

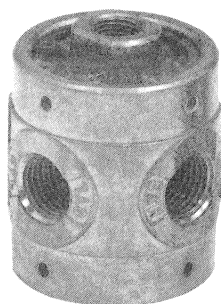
Humphrey 250 Series Air-Piloted Valves

Humphrey 250 Series air-piloted valves are simple, reliable, 2-position, pressure-operated, spring- and pressure-return, 2-way or 3-way valves offering high flow rates (75 scfm at 125 psig) and fast cycling (to 600 cpm). They feature a short stroke for fast response.

These small, lightweight, double diaphragm poppet, "no-stick" valves require no lubrication and are ideal for use with instrument air or other media which prohibit lubrication. The use of lubrication, however, will not prevent a 250 Series Valve from functioning if the lubricant is varied or removed.

250 Series air-piloted valves have no sliding seals subject to cuts, metal seals subject to scratches, or O-rings subject to damage or replacement, so they are ideal for use with contaminated media and are unaffected by compressor varnish.

These versatile and economical valves can be mounted in any position.

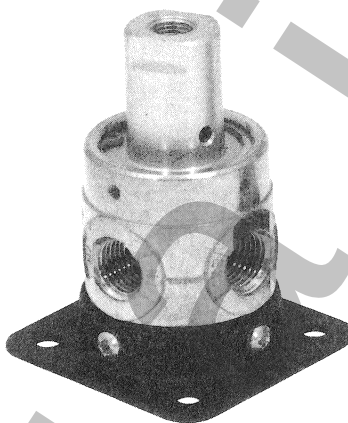


250A

250A-3-10-20

Model 250A is a normally closed 0.250-inch orifice valve. For use with low-pressure pilot signals, specify "w/pilot booster."

Model SS250A is identical in design to the 250A valve but is fabricated of 316 stainless steel and is furnished with fluoroelastomer diaphragms.



250A

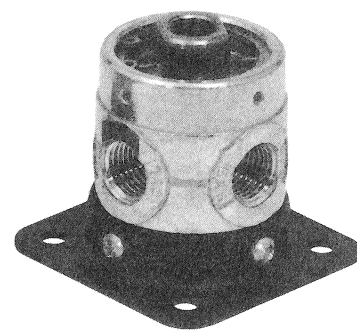
250A-3-11-21

Model 250A is a normally open 0.250-inch orifice valve. Furnished with pilot booster. Three additional functions are possible:

Directional: Supply pressure to CYL port (Open to IN).

Two-pressure selector: High pressure to EXH port (75 psig max.). Low pressure to IN port (50 psig max.). Insure adequate pilot pressure.

Normally closed: Supply pressure to EXH port.



250AA

250AA-3-10-21

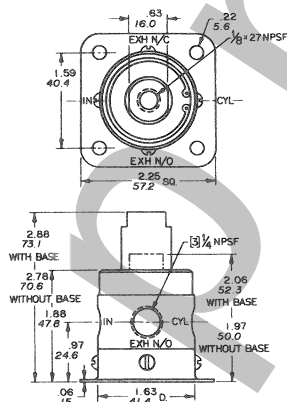
Model 250AA is a normally closed, 3-way or detented 3-way valve. Its internal compensating orifice maintains actuated position after momentary pilot signal, maintains "trapped" pilot pressure to compensate for minor leaks, and speeds both the opening and closing response time.

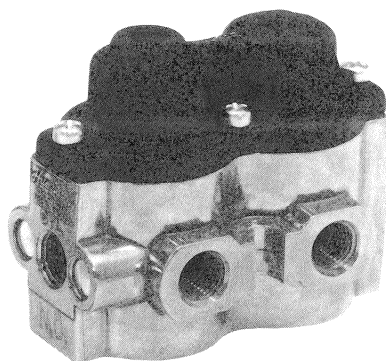


Options for 125 and 250 Series Valves

- Mounting Base, Code 21.
- Fluoroelastomer diaphragms for resistance to mild chemicals and for sustained temperatures to 400°F (204.4°C) and intermittent temperatures to 600°F (315.5°C).
- Brass Body (Not available for 4-way valves).
- Bottom inlet for normally closed models (Not available for 4-way valves).

250A





250-4A

Model 250-4A is a 4-way, 5-port valve with common supply and exhaust ports. Can be mounted in any position using four #10-32 holes in bottom, two slotted lugs on body, or with mounting base (Code 21).



Specifications

MEDIA:

Compressed Air (Consult factory for others)

PRESSURE RANGE:

250A NC: 10 to 125 psig (.7 to 8.6 bars)
250 NO, 250A NC with booster, 250-4A: 10 to 125 psig (.7 to 8.6 bars)
250-4AA: 20 to 125 psig (1.4 to 8.6 bars)
250AA: 15 to 125 psig (1.0 to 8.6 bars)

Air Flow to Atmosphere

MODEL	25 PSIG CFM	(1.7 BARS) LPM	125 PSIG CFM	(8.6 BARS) LPM
250A/AA	25.0	707.5	75	2122.5
250-4A/AA				

TEMPERATURE RANGE:

-20 to 225°F (-28.9 to 107.2°C)

OPERATING SPEEDS:

To 600 CPM

MATERIALS:

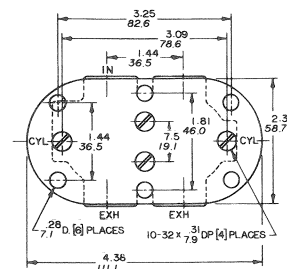
Zinc Die Cast, Zinc Plated Steel, Aluminum, Brass, Stainless Steel, Buna N

LUBRICATION Not required

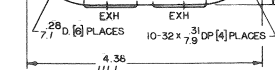
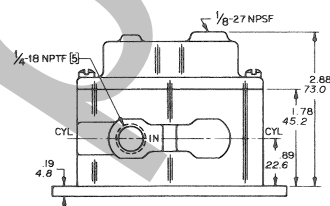
FILTRATION Not required

Weight

MODEL	ACTUAL LBS	KGS
250A/AA	0.5	0.2
250-4A/AA	1.8	0.8



250-4A



250-4AA

Model 250-4AA is identical to the 250-4A valve but has an internal compensating orifice which maintains actuated position after momentary pilot signal, maintains "trapped" pilot reserve to compensate for minor leaks,

and speeds both the opening and the closing response time.



Fill/Exhaust Times (Seconds)

MODEL	SUPPLY PRESSURE							
	At 50 psig (3.5 bars)				At 100 psig (7.0 bars)			
	Chamber Fill 0-40 psig (0-2.8 bars)		Exhaust 50-10 psig (3.5-.7 bars)		Chamber Fill 0-80 psig (0-5.5 bars)		Exhaust 100-20 psig (7.0-1.4 bars)	
	10 Cubic Inches (164cc)	100 Cubic Inches (1640cc)	10 Cubic Inches (164cc)	100 Cubic Inches (1640cc)	10 Cubic Inches (164cc)	100 Cubic Inches (1640cc)	10 Cubic Inches (164cc)	100 Cubic Inches (1640cc)
250A NC	0.032	0.044	0.312	0.433	0.033	0.059	0.324	0.565
250A NO	0.035	0.044	0.311	0.384	0.036	0.055	0.305	0.438
250AA	0.032	0.044	0.312	0.433	0.033	0.059	0.324	0.565
250-4A NC	0.032	0.049	0.307	0.405	0.033	0.060	0.315	0.505
250-4A NO	0.037	0.048	0.305	0.368	0.039	0.055	0.305	0.425
250-4AA/NC	0.034	0.045	0.310	0.427	0.034	0.057	0.300	0.527
250-4AA/NO	0.037	0.048	0.305	0.368	0.039	0.055	0.305	0.425

VALVED PRESSURE		25 psig	1.7 bars	75 psig	5.2 bars	125 psig	8.6 bars
PILOT PRESSURE							
MODEL		250A NC	21.7	1.5	48.3	3.3	88.3
	250A NO	23.0	1.6	48.3	3.3	84.0	5.3
	250AA	18.7	1.3	44.8	3.1	72.5	5.0
	250-4A	22.3	1.5	46.1	3.2	72.0	5.0
	250-4AA	8.5	0.6	25.1	1.7	41.2	2.8

Humphrey 250 Series Interface Valves

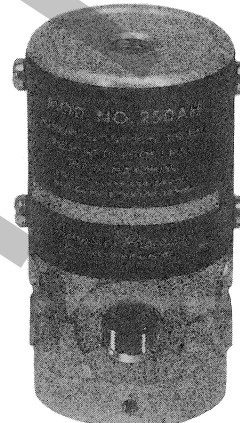
Humphrey 250 Series valves are 2-way or 3-way valves for interfacing low (fluidic) pilot pressures with full working pressures. These high flow valves offer exceptional performance and durability. Vibration or shock will not cause unwanted actuation. A 250 Series valve has a full 0.250-inch orifice (75 scfm at 125 psig). They mount in any position, and require a clean, dry air supply, filtered to 10 microns.



250AL

Model 250AL is a super-sensitive pilot operated interface valve for operation at the ultra-low pilot pressures encountered in jet sens-

ing and some fluidic applications. See Pilot Pressure Requirements Chart. A 250AL valve has a full 0.250-inch orifice.



250AH

Model 250AH is a sensitive pilot operated interface valve for operation at the low pilot pressures encountered in jet sensing

and some fluidic applications. See Pilot Pressure Requirement Chart. A 250AH valve has a full 0.250-inch orifice.



Options for 250 Interface Valves

- Mounting Base, Code 21.
- Brass Body.
- Bottom Inlet.

Specifications

MEDIA:
Compressed Air (Consult factory for others)

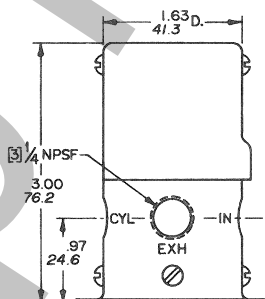
PRESSURE RANGE:
30 to 125 psig (2.1 to 8.6 bars)

TEMPERATURE RANGE:
40 to 125°F (4.4 to 51.7°C)

OPERATING SPEEDS:
60-125 psig, 600 CPM
30-60 psig, 400 CPM

MATERIALS:
Aluminum, Brass, Zinc Plated Steel, Stainless Steel, Buna N
LUBRICATION Not required
FILTRATION Recommended, 10 Microns Minimum

Base — 2.25 Sq. w/four
0.22 D. holes on
1.59 Sq. centers.



Air Flow to Atmosphere

MODEL	25 PSIG CFM	(1.7 BARS) LPM	125 PSIG CFM	(8.6 BARS) LPM	ACTUAL LBS	KGS
250AL	16.0	452.8	40.0	1132.0	0.77	0.35
250AH						

Weight

Fill/Exhaust Times (Seconds)

MODEL	SUPPLY PRESSURE							
	At 50 psig (3.5 bars)				At 100 psig (7.0 bars)			
	Chamber Fill 0-40 psig (0-2.8 bars)		Exhaust 50-10 psig (3.5-7 bars)		Chamber Fill 0-80 psig (0-5.5 bars)		Exhaust 100-20 psig (7.0-1.4 bars)	
	10 Cubic Inches (164cc)		100 Cubic Inches (1640cc)		10 Cubic Inches (164cc)		100 Cubic Inches (1640cc)	
	FILL	EXHAUST	FILL	EXHAUST	FILL	EXHAUST	FILL	EXHAUST
250AL	0.082	0.083	0.339	0.460	0.081	0.093	0.365	0.581
250AH	0.075	0.084	0.346	0.465	0.076	0.093	0.371	0.578

Pilot Pressure Requirements

Minimum pilot pressures to open the valve at valved pressures of

MODEL	MAXIMUM PILOT	HYS-TER-ESIS +	30 PSIG (Minimum (2.1 BARS)	80 PSIG (5.5 BARS)	125 PSIG (Maximum) (8.6 BARS)
250AL	10 psig	30%	.8 in. of water col.	1.2 in. of water col.	2.1 in. of water col.
250AH	30 psig	30%	9 in. of water col.	9 in. of water col.	9 in. of water col.

+ Once the valve is open, the valve will close when the minimum pilot pressure is reduced by the percentage shown.

Humphrey Air Piloted Valves

Order Information

125/250/500/501/590 Series

1/8-, 1/4-, 1/2-, and 3/4-inch ports, 2-way, 3-way, 4-way

VALVES

	2 Way	3 Way	Norm. Closed	Norm. Open	Universal	w/Out Mounting Base	With Mounting Base	Panel Mounting Nuts	Booster (STD on NO)	FKM** Seals	Brass Body	Bottom Inlet (NC only)
Option Code	2	3	10	11	12	20	21	22	w/BOS	w/VAI	w/BRB	w/BIN
MODEL												
125A	SP	N/C	N/C	SP	NA	N/C	SP	SP	SP	SP	SP	SP
125AA	NA	N/C	N/C	NA	NA	N/C	SP	SP	SP	SP	SP	SP
125AH	SP	N/C	N/C	NA	NA	N/C	SP	SP	NA	NA	NA	SP
125LA	SP	N/C	N/C	NA	NA	N/C	SP	SP	NA	NA	NA	SP
250A	SP	N/C	N/C	SP	NA	N/C	SP	NA	SP	SP	SP	SP
250AA	NA	N/C	N/C	NA	NA	N/C	SP	NA	SP	SP	SP	SP
250AH	SP	N/C	N/C	NA	NA	N/C	SP	NA	NA	NA	NA	SP
250AL	SP	N/C	N/C	NA	NA	N/C	SP	NA	NA	NA	NA	SP
250-4A	NA	NA	NA	NA	NA	N/C	SP	NA	NA	SP	NA	NA
250-4AA	NA	NA	NA	NA	NA	N/C	SP	NA	NA	SP	NA	NA
500A	SP	N/C	N/C	*	NA	NA	STD	NA	NA	SP	STD	NA
500AB	SP	N/C	N/C	*	NA	NA	STD	NA	STD	SP	STD	NA
590A	SP	N/C	N/C	*	NA	NA	STD	NA	NA	SP	SP	NA
590AB	SP	N/C	N/C	*	NA	NA	STD	NA	STD	SP	SP	NA
501A	SP	N/C	*	*	N/C	N/C	SP	NA	NA	SP	NA	NA
501AA	NA	N/C	N/C	NA	NA	N/C	SP	NA	NA	SP	NA	NA
501-4A	NA	NA	NA	NA	NA	NA	STD	NA	NA	SP	NA	NA
501-4AA	NA	NA	NA	NA	NA	NA	STD	NA	NA	SP	NA	NA
SS250A	NA	STD	STD	NA	NA	STD	NA	NA	NA	STD	NA	NA

*These options can be achieved by plumbing supply to the appropriate port. See specific catalog section.

**Fluoroelastomer

HOW TO ORDER

Starting with Model Number specify options in order from left to right.

Example: To Order Model 125A-3-10-22 w/BRB

3-Way Operation (125A-3)
 Normally Closed (125A-3-10)
 Panel Mounting Nuts (125A-3-10-22)
 With Brass Body (125A-3-10-22 w/BRB)

Remember: Option Codes marked STD and NA are not used as part of the Model Number when ordering. N/C indicates no charge but Option Code must be included in the Model Number. OS indicates that Option must be ordered separately and is not used as part of the Model Number.

N/C=No charge
 NA =Not available
 OS =Order separately,
 additional charge
 for this option

STD=Standard
 SP=Specify, additional
 charge for this option



This document is from Humphrey's Technical Library. If you need technical or sales assistance, please contact a Humphrey distributor. To locate the Humphrey distributor closest to you, please dial 1-800-477-8707.

Title: 250 Electric Valves

ISO Date: July 28, 2004

Don't Take Chances

Compressed air is an extremely powerful medium. Always take maximum precautions when handling any component of a compressed air system. **Never** attempt to construct, replace, operate or service any component of a compressed air system unless you have been specifically and properly trained to do so. **Always** disconnect the supply air and exhaust the air system before attempting to remove or service a component of that system. Failure to heed these warnings could result in **SERIOUS, EVEN FATAL, PERSONAL INJURY**.

Design And Specifications

The design and specifications and other product information contained in this catalog is for general reference purposes based upon customary and usual manufacturing standards and product applications. However, it is difficult to predict or to anticipate the functioning or suitability of the product for any particular application or use. Therefore, nothing herein shall be deemed a representation or warranty of the product design or specifications and Buyer shall have the responsibility for investigating and testing the product in any particular application or use and all risks attendant in such use.

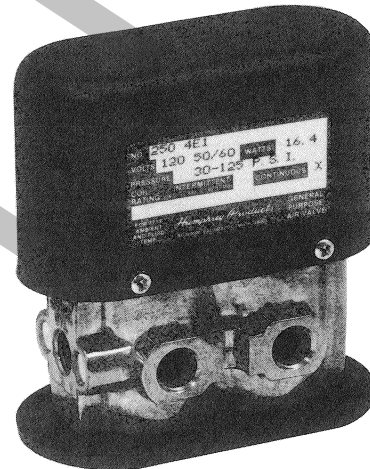
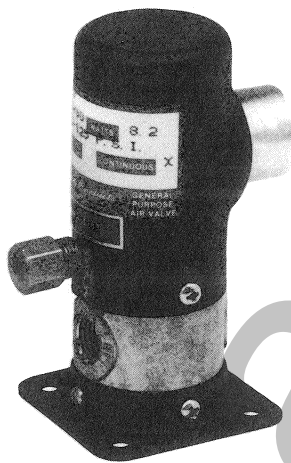
Humphrey Products Company
1-800-477-8707
Kalamazoo MI 49003
<http://www.humphrey-products.com>

* Available with U.L. Rating, consult factory

Humphrey 250 Series electric air valves are of double diaphragm poppet design. Because these "no stick" valves require no lubrication, they are ideal for use with instrument air and other media which prohibit lubrication. The use of lubrication, however, will not prevent a 250 Series valve from functioning if the lubricant is varied or removed.

250 Series electric air valves have no sliding seals subject to cuts or metal seals subject to scratches, so they are ideal for use with contaminating media and are unaffected by compressor varnish.

250 Series air valves are 2-position, 2-way, 3-way or 4-way, single- or double-solenoid valves. They are designed for rugged duty and rapid cycling and can be mounted in any position.

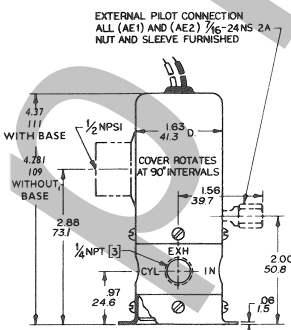
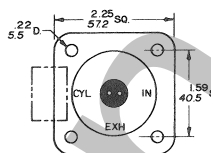
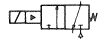


250E1

250E1-3-10-21-36

Model 250E1 is a single-solenoid, maintained-contact, spring return, 2-way or 3-way valve available either normally closed or normally open.

Model 250AE1 is identical to the 250E1 but has an external air pilot connection for valving media below 30 psig. Pilot air is isolated from valved media such as water, oil, instrument air, and gases.



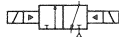
250E2

250AE2-3-21

Model 250E2 is a double-solenoid, momentary-contact, maintained-position, 2-way or 3-way valve. It holds in either the closed or open position with internal air pressure.

Model 250AE2 (shown) is identical to the 250E2 but has an external air pilot connection for valving media below 30 psig. Pilot air is isolated from valved media such as water, oil, instrument air, and gases.

If AC coils are to be energized longer than 30 seconds, specify Code CD (Continuous Duty). All coils for DC voltages are Code CD.

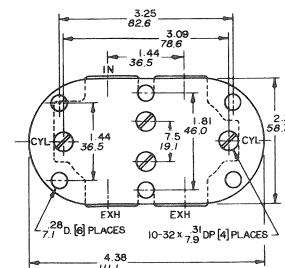
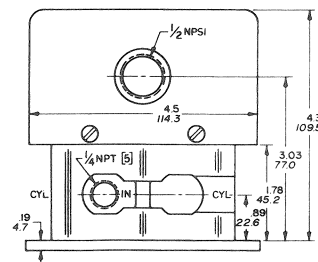
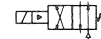


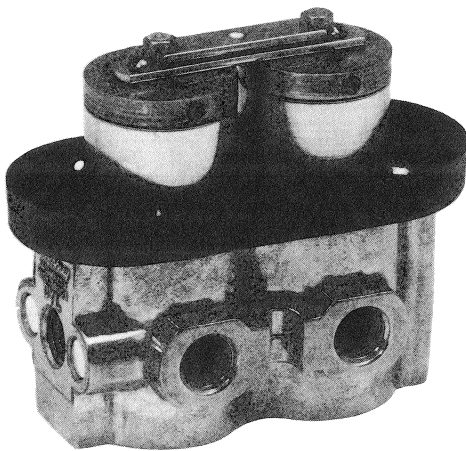
250-4E1

250-4E1-21

Model 250-4E1 is a single-solenoid, maintained-contact, spring return, 4-way valve. It can be mounted with mounting base (Code 21), with four #10-32 holes

in bottom, or with the two slotted lugs on body. The 250-4E1 is also available as a 3-position, NC/NC or NO/NO valve. Furnished with conduit cover.



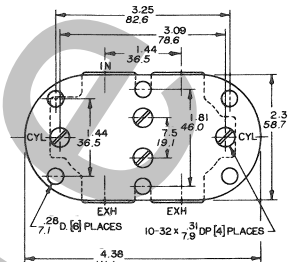
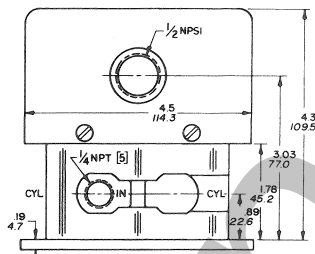


250-4E2

Model 250-4E2 is a double-solenoid, momentary-contact, maintained-position, 4-way valve. It can be mounted with mounting base (Code 21), with four #10-32 holes in bottom, or with two slotted lugs on body. Furnished with conduit cover.

250-4E2 (without cover)

All voltages Continuous Duty as standard.



Specifications

MEDIA:
Compressed Air (Consult factory for others)

PRESSURE RANGE:
30 to 125 psig (2.1 to 8.6 bars)
AE1/AE2: 0 to 125 psig (0 to 8.6 bars)
(body), 30 to 125 psig (2.1 to 8.6 bars)
(pilot)
External pilot pressure (AE1/AE2): Equal to
valved pressure, 30 psig (2.1 bars) Minimum

TEMPERATURE RANGE:
0 to 125°F (-17.8 to 51.7°C)
OPERATING SPEEDS:
To 600 CPM

MATERIALS:
Zinc Die Cast, Brass, Zinc Plated Steel, Stainless Steel, Buna N, Polyurethane

LUBRICATION: Not required
FILTRATION: Not required

Air Flow to Atmosphere

MODEL	25 PSIG CFM	(1.7 BARS) LPM	125 PSIG CFM	(8.6 BARS) LPM	ACTUAL LBS	KGS
250E1/E2	25.0	707.5	75.0	2122.5	1.2	0.5
AE1/AE2					1.2	0.5
250-4E1/E2					1.4	0.6
250-4AE1	22.0	622.6	70.0	1981.0	2.8	1.3
250-4AE2					2.9	1.4

Weight

Options for 250 Series valves

When ordering, specify desired option.

For all 250 valves:

- Mounting Base (Code 21)
- Fluoroelastomer diaphragms for resistance to mild chemicals and for sustained temperatures to 400°F (204.4°C) and intermittent temperatures to 600°F (315.5°C).

For E2 models only:

- All voltages Continuous Duty as standard on 4-way only.

For 2- or 3-way models only:

- Brass body.
- Bottom inlet for normally closed models.
- Cover seal (Code 61) for dirty or wet conditions.

Electrical Specifications

MODEL	VOLTAGE	COIL NUMBER	WATTS	AMPS	OHMS	HEAT RISE (°C)	ON TIME SECONDS	OFF TIME SECONDS
250E1	24 DC	46-8A	6.7	0.296	86	85.9	0.024	0.024
	120 AC	46-4	8.2	0.161	255	102.0	0.010	0.029
250E2	24 DC	46-8A	6.7	0.296	86	85.9	0.015	0.020
	120 AC	46-3	23.0	0.236	105	77.8	0.009	0.013
250-4E1	24 DC	46-8A	13.4	0.296	86	85.9	0.019	0.021
	120 AC	46-4	16.4	0.161	255	102.0	0.008	0.012
250-4E2	24 DC	46-10A	16.9	0.712	34	85.9	0.019	0.021
	120 AC	46-4	8.2	0.161	255	77.8	0.008	0.012

Lead Wire: # 18 AWG, 16-30 TC, 1/32, 105°C, PVC, UL & CSA.

Fill/Exhaust Times (Seconds)

MODEL	SUPPLY PRESSURE							
	At 50 psig (3.5 bars)				At 100 psig (7.0 bars)			
	Chamber Fill 0-40 psig (0-2.8 bars)		Exhaust 50-10 psig (3.5-.7 bars)		Chamber Fill 0-80 psig (0-5.5 bars)		Exhaust 100-20 psig (7.0-1.4 bars)	
	10 Cubic Inches (164cc)		100 Cubic Inches (1640cc)		10 Cubic Inches (164cc)		100 Cubic Inches (1640cc)	
	FILL	EXHAUST	FILL	EXHAUST	FILL	EXHAUST	FILL	EXHAUST
250E1/E2	0.048	0.062	0.290	0.431	0.057	0.075	0.330	0.521
250-4E1/4E2	0.046	0.058	0.299	0.410	0.054	0.068	0.326	0.486

Humphrey Electric Air Valves

Order Information

250/500/501/590 Series

1/4-, 1/2-, and 3/4-inch ports, 2-way, 3-way, 4-way

VALVES

	2 Way	3 Way	Norm. Closed	Norm. Open	w/Out Mount. Base	With Mount. Base	Grom- met Leads (18")	Conduit Leads (18")	DIN Con- nector	Grom./ Conduit Leads (72")	Cover Seal	FKM* Seals	Brass Body	Bottom Inlet (NC Only)	Specify Voltage with option code				12VDC 24VDC
															120V 50/60, 240/50/60 (ID not avail- able on E1)	24V 50/60 w/"Flywheel" Rectifiers for CD			
Option Code	2	3	10	11	20	21	35	36	39	LL	61	w/VAI	w/BRB	w/BIN	CD	ID	CD	ID	Spec. Volt.
Model																			
250E1	SP	N/C	N/C	N/C	N/C	SP	N/C	N/C	SP	SP	SP	SP	SP	SP	STD	NA	SP	NA	N/C
250AE1	SP	N/C	N/C	N/C	N/C	SP	NA	STD	SP	SP	NA	SP	SP	SP	STD	NA	SP	NA	N/C
250E2	SP	N/C	NA	NA	N/C	SP	NA	STD	SP	SP	SP	SP	SP	SP	SP	STD	SP	SP	N/C
250AE2	SP	N/C	NA	NA	N/C	SP	NA	STD	SP	SP	NA	SP	SP	SP	SP	STD	SP	SP	N/C
250-4E1	NA	NA	NA	NA	N/C	SP	NA	STD	SP	SP	NA	SP	NA	NA	STD	NA	SP	NA	N/C
250-4E1 NC NC	NA	NA	NA	NA	N/C	SP	NA	STD	SP	SP	NA	SP	NA	NA	STD	NA	SP	NA	N/C
250-4E1 NO NO	NA	NA	NA	NA	N/C	SP	NA	STD	SP	SP	NA	SP	NA	NA	STD	NA	SP	NA	N/C
250-4E2	NA	NA	NA	NA	N/C	SP	NA	STD	SP	SP	NA	SP	NA	NA	STD	NA	SP	NA	N/C

CD=Continuous Duty; ID=Intermittent Duty.

Note: Code 39 not available on E2 models with continuous duty coils (Code CD).

*Fluoroelastomer

ACCESSORIES

Model	Description
HS4	DIN Connector for use with Code 39 Valves.
JB	— Add "JB" to model number of any solenoid valve with conduit Connection (Code 36).

HOW TO ORDER

Starting with Model Number specify options in order from left to right.

Example: To Order Model 250E1-3-10-21-36 12VDC

3-Way Operation, Single Solenoid (250E1-3)
 Normally Closed (250E1-3-10)
 With Mounting Base (250E1-3-10-21)
 Conduit Leads (18") (250E1-3-10-21-36)
 Voltage 12VDC (250E1-3-10-21-36 12VDC)

Remember: Option Codes marked STD and NA are not used as part of the Model Number when ordering. N/C indicates no charge but Option Code must be included in the Model Number. OS indicates that Option must be ordered separately and is not used as part of the Model Number.

N/C=No charge
 NA =Not available
 OS =Order separately,
 additional charge
 for this option

STD=Standard
 SP=Specify, additional
 charge for this option