

# Humphrey Manual/Mechanical Air Valves

## TECHNICAL SECTION

### GENERAL INFORMATION DESCRIPTION

#### Description

125 Series	Full .125 inch (3.17mm) orifice diaphragm-poppet valves with various manual, ball, plunger and three different types of cam operators.
250 Series	Full .250 inch (6.35mm) orifice diaphragm-poppet valves with various manual, foot, and cam operators.
501 Series	Full .500 inch (12.7mm) orifice piston-poppet valves with manual operators.

**Port Identification** (Varies by model. See individual model drawing)

IN	Pressure supply port.
CYL	Delivery port.
CYL N/O	Delivery port, normally open (passing).
CYL N/C	Delivery port, normally closed (not passing).
EXH	Exhaust port. Vent to atmosphere.

#### Installation

Humphrey manual and mechanical valves can be mounted in any position in most environments within the parameters stated in the specifications.

#### Mounting

Valves can be mounted directly in the supply line, or with body mounting threads, holes, or lugs, depending on model. Many models can be panel mounted. Most Humphrey manual and mechanical valves have optional mounting bases (Code 21) which can be used for either base mounting or panel mounting. Mounting bases are standard on some models. 125 Series valves are available with optional panel mounting nuts (Code 22).

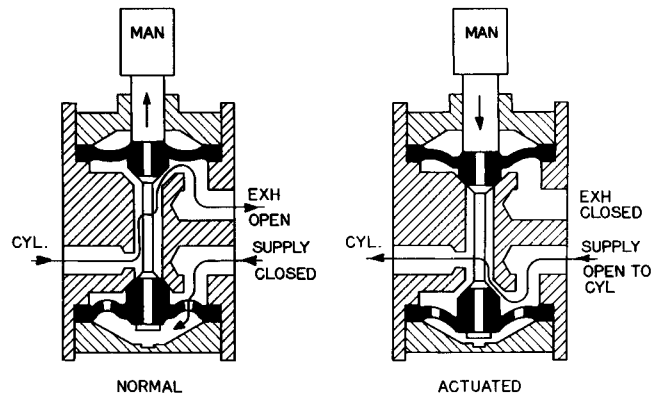
#### Use as 2-Way Valves

Most 3-way valves can be ordered as 2-way valves by specifying *Code 2* after the basic model number. Example: 125P-2-10-20. Most 3-way valves can be field converted to 2-way function simply by plugging the exhaust port.

These valves can be used as 2-ways venting to atmosphere; however, if actuated position is maintained for extended periods of time the bottom diaphragm may extrude into the flow path, causing a restriction.

These valves can be used as 2-ways to trap pressure between valve and downstream device; however, pressure under the top diaphragm may cause extrusion of the valve's stem through the bottom diaphragm if: 1) pressure exceeds 60 PSIG, or if 2) supply pressure is removed. If the conditions exist, consult factory for possible alternate port connections.

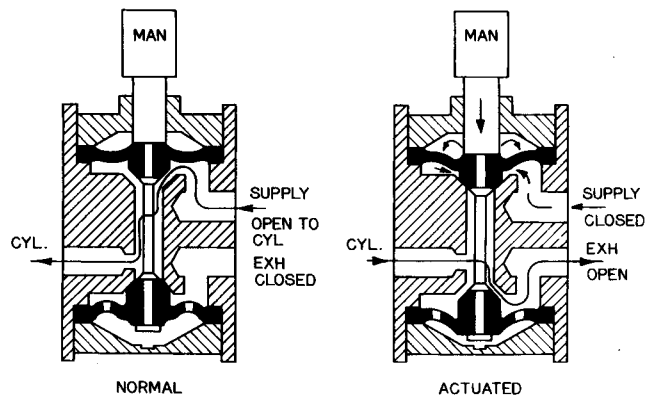
#### Basic Normally Closed Valve



**NORMAL** Design employs principle of imbalance wherein the supply pressure is applied to the greater effective area on the bottom side of the lower diaphragm.

**ACTUATED** When actuation is initiated, perforations in the bottom diaphragm begin to neutralize pressure to minimize the required actuation force. Supply pressure assists the spring in returning valve to normal position.

#### Basic Normally Open Valve



**NORMAL** Design employs principle of imbalance wherein the supply pressure is applied to the greater effective area on the bottom side of the top diaphragm.

**ACTUATED** When actuation is initiated, perforations in the bottom diaphragm begin to neutralize pressure to minimize the required actuation force.

### Use as 3-Way Valves

2-way valves can be used as 3-ways by removing the exhaust port plug.

4-way valves can be used as 3-ways by plugging the CYL NO or CYL NC delivery port.

### Use as Normally Open (passing)

Most models can be ordered as normally open by specifying *Code 11*. Example 250P-3-11-21.

Normally closed valves with detent actuators can be used as normally open by maintaining actuated position.

Most normally closed 3-way valves can be used as normally open by plumbing the supply pressure to the exhaust port (60 PSIG maximum). Excludes internally piloted 125PLG and 250HO models.

In this mode, the CYL port remains the delivery port; however, the IN port becomes the exhaust port.

### Use as a Selector Valve

Most 3-way normally open (Codes -3-11) can be used as selector valves. Connect higher pressure to EXH port (normally closed, not passing to CYL port). Connect lower pressure to IN port (normally open, passing to CYL port). Combined pressure must not exceed 125 PSIG total.

### Use as a Diverter Valve

Most 3-way normally open models (Codes -3-11) can be used as diverter valves. Connect supply pressure to CYL port (normally open, passing to IN port). EXH is normally closed, not passing to CYL port.

### Media/Pressure

Humphrey manual and mechanical valves are designed for use with compressed air or inert gases from 0 to 125 PSIG (8.5 bar) with some exceptions. Humphrey also manufactures a number of valves designed especially for vacuum service, from 0 to 29.5" Hg. See Vacuum section of Humphrey Air Valves General Catalog.

### Temperature

The normal temperature range of these valves with Buna N seals (nitrile, supplied as standard) is -20° to +225°F (-29° to 107°C). For higher temperatures (to 400°F/204°C), or for mild chemical resistance, consider optional fluoroelastomer seals. Specify *w/VAI*.

Some models are capable of controlling liquids and may be ordered with optional brass body. Specify *w/BRB*. Or consult factory and provide desired model number and application details.

### Lubrication

Whereas no lubrication of any kind is necessary with Humphrey manual and mechanical diaphragm-poppet valves, if lubricating oil is used it must be compatible with Buna N. Lubrication compatibility problems can sometimes be satisfied with Viton seals option. Specify *w/VAI*.

### Plumbing

Humphrey manual and mechanical diaphragm-poppet valves will function with low pressure or restricted volume media supplies, except Model 125PLG and 250HO which have minimum pressure requirements.

Most 125 Series Normally Closed valves are available with optional bottom inlet for plumbing convenience. Specify *w/BIN*.

Before connecting fittings and tubing, blow all foreign material from these components. If using a sealant, take extra care the sealant does not enter valve causing malfunction and/or leaks.

Recommended torque for 1/8 NPT and 1/4 NPT fitting installation is 60 and 130 inch-pounds (6.8 and 14.7 Newton-meters) respectively.

**CAUTION:** Compressed air is powerful and may be dangerous. Before attempting to remove a component from an air line or system, always disconnect the supply air and thoroughly exhaust the line or system. Never attempt to construct, operate, or service anything using compressed air unless you have been properly trained to do so. Failure to heed this warning could result in SERIOUS, EVEN FATAL, PERSONAL INJURY.

### Metric Ports

Although these valves are produced using the inch system, all drawings show the metric equivalent in millimeters (indicated by slanted numbers).

All port connections are available in metric as follows:

125 Series Available with 1/8 BSP instead of 1/8 NPT.  
250 Series Available with 1/4 BSP instead of 1/4 NPT.

Specify metric port threads by using letter *E* as a model number prefix. Example: *E125P* (with 1/8 BSP ports rather than Model 125P with 1/8 inch NPT ports).

Humphrey does not offer metric size fittings. Contact your local Humphrey distributor for metric size fittings sources.

### Force to Actuate

Force To Actuate (pounds) @ 30 PSIG and 100 PSIG

Valve Series	Actuator Type												
	B	C	F	H	HO	MC	MP	MOC	P	PL	PLG	T	V
125	3.25	1	•	•	3.5	2.5	4	3.25	4.75	•	2	2.5	.5
	8	2	•	•	7	5	8	6.5	8	•	3	3.5	1.5
250	•	5.5	3.75	•	8.5	•	•	•	10.5	7.5	•	3.25	1.25
	•	11	5	•	14	•	•	•	23	21	•	5	3
250-4	•	•	7.5	3	•	•	•	•	•	•	•	•	•
	•	•	13	4	•	•	•	•	•	•	•	•	•
501	•	•	•	•	•	•	•	•	•	•	•	•	3
	•	•	•	•	•	•	•	•	•	•	•	•	3.5

• Not available

## Flow Rates/C<sub>v</sub>

Humphrey recommends "fill/exhaust times", which are related to various chamber sizes, as the best method for calculating total valve and device (specifically, cylinder) response time. Humphrey recognizes the industry's use of flow coefficient C<sub>v</sub> as a comparison standard.

Consequently, Humphrey offers three types of flow data. The National Fluid Power Association's standards for C<sub>v</sub>, the scfm flow rate determined by flowing to atmosphere, and Humphrey's preferred "fill/exhaust times."

Model	C <sub>v</sub>	SCFM @100 PSIG	Fill Time (Sec) (0 to 90 PSIG)		Exhaust Time (Sec) (100 to 10 PSIG)	
			Chamber	(cu. in.)	Chamber	(cu. in.)
			10	100	10	100
125	0.2	20	.150	1.50	.200	2.00
250	0.8	50	.045	0.45	.080	0.80
250-4	0.8	50	.045	0.45	.080	0.80
501	2.4	220	.012	0.12	.019	0.19

**Note:** Normally Closed and Normally Open flow rates, C<sub>v</sub> etc. vary slightly and can cause slight deviations from these specifications.

## Example of how to calculate fill/exhaust times:

Model 125P-3-10-20

One Air Line (0.125 I.D. x 36-inch long)

100 PSIG supply

Air Cylinder (2-inch bore x 4-inch stroke)

Volume =

0.785 x Diameter squared x stroke or length

Cylinder Volume = 12.56 cubic inches

Air Line Volume = 0.43 cubic inches

Total Circuit Volume = 12.99 or 13 cubic inches

Time to Fill 13 cubic inches =

130% of .150 sec. for 10 cubic inches = 0.195 sec.

Time to Exhaust 13 cubic inches =

130% of .200 sec. for 10 cubic inches = 0.260 sec.

Total Cycle Time 0.455\*

\*Although this result is not exact, it is sufficient for most application needs and provides a simple, straight-forward system.

## Flow Controls

Flow controls should be placed between valve and device being actuated. **Installation of flow controls in valve exhaust ports is not recommended as back pressure may cause valve to malfunction.**

A muffler may be installed in valve exhaust port/s to muffle the sound of exhausting media. Mufflers should not impede exhaust function. A canister-type muffler is recommended. Sintered bronze mufflers are not recommended because they easily become plugged. If sintered bronze mufflers are used, routine cleaning or replacement is recommended.

## Packaging

Individual components are packaged in corrugated boxes for protection. Boxes show the valve model number for easy product identification.

Customers purchasing large quantities may prefer to reduce unpacking cost by ordering in bulk. Bulk packs contain multiple units. Consult factory.

## Troubleshooting

Valve malfunction problems are normally caused by circuit design errors, improper valve application, or improper plumbing.

Past experience indicates that the following are frequent causes of problems and should be investigated:

- Ensure presence of pressure; blocked or defective fittings are frequent causes of circuit start-up problems.
- Ensure that rated pressure is not exceeded. Higher than rated pressure may cause premature valve failure.
- Ensure proper stroke of cam or ball valves. Too little stroke will not allow valve to operate or cause air to leak at exhaust. Too much stroke may damage valve or equipment.
- Ensure integrity of cylinder seals. A valve leaking from the exhaust port may not actually be a valve malfunction, but may result from air leaking around worn out cylinder piston seals.

## Warranty

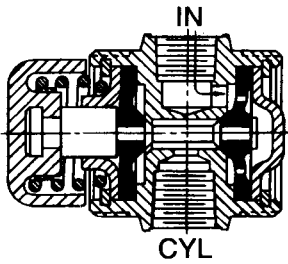
All valves have a one year warranty from date of manufacture. This warranty includes repair and/or replacement at no charge should the product be deemed defective due to workmanship and/or material.

Valves outside one year warranty may be returned for factory repair. Valves may also be repaired using a Humphrey Seal Repair Kit. Each kit includes replacement parts and instructions for easy completion. Please see following page for kit numbers.

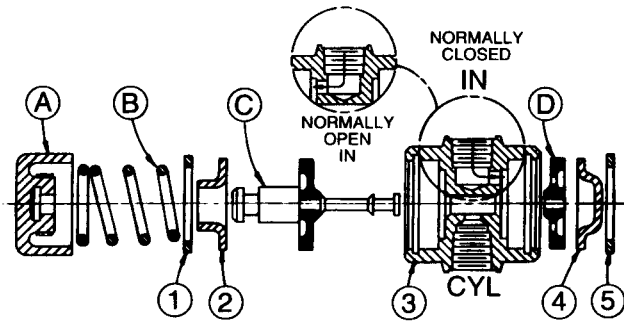
# Sample SRK Instruction Sheet

Kit Number	Repairs Model/s
SRK 125A	125A, 125B or HO
SRK 125MC	125MC, MP, MOC, or T(NO)
SRK 125P	125C or P
SRK 125PLG	125PLG
SRK 125V	125V or T(NC)
SRK 250	250C, F, P & 250-4F** or H**
SRK 250V	250B or V

\*\*Order 2 kits to repair both sides of these valves. Seals Repair Kits can be ordered with fluoroelastomer at extra charge. Specify w/VAI.



LETTERED PARTS (A) (B) (C) ETC. IN KIT  
 NUMBERED PARTS (1) (2) (3) ETC. NOT IN KIT



DISASSEMBLY PROCEDURE

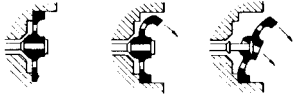
REASSEMBLY PROCEDURE

1. Remove nylon Button A as SHOWN — If \*steel button, remove two set screws.



2. Remove Retaining Ring 5 and End Cap 4.

3. Remove Diaphragm D as SHOWN.



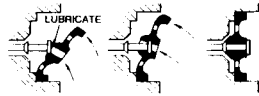
4. Remove Retaining Ring 1 and End Cap 2.

5. Remove Main Stem and Diaphragm Assembly C NOTING relationship to "IN" port to insure correct reassembly.

\*Valve with Steel Button has internal spring located between parts 4 and D. (This spring is not included in kit).

1. Insert New Main Stem and Diaphragm Assembly C into Valve Body 3 in correct relationship to "IN" port.

2. Assemble New Diaphragm D to Main Stem as SHOWN.



3. Install End Cap 4 and Retaining Ring 5.

4. Install End Cap 2 and Retaining Ring 1.

5. Assemble New Spring B and Button A with LARGE END of SPRING in BUTTON. Push down until Button "Snaps" into place.

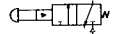


# Humphrey Manual and Foot Valves

Humphrey manual and foot valves are 2-way, 3-way, and 4-way valves featuring high flow and full orifice throughout their internal chambers. Simply designed for high reliability, these diaphragm valves require no lubrication and are appropriate for use in both refined and impure air systems. A 125 Series valve has a full 0.125-inch orifice. A 250 Series valve has a full 0.250-inch orifice, providing nearly three times the flow of 125 Series valves.



**125PLG** Model 125PLG is a 0.125-inch orifice, guarded palm-operated valve with internal pilot to ease operation and reduce operator fatigue. Its guard inhibits unintended operation and inhibits "bridging" when used in pairs for two-hand, no tie-down controls. The 125PLG mounts in any position and is furnished with panel locking nuts, base, side mount, and three colored (red, green, black) actuator stickers.



**250PL** Model 250PL is a rugged, 0.250-inch orifice, palm-operated valve with a large aluminum actuator for easy operation and reduced operator fatigue. The 250PL mounts in any position, in-line or with base. Specify if 250PL is desired with base on actuator end for panel mounting.



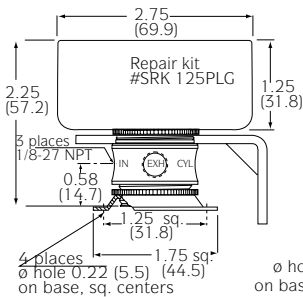
**125P** Model 125P is a 0.125-inch orifice, push-button valve with a high-impact nylon actuator for strength and durability. It spring-returns to normal position. The highly reliable 125P valve is designed with a short stroke piston, has no sliding seals, and requires no lubrication. If steel button is desired, specify Code 41. Model 125P mounts in any position, in-line or with base. For panel mounting, specify Code 22 (panel mounting nuts).



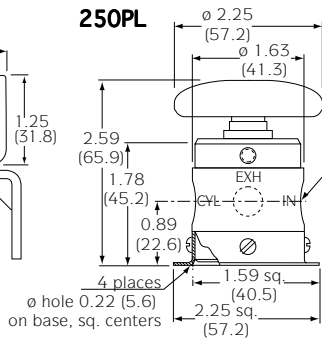
**250P** Model 250P is a 0.250-inch orifice, push-button valve with a high-impact nylon actuator for strength and durability. It spring-returns to normal position. This highly reliable valve is designed with a short stroke piston, has no sliding seals, and requires no lubrication. It is available with base on actuator end for added durability.



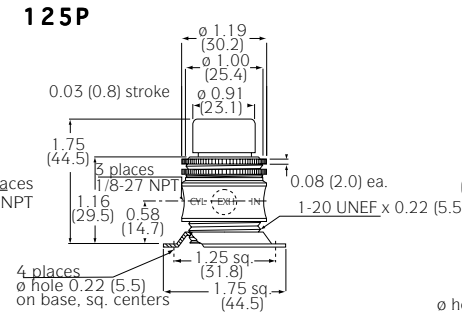
## 125PLG



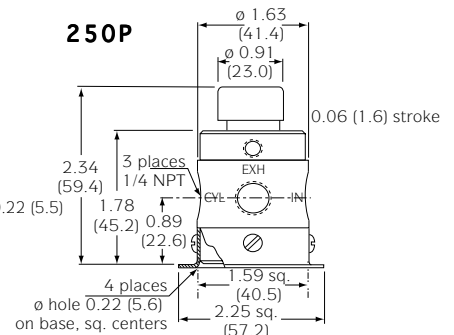
## 250PL



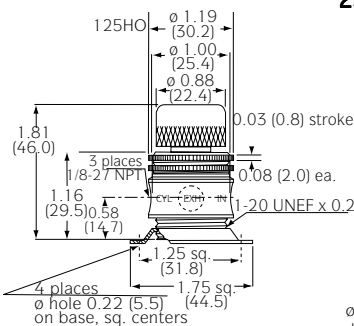
## 125P



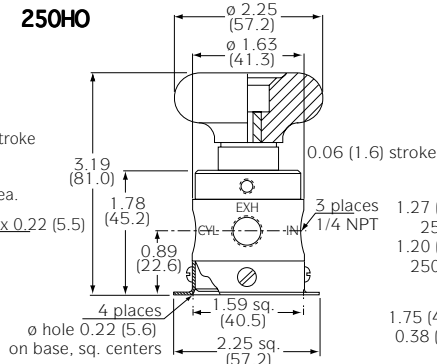
## 250P



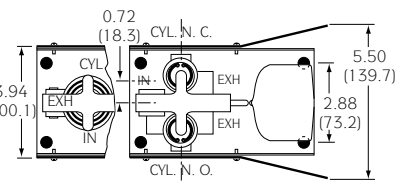
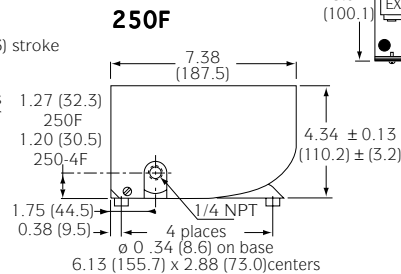
## 125HO



## 250HO



## 250F



## 250F (TOP VIEW)

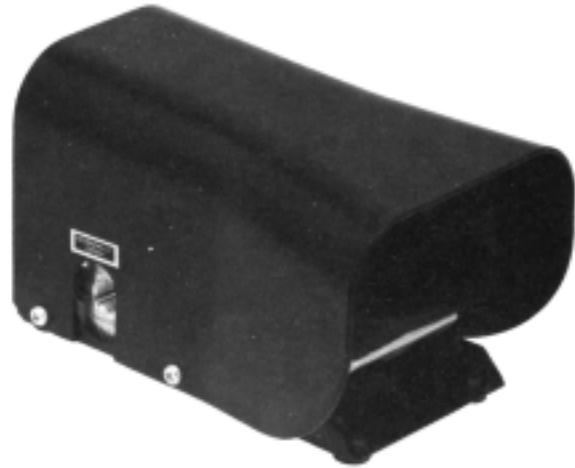
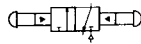
125PLG, 250PL, 125P, 250P, 125HO, 250HO, 250F, 125T, 250T, 125V, 250V, 250-4H, 510V  
 MANUAL/FOOT  
 10/23/97



**125HO** 125HO-3-10-21  
 Model 125HO is a 0.125-inch orifice, detented push-button valve with knurled steel actuator and bayonet-type lock. Detent is achieved by pushing actuator and rotating 30°. The 125HO can be used as a spring-return valve without detent.



**250HO** 250HO-3-10-20  
 Model 250HO is a 0.250-inch orifice, normally closed, detented, palm-operated valve. Detent is achieved by pressing the large aluminum palm actuator; valve is returned to the normally closed position by pressing the red center-button. The 250HO functions as a pneumatic "circuit breaker" and automatically closes if there is a sudden loss of pressure (below approximately 12 psig); valve must be manually re-opened. The pressure range of the 250HO valve is 25-125 psig.



**250F** 250F  
 Model 250F is a 2-way or 3-way, 0.250-inch orifice, guarded foot valve. Its 12-gauge steel guard helps protect the operator's foot from falling objects and other hazards. The actuator has a positive stop to protect valve from damage in rugged use. Its four rubber feet may be removed and the holes used for mounting.



**250-4F**  
 Model 250-4F is a 4 way, 5 port version of 250F, supplied normally closed/normally open as standard.



### Options for Humphrey Manual and Foot Valves

- Mounting Base, Code 21.
- Panel Mounting Nuts, Code 22 (125 Series valves only).
- Brass Body, (3-way models only).
- 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). Not available for 125PLG or 250F valves.
- Steel Button for Push-Button Valves, Code 41.
- Bottom inlet for normally closed models (except 250F/-4F).

### Specifications

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

**PRESSURE RANGE:**

- 125PLG:** 30 to 125 psig (2.1 to 8.6 bars)
- 125P, 125HO:** 0 to 125 psig (0 to 8.6 bars)
- 250PL, 250P, 250F:** 0 to 125 psig (0 to 8.6 bars)
- 250HO:** 25 to 125 psig (1.7 to 8.6 bars)

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

**MATERIALS:**  
**All 125s:** Zinc Die Cast, Zinc Plated Steel, Aluminum, Brass, Stainless Steel, Buna N, Nylon  
**All 250s:** Zinc Die Cast, Zinc Plated Steel, Aluminum, Brass, Stainless Steel, Buna N  
**LUBRICATION:** Not required  
**FILTRATION:** Not required

### Air Flow to Atmosphere

MODEL	SUPPLY PRESSURE				Weight	
	25 PSIG CFM	(1.7 BARS) LPM	125 PSIG CFM	(8.6 BARS) LPM	ACTUAL LBS	KGS
125PLG	4.5	127.3	24.3	679.2	.26	.12
125P					.21	.09
125HO					.26	.12
250PL	25.0	707.5	75.0	2122.5	0.7	0.3
250P					0.6	0.3
250HO					1.0	0.4
250F					3.8	1.7
250-4F	22.0	622.6	70.0	1981.0	4.7	2.2

### 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
All 125s	0.106	0.238	0.834	1.150	0.124	0.221	0.922	1.260
All 250s	0.032	0.044	0.312	0.433	0.033	0.059	0.324	0.565

# Humphrey Manual Valves

Humphrey manual valves are 2-way, 3-way, and 4-way valves featuring high flow and full orifice throughout their internal chambers. Simply designed for high reliability in rugged use, these compact valves require no lubrication. Bottom inlets are available for normally closed valves (except 250-4H and 501V valves). A 125 Series valve has a full 0.125-inch orifice. A 250 Series valve has a full 0.250-inch orifice, providing three times the flow of 125 Series valves.



**125T** 125T-3-10-21  
Model 125T is a 0.125-inch orifice, heavy-duty lever valve that is easy to operate with fingers or thumb. Designed for reduced operator fatigue, the 125T is also excellent as a knee-operated valve. The actuator can be positioned (rotated) 360°, and the valve itself can be mounted in any position.



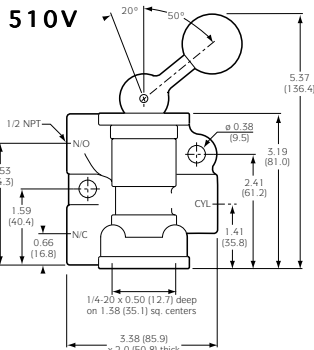
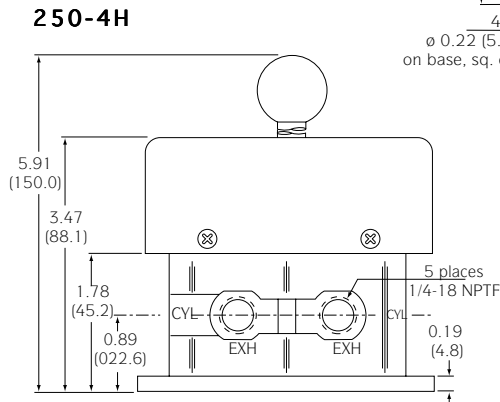
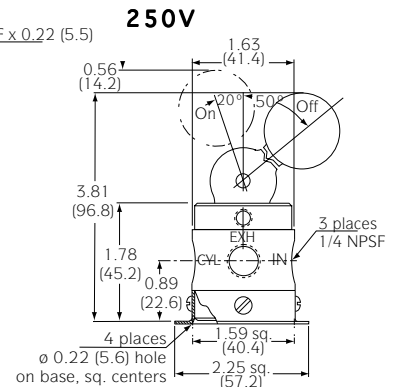
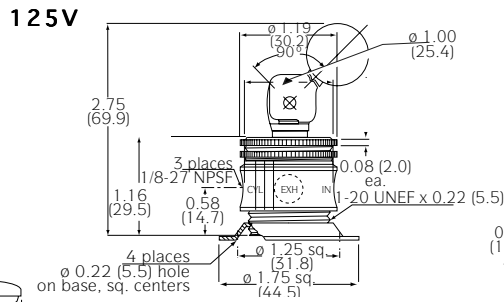
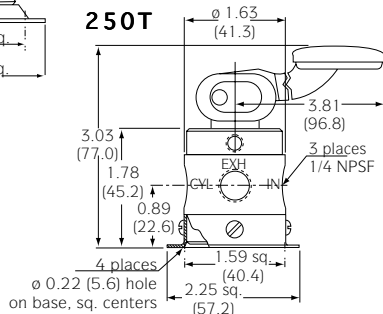
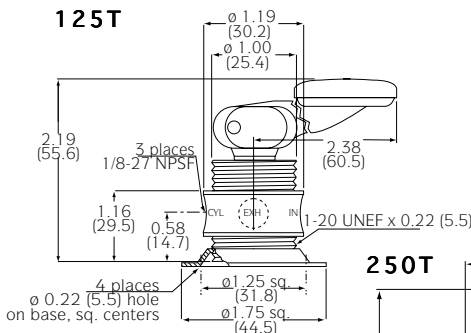
**250T** 250T-3-10-21  
Model 250T is a 0.250-inch orifice, heavy-duty lever valve that is easy to operate with fingers or thumb. Designed for reduced operator fatigue. The actuator can be positioned (rotated) 360°, and the valve itself can be mounted in any position.



**125V** 125V-3-10-21  
Model 125V is a 0.125-inch orifice, 2-position, normally closed, heavy duty valve with a straight-line 90° throw and positive detent in closed or open position. The large, rugged toggle will not wobble and permits visual identification of valve position. The actuator can be positioned (rotated) 360°.



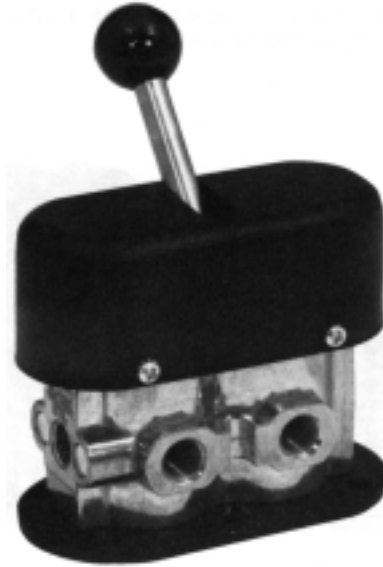
**125V for panel mounting** 125V-3-10-22  
Model 125V valve for panel mounting is identical to the 125V valve but may be ordered with Panel Mounting Nuts (Specify Code 22).



125PLG, 250PL, 125P, 250P, 125HO, 250HO, 250F, 125T, 250T, 125V, 250V, 250-4H, 510V  
MANUAL/FOOT  
10/23/97

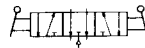


**250V** 250V-3-10-21  
 Model 250V is a 0.250-inch orifice, detented, heavy-duty toggle valve providing positive detent in the closed or open position and a straight-line 70° throw. The actuator can be positioned (rotated) 360°. The base of the 250V may be used for either panel or bottom mounting.



**250-4H** 250-4H-21  
 Model 250-4H is a 0.250-inch orifice, lever-operated valve. Moving the lever toward the inlet actuates right side; moving the lever toward the exhaust actuates left side; the center position is neutral. Mount

with four #10-32 tapped holes in body, with two slotted lugs on body, or on mounting base. The valve may be positioned on base in 90° increments.



**501V** 501V-3-12-20  
 Model 501V is a rugged, high flow (275 scfm at 125 psig), multi-purpose toggle valve offering several functions: normally closed, normally open, bi-media, and directional. All ports are on the same vertical plane for straight-line plumbing. The 501V valve can be mounted in any position: in-line, side mounted with bolts, with tapped holes in body, or on base. Full 0.500-inch orifice.



### Options for Humphrey Manual Valves

- Mounting Base, Code 21.
- Panel Mounting Nuts, Code 22 (125 Series valves only).
- Brass Body (For 125 and 250 Series 3-way valves.)
- 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).
- Bottom inlet for normally closed models (except 250-4H and 501V).

### Specifications

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

**PRESSURE RANGE:**

- All 125s: 0 to 125 psig (0 to 8.6 bars)
- All 250s: 0 to 125 psig (0 to 8.6 bars)

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

**MATERIALS:**  
 All 125s: Zinc Die Cast, Zinc Plated Steel, Aluminum, Brass, Stainless Steel, Buna N, Nylon  
 All 250s: Zinc Die Cast, Zinc Plated Steel, Aluminum, Brass, Stainless Steel, Buna N  
 LUBRICATION . . . . . Not required  
 FILTRATION . . . . . Not required

### Air Flow to Atmosphere

MODEL	25 PSIG (1.7 BARS)		125 PSIG (8.6 BARS)		Weight	
	CFM	LPM	CFM	LPM	ACTUAL LBS	KGS
125T	4.5	127.3	24.3	679.2	.26	.12
125V					.24	.11
250T	25.0	707.5	75.0	2122.5	.70	.30
250V					.70	.30
250-4H	22.0	622.6	70.0	1981.0	2.1	.94

### 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
All 125s	0.106	0.238	0.834	1.150	0.124	0.221	0.922	1.260
All 250s	0.032	0.044	0.312	0.433	0.033	0.059	0.324	0.565

# Humphrey Mechanical Valves

Humphrey mechanical valves are simple, reliable, compact, 2-way and 3-way valves providing high flow rates (full orifice throughout) and requiring no lubrication. A 125 Series valve has a full 0.125-inch orifice; a 250 Series valve has a full 0.250-inch orifice, providing nearly three times the flow of the 125 Series valves.



**125B** Model 125B is a 0.125-inch orifice, ball-operated valve that can be actuated from any angle. Its hardened steel ball is captive and free turning. The valve's short-stroke actuation is fully open at 0.031-inch; maximum stroke is 0.062-inch. The 125B can be mounted in-line, on mounting base, with panel mounting nuts, or with body threads.



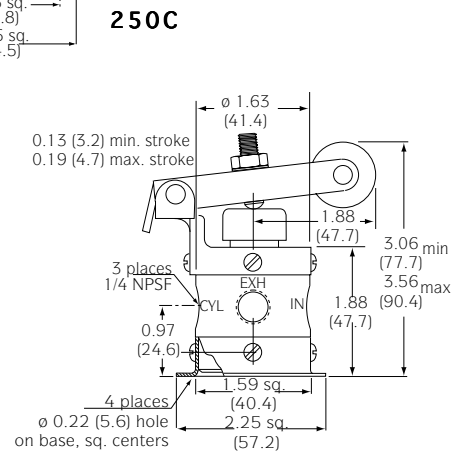
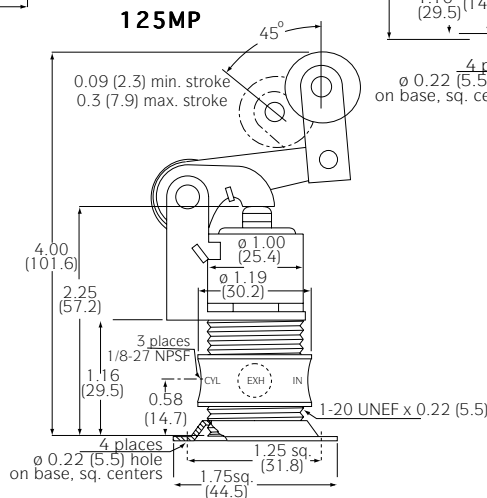
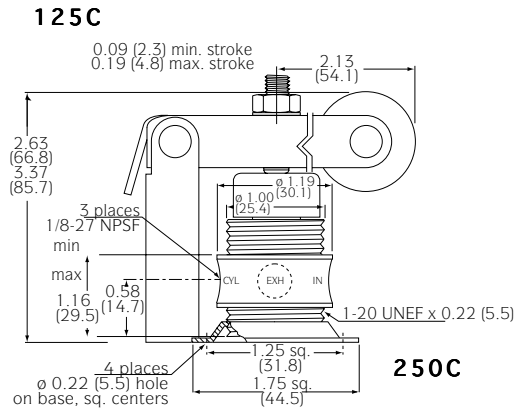
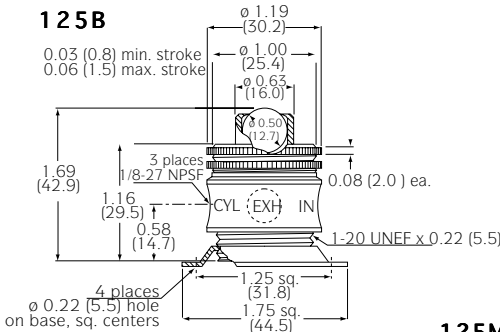
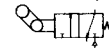
**125MP** Model 125MP is a 0.125-inch orifice valve actuated by a hardened plunger with spherical radius. The booted plunger may be actuated within  $\pm 20^\circ$  of centerline. The valve's short-stroke actuation is fully open at 0.062-inch; maximum stroke is 0.187-inch. The 125MP can be mounted in-line, on mounting base, with panel mounting nuts, or with body threads.



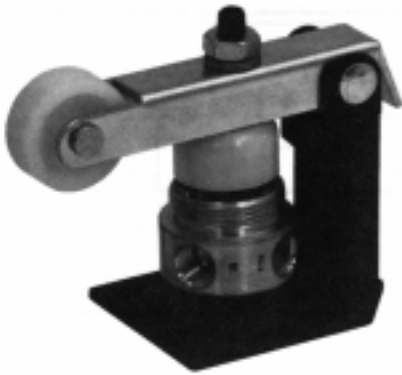
**125MC** Model 125MC is a 0.125-inch orifice roller cam valve with steel roller. The valve has been dust booted for extra protection. The actuator can be positioned  $360^\circ$  and locked in place by a hex lock nut below boot. The actuator height is adjustable in increments of 0.18", 8", and 8.18" through a  $270^\circ$  range. The 125MC can be mounted in-line, on mounting base, or with body threads.



**125MOC** Model 125MOC is a 0.125-inch orifice valve actuated by a one-way roller cam with steel roller. The valve has been dust booted for extra protection. The actuator can be positioned  $360^\circ$  and locked in place by a hex lock nut below boot. The actuator height is adjustable in increments of 0.18", 8", and 8.18" through a  $180^\circ$  range. The 125MOC can be mounted in-line, on mounting base, or with body threads.



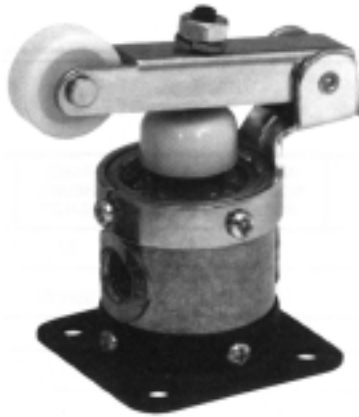
125B, 125MP, 125MC, 125MOC,  
125C, 250C mechanical  
10/23/97



**125C**

125C-3-10-40

Model 125C is an economical 0.125-inch orifice roller cam valve. The roller (1" DIA x 3/8") and actuator button are fabricated of self-lubricating, non-sparking, high-impact nylon. Roller height is adjusted with screw and locknut. Furnished with mounting base. Do not exceed allowable stroke or strike adjusting-screw with cam.



**250C**

250C-3-10-21

Model 250C is an economical 0.250-inch orifice roller cam valve. The roller (1" DIA x 3/8") and actuator button are fabricated of self-lubricating, non-sparking, high-impact nylon. Roller height is adjusted with screw and locknut.

Both the actuator and the valve may be rotated on base in 90° increments. Do not exceed allowable stroke or strike adjusting-screw with cam.



**Options for Humphrey Mechanical Valves**

- Mounting Base, Code 21.
- Brass Body
- 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).
- Panel Mounting Nuts, Code 22. For 125B and 125MP only.
- Bottom inlet for normally closed models.

**Specifications**

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

**PRESSURE RANGE:**  
**All 125s:** 0 to 125 psig (0 to 8.6 bars)  
**All 250s:** 0 to 125 psig (0 to 8.6 bars)

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

**MATERIALS:**  
**All 125s:** Zinc Die Cast, Zinc Plated Steel, Aluminum, Brass, Stainless Steel, Buna N, Nylon  
**All 250s:** Zinc Die Cast, Zinc Plated Steel, Aluminum, Brass, Stainless Steel, Buna N

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

**Air Flow to Atmosphere**

**Weight**

MODEL	25 PSIG (1.7 BARS)		125 PSIG (8.6 BARS)		ACTUAL	
	CFM	LPM	CFM	LPM	LBS	KGS
125B	4.5	127.3	24.3	679.2	.21	.09
125MP					.28	.13
125MC					.41	.19
125MOC					.43	.20
125C					.43	.20
250C	25.0	707.5	75.0	2122.5	.80	.40

**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)	
	FILL	EXHAUST	FILL	EXHAUST	FILL	EXHAUST	FILL	EXHAUST
All 125s	0.106	0.238	0.834	1.150	0.124	0.221	0.922	1.260
All 250s	0.032	0.044	0.312	0.433	0.033	0.059	0.324	0.565

## 125/250/501 SERIES

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

### VALVES

	2 WAY	3 WAY	NORM. CLOSED	NORM. OPEN	W/OUT MOUNT. BASE	WITH MOUNT. BASE**	PANEL MOUNT. NUTS**	NYLON BUTTON	STEEL BUTTON	FKM*** Seals	BRASS BODY	BOTTOM INLET (N/C only)
OPTION CODE	2	3	10	11	20	21	22	40	41	VAI	BRB	BIN
<b>MODEL 125B</b>	Specify	N/C	N/C	N/C	N/C	Specify	Specify	NA	NA	Specify	Specify	Specify
<b>125C</b>	Specify	N/C	N/C	N/C	NA	STD	NA	STD	NA	Specify	Specify	Specify
<b>125HO</b>	Specify	N/C	N/C	NA	N/C	Specify	Specify	NA	STD	Specify	Specify	Specify
<b>125MC</b>	Specify	N/C	N/C	N/C	N/C	Specify	NA	NA	STD	Specify	Specify	Specify
<b>125MOC</b>	Specify	N/C	N/C	N/C	N/C	Specify	NA	NA	STD	Specify	Specify	Specify
<b>125MP</b>	Specify	N/C	N/C	N/C	N/C	Specify	Specify	NA	STD	Specify	Specify	Specify
<b>125P</b>	Specify	N/C	N/C	N/C	N/C	Specify	Specify	STD	Specify	Specify	Specify	Specify
<b>125PLG</b>	NA	STD	STD	NA	NA	STD	STD	NA	NA	NA	Specify	Specify
<b>125T</b>	Specify	N/C	N/C	N/C	N/C	Specify	NA	NA	NA	Specify	Specify	Specify
<b>125V</b>	Specify	N/C	N/C	NA	N/C	Specify	Specify	NA	NA	Specify	Specify	Specify
<b>250C</b>	Specify	N/C	N/C	N/C	N/C	Specify	NA	STD	NA	Specify	Specify	Specify
<b>250F*</b>	Specify	N/C	N/C	N/C	NA	STD	NA	STD	NA	Specify	Specify	NA
<b>250HO</b>	NA	N/C	N/C	NA	N/C	Specify	NA	NA	NA	Specify	Specify	Specify
<b>250P</b>	Specify	N/C	N/C	N/C	N/C	Specify	NA	STD	NA	Specify	Specify	Specify
<b>250PL</b>	Specify	N/C	N/C	N/C	N/C	Specify	NA	NA	NA	Specify	Specify	Specify
<b>250T</b>	Specify	N/C	N/C	N/C	N/C	Specify	NA	NA	NA	Specify	Specify	Specify
<b>250V</b>	Specify	N/C	N/C	NA	N/C	Specify	NA	NA	NA	Specify	Specify	Specify
<b>250-4F*</b>	NA	NA	NA	NA	NA	STD	NA	STD	NA	Specify	NA	NA
<b>250-4H</b>	NA	NA	NA	NA	STD	Specify	NA	STD	NA	Specify	NA	NA
<b>501V</b>	Specify	N/C	NA	NA	N/C	Specify	NA	NA	NA	Specify	NA	NA

\*Model 250F and -4F may be ordered without guard.

\*\*Mounting accessories can be ordered separately. Contact your distributor.

\*\*\*Fluoroelastomer

### HOW TO ORDER

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

Example: To order Model 250P:

3-Way Operation (250P-3);  
 Normally Open (250P-3-11);  
 Mounting Base (250P-3-11-21);  
 With Viton Seals (250P-3-11-21 w/VAI); this is the complete Model Number.

Remember: Option Codes marked STD, 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.

N/C = No charge

STD = Standard

NA = Not available

Specify = Additional charge for this option

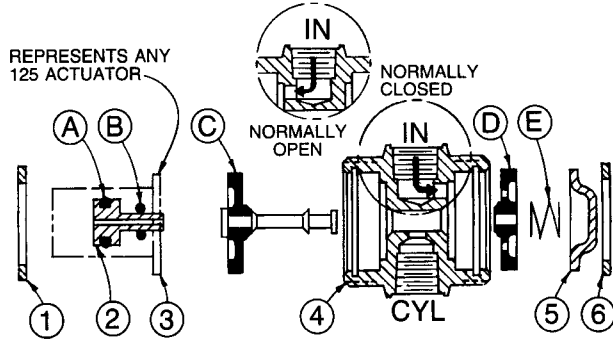
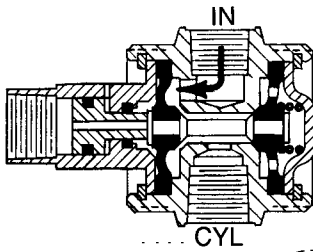
125B, 125MP, 125MC, 125MOC,

125C, 250C mechanical

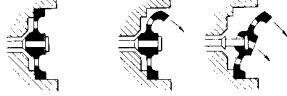
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# Seals Repair Kits and Parts

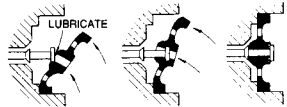
## Sample SRK Instruction Sheet



### DISASSEMBLY PROCEDURE

1. Remove Retaining Ring **6**, End Cap **5** and Spring **E**.
  2. Remove Diaphragm **D** as SHOWN.
  3. Remove Retaining Ring **1**, Actuator **3**.
- 
4. Remove Piston **2** from Actuator **3** (On 125A Normally Open Only).
  5. Remove "O" Rings **A** & **B** from Piston **2** and Actuator **3** (On 125A Normally Open Only).
  6. Remove Main Stem and Diaphragm Assembly **C** NOTING relationship to "IN" port to assure correct reassembly.

### REASSEMBLY PROCEDURE

1. Insert New Main Stem and Diaphragm Assembly **C** into Valve Body **4** in correct relationship to "IN" port.
  2. Assemble New Diaphragm **D** to main stem as SHOWN.
- 
3. Add New Spring **E**, End Cap **5** and Retaining Ring **6**.
  4. Add New "O" Rings **A** & **B** to Piston **2** and Actuator **3** (125A Normally Open Valve Only).
  5. Lubricate and Assemble Piston **2** to Actuator **3** (125A Normally Open Valve Only). Use CARE when sliding piston over threads.
  6. Assemble Actuator **3** to Valve Body **4** with Retaining Ring **1**.

**NOTE:** "O" Rings A & B are used on 125A Normally Open Valve with Booster ONLY. Short Spring E is used in 125A Normally Closed Only.

Seals Repair Kits are available to repair many Humphrey valves. Kits contain necessary parts and detailed instructions. Kits are sealed in plastic bags for cleanliness and protection. Kits are stocked by Humphrey valve representatives worldwide.

Models for which no Seals Repair Kits are available may be repaired with individual parts ordered from the parts list.

NUMBER	REPAIRS MODELS
SRK42A	M/S/42A, P
SRK42A2	M/S/42E/AE2/LW A2 PA, PP
SRK42E	M/S/42E/AE2/LW
SRK125A	125A, B, or -HO
SRK125LA	125LA, or 125AH
SRK125MC	125MC, MP, MOC or T(N/O)
SRK125P	125C, T (Old Style), or P
SRK125PLG	125PLG
SRK125V	125V, B, or T(N/C) N.S.
SRK250	250C, F, P, T, O.S. & 250-4F** or H**
SRK250A	250A (N/C), AE1 or AE2 & 250-4A (N/C Side)
SRK250A N/O	250A (N/O), 250-4A & AA (N/O Side)
SRK250AA	250AA & 250-4AA (N/C Side)
SRK250E	250E1, E2, & 250-4E1** or E2**
SRK250T	250T (New Style)
SRK250v	250B, SV, or V
SRKVA250	VA250A, AE1 or AE2
SRK500	500/590A, AB, AE1 OR AE2
SRK500E	500E1 & E2 OR 590E1 & E2
SRKVA500	V500C, VA500A, AE1 & AE2 or VA590A, AE1 & AE2
SRK501A	501A, AA, -4A*, -4AA**, -4E1** or -4E2**
SRK501E	501E & 501E2
SRKSQE	SQE1, 2
SRKQE	QE1, QE2, & QE3
SRKQE45	QE4 & QE5

\*\*Order 2 kits to repair both sides of these valves.

Seals Repair Kits can be ordered with fluoroelastomer at additional charge. Specify w/ VAI when ordering.  
Example: SRK 125A w/ VAI

Main Stem &  
Top Diaphragm Assembly

NO.	DESCRIPTION	(Diaph. Pt. No.)
2-20A	125A	
2-21A	125AA	
2-30A	250(-4)	
2-39A	250AA, 250-4AA N/C Side	(#3-19)
2-39B	250AA	(#3-20)
2-40A	VA,250A, 250-4A (N/C Side)	(#3-19)
2-40C	VA, 250A, 250-4A (N/C Side)	(#3-23)
2-40D	VA, 250A	(#3-20)
2-55A	250AL/AH	
2-56A	125LA (w/Orifice wire) &125AH	
2-70A	500/590A	
2-70C	500A w/FKM*	
2-70D	500/590 AG w/FKM*	
2-80A	125INS-A	
2-302A	250 (-4) A & N/O	(#3-19)
2-302E	250A N/O	(#3-20)

Solid Diaphragms

NO.	DESCRIPTION	DOT COLOR
3-10	125's 74D. Buna "N"	None
3-11	125's 80D. Buna "N"	Red
3-101	125's 70D. FKM*	White
R-510	1/8" Glue Valve, Teflon Profile	None
3-19	250 (-4) 70D. Polyurethane	All Green
3-20	250 (-4) 70D. Buna "N"	None
3-22	250 (-4)'s 50D. Buna "N"	Yellow
3-23	250 (-4)'s 70D. FKM*	White
3-25	500/590's 50D. Buna "N"	Yellow
3-30	500/590's 80D. Buna "N"	Red
3-32	500/590's 70D. FKM*	White
3-202	250's 80D. Buna "N"	Red
3-221	250 (-4)'s 65D. FKM*	Blue
3-55A	250AH - Rolling Diaph. Assy.	None
3-56A	250AL - Rolling Diaph. Assy.	None
3-60A	125LA Top Diaph.	None
3-63A	125AH - Top Diaph.	None

Perforated Diaphragms

NO.	DESCRIPTION	DOT COLOR
4-10	125's 74D. Buna "N"	None
4-11	125's 80D. Buna "N"	Red
4-101	125's 70D. FKM*	White
4-20	250 (-4)'s 70D. Buna "N"	None
4-22	250 (-4)'s 70D. FKM*	White
4-25	500/590's 50D. Buna "N"	Yellow
4-30	500/590's 70D. Buna "N"	None
4-32	500/590's 70D. FKM*	White
4-34	500/590's 80D. Buna "N"	Red
4-201	250 (-4)'s 50D. Buna "N"	Yellow
4-202	250 (-4)'s 80D. Buna "N"	Red
4-221	250 (-4)'s 65D. FKM*	Blue
R-456-1	Use Pt. #4-22	

Quad Rings &"V" Seals

NO.	DESCRIPTION
43-60	Piston, 250 (-4) A N/O

"O" Rings

NO.	DESCRIPTION
90-10	250 (-4). Body, Y125IN, Stem Y250IN
90-31	Piston, 125A w/Booster
90-50	Piston Rod, All Boosters
90-60	Stem, Y125IN
90-64	Body, 250IN
90-79	End Cap, 501 (-4)
90-90	Body, 125INS
90-92	Piston, 501 (-4)
90-93	125LA
90-95	500/590AB, AG - Buna "N"
90-130	500/590AB, AG -FKM*
90-502	250-4A, AA End Cap
90-504	Body, Y250IN
90-505	Body, Y500IN
90-602	Body, 125INL, Pilot Cap 125AH

Main Stems

NO.	USED ON
2-62	501A & (-4) A
2-64	501 (-4) AA
R550-1	R561

Diaphragm Supports

NO.	USED ON
5-10	250 (-4)
5-20	500

Open End Caps

NO.	USED ON
6-20	125A N/C
6-40	250A N/C
6-68	500/590AB
6-90	500 & 590A

Pilot Booster Assembly

NO.	USED ON
6-21A	125A
6-66A	500/590AB FKM*
6-66B	500/590AB Buna "N"
6-403A	250A
6-404A	Piston & Seals 250A

Plungers

NO.	USED ON
6-67	500/590AB
6-523	125LA
6-524	125AH

Closed End Caps

NO.	USED ON
7-10	125
7-20	250 (-4)
7-30	500 & 590
7-35	501 (-4)

Bases w/Screws

NO.	USED ON
8-10	125
8-12A	QE4, 5 Bracket
8-13	125 Side Mount
8-20A	250
8-40A	250-4
8-50A	501
8-1A	QE 1, 2 & 3

Springs

NO.	USED ON
81-10	125A N/O
81-11	125INS, INL
81-13	125A N/C
81-60	501 (-4)
81-201	250-4A, Y250IN
83-11	125AH Plunger
85-10	500A, 250-4A N/O
81-20	250A N/C, AL
85-104	VA500

Gaskets

NO.	USED ON
89-10	501-4

Retaining Rings

NO.	USED ON
91-10	125
91-20	250 (-4) & 501 (-4)
91-30	500 & 590

Panel Mounting Nuts

NO.	USED ON
120-301	125

Plugs

NO.	USED ON
130-15	1/4 NPT
130-20	1/2 NPT
130-24	3/4 NPT
130-31	1/8 NPT

\*Fluoroelastomer