

# INDIRECT-ACTING SOLENOID VALVES

## INTRODUCTION

*Indirect-Acting Solenoid Valves utilize a small Humphrey Direct-Acting Solenoid Valve to pneumatically operate a larger Air-Pilot Valve, thus achieving high-flow capacity in smaller overall sizes and low power consumption. Indirect-Acting Solenoid Valves are the popular choice for operating pneumatic cylinders and actuators where the pneumatic pressures are typically set to 30-100 PSIG. High internal shifting forces can be achieved resulting in reliable operation and long, trouble-free service.*

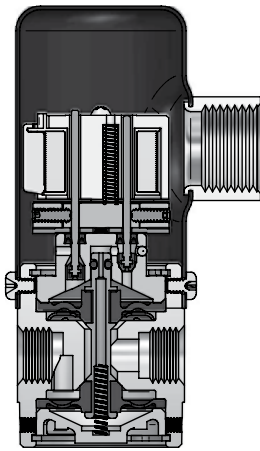
Although, **INDIRECT-ACTING SOLENOID VALVES** are essentially two pneumatic valves in one package. Their advantages over Direct-Acting Valves are:

- Greater shifting forces.
- Smaller overall size, relative to flow.
- Lower power consumption, relative to flow and size.
- Greater variety. 2-, 3-, or 4-way; 2- or 3-position.
- Several valve manifold variations available, when many cylinders and actuators need to be operated.

Available in sub-miniature M3x0.5 porting through large 3/4 PIPE in 2-, 3- and 4-way models, they are the ideal choice for factory automation applications.

**SQUARE TYPE:** Features a low friction, lip-seal, spool design offered as inline or manifold mount. Square types are a compact, modern design with power consumptions as low as 0.1 Watt and flow capacities as great as 1.0 Cv. The line up includes single or double solenoid, 2- or 3-position valves.

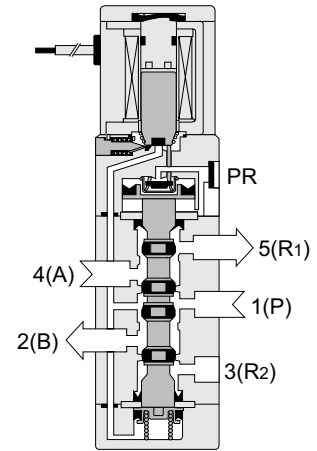
**ROUND TYPE:** Features the classic Humphrey diaphragm-poppet valve principle known for its reliability in clean, lubrication free environments, as well as a workhorse in poor air quality conditions.



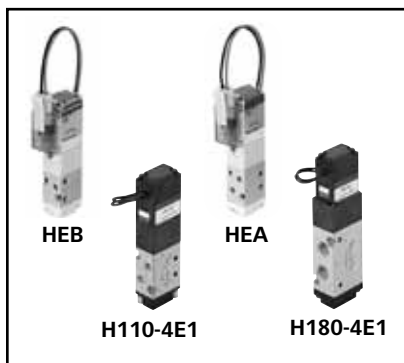
250E1 Series  
Round Type, Unactuated

### INDIRECT-ACTING SOLENOID VALVE FEATURES:

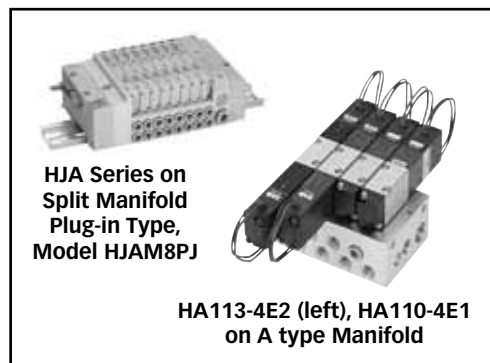
- Compact Size.
- Low power consumption.
- High flow.
- No lubrication required.
- 2- or 3-position.
- Variety of options.



H180-4E1 Series  
Square Type, Unactuated



Square Type Valve Offering



Square Type Valve Offering  
Manifolds



Round Type Valve Offering

INDIRECT-ACTING SOLENOID VALVES

<b>2-, 3-WAY VALVES</b>		<b>Ports</b>	<b>CFM*</b>	<b>Valves</b>	<b>Page</b>
<b>SMALL</b>	HEB Series	10-32, M3x0.5	5	HEB10F, HEB10A	22-23
	HJA Series	1/8	11	HJA10A	26-27
	250 Series	1/4	50	250(A)E1, 250(A)E2	36
<b>LARGE</b>	500 Series	1/2	160	500(A)E1, 500(A)E2	38
	501 Series	1/2	220	501E1, 501E2	39
	590 Series	3/4	260	590(A)E1, 590(A)E2	38

<b>4-WAY VALVES</b>		<b>Ports</b>	<b>CFM*</b>	<b>Valves</b>	<b>Page</b>
<b>SMALL</b>	HEA Series	10-32, M3x0.5	5	HEA10F, HEA10A	22-23
	HJA Series	1/4	11	HJA10A	26-27
	HJC Series	10-32	12	HJC10F, HJC10A	24-25
	HJE Series	1/8	32	HJE12F, HJE12A	24-25
	F10 Series	10-32	16	F10T(0,1,2,3,4,5)	28-29
	F15 Series	1/8	33	F15T(0,1,2,3,4,5)	28-29
	H110 Series	10-32	14	H(A)110-4E1(2), H(A)113-4E2	32-33
	H180 Series	1/8	33	H(A)180-4E1(2), H(A)183-4E2	32-33
<b>LARGE</b>	F18 Series	1/4, 1/8	60	F18T(0,1,2,3,4,5)	30-31
	H240 Series	1/4	53	H240-4E, HA240-4E, HW240-4E, H243-4E, HA243-4E, HW243-4E	34-35
	250-4 Series	1/4	50	250-4E1, 250-4E2	37
	TAC3 Series	1/4	31	(M)42E1, (M)42E2, (M)42AE1, (M)42AE2	40-41
	501-4 Series	1/2	170	501-4E1, 501-4E2	39

*\*Nominal flow @100 psi*



# HEA, HEB Valves

HEA10F, HEA10A, HEB10F, HEB10A

The HEA/HEB Series Indirect-Acting Solenoid, directional control valves feature a miniature 10mm size, high flow 0.07 Cv, and low 0.55 Watt power consumption. The next generation of H040/H041 Series are interchangeable. These inline or manifold mount valves are a popular choice for operating small bore cylinders. Fast response or ultra low current consumption solenoids are optional.

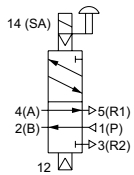
**HEB Series:** Family of 2- or 3-way valves.

**HEA Series:** Family of 2-, 3- and 4-way valves.

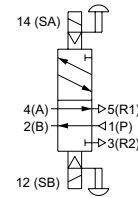
## Features and Benefits

- Small, compact 10mm size.
- Low power consumption.
- High flow.
- DC voltages.
- Manual override standard.
- Electrical connection options include lead wires or plug-in.
- Grommet type, lead wire valves offer moisture resistant specification – standard.
- Clean appearance.
- Options: Fast response solenoid (6 ms), low current solenoid (0.15 W)

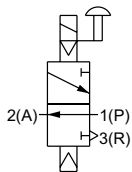
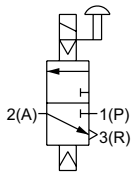
INDIRECT-ACTING SOLENOID VALVES



HEA



HEA Double Solenoid



HEB

Base Model	Nominal Dimensions (inch)		
	L	H	W
HEB10__ single solenoid only	2.09	0.87	0.39
HEA10A__ single solenoid	2.23		
HEA10A__ double solenoid	3.36		

## SPECIFICATIONS

Design Principle:	HEB: Pressure Balanced – Air Return HEA: Pressure Balanced – Air Return	Pressure Range:	29–102 PSIG
Porting Type:	2-, 3-, 4-Way	Temperature Range:	41°F to 122°F
Port Size:	10-32 UNF, M3x0.5	Flow @100 PSIG:	5 CFM, 141 LPM (Cv=0.08)
Media:	Air	Power:	0.55 W
		Available Voltages:	5VDC, 6VDC, 12VDC, 24VDC

**AVAILABLE VALVE TYPES – HEB AND HEA SERIES ... CONSULT WEBSITE FOR MODEL NUMBERS**

**HEA Series**

**For Direct Piping, or F Type Manifold:**

- 2-position, single solenoid, 4-way
- 2-position, double solenoid, 4-way

**For Base Piping, or A-Type Manifolds:**

- Normally closed, single solenoid, 2-way
- Normally open, single solenoid, 2-way
- Normally closed, single solenoid, 3-way
- Normally open, single solenoid, 3-way
- 2-position, single solenoid, 4-way
- 2-position, double solenoid, 4-way

**HEB Series**

**For Direct Piping, or F Type Manifold:**

- Normally closed, single solenoid, 2-way
- Normally open, single solenoid, 2-way
- Normally closed, single solenoid, 3-way
- Normally open, single solenoid, 3-way

**For Base Piping, or A-Type Manifolds:**

- Normally closed, single solenoid, 2-way
- Normally open, single solenoid, 2-way
- Normally closed, single solenoid, 3-way
- Normally open, single solenoid, 3-way



HEB Series on HEBM4A Manifold



HEA series on HEAM8F Manifold

INDIRECT-ACTING SOLENOID VALVES

Manifold Types Available	Overall Size (valves not mounted)	Nominal Dimensions (inch)		
		L	H	D
<b>A Type ( HEAM_A, HEBM_A ):</b> Extruded Aluminum. Delivery ports 2 and 4 located on MANIFOLD. Accepts base piping HEA10A_ (HEB10A_) valve models.	Two Station ( __M2A )	1.63	0.83 (0.67)	1.50 (1.26)
	Each Additional station	0.4		
	Max # of stations	20		
<b>F Type ( HEAM_F, HEBM_F ):</b> Extruded Aluminum. Delivery ports 2 and 4 located on VALVE. Accepts direct piping HEA10F_ (HEB10F_) valve models..	Two Station ( __M2F )	1.43	0.59 (0.67)	1.18 (1.04)
	Each Additional station	0.4		
	Max # of stations	20		

*Consult website for exact dimensions and additional manifold configurations.*

**HOW TO OBTAIN SPECIFICATIONS FOR A PARTICULAR VALVE(S)**

- ☞ Go directly to [www.humphrey-products.com/dynamic/products](http://www.humphrey-products.com/dynamic/products)
- ☞ Or, visit [www.humphrey-products.com](http://www.humphrey-products.com) and select "Online Product Guide."
- Once you have followed the steps to get the valve you need, select "Download Spec Sheet." Doing this will create a personalized PDF of the valve, which you may save to your computer and print at your convenience. These spec sheets are helpful when placing your order(s).

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- ☞ Or, visit [www.humphrey-products.com](http://www.humphrey-products.com), select "Find A Distributor," and input your information to locate a distributor nearest you.
- Or, call Customer Service at 1-800-477-8707 for the name and phone number of your local distributor.



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# HJC, HJE Valves

HJC10F, HJC10A, HJE12F, HJE12A

**HJC Series Indirect-Acting Solenoid, directional control valves achieve large 0.17 Cv flow in a 10mm width. These valves are a popular choice for operating small bore cylinders, up to 1.5" bore.**

**HJE Series Indirect-Acting Solenoid, directional control valves achieve unprecedented 0.53 Cv flow capacity in a 12mm width. These valves are sized for operating medium size cylinders, up to 2.5" bore.**

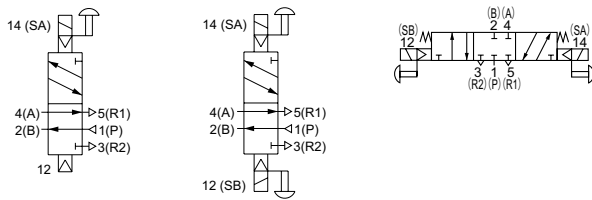
**Fast (6ms) response or ultra low (0.15 Watt) current consumption solenoids optional.**

**2-, 3- or 4-way models available as inline valves or manifold mount on two manifold configurations, A or F type.**

## Features and Benefits

- Small, compact 10mm and 12mm size.
- Low power consumption.
- High flow.
- Quiet operation.
- DC voltages.
- Manual override standard.
- Electrical connection options include lead wires or plug-in.
- Grommet type, lead wire valves offer moisture proof specification – standard.
- Clean appearance.
- Options: Fast response solenoid (6 ms), low current solenoid (0.15 W)

INDIRECT-ACTING SOLENOID VALVES



Base Model	Nominal Dimensions (inch)		
	L	H	W
HJC10__ single solenoid	2.58	0.87	0.39
HJC10__ double solenoid	3.77		
HJC10__ three position	4.16		
HJE12__ single solenoid	3.15	0.95	0.47
HJE12__ double solenoid	4.37		
HJE12__ three position	4.73		



HJC10F5



HJE12F5



HJC/HJE Double Solenoid

## SPECIFICATIONS

Design Principle:	Pressure Balanced – Air Return	Temperature Range:	41°F to 122°F
Porting Type:	2, 3- or 4-Way	Flow @100 PSIG:	HJC: 12 CFM, 339 LPM (Cv=0.2)
Port Size:	M3x0.5 (HJC), 10-32 UNF (HJE only)		HJE: 32 CFM, 906 LPM (Cv=0.5)
Media:	Air	Power:	0.55 W
Pressure Range:	29–102 PSIG	Available Voltages:	5VDC, 6VDC, 12VDC, 24VDC

**AVAILABLE VALVE TYPES – HJC AND HJE SERIES ... CONSULT WEBSITE FOR MODEL NUMBERS**

**For Direct Piping, or F Type Manifold:**

- 2-position, single solenoid, 4-way
- 2-position, double solenoid, 4-way
- 3-position, 4-way, closed center
- 3-position, 4-way, exhaust center
- 3-position, 4-way, pressure center

**For Base Piping, or A-Type Manifolds:**

- Normally closed, single solenoid, 2-way
- Normally open, single solenoid, 2-way
- Normally closed, single solenoid, 3-way
- Normally open, single solenoid, 3-way
- 2-position, single solenoid, 4-way
- 2-position, double solenoid, 4-way
- 3-position, 4-way, closed center
- 3-position, 4-way, exhaust center
- 3-position, 4-way, pressure center



**HJC Series on HJCM8A Manifold**



**HJE Series on HJEM8F Manifold**

INDIRECT-ACTING SOLENOID VALVES

Manifold Types Available	Overall Size (valves not mounted)	Nominal Dimensions (inch)		
		L	H	D
<b>A Type ( HJCM_A, HJEM_A ):</b> Extruded Aluminum. Delivery ports 2 and 4 located on MANIFOLD. Accepts base piping HJC10A_ (HJE12A_) valve models.	Two Station ( ___M2A )	1.59 (1.75)	0.98 (1.24)	1.85 (1.93)
	Each Additional station	0.41 (0.49)		
	Max # of stations	20		
<b>F Type ( HJCM_F, HJEM_F ):</b> Extruded Aluminum. Delivery ports 2 and 4 located on VALVE. Accepts direct piping HJC10F_ (HJE12F_) valve models.	Two Station ( ___M2F )	1.52 (1.67)	0.63 (0.61)	1.50 (1.81)
	Each Additional station	0.41 (0.49)		
	Max # of stations	20		

*Consult website for exact dimensions and additional manifold configurations.*

**HOW TO OBTAIN SPECIFICATIONS FOR A PARTICULAR VALVE(S)**

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# HJA Valves

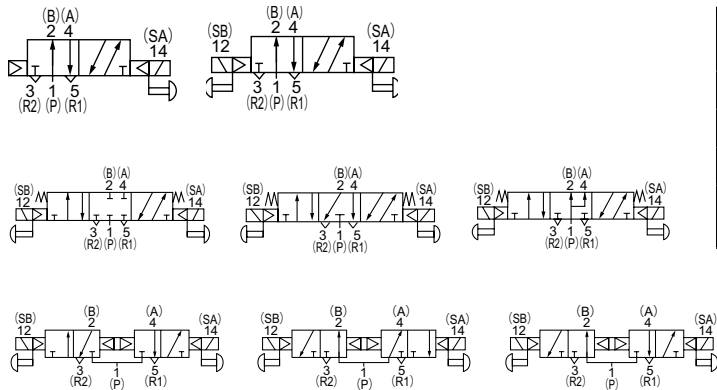
HJA10A(1,2,3,4), HJA10A(A,B,C)

The 10mm HJA Series manifold mount, directional control solenoid valves offer unprecedented compact size versus equivalent competitive models. Din-Rail mounted, HJA valves are low 0.5 Watt power consumption, with excellent 0.19 Cv flow capacity within a thin 50mm overall manifold height. Valves are available as subbase mount, or as manifold mount in 3 different configurations, monoblock, non plug-in, or pre-wired plug-in. Consult factory representative for serial transmission manifolds.

Space saving, tandem 3-port valves (two valves in one body) occupy one slice on a manifold.

## Features and Benefits

- Pre-wired, pre-assembled manifold configurations.
- Extreme miniaturization achieved for high flow, 0.19 Cv valve platform. Length and height, optimized.
- Quiet operation.
- DC voltages.
- Electrical connection options include plug-in or plug-in manifold.
- Tandem 3-port, 4-position valve optional.
- 0.5 W low power consumption standard, and 0.25 W optional.



Base Model	Nominal Dim. (inch)		
	L	H	W
HJA10__ single solenoid replacement	3.87	0.98	0.39
HJA10__ double solenoid replacement	4.02		
HJA10__ three position replacement	4.34		
HJA10__ on single subbase	see above	1.8	0.94



HJA10A



HJA10A on Sub-base

## SPECIFICATIONS

Design Principle:	Pressure Balanced – Air Return	Temperature Range:	41°F to 122°F
Porting Type:	2-, 3- or 4-Way	Flow @100 PSIG:	11 CFM, 311 LPM (Cv=0.19)
Port Size:	1/8 PIPE (5/32 and 1/4 tube size)	Power:	0.5 W
Media:	Air	Available Voltages:	12VDC, 24VDC
Pressure Range:	29–102 PSIG		

INDIRECT-ACTING SOLENOID VALVES

**AVAILABLE VALVE TYPES – HJA SERIES ... CONSULT WEBSITE FOR MODEL NUMBERS**

**For Base Piping, or Manifold Mount:**

- Normally closed, single solenoid, 2-way
- Normally open, single solenoid, 2-way
- Normally closed, single solenoid, 3-way
- Normally open, single solenoid, 3-way
- 2-position, single solenoid, 4-way
- 2-position, double solenoid, 4-way

**For Base Piping, or Manifold Mount:**

- 3-position, 4-way, closed center
- 3-position, 4-way, exhaust center
- 3-position, 4-way, pressure center
- 4-position, tandem 3-ports, NC/NC
- 4-position, tandem 3-ports, NO/NO
- 4-position, tandem 3-ports, NC/NO



**HJA Series on Split Manifold Plug-in Type, Model HJAM8PJ**

INDIRECT-ACTING SOLENOID VALVES

Manifold Types Available	Overall Size (valves not mounted)	Nominal Dimensions (inch)		
		L	H	D
<b>AJ Type (HJAM_AJ):</b> Extruded Aluminum. Delivery ports 2 and 4 located on MANIFOLD. Accepts base piping HJA10A_ PS valve models.	Two Station ( ___M2AJ )	1.91	1.02	2.08
	Each Additional station	0.41		
	Max # of stations	20		
<b>NJ Type (HJAM_NJ):</b> Split, DIN-Rail Mount Type, for Non - Plug-in valves. Delivery ports 2 and 4 located in MANIFOLD. Accepts HJA10A_ PS valve models.	Two Station ( ___M2NJ )	2.95	1.97	3.74
	Each Additional station	0.41		
	Max # of stations	20		
<b>PJ Type (HJAM_PJ):</b> Split, DIN-Rail Mount Type, for Plug-in Valves. Valves pre-wired to multi-pin electrical connector. Delivery ports 2 and 4 located in MANIFOLD. Accepts HJA10A_ valve models.	Two Station ( ___M2PJ )	3.74	1.97	3.74
	Each Additional station	0.41		
	Max # of stations	16		

*Consult website for exact dimensions and additional manifold configurations.*

**HOW TO OBTAIN SPECIFICATIONS FOR A PARTICULAR VALVE(S)**

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# F10, F15 Valves

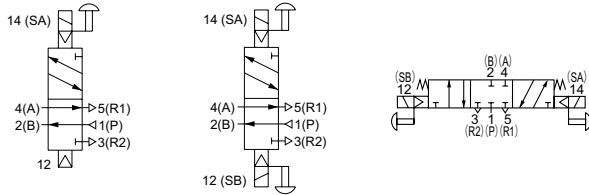
F10T (0,1,2,3,4,5); F15T (0,1,2,3,4,5)

**F10 and F15 Series Indirect-Acting Solenoid, directional control valves achieve 0.28 and 0.56 Cv flow capacity in a 10mm and 15mm width. These valves are a popular choice for operating small to medium size cylinders, up to 2.5" bore. Ultra low (0.1 Watt) current consumption solenoids and IP65 protection are optional. Available as inline, subbase mount, or as manifold mount in several configurations, including monoblock, non plug-in, or pre-wired plug-in. Consult factory representative for serial transmission manifolds.**

**4-way models available as inline valves or manifold mount on two manifold configurations, A or F type.**

## Features and Benefits

- Small, compact 10 and 15mm size.
- Low power consumption, as low as 0.1 W.
- High flow.
- Quiet operation. No AC hum.
- DC voltages.
- Manual override standard.
- Electrical connection options include plug-in or plug-in manifold.
- Two-position, double solenoids can be converted to single solenoid function.
- Valves with IP65 offer moisture proof specification – optional.
- Clean appearance.



Base Model	Nominal Dimensions (inch)		
	L	H	W
F10T0-F4H-__	4.02	1.4	0.39
F10T__F4H-__ (two solenoids)	4.33		
F10T__F4H-__ (three position)	4.75	1.83	0.59
F15T0-F4H-__	5.14		
F15T__F4H-__ (two solenoid)	5.14		
F15T__F4H-__ (three position)			



F10



F15

## SPECIFICATIONS

Design Principle:	Pressure Balanced – Air Return
Porting Type:	4-Way
Port Size:	F10: 10–32 UNF; F15: 1/8 PIPE
Media:	Air
Pressure Range:	29–102 PSIG

Temperature Range:	41°F to 122°F
Flow @100 PSIG:	F10: 16 CFM, 453 LPM (Cv=0.3) F15: 33 CFM, 934 LPM (Cv=0.6)
Power:	0.4 W (0.1 W optional)
Available Voltages:	12VDC, 24VDC, 100VAC

INDIRECT-ACTING SOLENOID VALVES

**AVAILABLE VALVE TYPES – F10 AND F15 SERIES ... CONSULT WEBSITE FOR MODEL NUMBERS**

**Operation Types:**

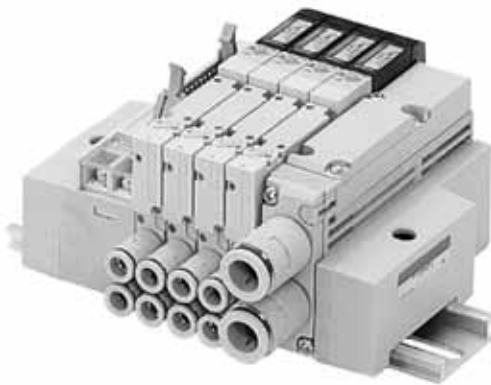
- Internal pilot type
- External pilot type, low positive pressure
- External pilot type, vacuum pressure

**For Base Piping, or Manifold Mount:**

- 2-position, single solenoid only, 4-way
- 2-position, two coil, single solenoid, 4-way
- 2-position, two coil, double solenoid, 4-way

**For Base Piping, or Manifold Mount:**

- 3-position, 4-way, closed center
- 3-position, 4-way, exhaust center
- 3-position, 4-way, pressure center
- 4-position, tandem 3-ports, NC/NC
- 4-position, tandem 3-ports, NO/NO
- 4-position, tandem 3-ports, NC/NO



F10T Series on F10M4PH Manifold



F15T Series on F15M4A Manifold

Manifold Types Available	Overall Size (valves not mounted)	Nominal Dimensions (inch)		
		L	H	D
<b>A Type (F10M_A, F15M_A):</b> Extruded Aluminum. Delivery ports 2 and 4 located in manifold, but transferable to valves. Accepts F10 (F15) valve models.	Two Station ( __M2A )	1.52 (1.89)	1.26 (1.81)	2.40 (2.91)
	Each Additional station	0.41 (0.63)		
	Max # of stations	20		
<b>F Type (F10M_F, F15M_F):</b> Extruded Aluminum. Delivery ports 2 and 4 located on VALVE. Accepts F10 (F15) valve models.	Two Station ( __M2F )	1.91 (2.44)	1.02 (1.18)	1.93 (2.40)
	Each Additional station	0.41 (0.63)		
	Max # of stations	20		
<b>NH Type (F10M_NH, F15M_NH):</b> Split, DIN-Rail Mount, for Non-Plug-in Valves. Delivery ports 2 and 4 located in manifold, but transferable to valves. Accepts F10 (F15) valve models.	Two Station ( __M2NH )	3.07 (3.98)	2.28 (2.64)	3.86 (4.53)
	Each Additional station	0.41 (0.63)		
	Max # of stations	20		
<b>PH Type (F10M_PH, F15M_PH):</b> Split, DIN-Rail Mount, for Plug-in Valves. Delivery ports 2 and 4 located in manifold, but transferable to valves. Accepts F10 (F15) valve models.	Two Station ( __M2PH )	3.90 (4.81)	2.28 (2.64)	3.86 (4.53)
	Each Additional station	0.41 (0.63)		
	Max # of stations	16		

*Consult website for exact dimensions and additional manifold configurations, including serial transmission.*

**HOW TO OBTAIN SPECIFICATIONS FOR A PARTICULAR VALVE(S)**

- ☞ Go directly to [www.humphrey-products.com/dynamic/products](http://www.humphrey-products.com/dynamic/products)
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- Or, call Customer Service at 1-800-477-8707 for the name and phone number of your local distributor.

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# F18 Valves

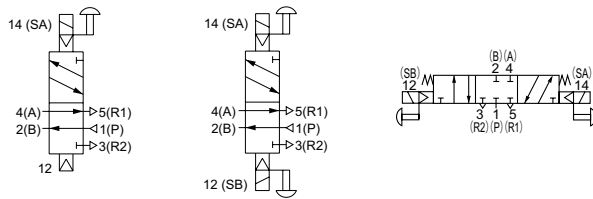
F18T (0,1,2,3,4,5)

**F18 Series Indirect-Acting Solenoid, directional control valves achieve 1.0 Cv flow capacity in a 18mm width. These valves are a popular choice for operating medium-size cylinders, up to 4" bore. Low (0.9 W) current consumption solenoids are standard. Valves are available as inline, subbase mount, or as manifold mount in several configurations, including monoblock, non plug-in, or pre-wired plug-in. Consult factory representative for serial transmission manifolds.**

**4-way models available as inline valves or manifold mount on two manifold configurations, A or F type.**

## Features and Benefits

- Small, compact 18mm size.
- Low power consumption.
- High flow.
- Quiet operation. No AC hum.
- DC voltages.
- Manual override standard.
- Electrical connection options include plug-in or plug-in manifold.
- Two-position, double solenoids can be converted to single solenoid function.
- Clean appearance.



Base Model	Nominal Dimensions (inch)		
	L	H	W
F18T0-F4H-__	5.18	2.19	0.71
F18T__F4H-__ (two solenoids)	5.65		
F18T__F4H-__ (three position)			



**F18**

## SPECIFICATIONS

Design Principle:	Pressure Balanced – Air Return
Porting Type:	4-Way
Port Size:	1/4 PIPE
Media:	Air
Pressure Range:	29–102 PSIG

Temperature Range:	41°F to 122°F
Flow @100 PSIG:	60 CFM, 1699 LPM (Cv=1.0)
Power:	0.9 W
Available Voltages:	12VDC, 24VDC, 100VAC

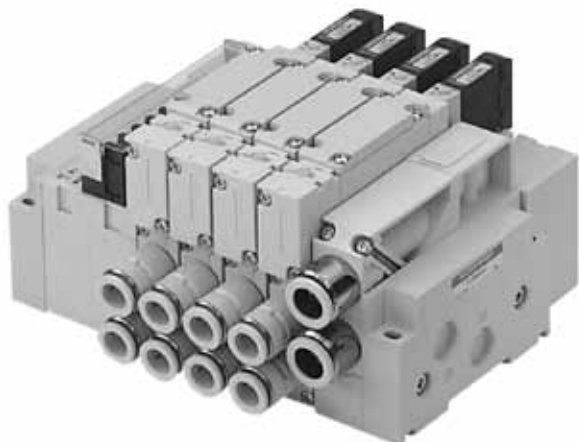
**AVAILABLE VALVE TYPES – F18 SERIES ... CONSULT WEBSITE FOR MODEL NUMBERS**

**Operation Types**

- Internal pilot type
- External pilot type, low positive pressure
- External pilot type, vacuum pressure

**For Base Piping, or Manifold Mount:**

- 2-position, single solenoid only, 4-way
- 2-position, two coil, single solenoid, 4-way
- 2-position, two coil, double solenoid, 4-way
- 3-position, 4-way, closed center
- 3-position, 4-way, exhaust center
- 3-position, 4-way, pressure center



F18T Series on F18M4PH Manifold



F18T Series on Monoblock F18M4A Manifold

Manifold Types Available	Overall Size (valves not mounted)	Nominal Dimensions (inch)		
		L	H	D
<b>A Type (F18M_A):</b> Extruded Aluminum. Delivery ports 2 and 4 located in manifold, but transferable to valves. Accepts F18 valve models.	Two Station ( F18M2A )	2.24	2.09	3.51
	Each Additional station	0.75		
	Max # of stations	20		
<b>F Type (F18M_F):</b> Extruded Aluminum. Delivery ports 2 and 4 located on VALVE. Accepts F18 valve models.	Two Station ( F18M2F )	2.24	1.34	2.96
	Each Additional station	0.75		
	Max # of stations	20		
<b>NH Type (F18M_NH):</b> Split, DIN-Rail Mount, for Non-Plug-in Valves. Delivery ports 2 and 4 located in manifold, but transferable to valves. Accepts F18 valve models.	Two Station ( F18M2NH )	3.58	2.99	3.55
	Each Additional station	0.75		
	Max # of stations	20		
<b>PH Type (F18M_PH):</b> Split, DIN-Rail Mount, for Plug-in Valves. Delivery ports 2 and 4 located in manifold, but transferable to valves. Accepts F18 valve models.	Two Station ( F18M2PH )	4.41	2.99	3.55
	Each Additional station	0.75		
	Max # of stations	16		

*Consult website for exact dimensions and additional manifold configurations, including serial transmission.*

**HOW TO OBTAIN SPECIFICATIONS FOR A PARTICULAR VALVE(S)**

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INDIRECT-ACTING SOLENOID VALVES

# H110, H180 Valves

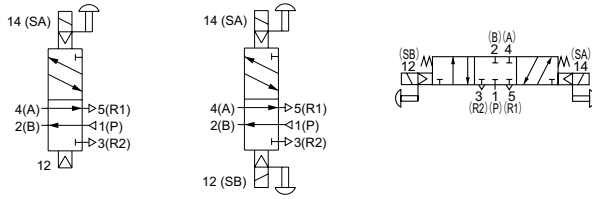
H110-4E1(2), HA110-4E1(2), H113-4E2, HA113-4E2, H180-4E1(2), HA180-4E1(2),

**H110 and H180 Series Indirect-Acting Solenoid, directional control valves achieve 0.23 and 0.57 Cv flow capacity in a 15mm and 18mm width. These valves are a popular choice for operating medium size cylinders, up to 2.5" bore. Low (1.6 Watt) current consumption solenoids are standard. Valves are available as inline, subbase mount, or as manifold mount.**

**2-, 3- or 4-way models available as inline valves or manifold mount on two manifold configurations, A or F type.**

## Features and Benefits

- Compact 15mm and 18mm size.
- Low power consumption.
- High flow.
- Quiet operation. No AC hum.
- AC and DC voltages.
- Manual override standard.
- Grommet, plug-in and DIN type electrical connector – standard.
- Clean appearance.



Base Model	Nominal Dimensions (inch)		
	L	H	W
H(A)110__ single solenoid	3.18	0.95	0.59
H(A)110__ double solenoid	4.66		
H(A)113__ three position	5.14	0.95	0.71
H(A)180__ single solenoid	3.81		
H(A)180__ double solenoid	5.31		
H(A)183__ three position	5.93		



**H110-4E1**



**H180-4E1**

## SPECIFICATIONS

Design Principle:	Pressure Balanced – Air Return	Temperature Range:	41°F to 122°F
Porting Type:	2-, 3-, or 4-Way	Flow @100 PSIG:	H110: 14 CFM, 396 LPM (Cv=0.2) H180: 33 CFM, 934 LPM (Cv=0.6)
Port Size:	H110: 10-32 UNF; H180: 1/8 PIPE	Power:	1.6 W
Media:	Air	Available Voltages:	12VDC, 24VDC, 24VAC, 120VAC, 240VAC
Pressure Range:	22–102 PSIG		

**AVAILABLE VALVE TYPES – H110 AND H180 SERIES ... CONSULT WEBSITE FOR MODEL NUMBERS**

**For Direct Piping, or F Type Manifold:**

- Normally closed, single solenoid, 2-way
- Normally open, single solenoid, 2-way
- Normally closed, single solenoid, 3-way
- Normally open, single solenoid, 3-way
- 2-position, single solenoid, 4-way
- 2-position, double solenoid, 4-way
- 3-position, 4-way, closed center
- 3-position, 4-way, exhaust center
- 3-position, 4-way, pressure center

**For Base Piping, or A-Type Manifolds:**

- Normally closed, single solenoid, 2-way
- Normally open, single solenoid, 2-way
- Normally closed, single solenoid, 3-way
- Normally open, single solenoid, 3-way
- 2-position, single solenoid, 4-way
- 2-position, double solenoid, 4-way
- 3-position, 4-way, closed center
- 3-position, 4-way, exhaust center
- 3-position, 4-way, pressure center



**HA110 Series on H110M4A Manifold**



**H180 Series on H180M4F Manifold**

INDIRECT-ACTING SOLENOID VALVES

Manifold Types Available	Overall Size (valves not mounted)	Nominal Dimensions (inch)		
		L	H	D
<b>A Type (H110M_A, H180M_A):</b> Extruded Aluminum. Delivery ports 2 and 4 located on MANIFOLD. Accepts HA110 (HA180) valve models.	Two Station ( ___M2A )	1.89 (2.25)	1.38 (1.58)	2.09 (2.92)
	Each Additional station	0.63 (0.75)		
	Max # of stations	20		
<b>F Type (H110M_F, H180M_F):</b> Extruded Aluminum. Delivery ports 2 and 4 located on VALVE. Accepts H110 (H180) valve models.	Two Station ( ___M2F )	1.89 (2.25)	0.71 (0.99)	1.81 (2.29)
	Each Additional station	0.63 (0.75)		
	Max # of stations	20		

*Consult website for exact dimensions and additional manifold configurations.*

**HOW TO OBTAIN SPECIFICATIONS FOR A PARTICULAR VALVE(S)**

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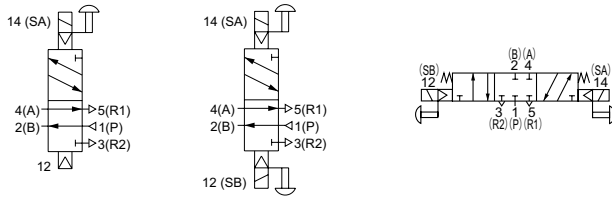
## H240 Valves

H240-4E, HA240-4E, HW240-4E, H243-4E, HA243-4E, HW243-4E

**H240 Series Indirect-Acting Solenoid, directional control valves achieve 0.88 Cv flow capacity in a 24mm width. These pressure balanced spool/air spring return valves are suitable for operating medium size cylinders, up to 3" bore. Low (1.6 Watt) current consumption solenoids are standard. Two or three position, 4-way models available as inline valves or manifold mount F-Type, stacking manifold A-Type or plug-in Type AW.**

### Features and Benefits

- Compact 24mm size.
- Low power consumption.
- High flow.
- Quiet operation. No AC hum.
- AC and DC voltages.
- Manual override standard.
- Grommet, plug-in and DIN type electrical connector – standard.
- Clean appearance.



Base Model	Nominal Dimensions (inch)		
	L	H	W
H(A)240__ single solenoid	4.07	1.38	0.91
H(A)240__ double solenoid	5.33		
H(A)243__ three position	6.52		



H240-4E1



H240-4E2

### SPECIFICATIONS

Design Principle:	Pressure Balanced – Air Return, Spring Assist	Pressure Range:	25–100 PSIG
Porting Type:	4-Way	Temperature Range:	41°F to 122°F
Port Size:	1/4	Flow @100 PSIG:	53 CFM, 1500 LPM (Cv=0.9)
Media:	Air	Power:	1.6 W
		Available Voltages:	12VDC, 24VDC, 120VAC, 240VAC, 24VAC

**AVAILABLE VALVE TYPES – H240 SERIES ... CONSULT WEBSITE FOR MODEL NUMBERS**

**For Direct Piping, or F Type Manifold:**

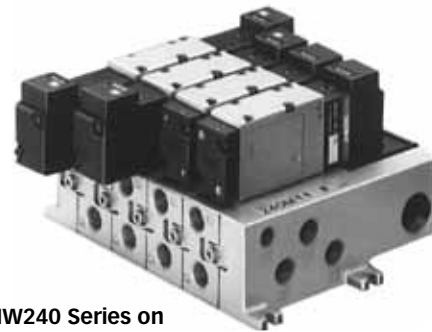
- 2-position, single solenoid, 4-way
- 2-position, double solenoid, 4-way
- 3-position, 4-way, closed center
- 3-position, 4-way, exhaust center

**For Base Piping, or A(AW)-Type Manifolds:**

- 2-position, single solenoid, 4-way
- 2-position, double solenoid, 4-way
- 3-position, 4-way, closed center
- 3-position, 4-way, exhaust center



**HA240 Series on H240M4A Manifold**



**HW240 Series on H240M4AW Manifold**

Manifold Types Available	Overall Size (valves not mounted)	Nominal Dimensions (inch)		
		L	H	D
<b>A Type (H240M_A):</b> Stacking diecast manifold (assembled). Delivery ports 2 and 4 located on MANIFOLD. Accepts HA240 valve models.	Two Station ( H240M2A )	4.6	1.87	3.35
	Each Additional station	1.1		
	Max # of stations	10		
<b>AW Type (H240M_AW):</b> Stacking diecast, plug-in manifold (assembled). Delivery ports 2 and 4 located on MANIFOLD. Accepts HW240 plug-in type valve models.	Two Station ( H240M2AW )	4.6	1.87	5.06
	Each Additional station	1.1		
	Max # of stations	10		
<b>F Type (H240M_F):</b> Extruded Aluminum. Delivery ports 2 and 4 located on VALVE. Accepts H240 valve models.	Two Station ( H240M2F )	2.84	1.1	2.44
	Each Additional station	0.95		
	Max # of stations	10		

*Consult website for exact dimensions and additional manifold configurations.*

**HOW TO OBTAIN SPECIFICATIONS FOR A PARTICULAR VALVE(S)**

- ☞ Go directly to [www.humphrey-products.com/dynamic/products](http://www.humphrey-products.com/dynamic/products)
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## 250 Valves

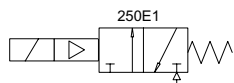
250E1, 250AE1, 250E2, 250AE2

**The classic Humphrey diaphragm poppet, 1/4 PIPE port solenoid valve 250 series, is a workhorse, whether the media and ambient conditions are clean or harsh. The pressure unbalanced diaphragm-poppet design has no metal-to-metal contact or sliding seals, thus millions of trouble-free cycling are expected, whether air is dirty, lubricated or not.**

**Available as 2- or 3-way models, normally open or normally closed, single or double solenoid.**

### Features and Benefits

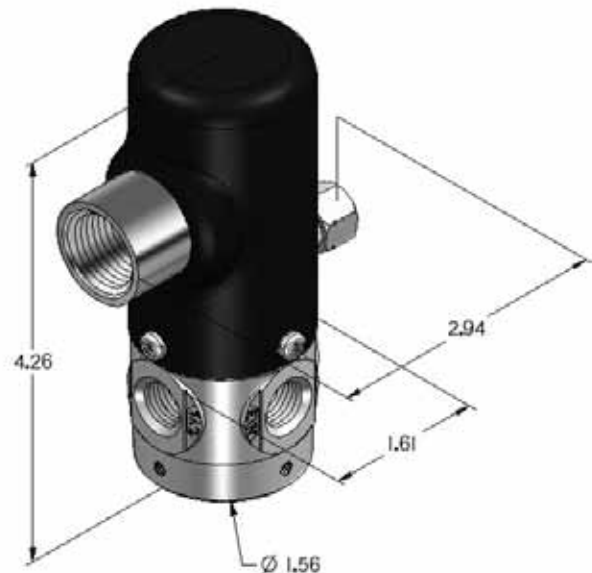
- Low leak rate.
- Full ported 1/4" orifice, 1/4 PIPE ports.
- Impervious to air quality, lubricated or not lubricated.
- Quiet operation. No AC hum.
- Short stroke and quick exhaust permits fast cycling.
- Class B-rated, continuous duty coils.
- Electrical connections include grommet cover, conduit or DIN type connector.
- For low pressure or alternate media, select external piloted "AE" type.
- Optional brass body available.
- Design characteristics translate to excellent vacuum valve, see Vacuum, p. 78.



250E1



250AE1



250AE1

### SPECIFICATIONS


Design Principle:	Pressure Unbalanced – Air Return, Spring Assist
Porting Type:	2- or 3-Way
Port Size:	1/4 PIPE
Media:	Air, Inert Gas, Liquid (brass body including AE1 and AE2)
Pressure Range:	30–125 PSIG; AE 0–125 PSIG
Temperature Range:	0°F to 125°F
Flow @100 PSIG:	50 CFM, 1415 LPM (Cv=0.8)
Power:	6.7/8.2 W
Available Voltages:	12 VDC, 24VDC, 24/50/60, 120/50/60, 240/50/60

### HOW TO OBTAIN SPECIFICATIONS FOR A PARTICULAR VALVE(S)

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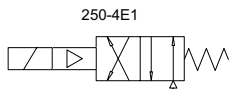
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**The classic Humphrey diaphragm poppet, 1/4 PIPE port solenoid valve 250-4 series, is a workhorse, whether the media and ambient conditions are clean or harsh. The pressure unbalanced diaphragm-poppet design has no metal-to-metal contact or sliding seals, thus millions of trouble-free cycling are expected, whether air is dirty, lubricated or not.**

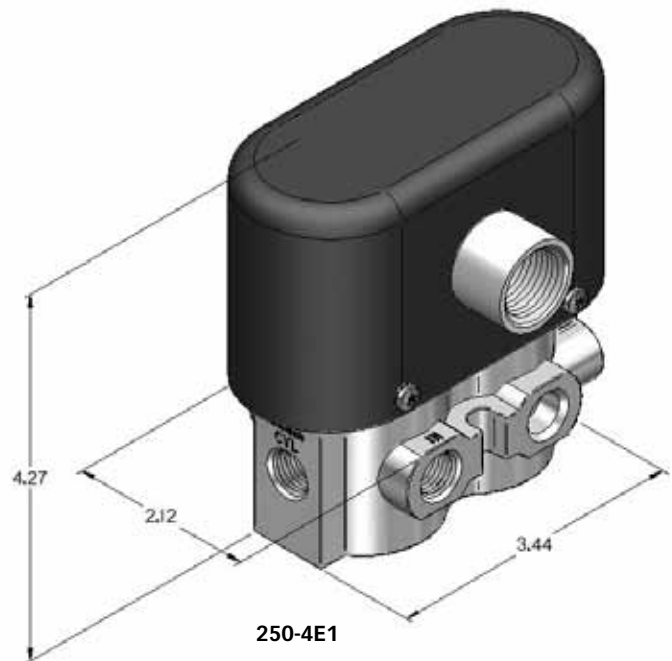
**Available as 4-way models, single or double solenoid, 2- or 3-position.**

### Features and Benefits

- Low leak rate.
- Full ported 1/4" orifice, 1/4 PIPE ports.
- Impervious to air quality, lubricated or not lubricated.
- Quiet operation. No AC hum.
- Electrical connections include grommet cover, conduit or DIN type connector.
- Short stroke and quick exhaust permits fast cycling.
- Class B-rated, continuous duty coils.



250-4E2



250-4E1

#### HOW TO OBTAIN SPECIFICATIONS FOR A PARTICULAR VALVE(S)

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#### SPECIFICATIONS

Design Principle:	Pressure Unbalanced – Air Return, Spring Assist
Porting Type:	4-Way
Port Size:	1/4 PIPE
Media:	Air
Pressure Range:	30–125 PSIG
Temperature Range:	0°F to 125°F
Flow @100 PSIG:	50 CFM, 1415 LPM (Cv=0.8)
Power:	6.7/8.2 W
Available Voltages:	12 VDC, 24VDC, 24/50/60, 120/50/60, 240/50/60

## 500, 590 Valves

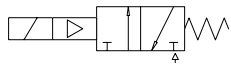
500E1, 500AE1, 500E2, 500AE2, 590E1, 590AE1, 590E2, 590AE2

**Large 1/2 PIPE port and 3/4 PIPE port sizes of the classic Humphrey diaphragm-poppet, solenoid valve series, the 500E and 590E are proven workhorses, whether the media and ambient conditions are clean or harsh. The pressure unbalanced diaphragm-poppet design has no metal-to-metal contact or sliding seals, thus millions of trouble-free cycling are expected, whether air is lubricated or not.**

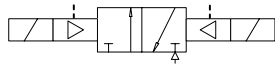
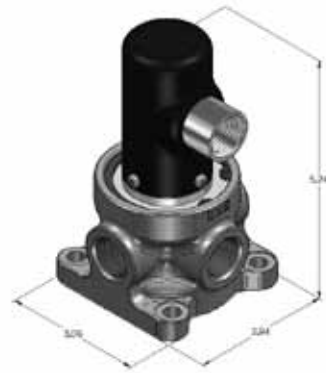
**Available as 2- or 3-way models, normally open or normally closed, single or double solenoid.**

### Features and Benefits

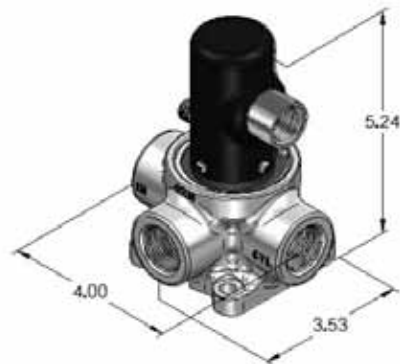
- Low leak rate.
- 1/2" orifice, 1/2 PIPE, or 5/8" orifice, 3/4 PIPE.
- Impervious to air quality, lubricated or not lubricated.
- Quiet operation. No AC hum.
- Short stroke and quick exhaust permits fast cycling.
- Class B-rated, continuous duty coils.
- Electrical connections include grommet cover, conduit or DIN type connector.
- For low pressure or alternate media, select external piloted "AE" type.
- Brass or aluminum body available.
- Design characteristics translate to excellent vacuum valve, see Vacuum, p. 79.



500E1



590E1



### SPECIFICATIONS FOR 500E AND 590E

Design Principle:	Pressure Unbalanced – Air Return, Spring Assist
Porting Type:	2-, 3-Way
Port Size:	1/2, 3/4 PIPE
Media:	Air, Inert Gas, Liquid (brass body including AE1 and AE2)
Pressure Range:	30–125 PSIG; 0–125 PSIG (AE)
Temperature Range:	0°F to 125°F
Flow @100 PSIG:	500E: 160 CFM, 4530 LPM (Cv=2.7) 590E: 260 CFM, 7362 LPM (Cv=3.7)
Power:	4.5/6.7/8.2 W
Available Voltages:	12 VDC, 24VDC, 24/50/60, 120/50/60, 240/50/60

### HOW TO OBTAIN SPECIFICATIONS FOR A PARTICULAR VALVE(S)

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### HOW TO ORDER HUMPHREY VALVES AND ACCESSORIES

- ✓ Go directly to: [www.humphrey-products.com/?q=content/find-distributor](http://www.humphrey-products.com/?q=content/find-distributor)
- ✓ Or, visit [www.humphrey-products.com](http://www.humphrey-products.com), select "Find A Distributor," and input your information to locate a distributor nearest you.
- Or, call Customer Service at 1-800-477-8707 for the name and phone number of your local distributor.



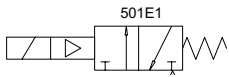
**HUMPHREY PRODUCTS ARE SOLD WORLD-WIDE THROUGH AUTHORIZED DISTRIBUTORS**

**Humphrey piston-poppet, 501E and 501-4E, 1/2 PIPE port solenoid valve series, achieves fully ported, high flow relative to overall size. Hard coated, cast aluminum body permits resistance to wear and easy mounting/plumbing. The pressure unbalanced piston-poppet design achieves greater flow than comparable 1/2" orifice valves and millions of trouble-free cycles.**

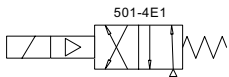
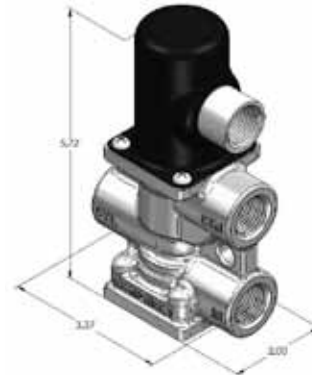
**Available as 2- or 3-way models, normally open or normally closed, single or double solenoid, and 4-way models, single or double solenoid.**

**Features and Benefits**

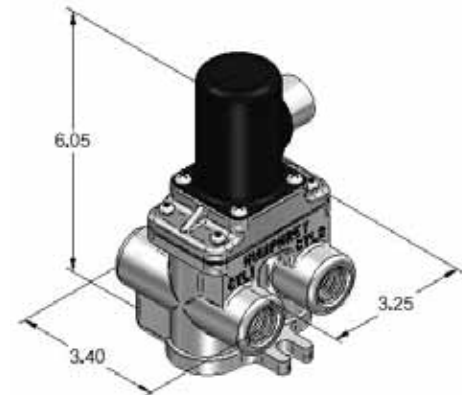
- Low leak rate.
- Full ported 1/2" orifice, 1/2 PIPE ports.
- "Flow through" construction achieves greater flow than competition.
- Quiet operation. No AC hum.
- Short stroke and quick exhaust permits fast cycling.
- Class B-rated, continuous duty coils.
- Electrical connections include grommet cover, conduit or DIN type connector.
- Mount in any position via body mounting holes or base (3-way), or body mounting lugs (4-way).
- Plug exhaust for 2-way service.



501E1



501-4E1



**HOW TO OBTAIN SPECIFICATIONS FOR A PARTICULAR VALVE(S)**

- Go directly to [www.humphrey-products.com/dynamic/products](http://www.humphrey-products.com/dynamic/products)
- Or, visit [www.humphrey-products.com](http://www.humphrey-products.com) and select "Online Product Guide."
- Once you have followed the steps to get the valve you need, select "Download Spec Sheet." Doing this will create a personalized PDF of the valve, which you may save to your computer and print at your convenience. These spec sheets are helpful when placing your order(s).

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**SPECIFICATIONS FOR 501E AND 501-4E**

Design Principle:	Pressure Unbalanced – Air Return, Spring Assist
Porting Type:	2-, 3- or 4-Way
Port Size:	1/2 PIPE
Media:	Air, Inert Gas
Pressure Range:	30–125 PSIG
Temperature Range:	-30°F to 125°F
Flow @100 PSIG:	501: 220 CFM, 6229 LPM (Cv=3.5) 501-4: 170 CFM, 4814 LPM (Cv=2.5)
Power:	6.7/8.2 W
Available Voltages:	12 VDC, 24VDC, 24/50/60, 120/50/60, 240/50/60

INDIRECT-ACTING SOLENOID VALVES

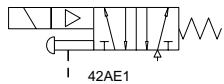
## TAC3 Valves

42E1, M42E1, 42E2, M42E2, 42AE1, M42AE1, 42AE2, M42AE2

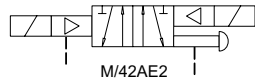
**TAC3 Electric 42E Series Indirect-Acting Solenoid, directional control valves achieve 0.5 Cv flow capacity. These pressure unbalanced spool/air-spring return valves are suitable for operating medium size cylinders, up to 2" bore. Low current consumption solenoids are standard. Two position, 4-way models available as inline valves or manifold mount and internal or external pilot.**

### Features and Benefits

- Low leak rate.
- Small size.
- Low power consumption.
- High flow.
- Quiet operation. No AC hum.
- AC and DC voltages.
- Manual override standard.
- Grommet – standard or DIN type electrical connector – optional.
- Clean appearance.



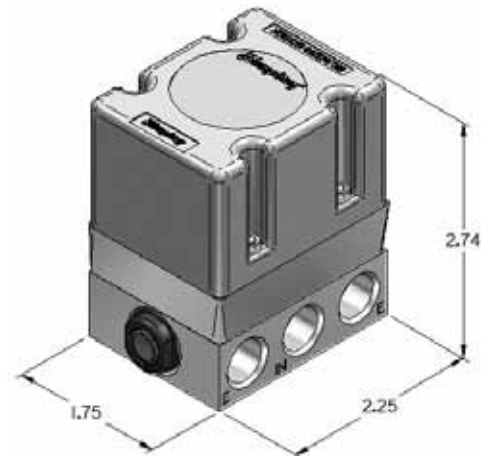
42AE1



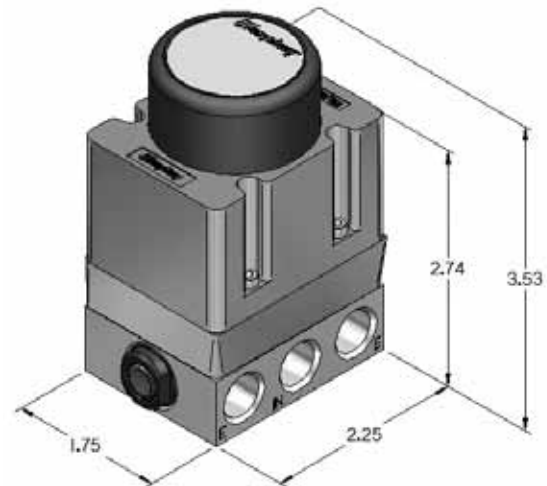
M/42AE2



42E1



42E2



### SPECIFICATIONS

Design Principle: Pressure Unbalanced – Air Return, Spring Assist

Porting Type: 4-Way

Port Size: 1/4 PIPE

Media: Air, Inert Gas

Pressure Range: 30–125 PSIG (AE: 0–125 PSIG)

Temperature Range: -20°F to 150°F

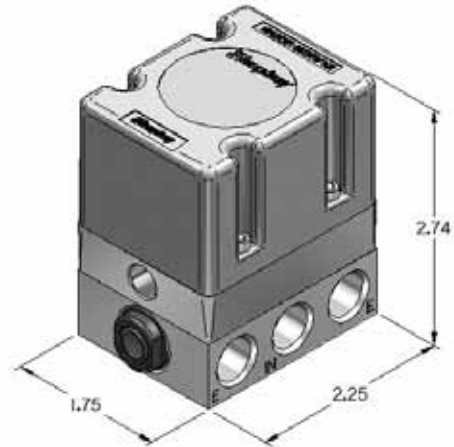
Flow @100 PSIG: 31 CFM, 877 LPM (Cv=0.5)

Power: 7.1/8.2 W

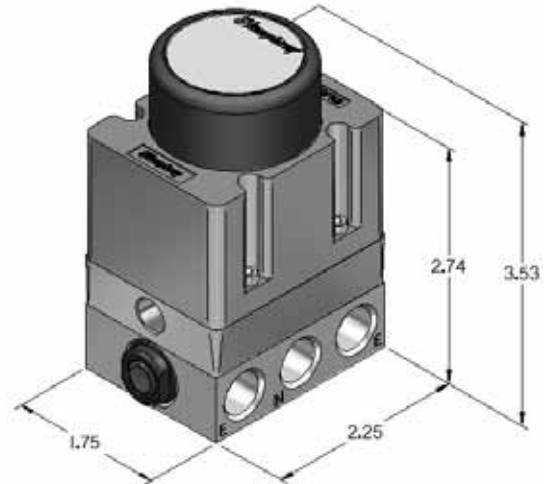
Available Voltages: 12 VDC, 24VDC, 24/50/60, 120/50/60, 240/50/60



42AE1



42AE2



MC Manifold

**Manifold Types Available**

**MC Type:** Extruded Aluminum. Delivery ports C1 and C2 located on MANIFOLD. Accepts M42(A)E1 and M42(A)E2 valve models.

Overall Size (valves not mounted)	Nominal Dimensions (inch)		
	L	H	D
Two Station ( MC2 )	3.63	2.02	2.25
Each Additional station	1.88		
Max # of stations	7		

*Consult website for exact dimensions and additional manifold configurations.*

INDIRECT-ACTING SOLENOID VALVES

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