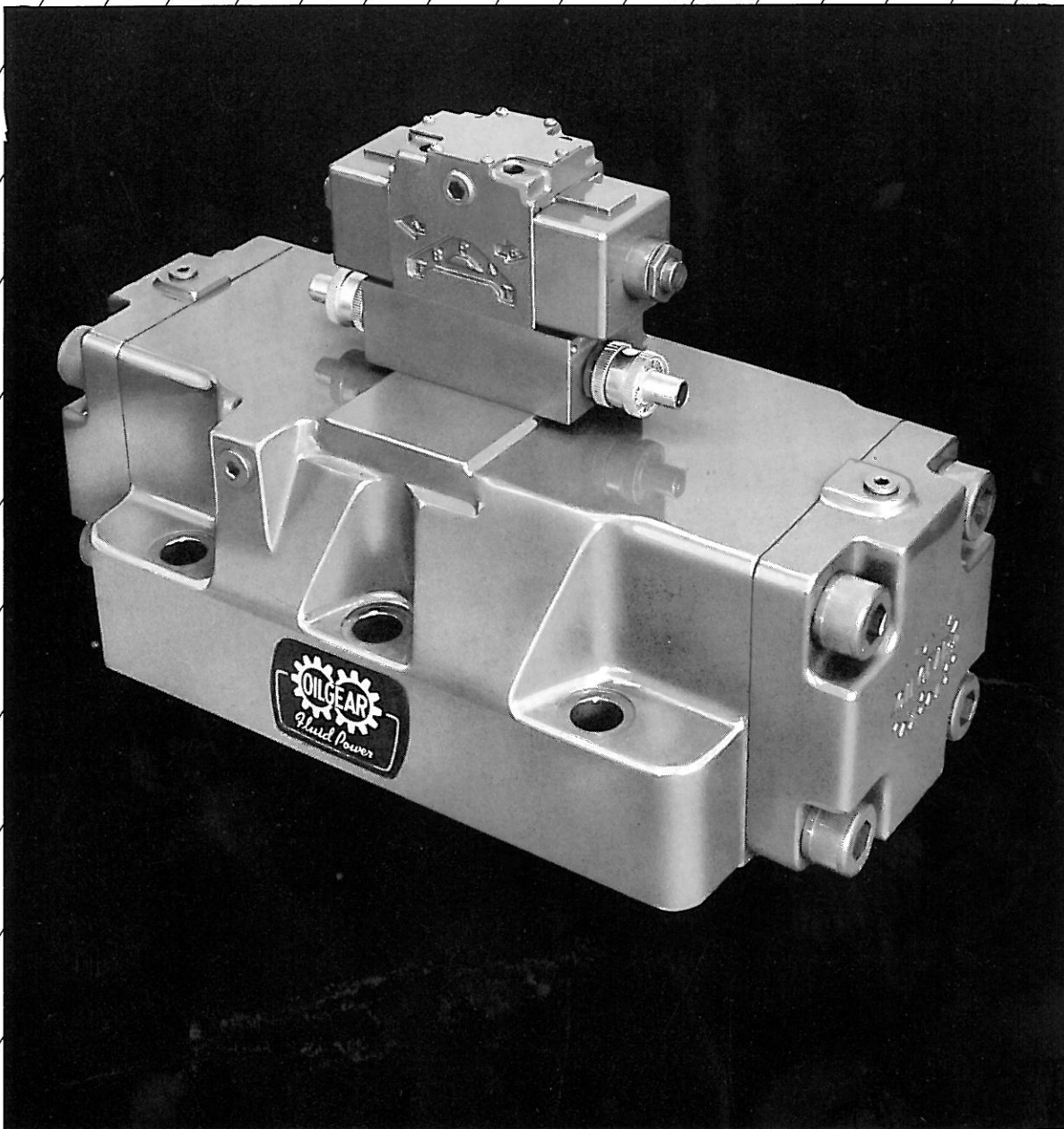


Oilgear

TYPE "VDC" 3- AND 4- WAY
MANIFOLD CONNECTED VALVES

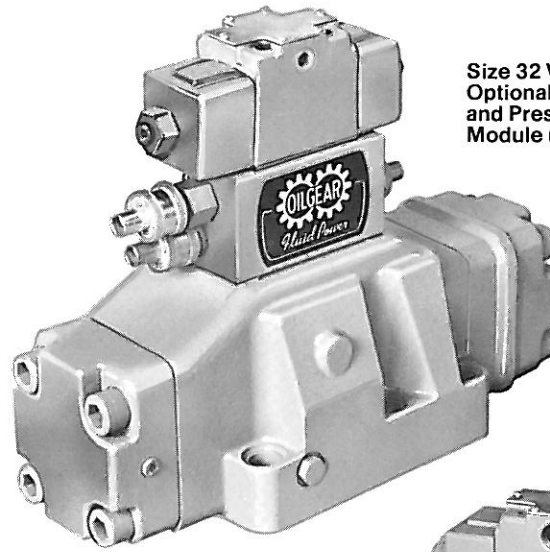


BULLETIN 80305

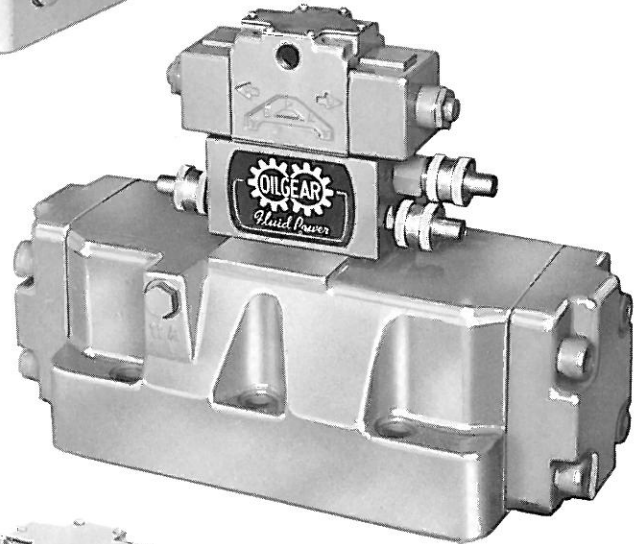
FEATURES

Valve Features and Benefits

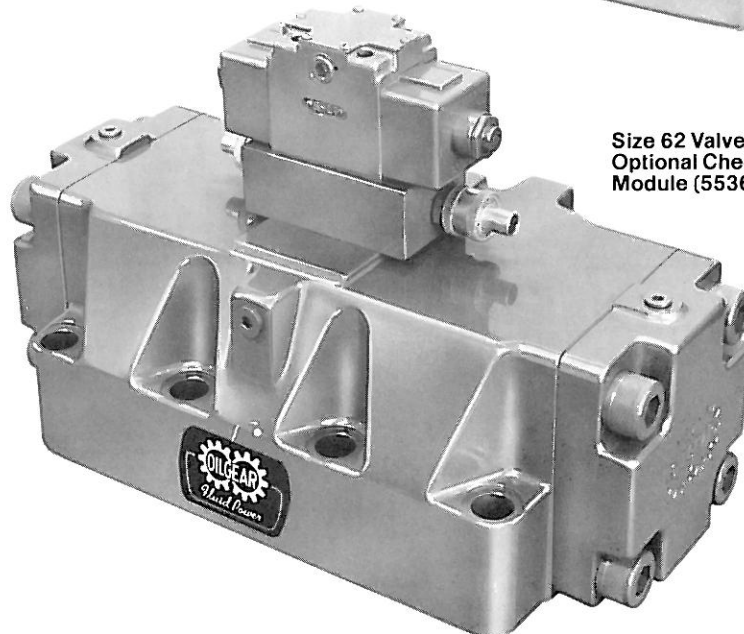
1. 5000 psi rating on all ports.
2. Long plunger stroke coupled with "U" slots for progressive "shut-off" action provides smooth and controlled decompression and load reversal.
3. Custom plungers available.
4. Plungers are interchangeable.
5. High flow capacity, with low pressure drop.
6. Fast response.
7. Solenoid actuated 4-way pilot valve.
8. Check and choke modules available.
9. Compact (but heavy-duty) construction virtually eliminates body deflection and tendency for manifold O-rings to extrude.



Size 32 Valve with
Optional Check-Choke
and Pressure Reducing
Module (55308)



Size 52 Valve with
Optional Check-Choke
and Pressure Reducing
Module (55308)



Size 62 Valve with
Optional Check-Choke
Module (55363)

SPECIFICATIONS

Operating Pressures

Ports 1, 2, 3 and 4
 Maximums (all sizes) 5000 psi
 Port 10 (drain)
 Maximums (all sizes) 50 psi
 Port 11 (pilot)
 Maximums (all sizes) 1000 psi
 Port 12 (drain)
 Maximums (all sizes) 1000 psi

Drain Lines

The drain lines from a directional valve have a pulsing flow which is related to the amount of fluid displaced by the spool and its shift time. To prevent aeration, the drain line can either be connected below the reservoir fluid level or have the surge dissipated and be connected above fluid level. Use proper precautions to prevent syphoning during maintenance (as an example during removal of solenoid covers or valve itself).

Conversion Factors

psi ÷ 14.5 = bar
 (°F-32) x 0.55 = °Centigrade
 Cubic inches x 16.39 = Cubic centimeters
 GPM x 3.79 = liters/minute
 Inches x 25.4 = millimeters

Valve Size	Method of Centering	Volume to Shift, in Cubic inches	Hydraulic shifting time (neutral to full in Milliseconds. Pressure rise and fall are typical for N-4 spool ¹)								Maximum GPM for spring centered valve operation with indicated line psi (D4N spool) ³			No. of ports
			150 psi pilot		500 psi pilot		1000 psi pilot		Return		1000	3500	5000	
			Begin rise ²	Complete stroke	Begin rise ²	Complete stroke	Begin rise ²	Complete stroke	Begin fall ²	Complete stroke				
32	Spring	1.59	45	170	24	55	20	40	70	110	230	125	100	4
	Hydraulic	1.59	65	180 ⁵	40	80 ⁵	28	60 ⁵		NA	NA	NA	NA	4
52	Spring	2.08	75 ⁴	700 ⁴	32	115	24	85	50	90	310	225	220	5
	Hydraulic	2.08	80	215 ⁵	40	95 ⁵	34	75 ⁵		NA	NA	NA	NA	5
62	Hydraulic	3.97	70	335 ⁵	35	150 ⁵	30	110		NA	NA	NA	NA	5

- (1) Minimum response time assuming adequate pilot volume and no chokes.
- (2) Time when pressure change is first sensed at output port.
- (3) These values may be exceeded if throttling does not occur during shifting.
- (4) Minimum pilot pressure is 170 psi.
- (5) Complete stroke *return* times are the same or slightly faster with hydraulic centering.

Valve Size	Pressure drop through valve from flow	Minimum pilot pressure required for operation with spring/hydraulic centering operators at various system pressures (N4N spool)		
		1000	3500	5000
32	20	100/100 psi	125/180 psi	140/220 psi
	50	120/130 psi	150/240 psi	180/300 psi
	100	150/170 psi	190/320 psi	225/400 psi
52	20	180/ 70 psi	220/125 psi	225/130 psi
	50	215/105 psi	280/185 psi	290/200 psi
	100	265/150 psi	365/270 psi	375/295 psi
62	20	NA/ 65 psi	NA/105 psi	NA/125 psi
	50	NA/ 95 psi	NA/170 psi	NA/215 psi
	100	NA/140 psi	NA/250 psi	NA/315 psi

SPECIFICATIONS

Typical Pressure Drops
(except for A-4 Spools) with 270 SUS Fluid at 100°F

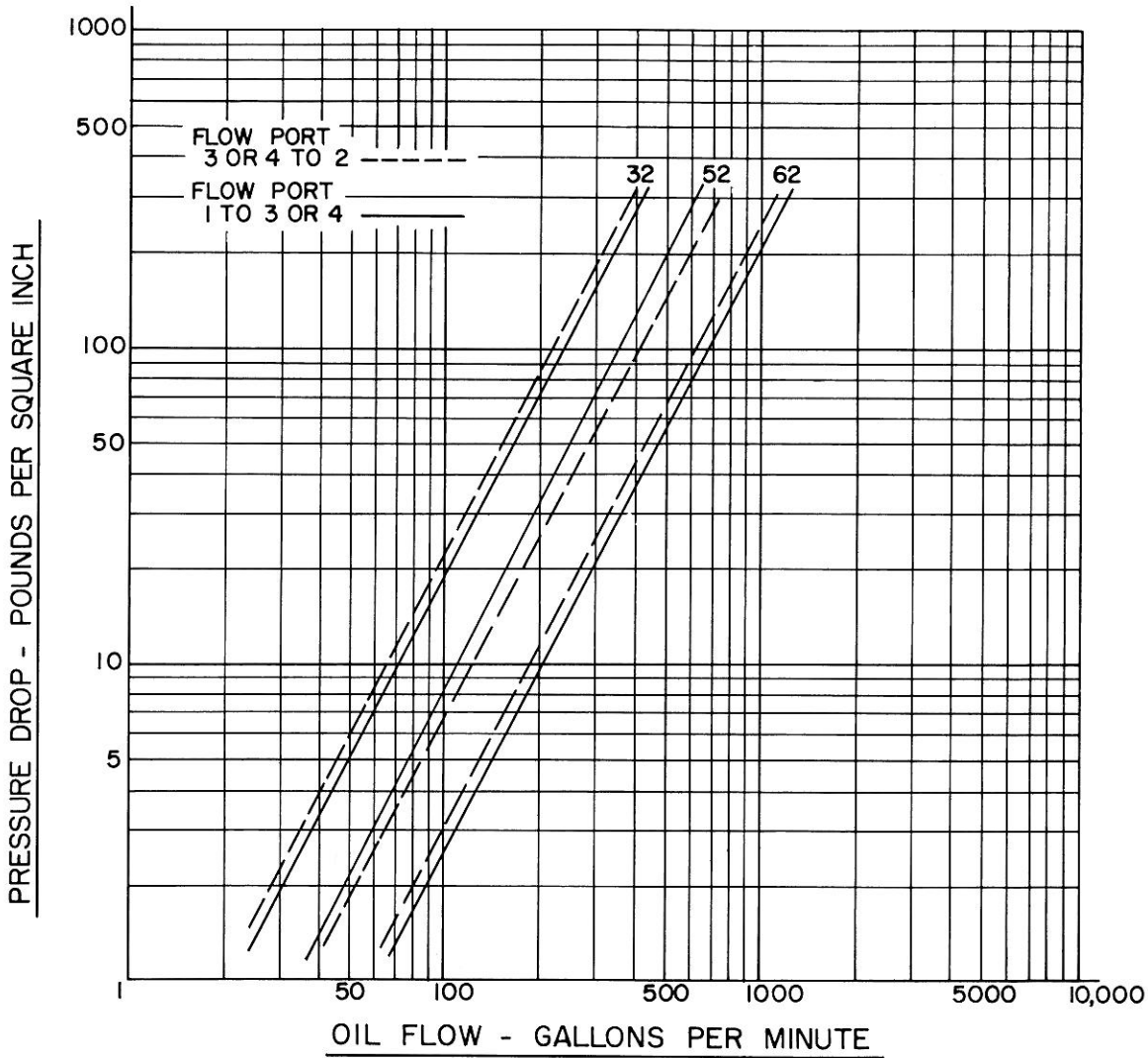


Figure 1. Pressure Drop vs Flow for N4 Spools. Curves are based on 270 SUS fluid with a specific gravity (SG) of 0.88. Different viscosity effects can be predicted from

$$\Delta P = \Delta P_{(curve)} \left[\frac{\text{viscosity used}}{270\text{SUS}} \right]^{0.1}$$

Different specific gravity can be predicted

$$\text{from } \Delta P = \Delta P_{(curve)} \left(\frac{\text{used SG}}{0.88} \right)$$

SOLENOID PILOT OPERATED/SIZE 32

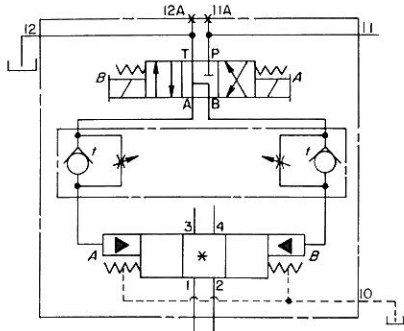


FIG. 1- VDC/32**SSAA_A/5T4SS /UUN
(SPRING CENTERED)

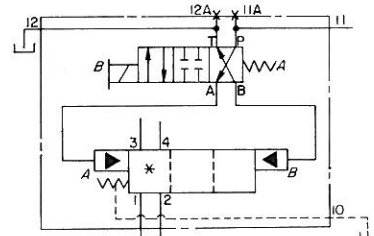


FIG. 2- VDC/32**JKAA_A/5N4EJ /NNN
(HYDRAULIC RETURN)

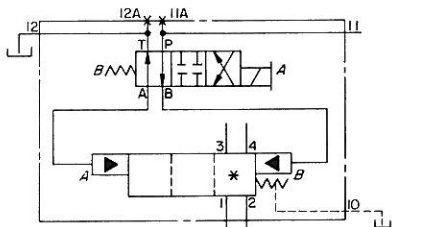


FIG. 3- VDC/32**KJAA_A/5N4JE /NNN
(HYDRAULIC RETURN)

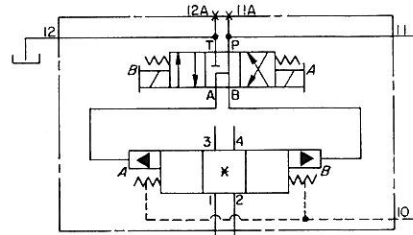


FIG. 4- VDC/32**HHAA_A/5G4SS /NNN
(HYDRAULIC CENTERED)

* SEE BELOW FOR PLUNGER STYLES.

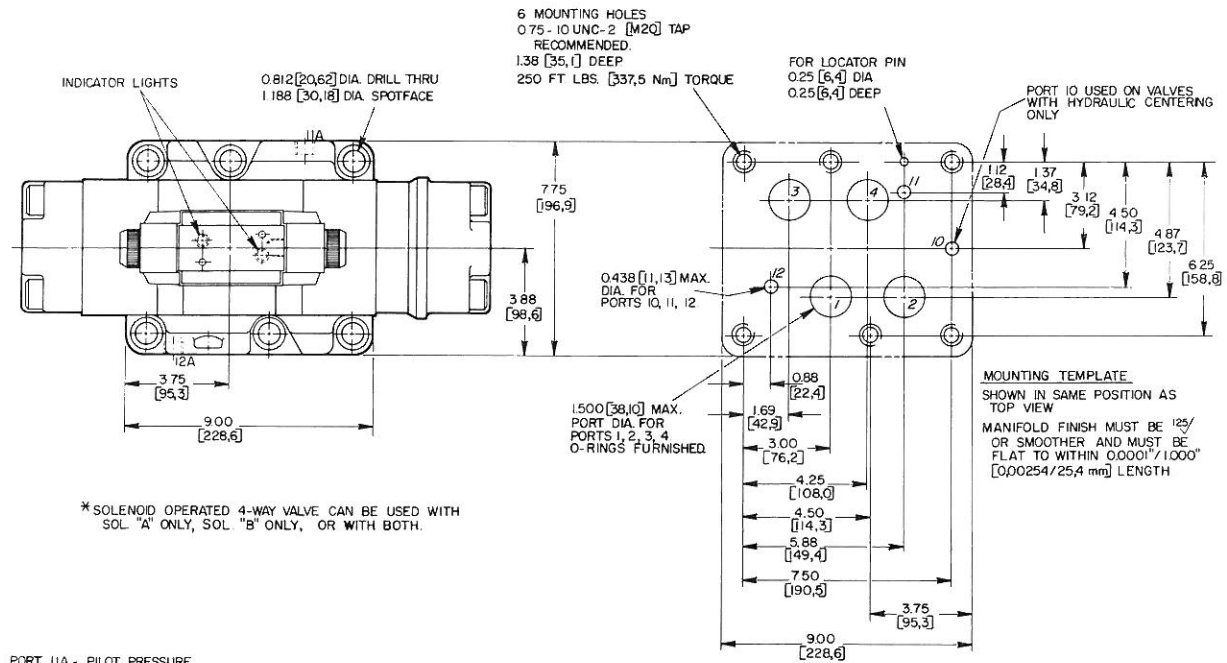
† THE CHECK-CHOKE OPTION CAN BE USED ON ANY "VDC" VALVE.

PLUNGER FUNCTIONS

STYLE	PLUNGERS AVAILABLE	SIMPLIFIED SYMBOL
B4		
C4		
D4		
K4		
N4		

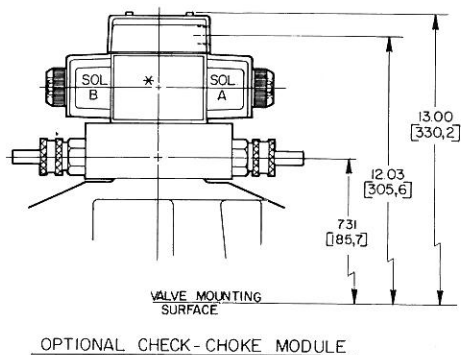
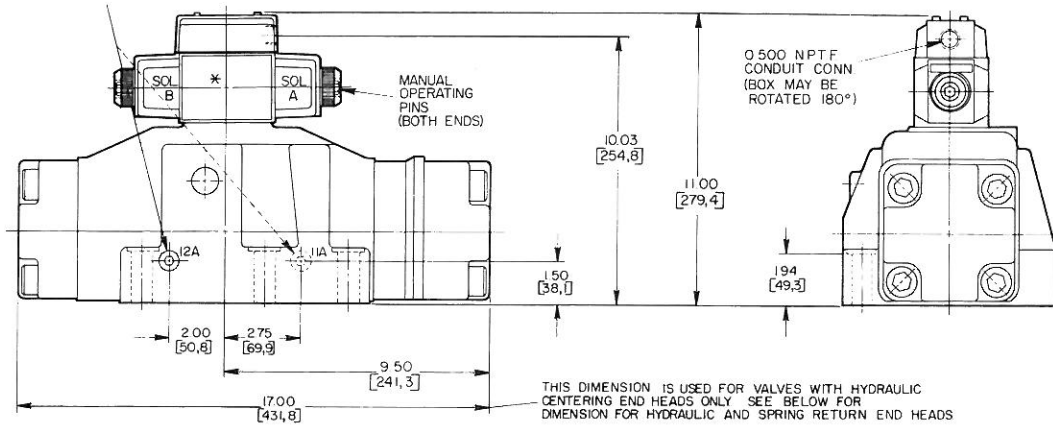
Figure 2. Plunger functions and hydraulic symbols for Oilgear Type VDC Solenoid Pilot Operated Directional Valves, size 32. (DS-80338-3C).

SOLENOID PILOT OPERATED/TYPE "VDC"/SIZE 32

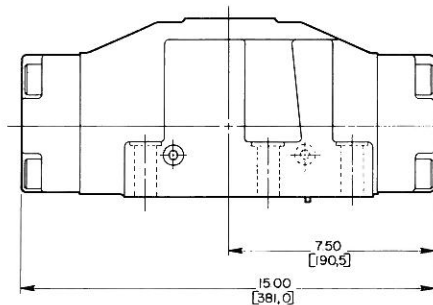


*SOLENOID OPERATED 4-WAY VALVE CAN BE USED WITH
SOL. "A" ONLY, SOL. "B" ONLY, OR WITH BOTH.

PORT 11A - PILOT PRESSURE
PORT 12A - PILOT DRAIN
NO. 6 SAE STR. THD. AUX CONN



VALVE WITH HYDRAULIC AND SPRING RETURN END HEADS.
ALL OTHER DIMENSIONS ARE THE SAME AS SHOWN ABOVE



DIMENSIONS GIVEN IN INCHES
[mm]

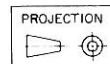


Figure 3. Installation, size 32 solenoid pilot operated 3- and 4-way valve. (DS-80338-2C).

SOLENOID PILOT OPERATED/SIZES 52 & 62

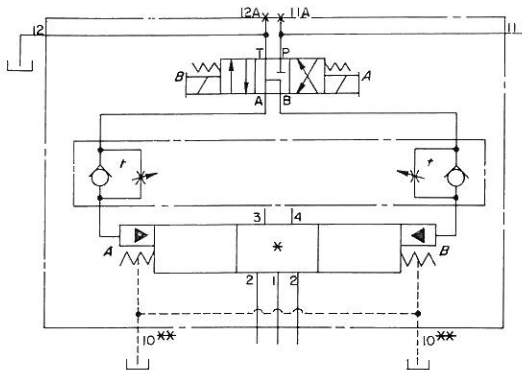


FIG. 1- VDC/...SSAA_A/5T4SS.../UUN
(SPRING CENTERED)

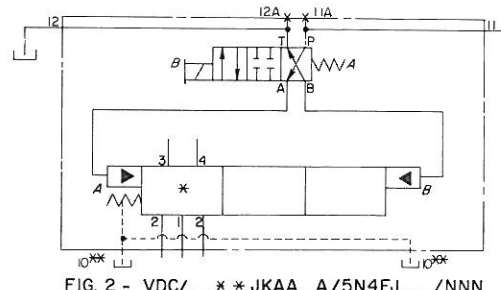


FIG. 2 - VDC/...JKAA_A/5N4EJ.../NNN
(HYDRAULIC RETURN)

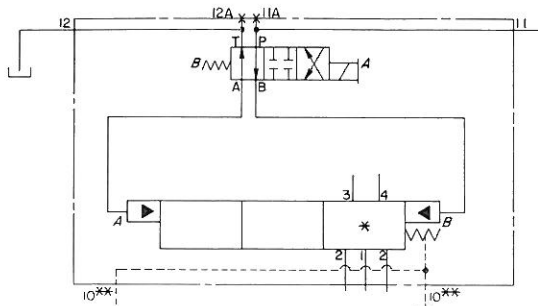


FIG. 3- VDC/...KJAA_A/5N4JE.../NNN
(HYDRAULIC RETURN)

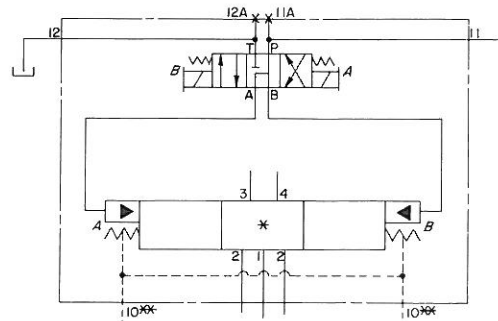


FIG. 4- VDC/...HHAA_A/5G4SS.../NNN
(HYDRAULIC CENTERED)

* SEE BELOW FOR PLUNGER STYLES.

** EITHER PORT 10 ALONE, OR BOTH PORTS TOGETHER CAN BE USED AS DRAIN PORTS, AS THEY ARE CONNECTED INTERNALLY

† THE CHECK-CHOKE OPTION CAN BE USED ON ANY "VDC" VALVE.

PLUNGER FUNCTIONS

STYLE	PLUNGERS AVAILABLE	SIMPLIFIED SYMBOL
B4		
D4		
K4		
N4		
Y4		
Z4		

Figure 4. Plunger functions and hydraulic symbols for Oilgear Type VDC Solenoid Pilot Operated Directional valves, sizes 52 and 62. (DS-80338-6C).

SOLENOID PILOT OPERATED/TYPE "VDC"/SIZE 52

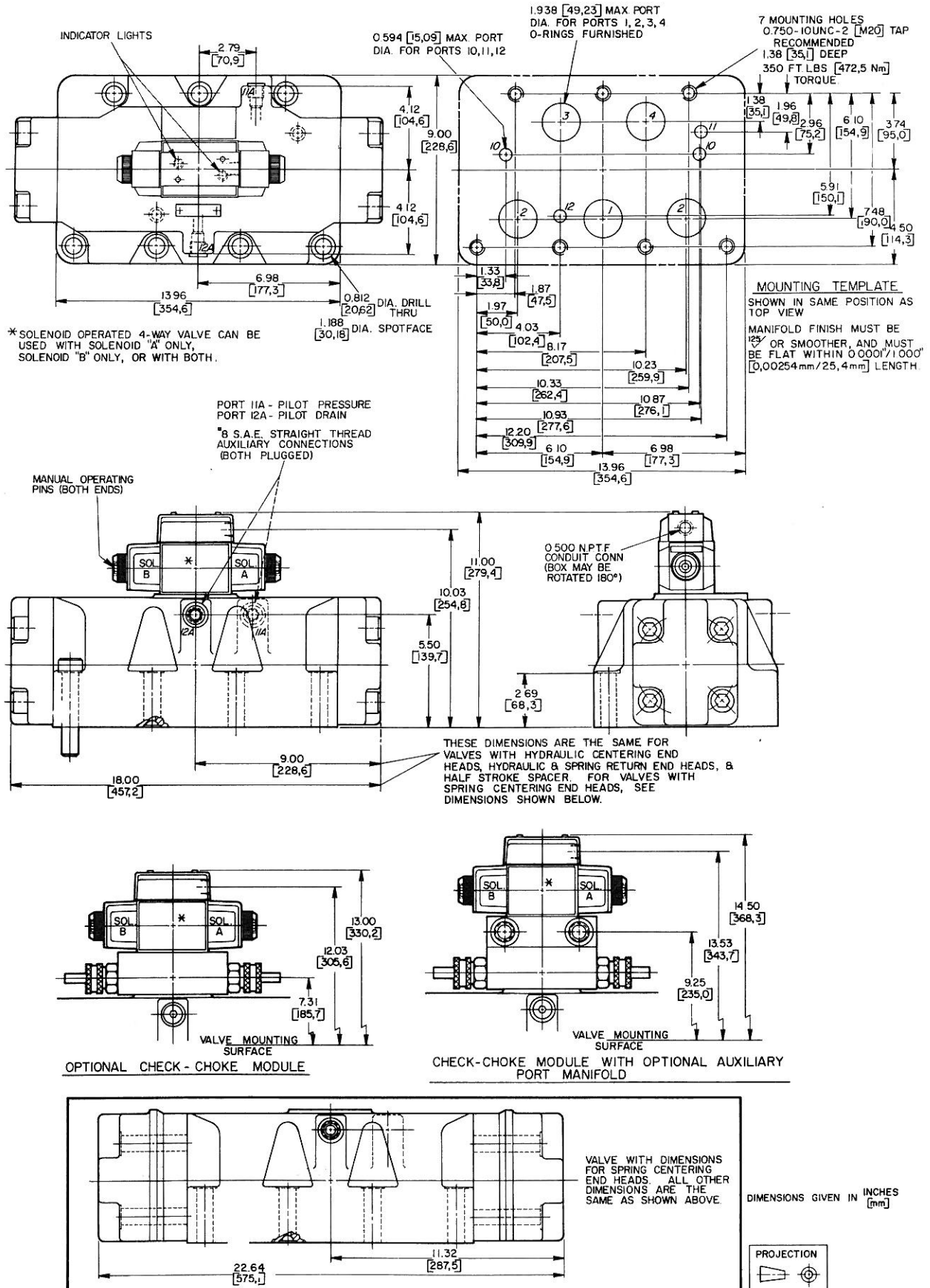


Figure 5. Installation, size 52 solenoid pilot operated 3- and 4-way valves. (DS-80338-4C).

SOLENOID PILOT OPERATED/TYPE "VDC"/SIZE 62

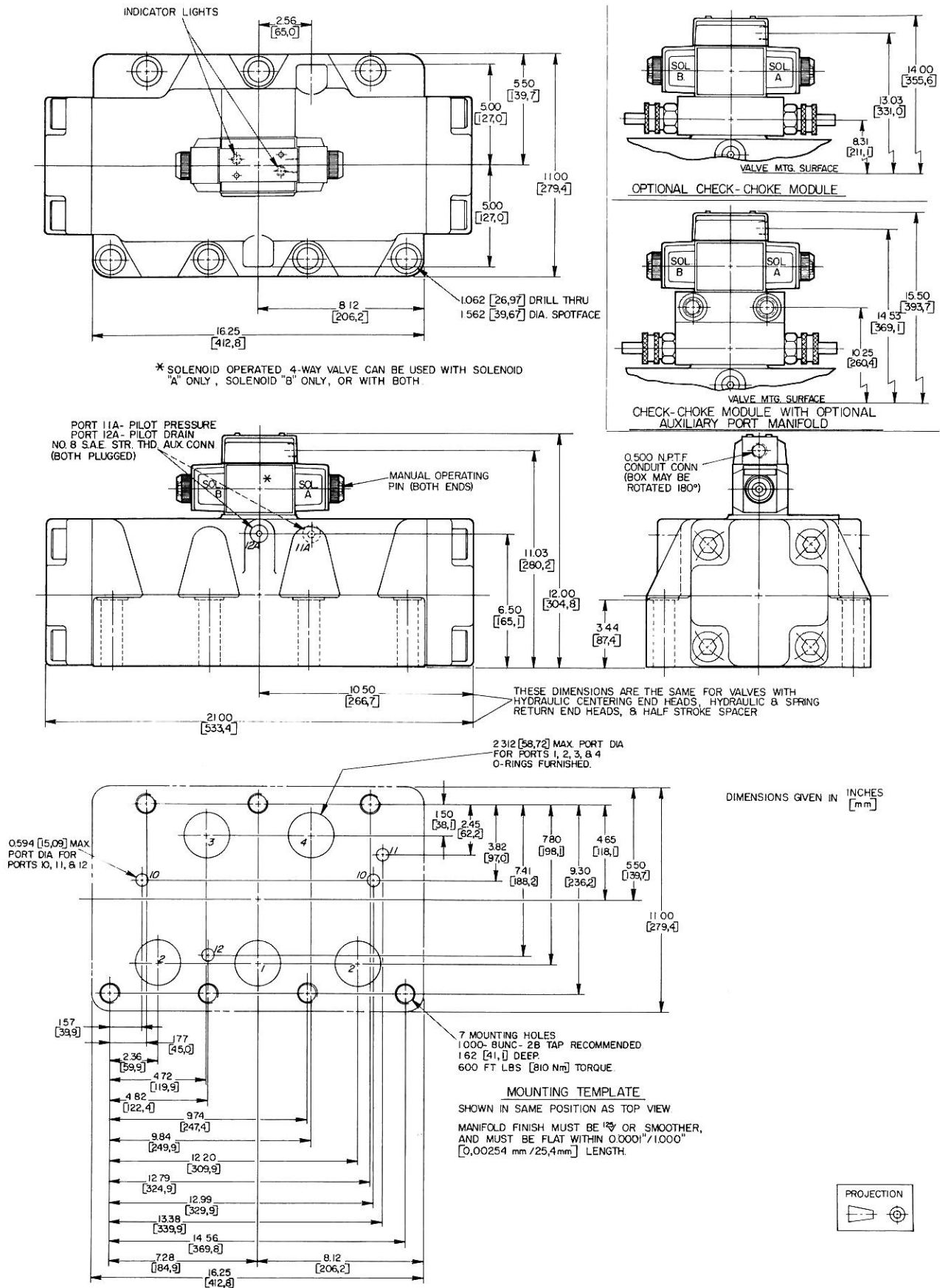


Figure 6. Installation, size 62 solenoid pilot operated 3- and 4-way valves. (DS-80338-5C).

HOW TO ORDER

Explanation

Block Number	1	2	3	/	4	5	6	7	8	9	10	11	/	12	13	14	15	16	17	/	18	19	20
Example	V	D	C	/	52	B4	H	H	A	A	A	A	/	5	G4	S	S	7	L	/	N	N	N

1 = Basic valve
V = Valve

2 = Basic type
D = Directional

3 = Basic model
C = Series

4 = Main valve size
32 = 1.5" nominal (page 6)
52 = 2.5" nominal (page 8)
62 = 3.0" nominal (page 9)

5 = Type of main valve plunger
(see pages 5 or 7)

6 = Main valve port 3
end operator
H = Hydraulic centering
(must be used on both ends)
J = Spring return
K = Hydraulic return
Q = Half stroke spacer
S = Spring centering (must be used on both ends)
Z = Special (specify in writing)

7 = Main valve port 4
end operator
H = Hydraulic centering
(must be used on both ends)
J = Spring return
K = Hydraulic return
S = Spring centering (must be used on both ends)
Q = Half stroke spacer
Z = Special (specify in writing)

8 = Pilot supply
A = Internal from port 11
(standard)
B = Internal from port 1
C = External from port 11 A

9 = Pilot drain
A = External drain to port 12
(standard)
B = External drain to port 12 A
C = Internal drain to port 2

10 = Seals
A = Viton
B = Buna N
Z = Special (specify in writing)

11 = Design
A = series

12 = Pilot valve size
5 = NFPA D05 (standard for all sizes of main valves)

13 = Type of pilot valve plunger
(see pages 5 or 7)

14 = Pilot valve port A end operator
E = Electric (solenoid)
J = Spring return
S = Spring centering w/
solenoid (must be used on both ends)

15 = Pilot valve port B end operator
E = Electric (solenoid)
J = Spring return
S = Spring centering w/
solenoid (must be used on both ends)

16 = Solenoid voltage
2 = 12 VDC
3 = 24 VDC
7 = 115 VAC/60 hz. (std)
8 = 110 VAC/50 hz.
9 = 230 VAC/60 hz.
0 = 220 VAC/50 hz.

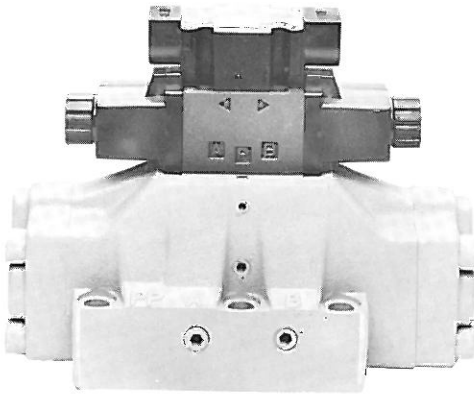
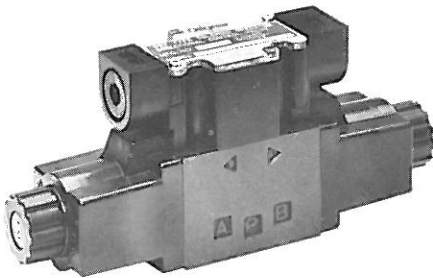
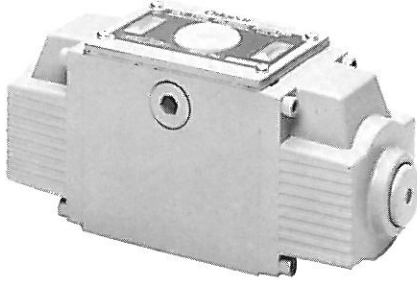
17 = Electric connection
S = Cable plug-in
L = Cable w/light
(115 VAC only)
R = 1/2" NFPT plug-in
W = 1/2" NFPT w/light
(115 VAC only)

18 = Optional port 3 end module
N = None
U = Hydraulic check, adjustable meter out choke

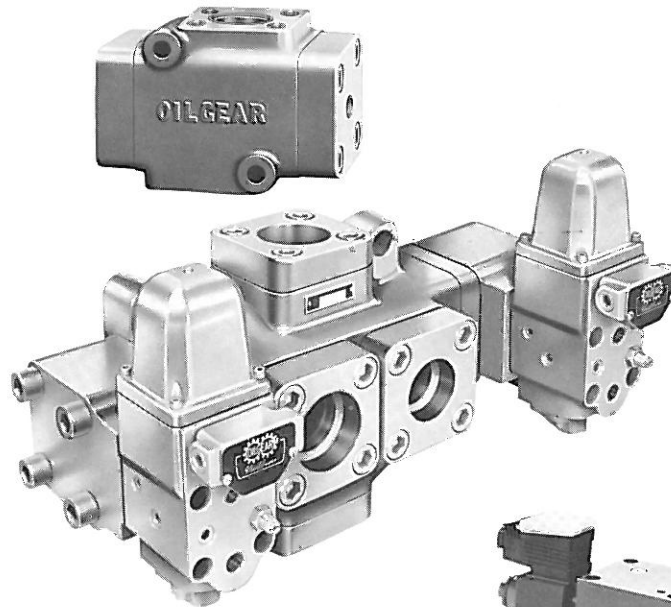
19 = Optional port 4 end module
N = None
U = Hydraulic check, adjustable meter out choke

20 = Optional module both ends
A = Auxiliary connection for A & B ports
R = Pressure reducing option (required when pilot supply is from port 1 or in excess of 1000 psi)
N = None

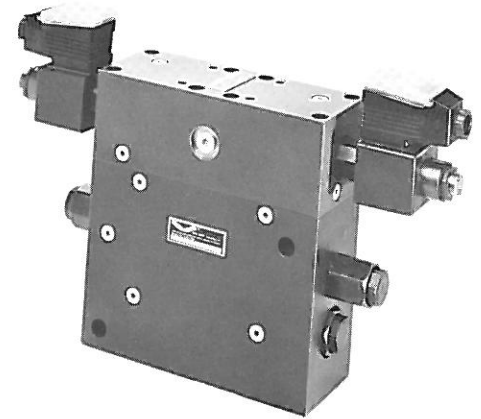
**Many Other Valves, Valve Styles,
Custom-Built Valves and Valve
Stands Available**



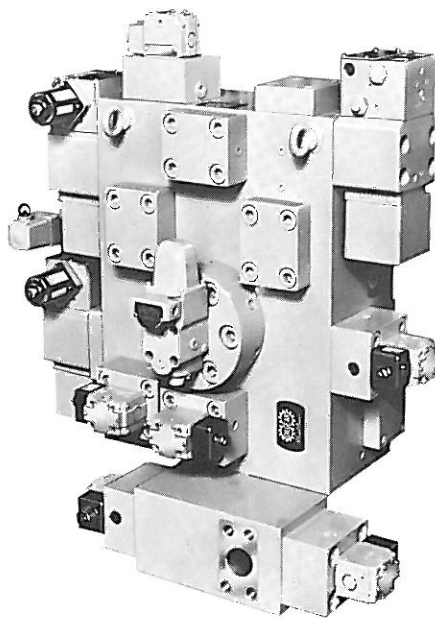
Smaller Oilgear Type "VDS" manifold connected directional control valves are available in NFPA D01, D02, D06 and D10 sizes with valve pressure rating of either 3000 or 5000 psi. Many spool types are available. For further information, see Bulletin HS-100. (55641, 55637 and 55638).



Oilgear Type "V" and "L" flange connected directional valves are available in two-, three- and four-way configurations with solenoid, manual, mechanical and hydraulic operators. Many spool types are available for sizes up to 150 (6 inches). For further information, see Bulletin 80200 and 80300. (55358 and 55320).



Oilgear Type "VDP" two-, three- and four-way directional control valves with screw-in poppets were specifically designed for low viscosity fluids and also operate on most hydraulic fluids. The line includes options of complete screw-in pilot logic for multi-functions of speed and/or pressure control sizes from D02 to D10. For further information, see Bulletin HS-100. (55635).



"Customerized" manifold with Oilgear Pilot operated relief valve utilizes Oilgear slip-in cartridge valves for large flow two-, three-, and four-way directional control functions. Slip in cartridges are available up to size 100 (4 inches). For further information, see Bulletins 80005 and 80006. (55312).

Consult Your Oilgear Representative On Any Questions.

When none of the standard Oilgear valves with standard or special plungers meet your directional and control function requirements — consult your Oilgear Representative — Oilgear has been designing and manufacturing "Custom-Built" valves for specific applications since 1921.

Changes in the equipment described in this bulletin may be made without notice. For further information, details, etc. contact your Oilgear representative.

PERFORMANCE ASSURANCE IS STANDARD WITH EVERY OILGEAR COMPONENT

Each Oilgear component manufactured is shipped with a corporate commitment to stay with the installation until the unit performs as specified.

This total dedication to performance is based upon experience gained since 1921 in matching fluid power systems to a tremendous range of machines and applications.

Oilgear's Performance Assurance is made possible because of the many hydraulic techniques learned over the years in supplying machinery builders and users with unique solutions to hundreds of unusual fluid power problems.

Historically, Oilgear has concentrated all of its energies on hydraulic equipment and systems. Every Oilgear facility is staffed with factory trained and field experienced application engineers.

Performance Assurance doesn't stop with the design of the system or the sale of the component. It guarantees that Oilgear engineers will be there- when they are needed- supplying the technical support, field service, parts and repairs, to make sure each component operates correctly.

