



Optional Features and Accessories

Million Cycle Valves Vacuum Research Valves have been designed to eliminate sliding friction to extend operating life and reduce particle generation. For example, all of our valves use roller bearings on the actuator shaft and stainless steel rollers to guide the gate when opening and closing. This results in our standard operating life specification of 250,000 cycles without maintenance. For most situations our standard 250,000 cycle valve will out live the system it is installed on, but for some applications an even longer life is needed. For million cycle lifetime on VRC Welded Aluminum or Stainless Steel Valves add to the model number "10⁶ Cycles" and add the price shown below:
 2 to 8 inch ANSI, or 63 to 200 mm ISO valves \$455.
 10 & 12 in. ANSI, or 250 to 320 mm ISO valves \$571.

Kits to Convert Manual Valves to Electro-Pneumatic Operators for LPWA or OP Valves					
LPWA ISO 63	X810355	\$375.	OP 2 or 3 in.	X810355	\$415.
LPWA ISO 100	X810089	\$415.	OP 4 in.	X810355	\$472.
LPWA ANSI 2", 3"	X810022	\$472.	OP 6 or 8 in.	X810355	\$472.
LPWA ANSI 4"	X810061	\$472.			
LPWA ANSI 6" or 8"	X810304	\$472.			
LPWA ANSI 10" or 12"	X810529	\$681.			

Double Solenoid in place of standard, P/N: X702942 . \$184.

Explosion-Proof Solenoids

Class I, Div. 1, Groups A,B,C,D; Class II, Div. 2, Groups E,F, & G
 24 VDC, P/N: X134020 \$271.
 120V, 50/60 Hz, P/N: X134022 \$271.
 220V, 50/60 Hz, P/N: X134023 \$271.

Non-magnetic Valves The standard VRC valve is constructed of aluminum with non-magnetic stainless steel fasteners. There are, however, a few steel components that can be replaced with stainless steel at extra cost if completely non-magnetic valves are needed. (The Solenoid Valve is always magnetic, but can be located remotely.)

2 to 8 inch valves (63 mm to 200 mm) \$156.
 10 and 12 inch valves (250 mm and 320 mm) \$213.

OSHA Style EP Covers for VRC LPWA & OP Gate Valves Completely enclosed OSHA style covers with CE mark. This cover style is now standard on LPWA and OP gate valves with electro-pneumatic operators, but it may also be retrofitted to valves in the field. (Prices for LPWA and OP valves shown in this catalog include the OSHA style cover.)

Valve Size	Cover P/N	OSHA Style EP Cover with CE Mark
2 & 3 inch ANSI	X02WA152	\$80.
63, 80, 100 mm ISO 65, 80, 100 mm JIS	X703042	\$80.
4 inch ANSI 160 mm ISO 150 mm JIS	X04WA152	\$104.
6 & 8 inch ANSI 200 mm ISO 200 mm JIS	X06WA152	\$121.
10 & 12 inch ANSI 250, 320 mm ISO 250, 300 mm JIS	X10WA152	\$144.

Position Indicators (Limit Switches)

Position indicators (Limit Switches) are available on all Valves to provide remote indication of the valve position. Position indicators are available for air operated or manually operated valves. Several styles are offered.

All position indicators are RoHS compliant.

Fully Enclosed Style For LPWA, Rotary Actuator Valves

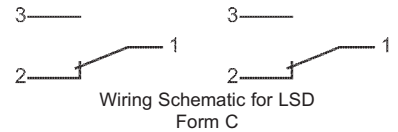
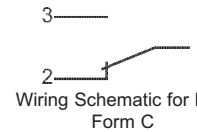


LSS or LSD - Fully Enclosed switches with 1/2-14 NPT conduit connection for unprotected industrial applications where physical protection of the wiring is required.

LSS - Fully Enclosed Limit Switches, SPDT. Contact rating is 15 A@115 or 230 VAC, 0.5 A@115 VDC.
 Kit P/N: X706901 \$138./pair

LSD - Fully enclosed Limit Switches, DPDT.

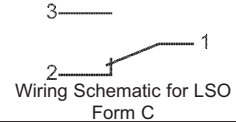
Contact rating is 10 A @ 125 or 250 VAC, 0.3 A@125 VDC, 0.15A@250 VDC.,
 Kit P/N: X706900 \$380./pair



Open Style



LSO - Open Style switches are often used when the valve is inside a cabinet or is otherwise protected. Open Style Limit Switches SPDT. Contacts: non-inductive 15A, 125-277 VAC; 5A, 125-250 VDC. Inductive 5A, 125 VAC; 0.2A, 250 VDC
 Kit P/N: X706907 \$40. /pair



Electronic Style for End Operated and Angle Style Valves

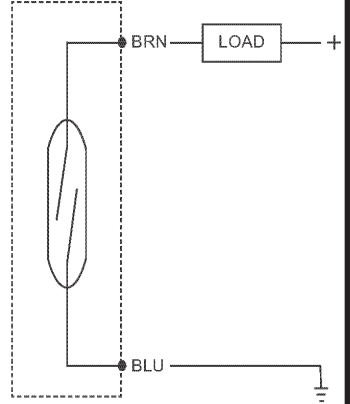


LSE - Electronic Position Indicators for Bellows Sealed, End Operated, Poppet and Rectangular Port Valves. Two reed switches activated by a magnet inside the pneumatic actuator provide contact closure for open and closed position.

LSE Model Specifications:

Contacts: SPST Form A (Normally Open)
 Contact Rating: 50 W maximum
 Voltage Rating: 200 VDC maximum, 141 VAC maximum
 Switching Current: 1A maximum
 Initial Contact Resistance: 1 ohm max.
 Minimum Breakdown Voltage: 225 VDC, 275 VAC
 Temperature Range: -40 °F to 200 °F (-40 °C to 93 °C)

Contact factory for P/N for your particular valve \$138./pair



Explosion Proof

LSX-C - Explosion Proof SPDT switches Class I, Division 1, Group C or D, and Class II, Division 1, Groups E,F,G (NEMA 7 & 9), Kit P/N: X706904 . . \$750./pair

LSX-B - Explosion Proof SPDT same as LSX-C but for Group B(H₂),
 Kit P/N: X706909 \$917./pair

Splash Proof

NEMA 1, 3, 4 and IP-66 enclosures contact factory

Reverse Carriage On standard Vacuum Research Bonnet Style valve sizes 2 to 8 inch (63 to 200 mm) the actuator is on the seal side. It is possible to build these valves with the actuator on the open side. Add to the model no. "REV. CARR." and add \$184. to the price.

Plain, Blank Or Special Flanges Valves may be specified with Plain or Blank flanges. Plain means without O-ring groove but with bolt holes. Blank means neither O-ring grooves nor bolt holes. Standard valves have O-rings and bolt holes on both sides. Special bolt circles and seal surfaces are also available but if non-standard flanges are required, be sure to specify "seal side" or "open side."no extra charge

JIS - ANSI - ISO - Conflat® Flange Combination VRC Valves are often used as an adapter to mate components of different flange styles. For example, valves can be provided with an ISO flange on one port and a Conflat®, or special flange on the other. Any combination can be provided to mate with your pumps, traps, or chamber.no extra charge

Reducer Valves Similar to adapting different flange styles as described above, valves can also be provided with port flanges of different sizes. Virtually any mix of port flange sizes or styles are available; for example, you may order a valve with a 6 in. flange on one side and an 8 inch on the otherno extra charge

Viton®, Kalrez® or Silicone O-Rings Our standard Valves use a Viton® O-Ring for the gate seal and Buna-N O-Rings for all other locations. For special or higher temperature applications you may specify Viton® (or other materials) throughout the valve with a "V", "S", or "K" in the model number. Viton® prices are listed on valve pages in the catalog. (For Silicone or Kalrez® contact the factory for prices.)

Port Flange O-Rings The standard and most commonly ordered configuration is with O-Rings on both port flanges. As shown on page 2, this is specified in the model no. as "20". There is no extra cost however for valves with O-Rings on one or neither flange. Please be sure to specify "open" or "seal" side if only one O-Ring is required.no extra charge

Stainless Steel Gates in Aluminum Valves To substitute a stainless steel gate on an aluminum valve add the suffix "SS Gate" to the model No. and increase the price as shown below.

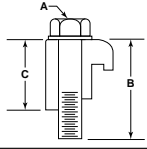
LP 2 in., LP 3 In. & NW-50 & ISO-100	.....	\$307.
LP 4 in. & ISO-160	.....	\$598.
LP 6 in. & ISO-200	.....	\$911.
LP 8 in. & ISO-250	.....	\$1191.
LP 10 in. & ISO-320	.....	\$1472.

ISO Centering Rings and Claw Clamps

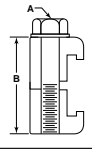
Aluminum Centering Ring with O-Ring				
ISO Flange Size	With Buna-N O-Ring		With Viton O-Ring	
	Part No.	List Price	Part No.	List Price
ISO 63	063-ALBU	\$11.00	063-ALVI	\$15.00
ISO 80	080-ALBU	\$14.00	080-ALVI	\$17.00
ISO 100	100-ALBU	\$16.00	100-ALVI	\$19.00
ISO160	160-ALBU	\$32.00	160-ALVI	\$39.00
ISO 200	200-ALBU	\$65.00	200-ALVI	\$73.00
ISO 250	250-ALBU	\$80.00	250-ALVI	\$91.00
ISO 320	320-ALBU	\$106.00	320-ALVI	\$126.00
ISO 400	400-ALBU	\$220.00	400-ALVI	\$225.00
ISO 500	500-ALBU	\$271.00	500-ALVI	\$317.00
ISO 630	630-ALBU	contact factory	630-ALVI	contact factory

Replacement O-Ring Only				
ISO Flange Size	Buna-N O-Ring		Viton O-Ring	
	Part No.	List Price	Part No.	List Price
ISO 63	063-OBU	\$1.00	063-OVI	\$5.00
ISO 80	080-OBU	\$1.00	080-OVI	\$6.00
ISO 100	100-OBU	\$1.20	100-OVI	\$7.00
ISO160	160-OBU	\$2.00	160-OVI	\$14.00
ISO 200	200-OBU	\$3.00	200-OVI	\$16.00
ISO 250	250-OBU	\$4.00	250-OVI	\$18.00
ISO 320	320-OBU	\$6.00	320-OVI	\$30.00
ISO 400	400-OBU	\$10.00	400-OVI	\$35.00
ISO 500	500-OBU	\$14.00	500-OVI	\$43.00
ISO 630	630-OBU	contact factory	630-OVI	contact factory

Aluminum Single Claw Clamps With Stainless Steel Bolt and Washer for Joining k to f Flanges					
ISO Flange Size (Quantity Needed)	A (THD)	B (mm)	C (mm)	Part Number	Price Each
ISO 63 (4)	M8	35	24	100-SGLAL	\$2.00
ISO 83 (8)					
ISO 100 (8)					
ISO 160 (8)	M10	35	24	250-SGLAL	\$4.00
ISO 200 (12)					
ISO 250 (12)					
ISO 320 (12)	M12	50	30	630-SGLAL	\$4.00
ISO 400 (16)					
ISO 500 (16)					
ISO 630 (20)					



Aluminum Double Claw Clamps With Stainless Steel Bolt and Washer for Joining Two k Flanges					
ISO Flange Size (Quantity Needed)	A (THD)	B (mm)	Part Number	Price Each	
ISO 63 (4)	M8	35	100-DBLAL	\$2.00	
ISO 83 (4)					
ISO 100 (4)					
ISO 160 (4)	M10	35	250-DBLAL	\$4.00	
ISO 200 (6)					
ISO 250 (6)					
ISO 320 (8)	M12	50	630-DBLAL	\$4.00	
ISO 400 (8)					
ISO 500 (12)					
ISO 630 (16)					



All Vacuum Research Valves can be supplied with one or several extra ports in a variety of locations, sizes and styles. The most common use is for the connection of roughing pumps and gauge tubes, but these ports can also be used for vent, backfill and purge gas connections. Select either brass "Bolt-on" flanges or the more economical "NW" style.

NW Flanges

This is the least expensive style and is usually the easiest for the user because connection requires no tools. The NW port is welded to the valve in the location you select. Centering ring, clamp, and blank-off flange not included. The table below lists the 'NW' sizes available in each location.

Location R-4	Location R-1, R-2, R-3, R-6, & R-7
NW-16 . . . \$138.	NW-16 . . . \$115.
NW-25 . . . \$149.	NW-25 . . . \$126.
NW-40 . . . \$173.	NW-40 . . . \$149.
NW-50 . . . \$184.	NW-50 . . . \$161.

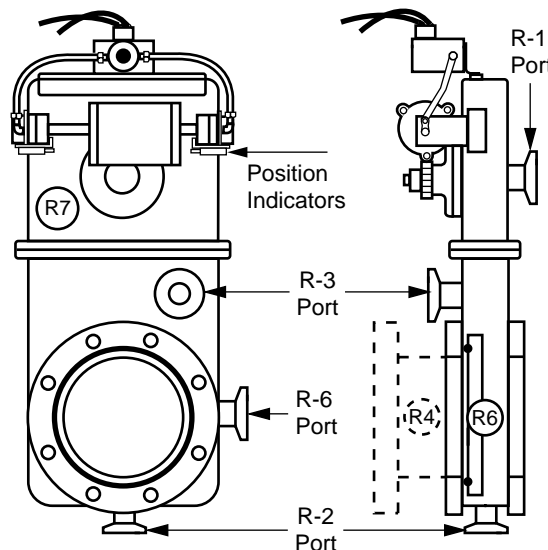
Bolt On Brass Flanges

This style is slightly more expensive than the NW ports because of the several machine setups to bore, mill and drill and tap the valve body, and manufacturing of the brass blank off flange which is included. With this style the customer must bore a hole in the blank-off flange and braze the required tubing to the flange.

Location R-4	Location R-1, R-2, R-3, R-6, R-7
2 to 4 inch and 63 to 100 mm . . . \$293.	Roughing Port Diameter 0.5 to 1.25 in. dia. port . . . \$259.
6 to 12 inch and 160 to 320 mm . . . \$357.	Over 1.25 in. dia. port . . . \$281.

NW Clamps and Centering Rings

The NW style roughing and gauge ports do not include clamps or centering rings. These items are described on page 31 of this catalog.



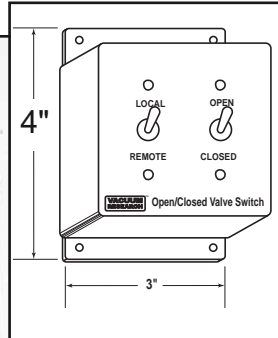
Gauge and Roughing Port Locations

Gauge & Roughing Port Locations

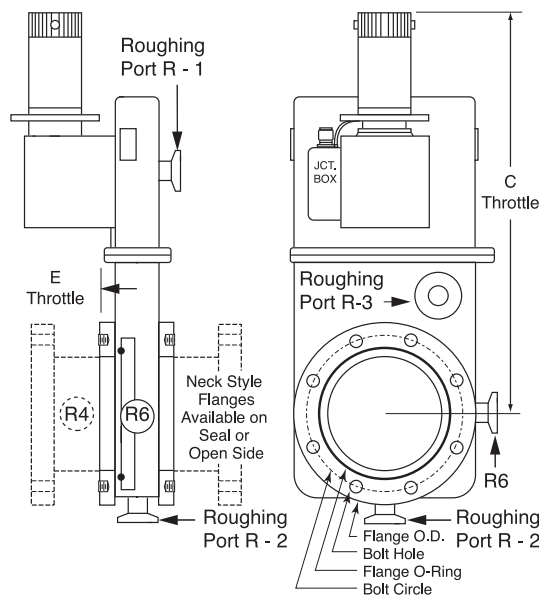
Nominal Valve Sizes	R-1	R-2	R-3	R-4 available only on valves with N5 or N6 necks	R-6	R-7
2 inch and 63 mm	NW-16 NW-40 NW-25 NW-50	NW-16 NW-40 NW-25	NW-16 NW-25	NW-16 NW-40 NW-25	NW-16 NW-25	NW-16 NW-40 NW-25 NW-50
3 inch and 80 mm	NW-16 NW-40 NW-25 NW-50	NW-16 NW-40 NW-25	Available only on OP style valves. NW-16, NW-25, NW-40, NW-50	NW-16 NW-40 NW-25	NW-16 NW-25	NW-16 NW-40 NW-25 NW-50
4 inch and 100 mm	NW-16 NW-40 NW-25 NW-50	NW-16 NW-40 NW-25	NW-16 NW-40 NW-25 NW-50	NW-16 NW-40 NW-25	NW-16 NW-25	NW-16 NW-40 NW-25 NW-50
6 inch and 160 mm	NW-16 NW-40 NW-25 NW-50	NW-16 NW-40 NW-25	NW-16 NW-40 NW-25 NW-50	NW-16 NW-40 NW-25	NW-16 NW-25	NW-16 NW-40 NW-25 NW-50
8 inch and 200 mm	NW-16 NW-40 NW-25 NW-50	NW-16 NW-40 NW-25	Available only on OP style valves. NW-16, NW-25, NW-40, NW-50	NW-16 NW-40 NW-25	NW-16 NW-25	NW-16 NW-40 NW-25 NW-50
10 inch and 250 mm	NW-16 NW-40 NW-25 NW-50	NW-16 NW-40 NW-25 NW-50	NW-16 NW-40 NW-25 NW-50	NW-16 NW-40 NW-25	NW-16 NW-25	NW-16 NW-40 NW-25 NW-50
12 inch and 320 mm	NW-16 NW-40 NW-25 NW-50	NW-16 NW-40 NW-25 NW-50	Available only on OP style valves. NW-16, NW-25, NW-40, NW-50	NW-16 NW-40 NW-25	NW-16 NW-25	NW-16 NW-40 NW-25 NW-50



12 In. Stainless Valve with Electric Motor Actuator
All Valves (RoHS) 2002/95/EC Compliant



2 Position (open / closed) electric actuators are available for all LPWA valves from 2 to 16 inch ANSI and 50 to 400 mm ISO sizes. These actuators replace the standard electro-pneumatic actuators and can be installed on either aluminum or stainless steel valves. In addition to these open / closed actuators our Throttlemaster® series provides full modulation from 0% to 100% for 3 position or PID throttling. Refer to pages 26 and 27 for Throttlemaster® specifications.



ANSI Port Size	Motor C	Motor E
2 & 3 inch	15.9 inch	4.34 inch
4 inch	19.7 inch	4.15 inch
6 inch	22 inch	4.03 inch
8 inch	22 inch	4.03 inch
10 inch	20.67 inch	3.90 inch
12 inch	22.74 inch	3.90 inch

ISO Port Size	Motor C	Motor E
63 & 80 mm	403 mm	110 mm
100 mm	403 mm	110 mm
160 mm	487 mm	105 mm
200 mm	561 mm	102 mm
250 mm	525 mm	99 mm
320 mm	577 mm	99 mm

Dimensions: Port dimensions, bolt patterns, and other dimensions are shown on pages 6 and 7 for ANSI and page 17 for ISO valves. A few dimensions unique to the Electric Motor Actuator are listed here.

Electric Motor Actuator for Gate Valves

Electric Actuator includes motor with Thermal Protection, position indicators, open/close switch and cable.

Power Required

5 A @ 115V 50/60 Hz at the valve site.

Position Indicators

SPDT Relays located at the valve for full open and closed positions. Contacts rated 3A @ 120 VAC and 1.5 A at 230 VAC resistive or 1.5 A @ 28 VDC inductive.

Open / Close; Manual Switch

In a surface mount box with LEDs to indicate open and closed, and 25 ft. (7.7 m) of cable (longer cable can be added). No power required at the switch site. Switch box is approximately 3 X 4 inches.

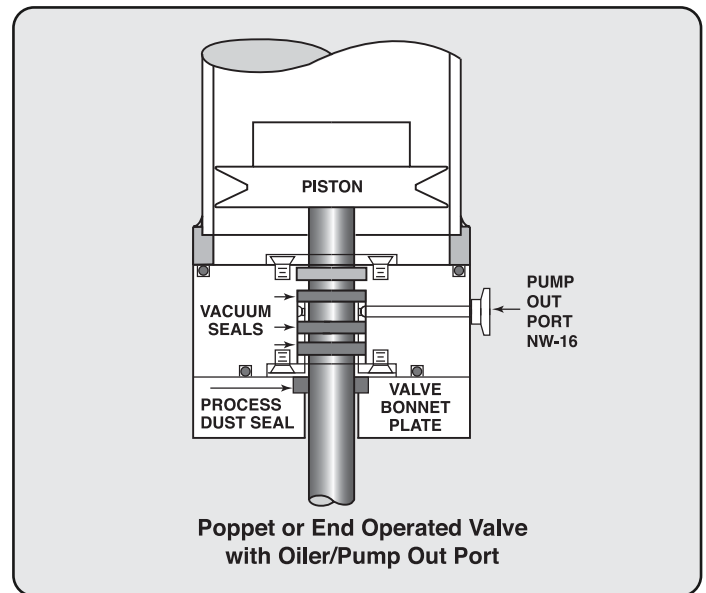
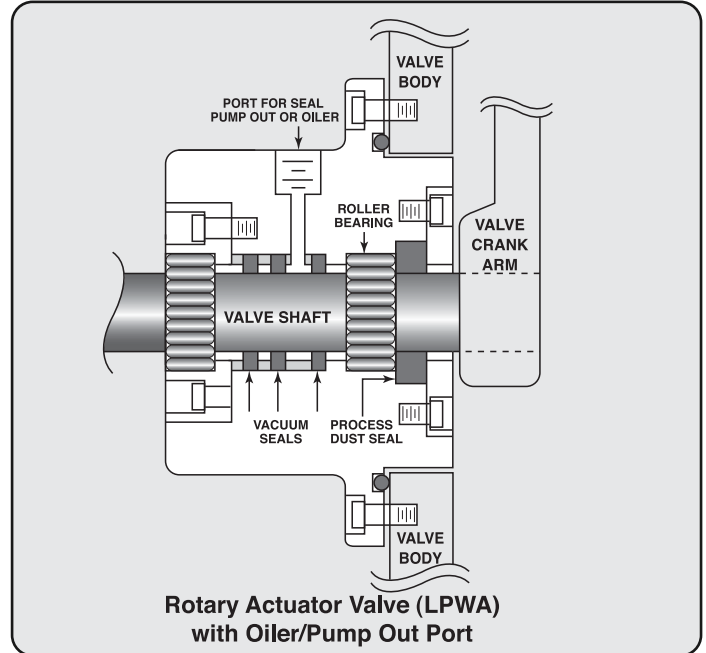
Open / Close; Remote Input

In addition to the Manual Switch for Open/Close the valve may also be actuated by a signal from your PLC or other system controller. Any signal between 5 and 30 VDC will open the valve. Zero volts will close the valve. A 4 - 20 mA current signal may also be used.

Ordering Information

Cost shown below should be added to the cost of valve with Electro Pneumatic actuator.

- 2 or 3 inch ANSI or 63 or 80 mm ISO Port LPWA Valve Electric Motor Actuator**
p/n: V806101add \$514.
- 4, 6 or 8 inch ANSI or 100 or 160 mm ISO Port LPWA Valve Electric Motor Actuator**
p/n: V806102add \$593.
- 10, 12 or 16 inch ANSI or 250, 320 or 400 mm ISO Port LPWA Valve Electric Motor Actuator**
p/n: V806103add \$747.



Our standard valves will give hundreds of thousands of cycles and years of service in most applications, however there are some industrial vacuum processes that are so dirty that the valves may need special features to provide long life and trouble free operation. Processes such as investment casting, tire reclamation and steel degassing often produce dust and particulate that can lead to frequent valve seal maintenance. Plasma systems may also need special care to protect the valve seals. The high temperature and corrosive nature of the plasma can cause the seals to quickly become dry and brittle and subsequently leak.

In these situations one of the most popular options is to apply a rough vacuum of approximately 0.1 Torr between the stages of the seal on the valve actuator shaft. Keeping a low pressure differential between seal stages can greatly extend the useful life of the seal.

Other customers prefer to lubricate the shaft and seals with high quality oil from a continuous gravity oiler. In this case the valve hub may be provided with both an inlet and outlet port so that a continuous drip of lubricant can be supplied.

In certain situations high viscosity grease is preferred and an appropriate fitting can be provided.

In all such situations a compliant dust seal is installed around the shaft at the vacuum interface to keep dust and particulate away from the vacuum seals and shaft roller bearings.

These inexpensive features are available on any size of our standard or water cooled gate or poppet valves. We recommend them on any application wherever dust and dirt from your process may contribute to increased maintenance and downtime.

Ordering Information

Although these options are not expensive they are always built to match the exact needs of each customer (for example, the pump out port may be pipe thread or 'NW' style flanges of various sizes). Because there are so many variables a firm price quotation will be provided after your discussion with our customer service people.