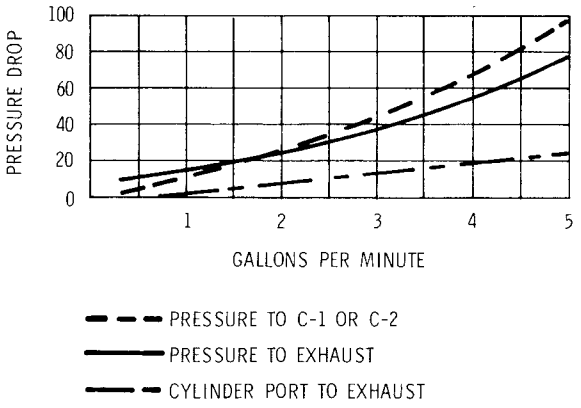
*Flow patterns P & R are supplied with pressure beyond port in addition to tank port for operation of other devices downstream. Flow pattern P is accomplished by using a 3C spool section and a special end plate and R is accomplished by using a 2C spool section & a special end plate.

SPECIFICATIONS

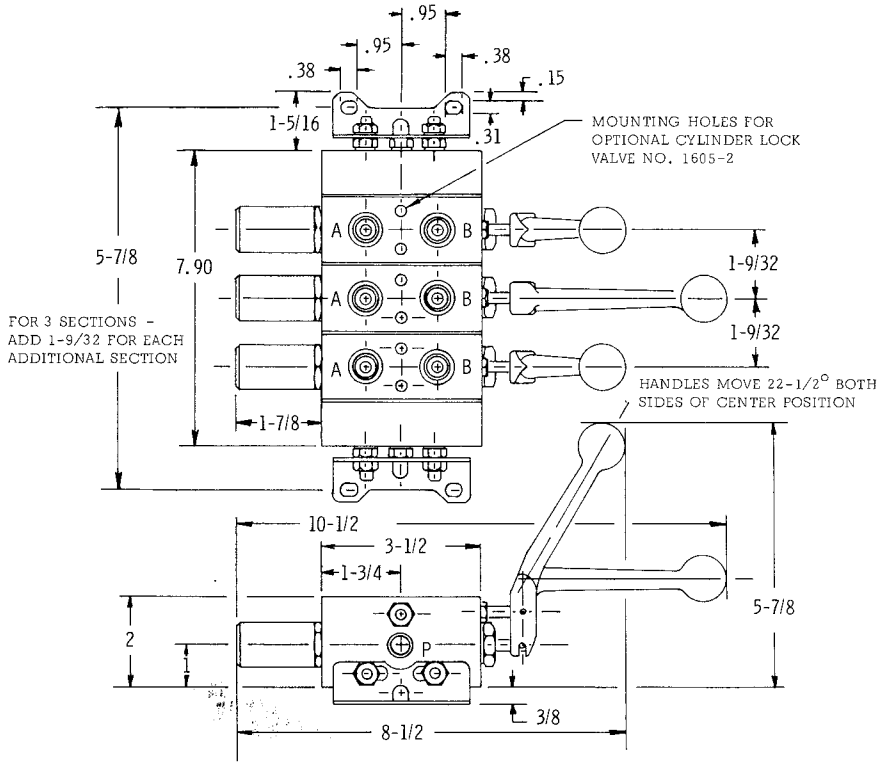
Weight	Single valve section - 20 ozs.; Bank of 3 valves with end plates & accessories - 6 lbs. 8 ozs.
Capacity	3 GPM
Pressure Rating	3000 psi
Port Size	#6 SAE or 1/4 N. P. T. F.
Mounting	Detent & spring centered types unrestricted
Material	Anodized aluminum body, alumalite hard coated spool & cadmium plated tie rods & mounting brackets
Leakage	10 in^3 per minute at 3000 psi

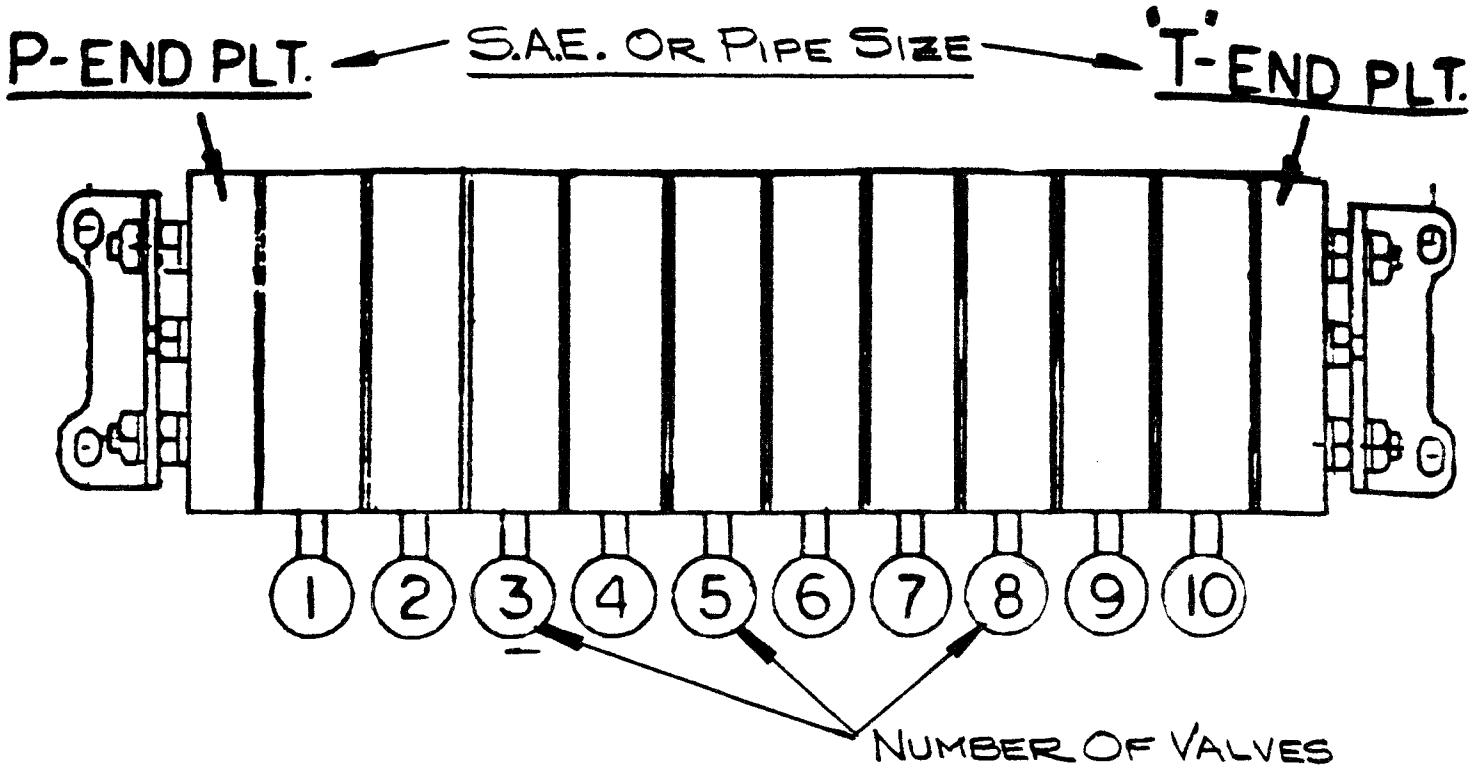
NOTE: All test data based on oil viscosity of 185 SSU.

FLOW CHART

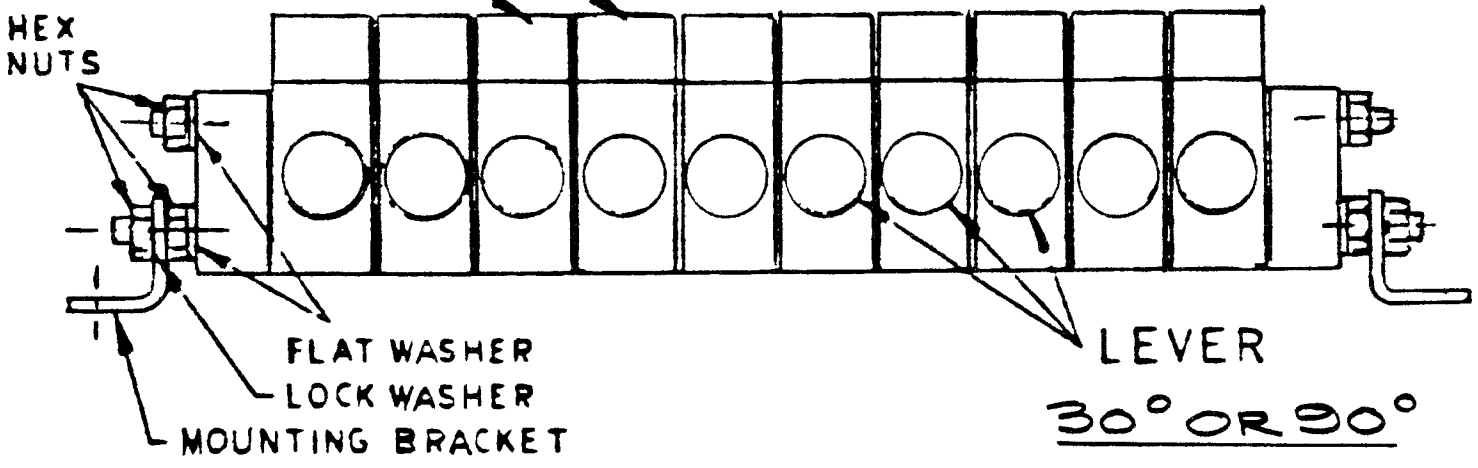


DIMENSIONAL DATA





CYLINDER LOCK # _____
WITH BOLT KIT 707953
AS REQUIRED



STACKING KIT
_____

LIST NUMER OF
STACK ASS'Y.

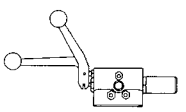
DESCRIPTION
STACK
ARRANGEMENT
DIRECTIONAL CONTROL
VALVES

HOW TO ORDER ——— 1254, 1284 & 1255 INDIVIDUAL VALVE SECTIONS

C-1254-2C-2-N

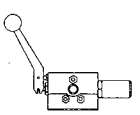
1254
1284
1255

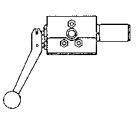
C--CAM
L--LEVER *

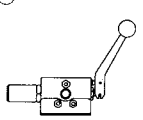


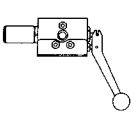
Standard 30° and 90° alternating will be furnished for entire bank if only "L" is specified.

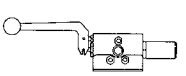
FOR SPECIAL HANDLE ARRANGEMENTS SPECIFY FOR EACH VALVE SECTION FROM THE OPTIONS LISTED BELOW

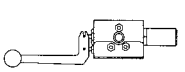
LA  30° Handle Up

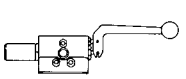
LB  30° Handle Down

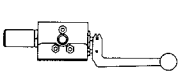
LC  30° Handle Up Opposite End

LD  30° Handle Down Opposite End

LE  90° Handle Up

LF  90° Handle Down

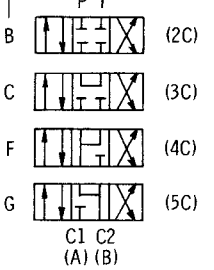
LG  90° Handle Up Opposite End

LH  90° Handle Down Opposite End

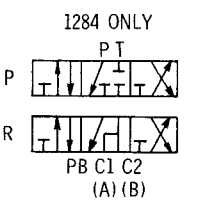
P--SINGLE PILOT
PP--DOUBLE PILOT

NOTE: Unless otherwise specified, pilot port will match body ports.

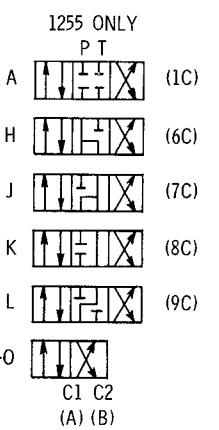
1254 ONLY



1284 ONLY



1255 ONLY



*Drawing is looking at Tank Port end of Bank (normally the right hand end of Bank)

N--3 POSITION DETENT
N2--2 POSITION DETENT (1255 ONLY)
O--SPRING OFFSET, STEM IN (1255 ONLY)
OO--SPRING OFFSET, STEM OUT (1255 ONLY)
S--SPRING CENTERED

NOTE: Extended stem for micro-switch actuation available on special request only. (Not available with cam or double pilot valves).

2--1/4 N. P. T. F. PORTS
6 SAE--SAE "O" RING PORTS FOR 3/8" TUBE

NOTE: UNLESS OTHERWISE SPECIFIED, PILOT PORT WILL MATCH BODY PORTS
VITON SEALS STANDARD IN ALL VALVE

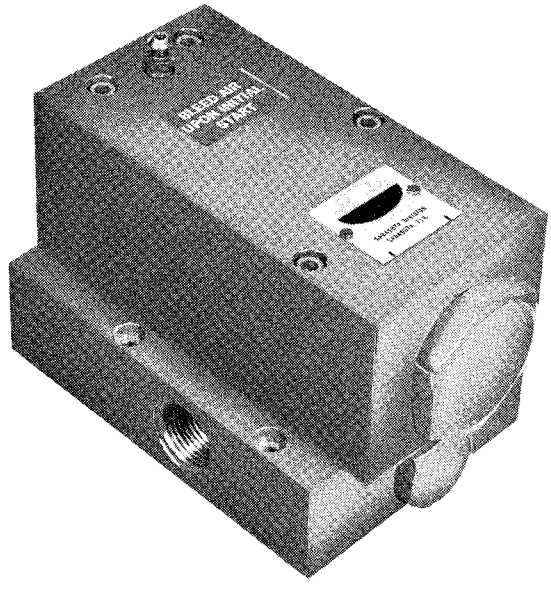
EXTRAS:

EXTENDED STEM . .
THROTTLING SPOOL
DOUBLE CYL. LOCK VALVE

Burton Hydraulics, Inc.
7875 DIVISION DRIVE MENTOR, OHIO 44060 (440) 974-8868 FAX - (440) 974-0951

ENGINEERING DATA

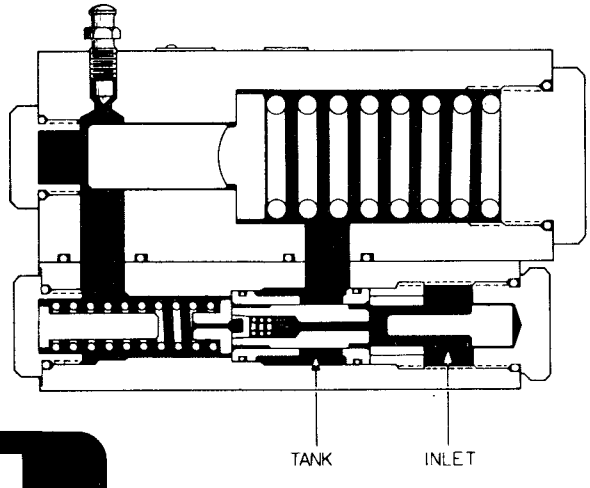
3/4" SHOCK SUPPRESSOR

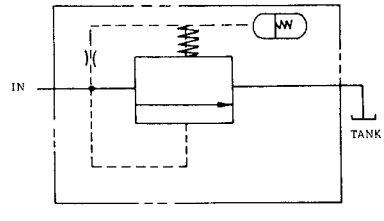


FEATURES

- Used to prevent shocks in oil hydraulic systems
- Completely automatic – no adjustments necessary.
- Responds to a rate of pressure rise rather than operating at a predetermined setting – anticipates shock before it occurs.
- Pressure rating – 3,000 PSI
- Designed for dependability and rugged duty.

OPERATIONAL DATA





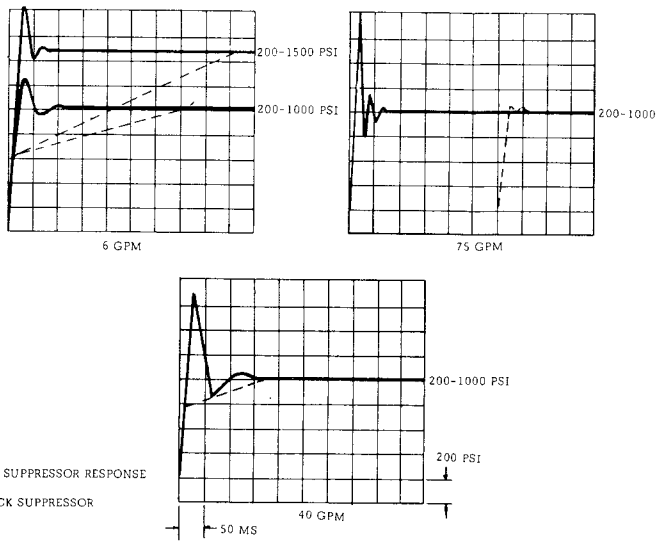
APPLICATION – The shock suppressor is designed to prevent damage to components and piping due to excessive shocks in a system. The shock suppressor does not act as a relief valve, but rather it responds to the rate of pressure rise due to a shock. When pressure rises too quickly, the shock suppressor will open to allow excess oil to flow to the reservoir. This limits the peak pressure of the shock to a safe level. In order to insure proper operation, all air must be bled from the valve prior to initial start-up.

Burton Hydraulics, Inc.

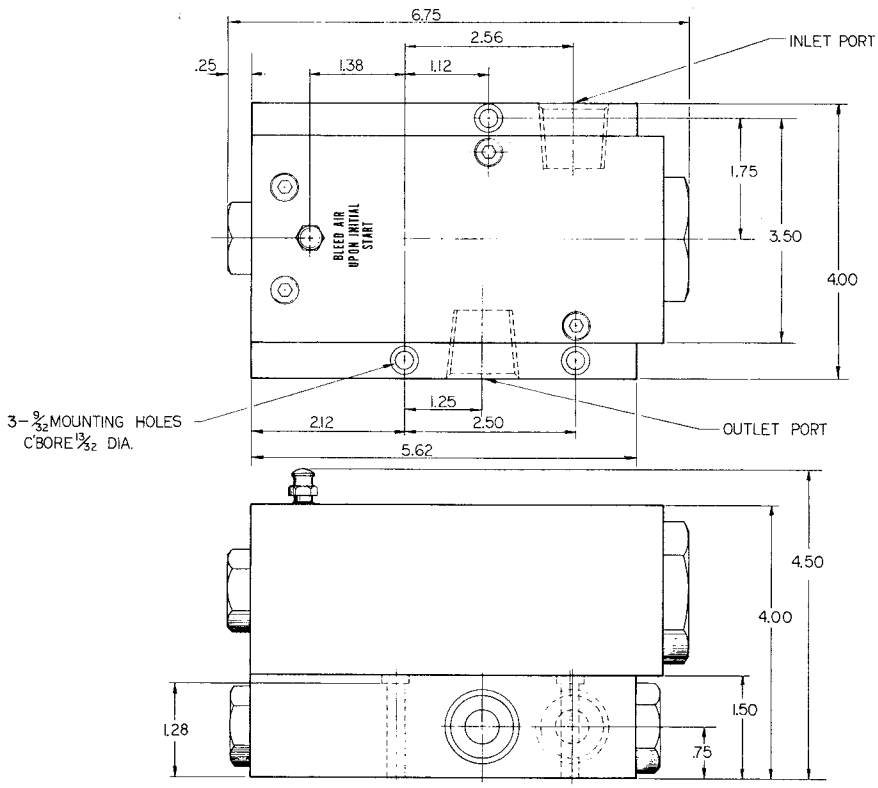
7875 DIVISION DRIVE MENTOR, OHIO 44060 (440) 974-8868 FAX - (440) 974-0951

SPECIFICATIONS

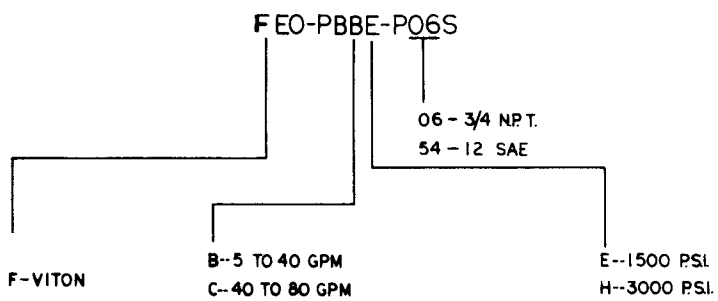
PRESSURE RATING	1500 PSI – 3000 PSI
FLOW CAPACITY	5 to 80 GPM
PORT SIZE	3/4 NPT
OIL TEMPERATURE	200°F.
OIL VISCOSITY	200 to 250 SSU @ 100°F.
MOUNTING	Valve must be mounted with air bleed verticle
MATERIAL	Aluminum body with internal steel parts
WEIGHT	8 lbs., 10 oz.



DIMENSIONAL DATA



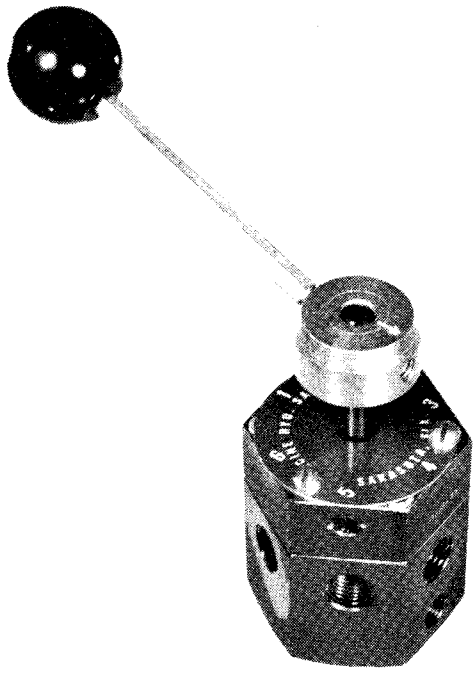
HOW TO ORDER



Burton Hydraulics, Inc.
7875 DIVISION DRIVE MENTOR, OHIO 44060 (440) 974-8868 FAX - (440) 974-0951

ENGINEERING DATA

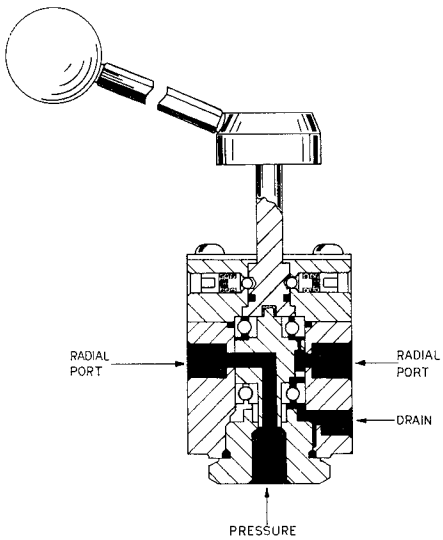
1/4" MULTIPLE SELECTOR VALVE



FEATURES

- Valve used to probe or direct flow to any one of six areas of a circuit.
- Flow Rate – 3 GPM.
- Unrestricted Mounting.
- Pressure Rating – 2000 PSI.

OPERATIONAL DATA

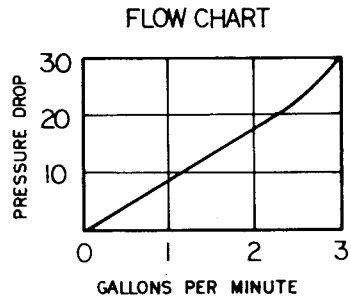


OPERATION – This valve is used to probe or direct flow to any one of six areas of a circuit, for pressure or flow reading, with flow from the other five areas blocked or drained to tank. All seven ports can be pressurized.
The bottom port can either be a pressure or cylinder port. By indexing the rotor, this port can be connected to any one of the six radial ports. The choice of an open or closed rotor spool permits either blocking the other five circuits or draining them to tank.

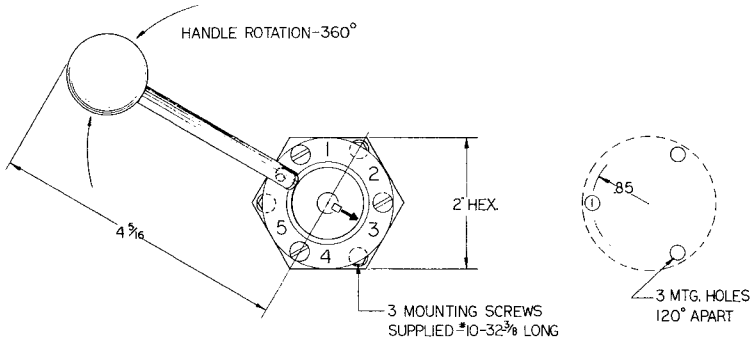
Lever is held in the selected position by a spring loaded ball and groove mechanism. Lever must be manually moved to each radial port position.

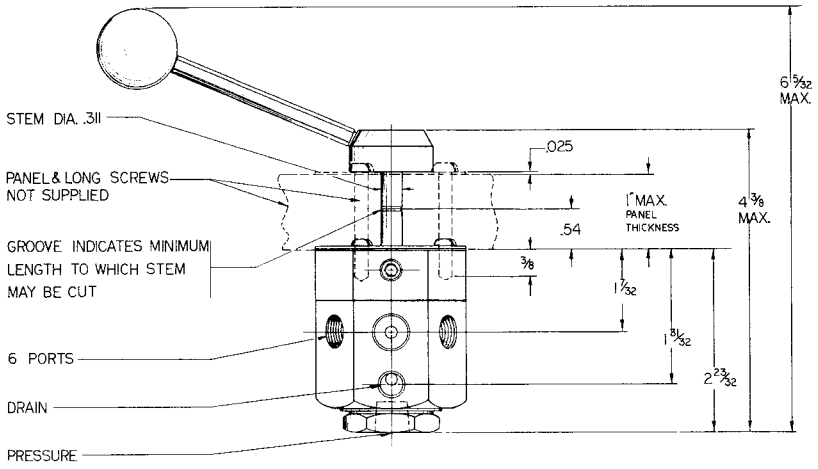
SPECIFICATIONS

PRESSURE RATING	2000 PSI
FLOW CAPACITY	3 GPM
PORT SIZE	1/4 NPT or #6 SAE
OIL TEMPERATURE	200°F.
LEAKAGE	5 in. ^{3}/min. @ 2000 PSI
MOUNTING	Unrestricted
BACK PRESSURE	Drain port pressure should not exceed 50 PSI
MATERIAL	Aluminum body and hard coated aluminum spool
WEIGHT	1 lb., 4 oz.

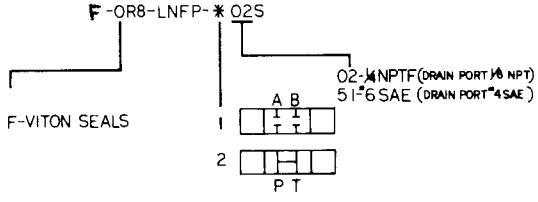


DIMENSIONAL DATA





HOW TO ORDER

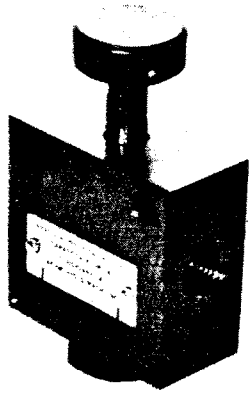


Burton Hydraulics, Inc.

7875 DIVISION DRIVE MENTOR, OHIO 44060 (440) 974-8868 FAX - (440) 974-0951

ENGINEERING DATA

1/4" FOOT MOUNTED 2-WAY VALVE

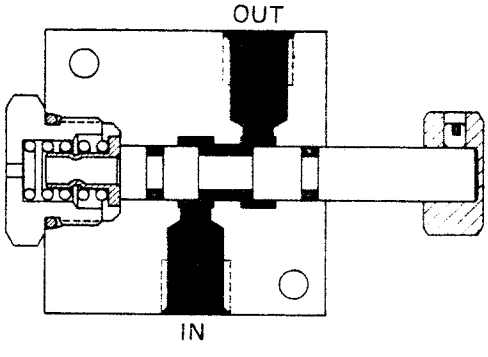


FEATURES

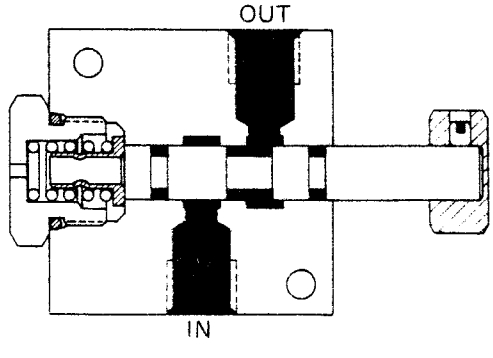
- Pressure Rating – 3,000 PSI
- Light Weight Small Physical Size
- Minimal Leakage At Rated Pressure
- Balanced Spool With Spring Return
- Normally Open And Closed Version

OPERATIONAL DATA

NORMALLY OPEN



NORMALLY CLOSED

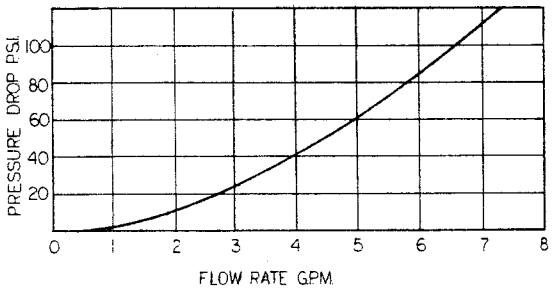


Used in a circuit to manually shut off flow of oil through one line. Can be used as a dump valve to relieve pressure on a line. Normally open version can be used where a momentary manual cut off is desired.

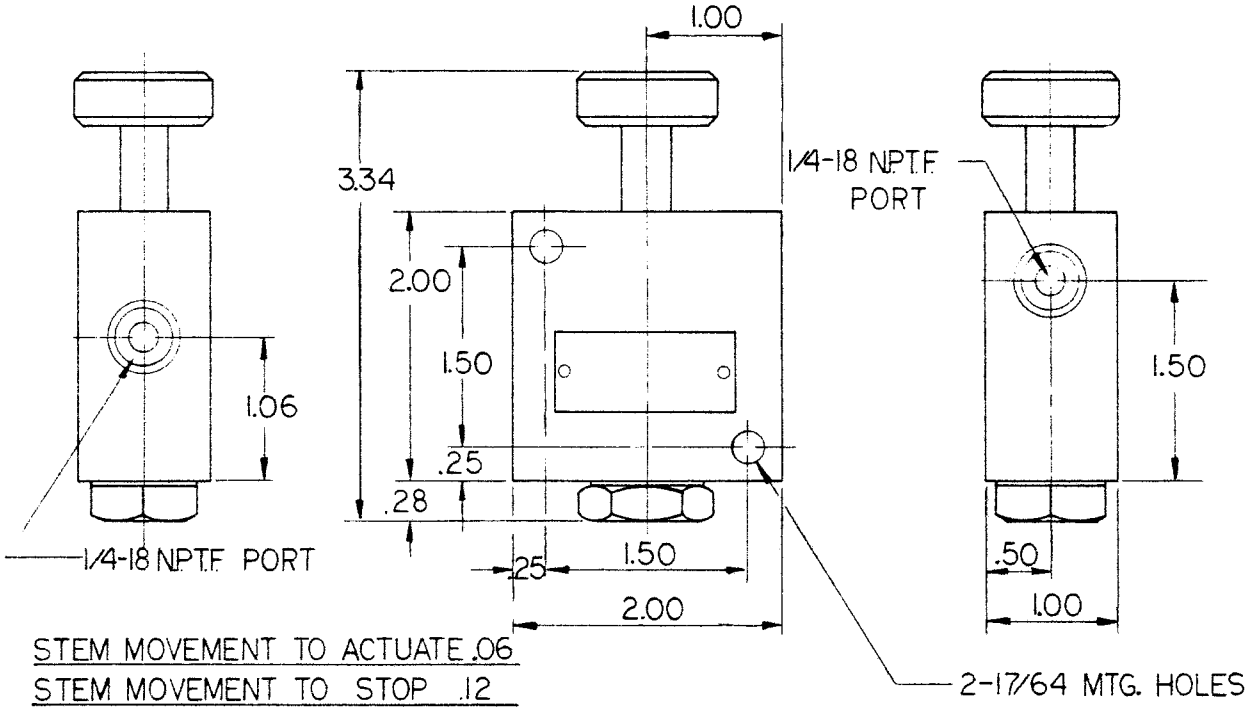
ED 6.28B

SPECIFICATIONS

PRESSURE RATING	3,000 PSI
CAPACITY	6 GPM
MOUNTING POSITION	Unrestricted
MATERIAL	Hardened steel spool in steel body
LEAKAGE	5 in ^{3}/ minute @ 3,000 PSI
WEIGHT	7 ounces



DIMENSIONAL DATA



HOW TO ORDER

SERIES	PORT SIZE	DESCRIPTION
1261 – 2	1/4 NPT	Normally open
1262 – 2		Normally closed
1261 – 6 SAE	# 6 SAE	Normally open
1262 – 6 SAE		Normally closed

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