

# Classic Diaphragm-Poppet Series

*Humphrey*<sup>®</sup>

**Solenoid, Air-Piloted, Manual,  
Mechanical and Vacuum Valves**

Humphrey's Classic Diaphragm-Poppet Series features valves that **"CANNOT STICK. WILL NOT LEAK."** making them perfect for difficult and critical applications.

Due to a unique design, valves have no sliding seals to stick or wear, even in poor, unstable conditions. Construction is rugged, simple and reliable.

This series offers exceptional multi-purpose functionality and a broad product offering with models and configurations for almost every environment and application.

## FEATURES

- Valves seal tight and have no sliding seals. **CANNOT STICK. WILL NOT LEAK.**
- Impervious to air quality; no lubricant required.
- 2-, 3- and 4-Way Types  
Port Sizes: 1/8, 1/4, 1/2 and 3/4.
- Solenoid, Air-Piloted, Manual, Mechanical and Vacuum models available.
- Brass and Stainless Steel bodies are options for alternate gases and liquids, and corrosive environments



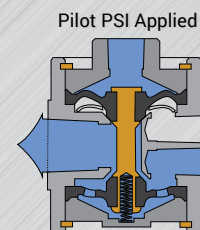
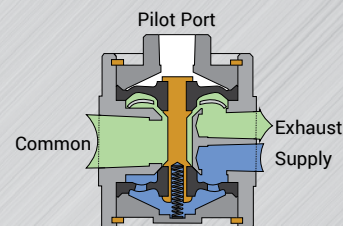
## HOW IT WORKS

Compressed air to the SUPPLY port, fills bottom cavity (BLUE), and underside of the bottom diaphragm, causing the poppet to seat and seal. **VALVE WILL NOT LEAK.**

Valve actuation (at top) overcomes force to the underside of the bottom diaphragm, and opens flow to the COMMON port. High flow, no sliding seals. **VALVE CANNOT STICK.**

Releasing the actuation permits bottom diaphragm to begin valve closing. Compressed air assists valve shift. Exhausting pressure under the top diaphragm (GREEN) assists the position change and creates "Quick Dump" feature to EXHAUST.

NOTE: Design provides an excellent, leak free, 2-way function with plugged Exhaust port.



Scan for additional product details on our online catalog.



## Applications

**MEDICAL**  
Inert construction and leak proof. Ideal for clean/alternate media.

**TRANSPORTATION**  
Long history of reliability in extreme conditions and climates.

**PETROCHEMICAL**  
Simple design works well in demanding media and harsh environments.

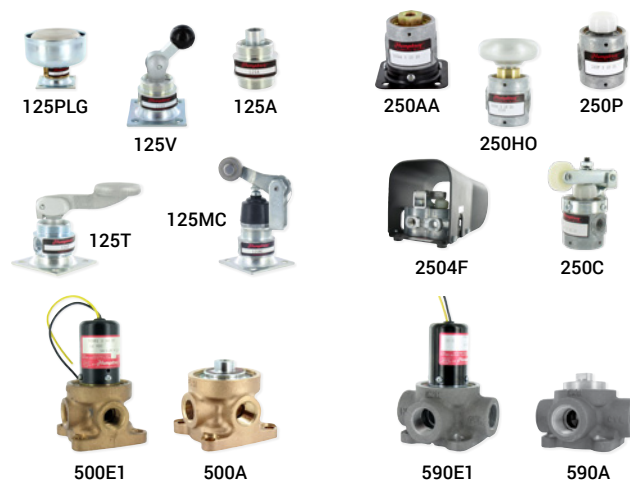
**FOOD AND BEVERAGE**  
Performs well with moisture laden air. No sticking.

**INDUSTRIAL AUTOMATION**  
Rugged, Reliable. Withstands difficult conditions.

# Classic Diaphragm-Poppet Series

## Solenoid, Air-Piloted, Manual, Mechanical and Vacuum Valves

SPECIFICATIONS	125 SERIES 1/8 PIPE	250 SERIES 1/4 PIPE	500 SERIES 1/2 PIPE	590 SERIES 3/4 PIPE
MEDIA	Compressed Air and Inert Gases (consult factory for others)			
MAXIMUM PRESSURE	125 PSI			
FLOW - SCFM	18	50	160	260
FLOW - CV	0.3	0.8	2.7	3.7
OPERATING SPEEDS	600 CPM			
LUBRICATION	Not Required			
TEMPERATURE RANGE	0-225° F			
WETTED MATERIALS	Zinc Plated Steel, Brass, Buna, SST	Zinc Diecast, Brass, Buna, SST	Brass, Buna, SST	Aluminum, Buna, Brass, SST
STANDARD VOLTAGES (VOLT)	12VDC, 24VDC, 120/50/60, 240/50/60, 24/50/60			



### Air Piloted 3- and 4-Way Valves

ORDERING CODE	FUNCTION	TYPE-OPERATOR
125A-3-10-21	3-way, NC	Air Piloted
125A-3-11-21	3-way, NO	Air Piloted
125AA-3-10-21	3-way, NC	Air Piloted - Interlock
250A-3-10-21	3-way, NC	Air Piloted
250A-3-11-21	3-way, NO	Air Piloted
250AA-3-10-21	3-way, NC	Air Piloted - Interlock
SS250A	3-way, NC	Single Pilot, SST Materials
250-4A-21	4-way	Air Piloted
250-4AA-21	4-way	Air Piloted - Interlock
500A-3-10	3-way, NC	Air Piloted
590A-3-10	3-way, NC	Air Piloted

### Mechanical 3-Way Valves

ORDERING CODE	FUNCTION	TYPE-OPERATOR
125B-3-10-21	NC	Ball - Mechanical
125MP-3-10-21	NC	Plunger - Mechanical
125MC-3-10-21	NC	Cam - Mechanical
250C-3-10-21	NC	Cam - Mechanical
500C-3-10	NC	Cam - Mechanical

### Manual 3- and 4-Way Valves

ORDERING CODE	FUNCTION	TYPE-OPERATOR
125PLG	3-way, NC	Easy Push w/Shroud
125P-3-10-21-40	3-way, NC	Push Button
125P-3-11-21-40	3-way, NO	Push Button
125V-3-10-21	3-way	Toggle - Detent
125HO-3-10-21	3-way	Push Turn - Detent
125T-3-10-21	3-way, NC	Lever
250P-3-10-21	3-way, NC	Push Button
250P-3-11-21	3-way, NO	Palm Button
250PL-3-10-21	3-way, NC	Palm Button
250HO-3-10-21	3-way	Hold On - Detent
250F-3-10	3-way, NC	Foot
250F-3-11	3-way, NO	Foot
250V-3-10-21	3-way	Toggle - Detent
250T-3-10-21	3-way, NC	Lever
250-4F	4-way	Foot
250-4H-21	4-way	3 Position Lever - Detent

### Vacuum Service (Consult factory for order codes)

- Diaphragm Poppet valves can be configured at the factory to be outstanding vacuum valves.
- All Air Piloted and Solenoid 3-Way Valves, and some Manual 3-Way valves, can be available as vacuum valves.

### Solenoid 3- and 4-Way Valves

BASE MODEL	FUNCTION	TYPE-OPERATOR
250E1-3-10-21-36-(V)	3-way, NC	Single Solenoid
250E2-3-21-(V)	3-way	Double Solenoid - Detent
250AE1-3-10-21-(V)	3-way, NC	Single Solenoid
250AE2-3-21-(V)	3-way	Double Solenoid - Detent
250-4E1-21-(V)	4-way	Single Solenoid
250-4E2-21-(V)	4-way	Double Solenoid - Detent
500E1-3-10-36-(V)	3-way, NC	Single Solenoid
500E2-3-36-(V)	3-way	Double Solenoid - Detent
500AE1-3-10-36-(V)	3-way, NC	Single Solenoid
500AE2-3-36-(V)	3-way	Double Solenoid - Detent
590E1-3-10-36-(V)	3-way, NC	Single Solenoid
590E2-3-36-(V)	3-way	Double Solenoid - Detent
590AE1-3-10-36-(V)	3-way, NC	Single Solenoid
590AE2-3-36-(V)	3-way	Double Solenoid - Detent

Certified: ISO 9001:2015

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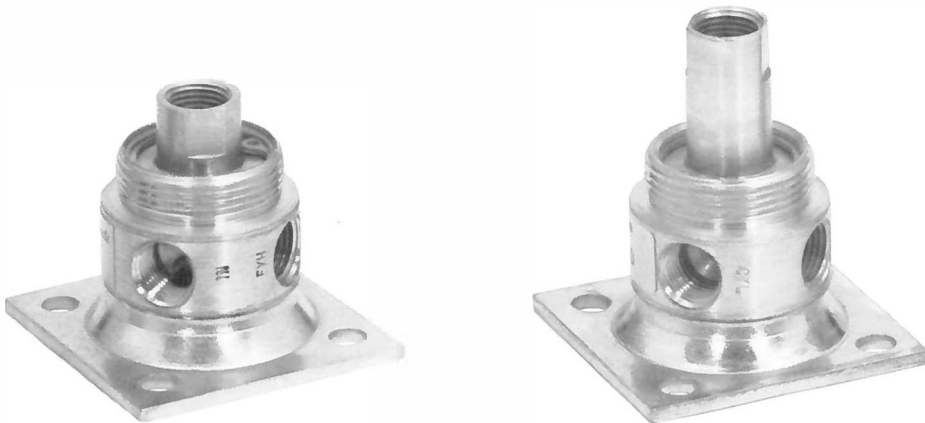
# Humphrey 125 Series Air-Piloted Valves

Humphrey 125 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 (27.5 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 125 Series valve from functioning if the lubricant is varied or removed.

125 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.



**125A** . . . . . 125A-3-10-21  
Model 125A is a normally closed 0.125-inch orifice valve. For use with low-pressure pilot signals, specify "w/pilot booster."



**125A** . . . . . 125A-3-11-21  
Model 125A is a normally open 0.125-inch orifice valve. Furnished with pilot booster.

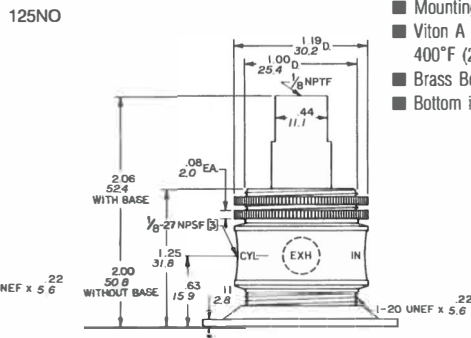
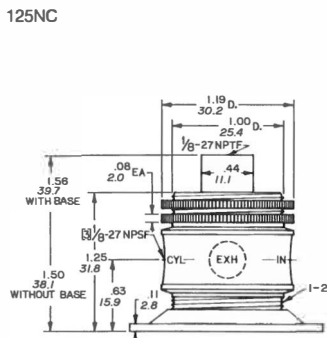
The Valve may also be used as:

- 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.). Ensure adequate pilot pressure.
- Normally closed:** Supply pressure to EXH port.



## Options for 125 Series Air-Piloted Valves

- Mounting Base, Code 21.
- Viton A Diaphragm for resistance to mild chemicals and for sustained temperatures to 400°F (204.4°) and intermittent temperatures to 600°F (315.5°).
- Brass Body.
- Bottom inlet for normally closed models .



Base: (all) — 1.75 Sq. w/four 0.22 D. holes on 1.25 Sq. centers



## 125AA

125AA-3-10-20

Model 125AA is a normally closed, 3-way or "detented" 3-way air-piloted 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.



## Specifications

**MEDIA:**  
Compressed Air (Consult factory for others)

**TEMPERATURE RANGE:**  
-20 to 225°F (-28.9 to 107.2°C)

### PRESSURE RANGE:

- 125A NC:** 0 to 125 psig (0 to 8.6 bars)
- 125A NC with booster:** 25 to 125 psig (1.7 to 8.6 bars)
- 125A NO, 125AA:** 10 to 125 psig (.7 to 8.6 bars)

**OPERATING SPEEDS:**  
To 600 CPM

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

**LUBRICATION** ..... Not required  
**FILTRATION** ..... Not required

### Air Flow to Atmosphere

MODEL	Air Flow				Weight	
	25 PSIG CFM	(1.7 BARS) LPM	125 PSIG CFM	(8.6 BARS) LPM	ACTUAL LBS	KGS
All	4.5	127.3	24	679.2	.20	.09

### 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)		
	FILL	EXHAUST	FILL	EXHAUST	FILL	EXHAUST	FILL	EXHAUST	
125A NC	0.106	0.238	0.834	1.150	0.124	0.221	0.922	1.260	
125A NO	0.144	0.113	0.825	0.924	0.127	0.155	0.850	1.230	
125AA NC	0.093	0.177	0.779	1.090	0.111	0.193	0.901	1.280	
VALVED PRESSURE		25 psig	1.7 bars	75 psig	5.2 bars	125 psig	8.6 bars		
PILOT PRESSURE									
MODEL	125A NC	21.6	1.5	36.0	2.5	51.5	3.6		
	125A NO	27.3	1.9	53.6	3.9	88.2	6.1		
	125AA	20.0	1.4	34.8	2.4	49.7	3.4		