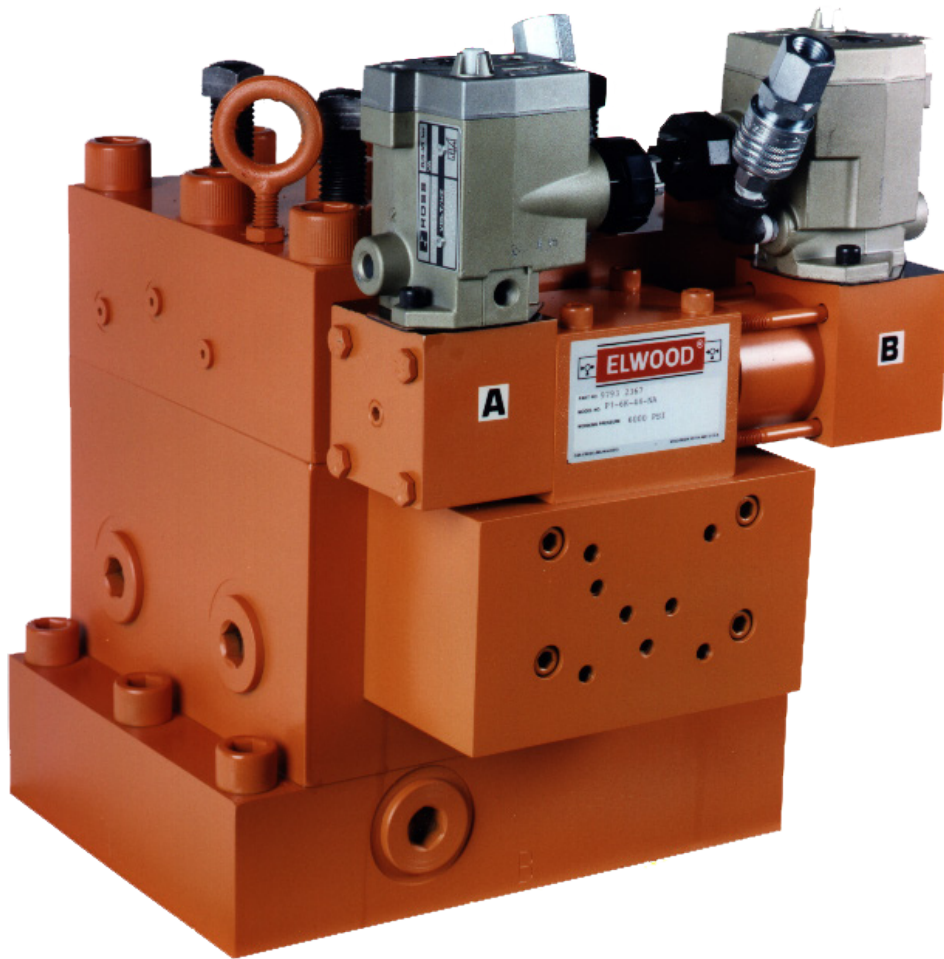


ELWOOD[®]

**FLUID
POWER**

2-, 3- & 4-WAY DIN POPPET



DIRECTIONAL CONTROL VALVE

195 West Ryan Road
Oak Creek, WI 53154

414-764-7500
info@elwood.com

www.elwood.com/fluidpower.html

Poppet Directional Valves Features

A modern concept in water hydraulics

Zero Leakage

Positive, drop tight sealing is achieved by poppet type plunger assemblies with replaceable seating discs which close against heat treated stainless steel seats.

Extended Poppet Seal Life

The dynamic seals never cross ports during operation, therefore, cannot extrude into ports. These seals are wear compensating.

Minimum Valve Space Requirements

Compact subplate mounted design reduces space requirements by as much as 50%.

Easy Valve Maintenance

All normal maintenance can be performed at the top side of the valve without removing the valve from the system. The internals are designed eliminating all "press" fitted as well as "selectively" locked parts or assemblies. Cavities conform to international DIN standards and are sleeved to facilitate seal and parts replacement.

Directional Control Function Flexibility

Change the valve function by simply removing the top plate and arranging plugs for the appropriate function.

Less Inventory Required

Minimize spare inventory requirements through commonality of components between 2-, 3- and 4-way valves.

Built-in Flow Controls

Totally independent "meter-in" and/or "meter-out" flow control from either port is accomplished by simply limiting the poppet stroke by use of the externally stainless steel flow control screw.

Maximum Efficiency of Fluid Flow

The design of passage-ways through the 2-, 3- and 4-way valves optimizes valve efficiency and minimum pressure drops, resulting in a smaller valve overall and less manifold space required.

Pilot Designed to Suit Application

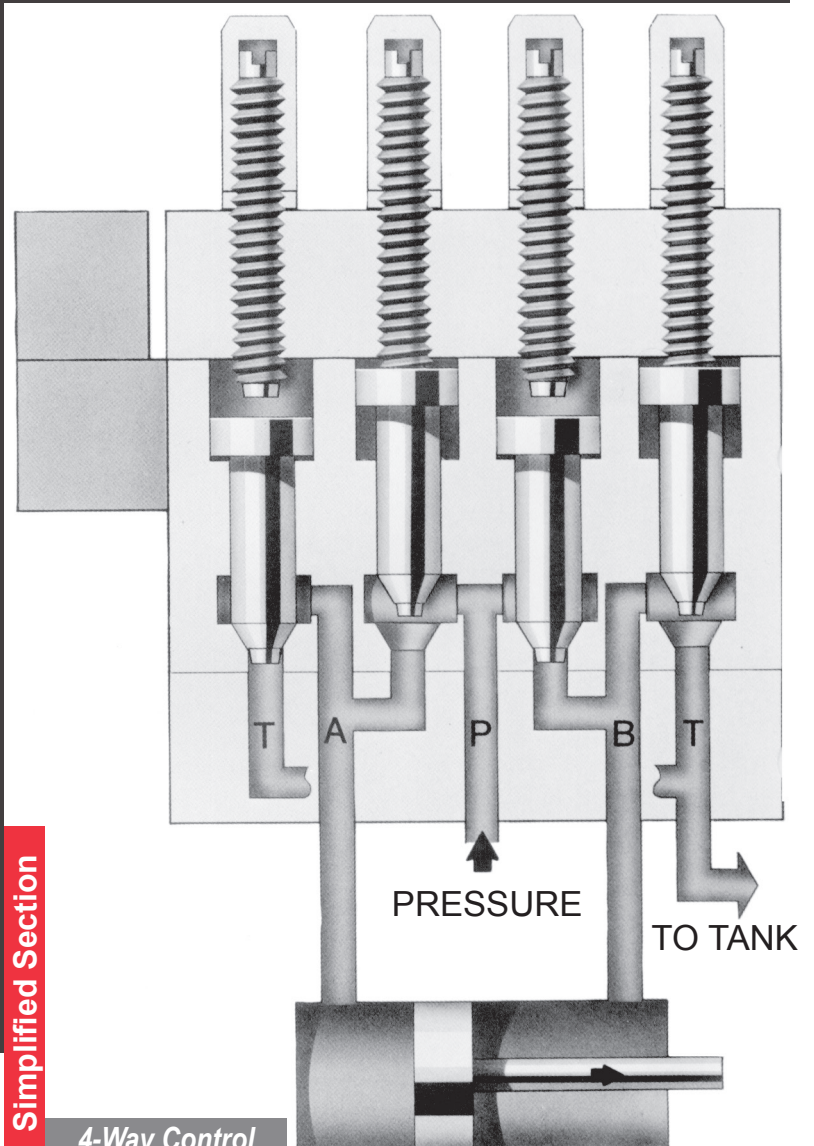
For heavy duty mill type applications, our standard air actuated pilot valve (Brochure 82) is furnished. This valve requires no secondary operating media.

Six Poppet Models Available

Designed for dual speed, 4-way applications.

Interchangeability with Competitor Valves

Direct replacements with competitor valves via simple adapter plates.



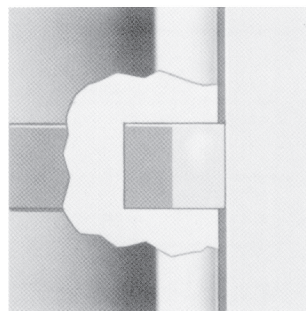
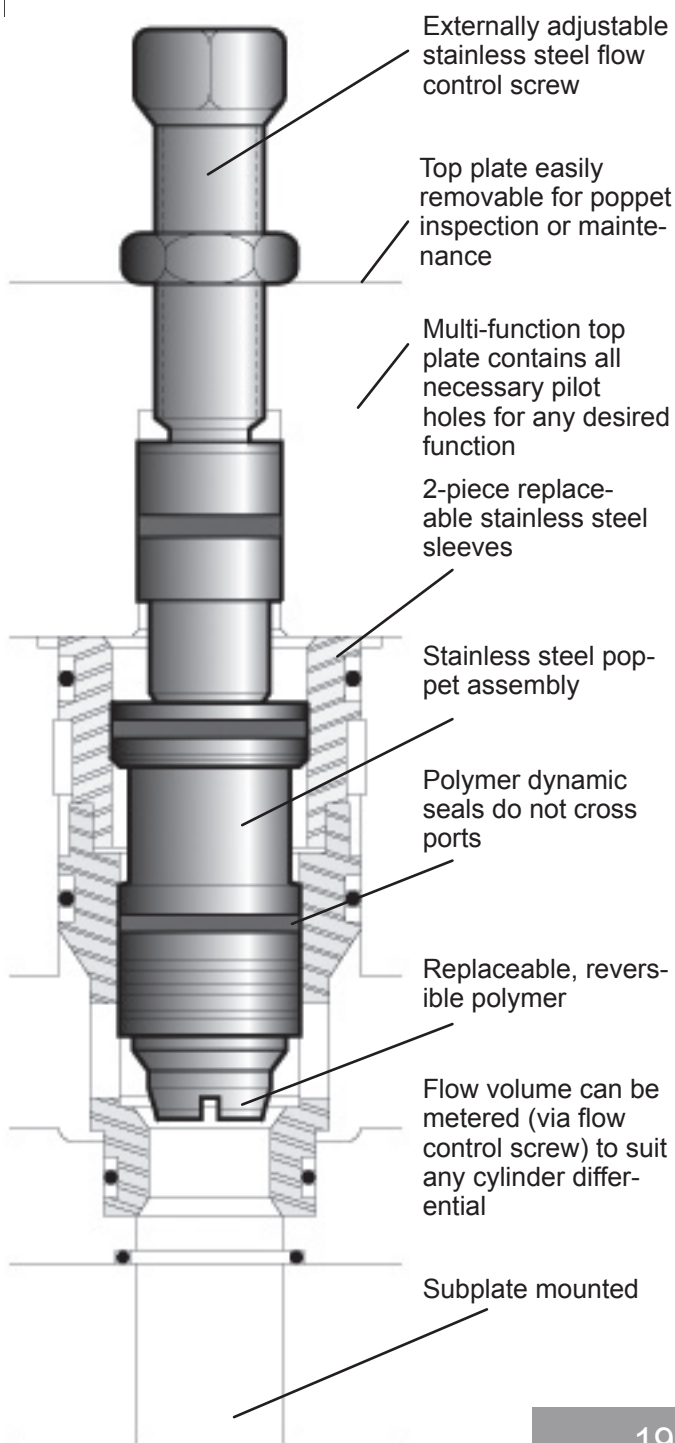
Poppet Valve Design Features

Versatility:

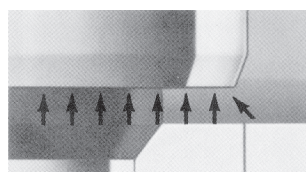
As many as nine (9) positions are available in one valve, eliminating the need for additional valving and manifold space. Any existing 3-position Elwood valve can be converted to provide multi-position valves. Basic valves are interchangeable, minimizing spares. By plugging certain pilot holes to re-route pilot lines, any desired flow sequence can be achieved.

Features:

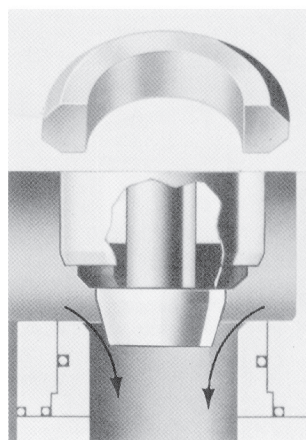
Circuit design, manifolding, and piping are simplified with externally adjustable flow control screws. This eliminates the need for piped-in or manifolded speed and flow control valves.



Outside polymer piston seal is loaded to the valve bore by an inner square elastomer ring which compensates for pressure and wear on the outside seal.



When pilot line is switched to exhaust, lift force will raise plunger and permit flow



Replaceable, reversible, resilient polymer disc

Built-in deceleration and shock alleviation

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Main Pilot Valve

Brochure 82

Heavy-Duty Durable Design using Corrosion-Resistant Materials

- Self-compensating seals
- Same piston rings used throughout
- Hydraulically-balanced spool
 - Assures uniform wear
 - Eliminates concentricity issues
- Designed with no-lap fitted parts

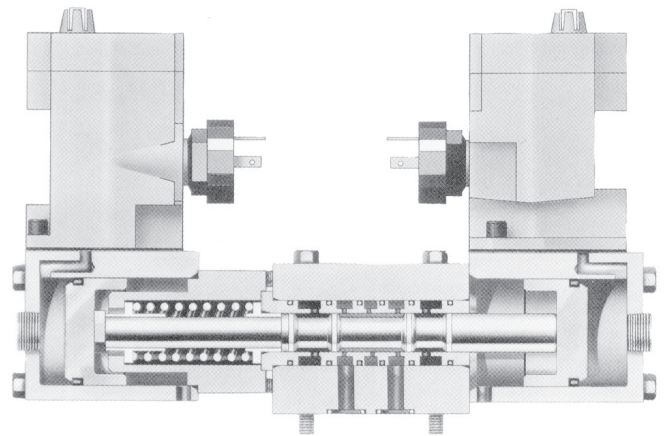
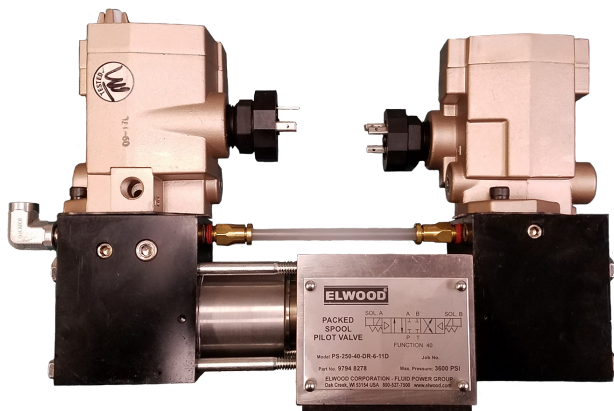
Versatile

- Configure main valve function with pilot spool and plugs
- Create multiple positions of the main valve by mounting an additional pilot valve

Recommended Air Supply

- PS-250 Model
 - 72 PSI (5 bar) minimum
 - 120 PSI (8 bar) maximum
- PS-415 Model
 - 81 PSI (6 bar) minimum
 - 120 PSI (8 bar) maximum
- To Actuate for 98/2 HWCF
 - 61 PSI (4 bar) minimum
 - 120 PSI (8 bar) maximum

Inrush current for 110/120 V 50/60 Hz & 220/240 V 50/60Hz is 87 VA, holding 30 VA



Electrical Cord Ordering Data

(Electrical cord not supplied with valve assembly)

- Hirschmann Type Industrial
 - Form B
 - Standard for MAC solenoids

- Hirschmann Type (DIN#43650)
 - Form A
 - Standard for ROSS solenoids

TYPE 11B	TYPE 11D	Part No.	STD. CORDS AVAILABLE ②	
<p>HIRSCHMANN TYPE INDUSTRIAL ELECTRICAL CONN. PATTERN, FORM B, STANDARD FOR MAC, CODE 11B</p> <p>FACE VIEW OF PATTERN CONFIGURATION</p>	<p>HIRSCHMANN TYPE (DIN#43650) ELECTRICAL CONN. PATTERN, FORM A, STANDARD FOR ROSS, CODE 11D</p>	8712 0100	Type 11D with 6 ft. long molded cord	
		①	8712 0103	Type 11D with indicator light and 18" length of shielded cable with 3 ft. of extended wire - ½" NPT conn.
			8712 0150	Type 11B with 6 ft. long cord

NOTES:

- ① When ordering cord that requires indicator light other than 110/220V, 50/60Hz, please specify voltage.
- ② Longer cord lengths and electrical connector patterns other than listed above can be supplied at additional cost. Consult factory.

Valve Sizing

Valve sizing and selection requires consideration in two (2) areas:

1. Pipe Velocity & Pressure Drop

Allowable maximum pipe velocity is based on various system considerations, fluid velocity, and resultant pressure drop. Generally, the following flow rates are acceptable parameters for most piping systems:

- Short-to-medium length runs, 26 ft/s (8 m/s), and a maximum of 30 ft/s (9 m/s)
- Long piping runs, 20 ft/s (6.5 m/s)

These parameters consider pressure drop. For a complete engineering analysis involving the full measurement of pipe run length while factoring in the number of elbows, valves, etc., Cranes Reference or other references can be used.

2. Pressure Drop through the Valve

For correct valve sizing, pressure drop can be calculated using the valve's C_v factor:

$$\Delta P = \left(\frac{\text{GPM}}{C_v} \right)^2$$

$$C_v = \sqrt{\frac{\text{GPM}^2}{\Delta P}}$$

$$\text{GPM} = C_v \sqrt{\Delta P}$$

ΔP = Pressure drop (PSI)

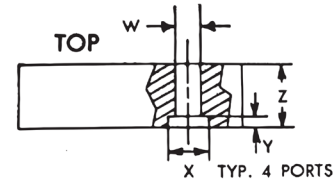
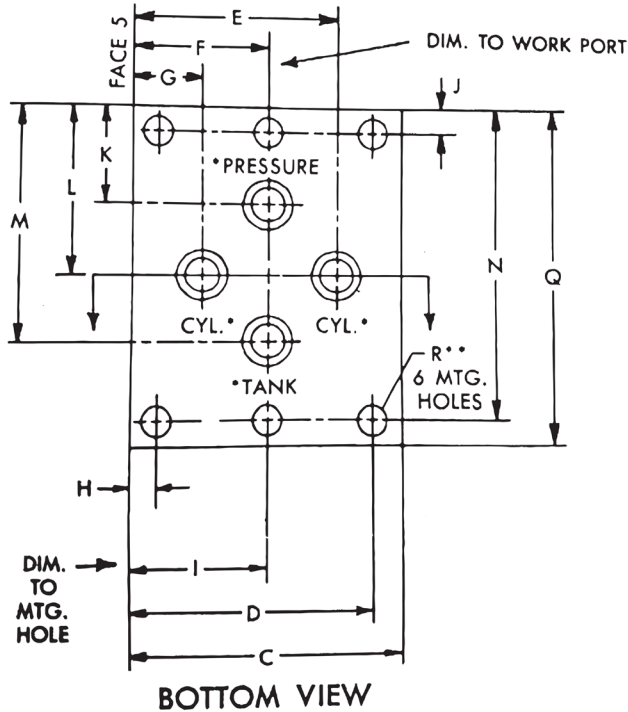
C_v = C_v factor

GPM = Flow (GPM)

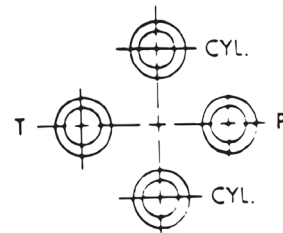
Cv Factor for Manifold Mounted Valves			
Valve Size	2-Way	3-Way	4-Way
DIN 16	5.2	3.2	5.3
DIN 25	11.3	7.9	9.3
DIN 32	16.5	10.5	12.2
DIN 40	29	27	24.5
DIN 50	52.5	49.3	37
DIN 63	75	-	-

Total C_v for one pass through the valve body, pressure to cylinder or cylinder return.

Manifold Mount Valve Sizing



- * = FOR C4M, D6M, E8M USE PORT PATTERN AS SHOWN
- * = FOR A2M & B3M ROTATE PORT PATTERN BY 90° CLOCKWISE THUS:
PRESSURE: 3000 PSI (NON SHOCK)
- **USE SOCKET HEAD CAP SCREWS — (UNF — CLASS 3A THRD.)



Dimensions - inches																		
Valve Models	C	D	E	F	G	H	I	J	K	L	M	N	Q	R DIA.	W	X	Y	Z
A2M	5.00	4.62	3.68	2.50	1.31	0.37	2.50	0.37	2.31	3.50	4.68	6.62	7.00	0.40	0.58	0.94	0.08	1.75
B3M	5.00	4.62	3.68	2.50	1.31	0.37	2.50	0.37	2.31	3.50	4.68	6.62	7.00	0.40	0.81	1.13	0.08	1.75
C4M	6.00	5.50	4.88	3.00	1.12	0.50	3.00	0.50	2.75	4.00	5.25	7.50	8.00	0.53	0.92	1.25	0.08	2.00
D6M	8.00	7.37	6.50	4.12	1.50	0.62	4.00	0.62	3.50	5.25	7.00	9.88	10.50	0.68	1.16	1.56	0.08	2.50
E8M	10.00	9.25	8.00	5.00	2.00	0.75	5.00	0.75	4.25	6.50	8.75	12.25	13.00	0.80	1.50	1.94	0.08	3.00

Directional Valve Technical Data

Hydraulic Fluids	Fluid Media	HWCF, 97/3 Soluble Oil in Water, Synthetics, Mineral Oils, & Kerosene	Pressure	Minimum Operating Pressure	400 PSI (28 bar) (Consult factory for pressures below 400 PSI)	Filtration	Minimum	149 micron (100 mesh)	Available Finishes	Black Oxide	Good corrosion resistance
	Viscosity Range at 100°F (38°C)	20 SSU (1.2 Cst.) to 1,800 SSU (385 Cst.)		Maximum Pressure Ratings	3,600 PSI (250 bar) 6,000 PSI (414 bar)		Recommended	74 micron (200 mesh)			
	Temperature	HWCF		35° to 150°F (2° to 65°C)	Optimal		40 micron	Stainless Steel		Standard finish	
		Mineral Oil		5° to 150°F (-15° to 65°C)							Best corrosion resistance

Ordering Data - 2-, 3-, & 4-Way Directional Control Valve

THE ELWOOD LINE OF DIN POPPET DIRECTIONAL VALVES IS A MODERN CONTROLS CONCEPT IN WATER HYDRAULICS

MODEL CODE EXAMPLE

D6M / DN32 - 3.6K - 40 - 6 - 11D - ***

Model

Operating Pressure

Function

Voltage

Valve Accessories

Options

MODEL			
CODE NO.	Description	Connection Size	Recommended Flow Range
B3M/DN16	B-Size Valve, Port Code 3, Manifold Mounting, Cartridge Size - DIN16	3/4"	15 - 50 GPM
C4M/DN25	C-Size Valve, Port Code 4, Manifold Mounting, Cartridge Size - DIN25	1"	30 - 100 GPM
D6M/DN32	D-Size Valve, Port Code 6, Manifold Mounting, Cartridge Size - DIN32	1-1/2"	60 - 200 GPM
E8M/DN40	E-Size Valve, Port Code 8, Manifold Mounting, Cartridge Size - DIN40	2"	110 - 300 GPM
F12M/DN50	F-Size Valve, Port Code 12, Manifold Mounting, Cartridge Size - DIN50	3"	250 - 570 GPM
G16M/DN63	G-Size Valve, Port Code 16, Manifold Mounting, Cartridge Size - DIN63	4"	400 - 900 GPM

Custom sizing & mounting connections available upon request.

OPERATING PRESSURE	
CODE NO.	DESCRIPTION
3.6K	3,600 PSI / 250 BAR
6K	6,000 PSI / 415 BAR

Custom pressures available upon request.

FUNCTIONS			
TYPE	CODE NO.	NFPA Hydraulic Symbol	Neutral Position Description
4-WAY VALVE	40		All Ports Blocked
	41		All Ports Open
	42		P to A & T - B Blocked
	43		P to B & T - A Blocked
	44		P to A & B - T Blocked
	45		P Blocked - A & B to T
	46		P & A Blocked - B to T
	47		P & B Blocked - A to T
	48		P to A - B to T
	49		P to B - A to T
50		No Neutral Position	
3-WAY VALVE	30		All Ports Blocked
	31		All Ports Open
	32		P to A - T Blocked
	33		P Blocked - A to T
	34		P to A - T Blocked
	35		P Blocked - A to T
	36		No Neutral Position
2-WAY VALVE	20		Normally Closed
	21		Normally Open
	22		No Neutral Position

Custom specifications & functions available upon request.

VOLTAGE ①	
1	6 VDC
2	12 VDC
3	24 VDC
5	110 VDC
6	110/120VAC 50/60Hz
8	220/240VAC 50/60Hz
9	410/460VAC 50/60Hz
10	200VAC 50/60Hz
11	440/480VAC 60Hz
12	24VAC 50/60Hz

VALVE ACCESSORIES ②	
CODE NO.	DESCRIPTION
11B	ELECTRICAL QUICK DISCONNECT MALE - INDUSTRIAL, 3-BLADE PATTERN
11D	ELECTRICAL QUICK DISCONNECT MALE - DIN# 43650, 3-BLADE PATTERN
11E	ELECTRICAL QUICK DISCONNECT MALE - BRAD HARRISON 3-PIN

INDICATOR LIGHTS ARE STANDARD

Accessories

MODULAR VALVES

- Check Valve
- Flow Control Sandwich Plate
- Filter Block Assembly

SUBPLATES

- Side Ported
- Bottom Ported

ELECTRICAL CORD ASSEMBLIES		
Standard Cords Available	Conn. Type	
6' molded cords	X	X
18" shielded cable w/ 3' extended wire	X	

OPTIONS	
CODE NO.	DESCRIPTION
22	Adjustable Pilot Choke
MO	Manual Lever Operator
MD	Manual Lever with Detent

Notes

- Codes 3, 6, & 8 are standard voltages. For non-standard voltages, please contact us!
- Omit Valve Accessories (Electrical Characteristics) for Manual Options (MO/MD)

For custom specifications and non-standard voltages, please contact us! Our team at Elwood is happy to customize a valve to fit your requirements!

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Elwood Fluid Power is proud to provide high pressure hydraulic valves and systems for water and other low viscosity applications. Traditionally, Elwood custom valves have been used in steel mills, aluminum mills, and petrochemical facilities across the world!

Today Elwood is expanding its markets into custom high pressure water or low viscosity applications across many industries. Contact us today to start talking with our team!

Water and Low Viscosity Hydraulics

2-, 3- & 4-Way Directional Control Valves

As one of the most fundamental components in hydraulic and pneumatic machinery, directional control valves are responsible for stopping, allowing, and changing direction of fluid flow from one or multiple sources.

Packed Spool 4-Way Directional Control Valves

Deliver precise valve control through air actuated function.

Pressure Control Valves

Named for their primary function, pressure control valves provide relief, reduce, or stop system pressure.

Isolation Valves

Utilize system maintenance with the ISO-Lock valve by isolating manifold mounted directional control valves without shutting the entire system down.

2-Way Valves

- Descaling applications
- Pump unloading & bypass applications
- Stop applications

Accumulator System Shut-Off Valves

As system pressure builds, this safety valve shuts off pressure when determined levels are reached.

Decoking Control Valves

Assisting the refinery industry since the late 1930's, Elwood's decoking control valves have come a long way. Support provided is for older Nordberg and Rexnord valves. Newer designs feature additional beneficial characteristics. Available in spindle and cartridge designs, customized to fit your needs.

Valve Stands & Manifolds

ELWOOD CORPORATE POLICY STATEMENT

It is the policy of Elwood to provide our customers with products that meet or exceed their expectations for performance, reliability and safety while ensuring compliance with applicable laws and regulations, and to continually improve all aspects of our business.



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