

# PACKED SPOOL 4-WAY DIRECTIONAL CONTROL VALVE

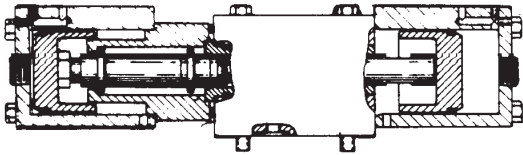
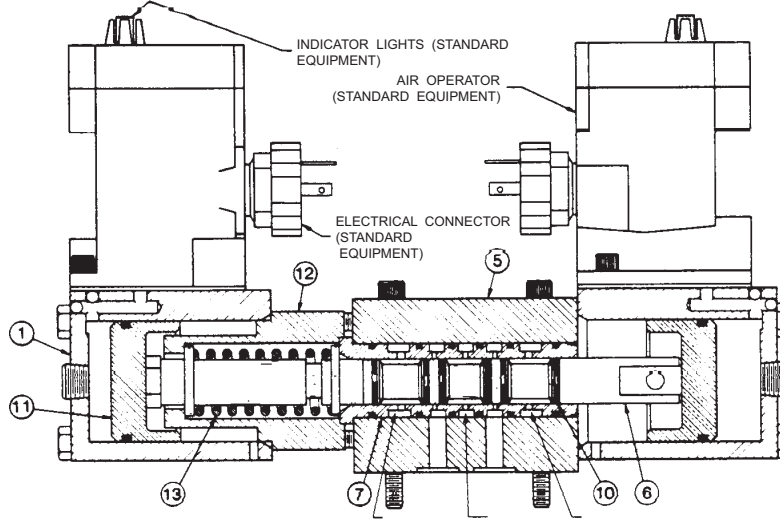
[www.elwood.com](http://www.elwood.com)



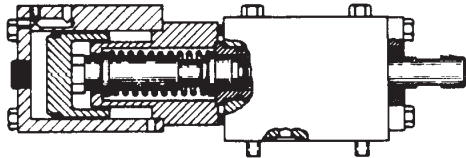
ISO 9001:2000  
CERTIFIED COMPANY

# 4-Way 3-Position Valve

4-WAY, 3-POSITION DIRECTIONAL VALVE, AIR SOLENOID OPERATED SHOWN; DIRECT HYDRAULIC AVAILABLE.

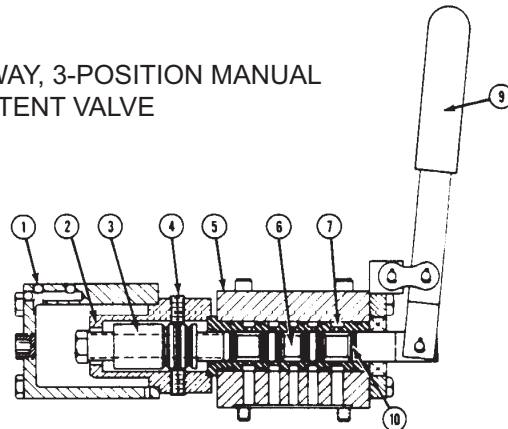


4-WAY, 2 POSITION VALVE, MOMENTARY CONTACT



4-WAY, 2-POSITION VALVE, SPRING OFFSET

4-WAY, 3-POSITION MANUAL  
DETENT VALVE



- |                            |                                          |
|----------------------------|------------------------------------------|
| 1. GAir Cylinder Body      | 7. Sleeve (Heat Treated Stainless Steel) |
| 2. Detent Housing          | 9. Hand Lever                            |
| 3. Detent (3 Position)     | 10. Piston Seal Assembly                 |
| 4. Ball Plungers           | 11. Air Piston                           |
| 5. Body/Sleeve Assembly    | 12. Spring Housing                       |
| 6. Spool (Stainless Steel) | 13. Return Spring                        |

## OPERATING DATA

- 7 gpm (26 l/min.), 3600 psi (248 bar)
- 7 gpm (26 l/min.), 4500 psi (310 bar)
- 6 gpm (23 l/min.), 6000 psi (414 bar)
- 12 gpm (45 l/min.), 3000 psi (207 bar)
- 16 gpm (60 l/min.), 3000 psi (207 bar)
- 32 gpm (120 l/min.), 2000 psi (138 bar)
- 22 gpm (83 l/min.), 3000 psi (207 bar)
- 20 gpm (76 l/min.), 4500 psi (310 bar)

- P1-3K Model - 0.7
- P1-4.5K Model - 0.7
- P1-6K Model - 0.4
- P2-3K Model - 1.2
- P3-3K Model - 1.5
- P4-2K Model - 3.0
- P4-3K Model - 2.5
- P4-4.5K Model - 1.6

$$D_P = \left( \frac{\text{gpm}}{C_v} \right)^2$$

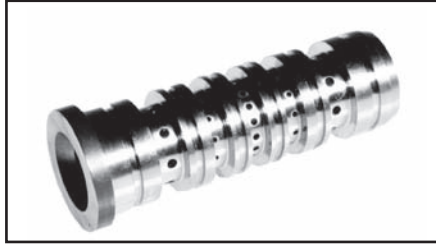
gpm = US gpm

D05, CETOP 5 Mounting Pattern - 2K & 3K Model uses 1/4" or 6 mm mounting bolts; 4.5K and 6K uses 5/16" or 8 mm mounting bolts. Operating Temperature 34° - 140°F (1-60°C); 150°F (65°C) maximum

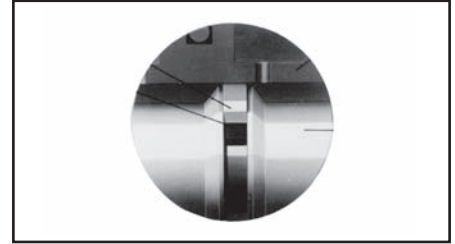
## Design Features



**Spool:** Stainless steel - resists scoring, pitting and corrosion.



**Sleeve:** Stainless steel - heat treated.



**Seal assembly:** 2-piece assembly - pressure and wear compensating.

**LONG LASTING PARTS:** Spool is hydraulically balanced to assure uniform wear

**HEAVY DUTY DESIGN:** Corrosion resistant materials, self compensating seals

**INTERCHANGEABILITY:** Same size seal rings throughout

No lap fitted parts

To change function, just change spool

3 spool configurations used to achieve all functions

**INDICATOR LIGHTS:** Standard: Located on Ross Air Solenoid Operator

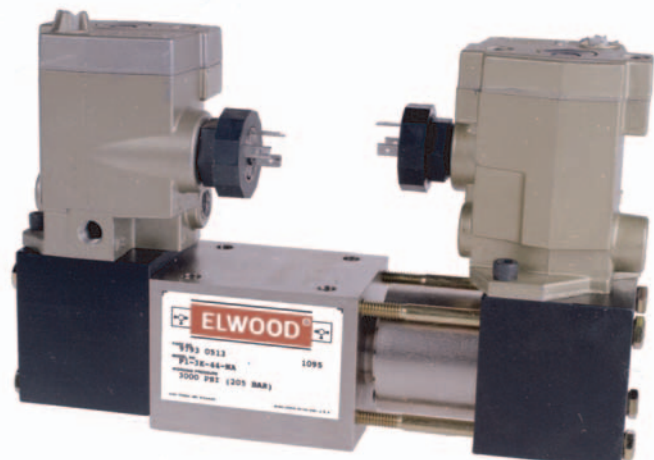
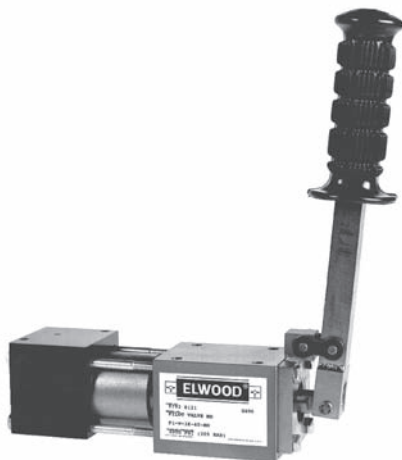
Standard: Located on Direct Hydraulic Solenoid Connector

### FLUID MEDIA

- Water/water soluble oil content of 3%
- Low Viscosity fluid, kerosene, etc.
- Raw Water
- Nonflammable fluids
- For other fluid media, consult factory

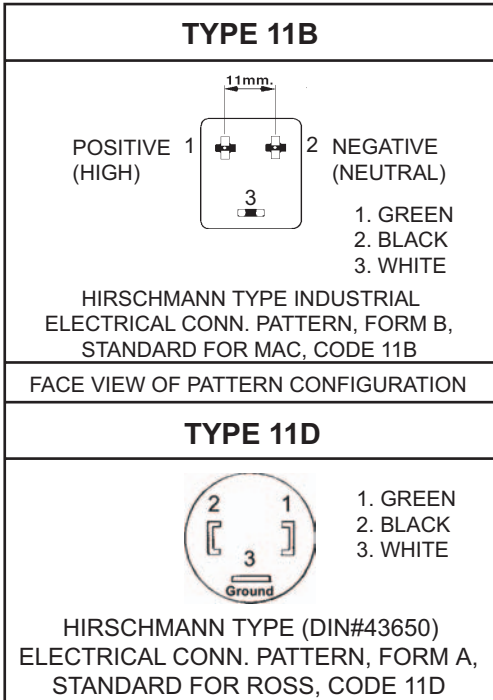
## Air Actuator Specifications

- Recommended air pressure: P1-, P2-, P3-3K & P4-2K & 3K; 72 psi (5 bar) minimum, 120 psi (8 bar) maximum.  
P1-, P4-4.5K; 81 psi (6 bar) minimum  
120 psi (8 bar) maximum.
- Minimum air pressure to actuate: 61 psi (4 bar) for 98/2 HWCF
- Air volume required to shift: 1.25 cubic inch (20ML)
- Solenoid Actuator
- Manual override
- Indicator light
- Mac: 120 Volt 50/60 Hz, 11 VA inrush, 8 VA holding, 24 VDC - 13 to 2 watts nominal
- Ross: 120/240 Volt 50/60 Hz, 87 VA inrush, 30 VA holding, 24 VDC - 14 watts nominal



# Electrical Cord Ordering Data

(electrical cord to be ordered separately - it is not supplied with value assembly)

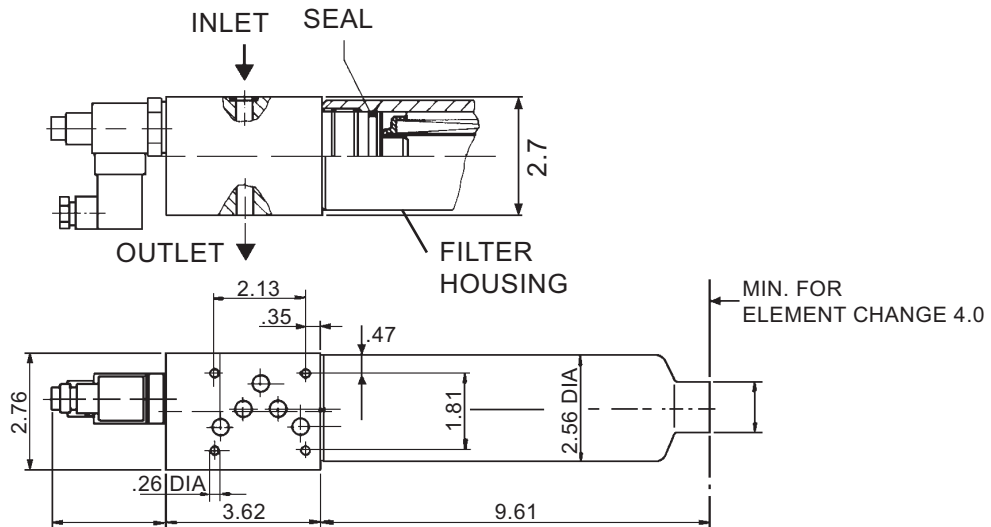


Part No.	STD. CORDS AVAILABLE ②
8712 0100	Type 11D with 6 ft. long molded cord
① 8712 0103	Type 11D with indicator light and 18" length of shielded cable with 3 ft. of extended wire - 1/2" NPT conn.
8712 0150	Type 11B with 6 ft. long cord

**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.

# Pressure Filter / Sandwich Type With Electrical Clogging Indicator

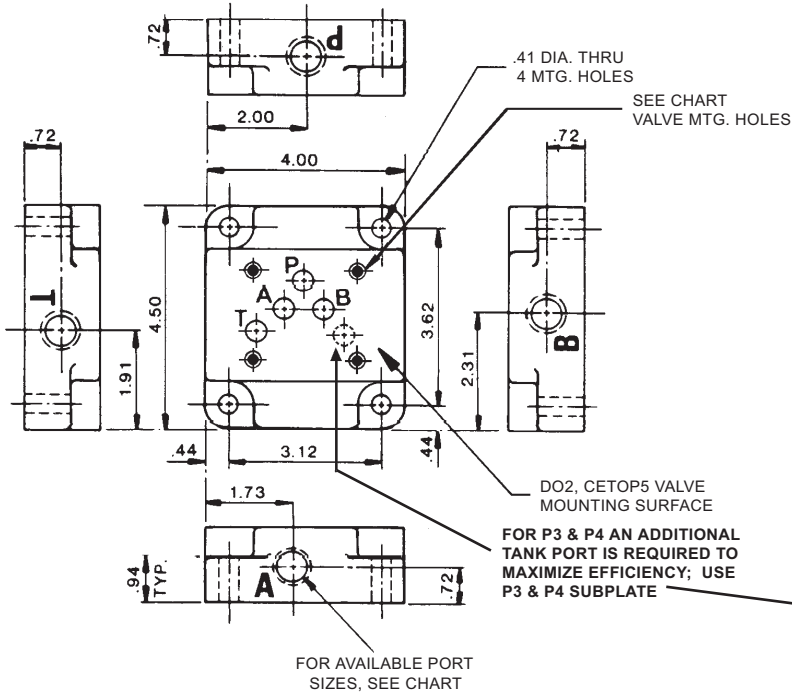


PART NUMBER 387 3060 FOR P1, 02 & P3-3K & P4-2K FLOW TO 30 GPM NOMINAL HWFC. FOR RAW WATER SERVICE CONSULT FACTORY.

SS WIRE MESH ELEMENT, CLEANABLE 80 MICRON, ELEMENT COLLAPSE RATING 2300 PSI Δ P WITH VISUAL AND ELECTRICAL CLOGGING INDICATOR. REPLACEMENT ELEMENT 387 3061.

# Packed Spool Pilot Accessories

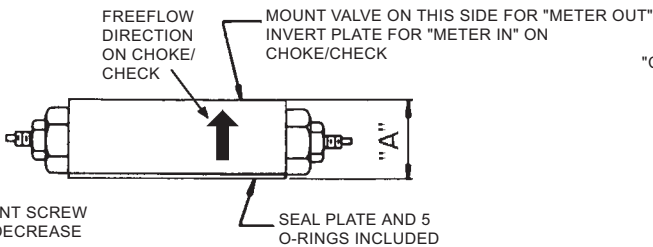
(order required items separately)



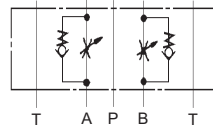
PORTED SUBPLATES

P1 & P2 (210 bar)		
TYPE OF PORT	PART NO.	VALVE MTG. HOLES
1/2" NPT	5549 0031	1/4-20 UNC
#8 SAE O-RING PORT	5549 2100	1/4-20 UNC
P1-6K (410 bar)		
1/2" NPT	5549 2112	5/16-18 UNC
#8 SAE	5549 2113	5/16-18 UNC
P1-6K (410 bar)		
#12 SAE (BOTTOM)	8458 1055 5549 2167	1/4-20 UNC

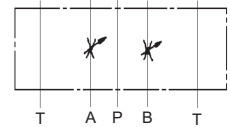
# Flow Control Sandwich Plate



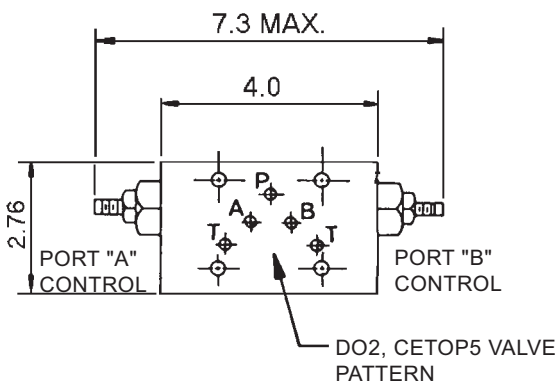
"CHECK/CHOKE" FLOW CONTROL "CC"



B1-DIRECTIONAL THROTTLE "TH"



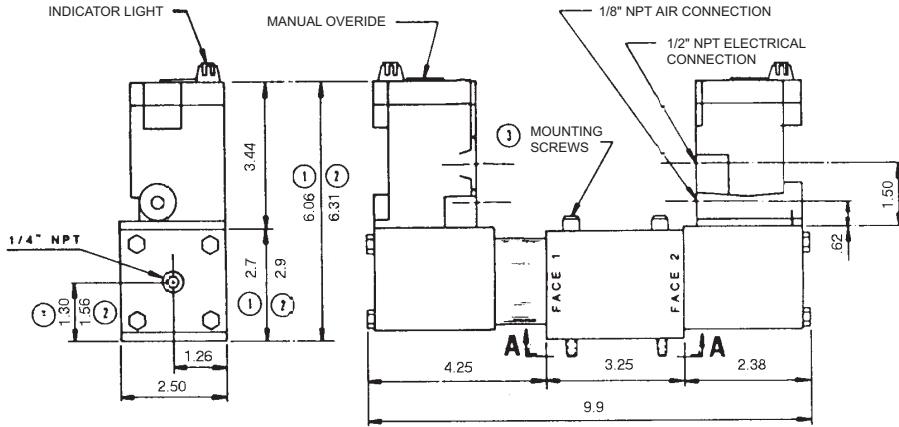
TURN ADJUSTMENT SCREW CLOCKWISE TO DECREASE FLOW



Valve Model	Elwood Part No.	Flow Control Type	Full Open Cv	"A" INCH	For Service
P1 & P2-3K	9793 7798	CC	1.1	1.56	HWCF OR WATER
P1-6K	9793 8046	CC	1.1	1.56	HWCF OR WATER
P3 & P4-3K	9793 9440	CC	3.9	2.0	HWCF OR WATER
P4-4.45K	9793 9533	CC	3.9	2.0	HWCF OR WATER
P1- & P2-3K	9793 5280	TH	1.0	1.7	HWCF OR WATER
P1-6K	9793 7800	TH	1.0	1.7	HWCF OR WATER

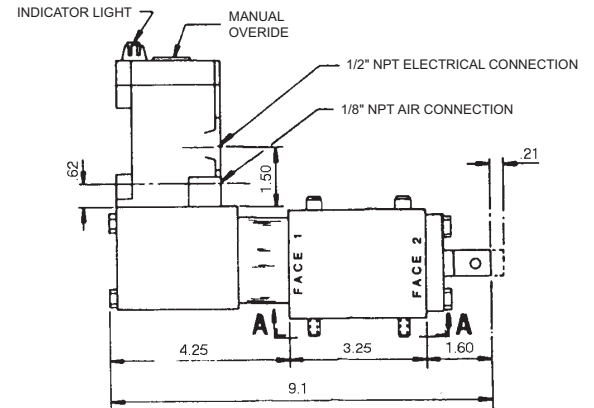
# Dimensional Data

**DOUBLE SOLENOID VALVE**  
L.H. ACTUATOR SHOWN  
R.H. ACTUATOR OPPOSITE



WEIGHT DOUBLE VALUE = 13.5 LBS.

**SINGLE SOLENOID VALVE**  
L.H. ACTUATOR SHOWN  
R.H. ACTUATOR OPPOSITE



WEIGHT DOUBLE VALUE = 10.5 LBS.

- ① P1-3K & P1-6K
- ② P3-3K

③ **MOUNTING SCREWS**

P2-3K, P3-3K,  
P4-2K & P4-3K  
1/4" OR 6mm

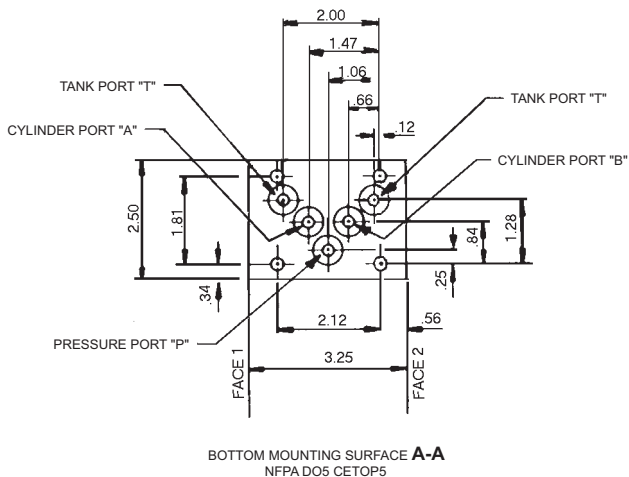
P1-6K, P1-4K,  
P4-4.5K  
5/16" OR 8mm

ROSS AIR ACTUATOR SHOWN

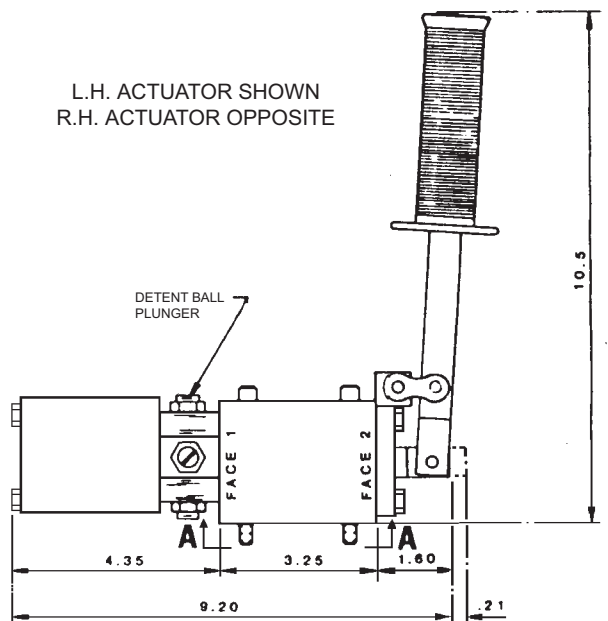
**NOTE :** AIR CYLINDER CAN BE ROTATED IN 90° INCREMENTS.

**NOTE:** FOR P3 AND P4 SERIES VALVES THE SUBPLATE OR MANIFOLD USE OF BOTH "T" (TANK) PORTING IS REQUIRED TO MAXIMIZE EFFICIENCY.

**MANUAL & MANUAL DETENT VALVE SHOWN; LOCKABLE VERSION AVAILABLE, CONSULT ELWOOD.**



L.H. ACTUATOR SHOWN  
R.H. ACTUATOR OPPOSITE



**NOTE:** Dimensions in Inches

## Ordering Data - Packed Spool Directional Control Valve

• STANDARD : NON-STANDARD ITEMS AVAILABLE AT EXTRA COST.

MODEL <span style="float: right;">①</span>					
CODE	Recommended Flow		Maximum Working Pressure		CV
	Nominal gpm (l/min.)	MAX gpm (L/Min.)	psi	bar	
P1-3K	7 (26)	10 (38)	3600	248	.7
P1-4.5K	7 (26)	10 (38)	4500	310	.7 <span style="float: right;">⑧</span>
P1-6K	6 (22)	8 (32)	6000	414	.4 <span style="float: right;">⑧</span>
P2-3K	12 (45)	17 (64)	3600	248	1.2
P3-3K	16 (60)	22 (83)	3600	248	1.5 <span style="float: right;">⑨</span>
P4-2K	32 (120)	46 (174)	2000	138	3.0 <span style="float: right;">⑨</span>
P4-3K	22 (83)	31 (140)	3600	248	2.5 <span style="float: right;">⑨</span>
P4-4.5K	20 (76)	28 (106)	4500	310	1.6 <span style="float: right;">⑨ ⑧</span>

VALVE ACTUATOR	
YAM	AIR ACTUATED VALVE WITH MAC SOLENOID <span style="float: right;">② ⑦</span>
YA	AIR ACTUATED VALVE WITH ROSS SOLENOID <span style="float: right;">② ⑦</span>
NAM	AIR ACTUATED VALVE WITHOUT MAC SOLENOID <span style="float: right;">② ⑦</span>
NA	AIR ACTUATED VALVE WITHOUT ROSS SOLENOID <span style="float: right;">② ⑦</span>
MO	MANUAL HAND LEVER OPERATOR
MD	MANUAL HAND LEVER OPERATOR WITH DETENT
YH	DIRECT HYDRAULIC SOLENOID

⑤	
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

CODE	WATER SERVICE
omit	STD. 98/2 HWCF & SOLUBLE OIL, WATER WITH INHIBITORS
W	WATER SERVICE, NO ADDITIVES
WHC	WATER, HIGH CORROSIVE RESISTANCE SERVICE

PILOT VALVE ACCESSORIES <span style="float: right;">⑦</span>	
CODE NO.	DESCRIPTION
10	AIR QUICK DISCONNECT
11B	HIRSCHMANN TYPE ELECTRICAL CONN.; INDUSTRIAL FORM B, 1MM <span style="float: right;">④ FOR -YAM</span>
11D	HIRSCHMANN TYPE ELECTRICAL CONNECTOR, DIN #43650, FORM A <span style="float: right;">④ FOR -YA</span>
13	SOLENOID INDICATOR LIGHT <span style="float: right;">⑦</span>
30A	LIMIT SWITCH SINGLE SOLENOID <span style="float: right;">⑩</span>
30B	LIMIT SWITCH DOUBLE SOLENOID <span style="float: right;">⑩</span>

CODE NUMBER EXAMPLE

: **P1 - \* - 3K - 40 - YAM - 6 - 10 - 11B**

### Valve Functions

40	501*	601* <b>B</b>	701*
44	502*	602*	702*
45	503*	603*	703*
80	51	61	71
81	52	62	72
82	53	63	73
83	54	64	74
	55	65	75
	56	66	76

\*CROSS OVER FOR FUNCTION

501, 601 & 701

502, 602 & 702

503, 603 & 703

**YAM ACTUATORS SHOWN SCHEMATICALLY**

Functions 80, 81, 82 & 83 available in P1-3K, P1-4.5K and P1-6K only.

THIS VALVE IS A 1/4" 4-WAY DIRECTIONAL CONTROL VALVE WITH A ANSI D02, NFPA D05, OR CETOP-5 MOUNTING PATTERN.

② UNLESS OTHERWISE SPECIFIED, ROSS AIR OPERATOR IS FURNISHED W/ CONN, DIN#43650 PATTERN FORM A. MAC AIR OPERATOR IS FURNISHED W/ CONN, INDUSTRIAL PATTERN FORM B.

③ FILTRATION REQUIREMENTS:  
 - 149 MICRON (100 MESH) MARGINAL, NOT RECOMMENDED  
 - 74 MICRON (200 MESH) RECOMMENDED MINIMUM  
 - 40 MICRON OPTIMAL

④ ELECTRICAL CORD ASSEMBLY IS NOT SUPPLIED WITH VALVE & MUST BE ORDERED SEPARATELY, IF REQUIRED.

⑤ 110/120VAC 50/60Hz COILS ARE STANDARD. FOR ALTERNATES, CONTACT ELWOOD.

⑥ FOR AVAILABLE SUBPLATES FOR EXTERNAL CONNECTIONS, SEE PAGE 5.

⑦ INDICATOR LIGHTS ARE SUPPLIED AS STANDARD EQUIPMENT.

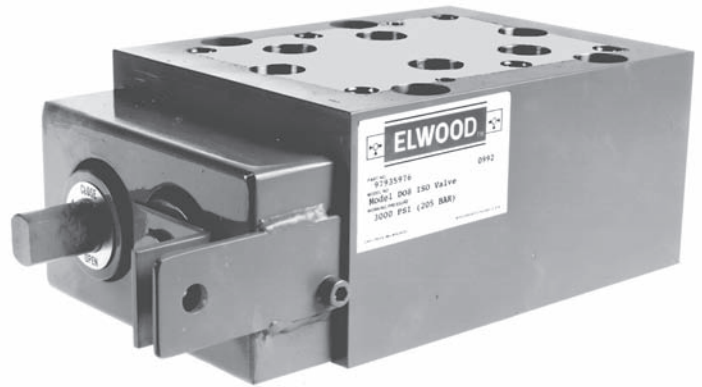
⑧ ANSI D02-315 MOUNTING PATTERN.

⑨ NOTE: FOR P3 AND P4 SERIES VALVES USE OF BOTH "T" (TANK) PORTING IN THE SUBPLATE OR MANIFOLD IS REQUIRED TO MAXIMIZE EFFICIENCY.

⑩ AIR VERSION ONLY. CONNECTOR INCLUDED WITH SOLENOID INDICATOR LIGHT.

## Isolation Valve (Lock-Out)

- Isolates Manifold Mounted Directional Control Valves.
- Reduces maintenance time - replace Directional Valves without depressurizing and draining hydraulic system.
- Single lever operation to close all four ports (P, T, A, B). Cylinders can remain under external load without having to be blocked.
- Lockable per OSHA safety standards.
- NFPA "DO"/CETOP and special mounting patterns available. Request NFPA D05 pattern for compatibility with Elwood Packed Spool Series. Specify whether 2K, 3K, 4.5K or 6K models to assure mounting bolt compatibility.
- Contact factory to identify appropriate P/N for your application.



## Water and Low Viscosity Hydraulics

### COMPLETE RANGE FROM ONE SOURCE

#### Hydraulic System Components

Directional Control Valves  
Pressure Control Valves  
Isolation Valves  
Cartridge Valves  
Proportional Valves  
Servo Control Valves  
Valve Stands & Manifolds

#### Descaling System Components

2-Way Descaling Valves & Stop Valves  
Accumulator Shut-off Valves  
Accumulator Control System