

Kits to Convert Manual Valves to Electro-Pneumatic Operators for LPWA or OP Valves					
OPWA ISO 63	X810355	\$605	OP 2" or 3"	X810022	\$690
LPWA ISO 100	X810089	\$668	OP 4"	X810061	\$816
LPWA ANSI 2", 3"	X810022	\$702	OP 6" or 8"	X810304	\$912
LPWA ANSI 4"	X810061	\$816			
LPWA ANSI 6" or 8"	X810304	\$912			
LPWA ANSI 10" or 12"	X810529	\$1235			

Double Solenoid: in place of standard, P/N: X702942 \$321

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\$600

120V, 50/60 Hz, P/N: X134022.....\$600

220V, 50/60 Hz, P/N: X134023\$600

Lock Out / Tag Out:

Hasps for lockout are available for manual valves and LPWA style valves.....add \$296

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).....\$272

10 and 12 inch valves (250 mm and 320 mm).....\$373

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	\$131
63, 80, 100 mm ISO 65, 80, 100 mm JIS	X703042	\$131
4 inch ANSI 160 mm ISO 150 mm JIS	X04WA152	\$182
6 & 8 inch ANSI 200 mm ISO 200 MM JIS	X06WA152	\$205
10 & 12 inch ANSI 250, 320 mm ISO 250, 300 mm JIS	X700284	\$233

Position Indicators (Limit Switches)

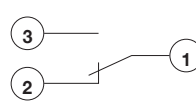
Electrical position indicators (Limit Switches) are available on all Valves to provide remote indication of valve position. Position indicators are available for air operated or manually operated valves. Several styles are offered, all are RoHS compliant.

For LPWA, Rotary Actuator Valves

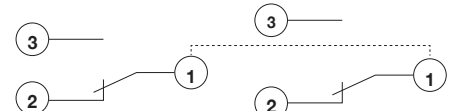
LSS or LSD - Fully Enclosed switches with 1/2-14 NPT conduit connection for unprotected industrial applications where physical protection of the wiring is required.

LSS - Fully Enclosed Limit Switches, SPDT. Contact rating is 15 A@115 or 230 VAC, 0.5 A@115 VDC. Kit - P/N: X706901..... \$231/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.....\$850/pair



Wiring Schematic for LSS, LSX, LSO, Form C



Wiring Schematic for LSD Form C

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.....\$1,785/pair

LSX-B - Explosion Proof SPDT same as LSX-C but for Group B(H2), Kit P/N: X706909\$2,039/pair

Splash Proof

NEMA 1, 3, 4 and IP-66 enclosures Contact Factory

GMR - Gate Magnet Style

Magnets on the gate activate reed switches mounted in IP-65 enclosures on the outside of the valve body. Schematic and contact rating same as for LSE shown below. P/N: X706014..... \$1,065/pair

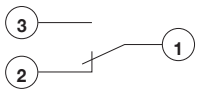
LSO - Open Style

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\$200/pair



For Motor and Throttle Valves

2 SPDT relays for open and closed position indication for throttle and motor actuated valves. Unpowered (form C) contacts rated for 3 A up to 220 V, non-inductive. Screw terminals for NO, C, NC wiring. Enclosure is 3" X 3" X 1.5" high with tabs for surface mounting. 6 ft. power cord, 6 ft. pigtail for connection to valve and LED indicators are included. P/N: X801410 (specify 115 or 220 V) \$703/ea



Wiring Schematic for LSO, Form C

For End Operated & 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 max., 141 VAC max.

Switching Current: 1A maximum

Initial Contact Resistance: 1 ohm max.

Minimum Breakdown

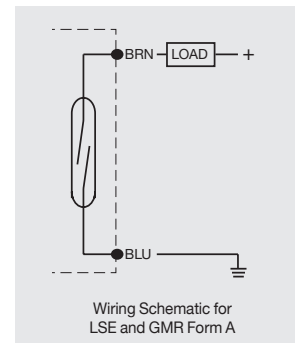
Voltage: 225 VDC, 275 VAC

Temp Range: -40°F to 200°F

(-40°C to 93°C)

Contact factory for P/N for your particular valve\$231/pair

Reverse Carriage (add to price) Contact



Wiring Schematic for LSE and GMR Form A

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: 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 chamberno 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 inch flange on one side and an 8 inch on the other 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 inch, LP 3 inch & NW-50 & ISO-100\$2,500
- LP 4 inch & ISO-160\$4,500
- LP 6-8 inch & ISO-200\$4,700
- LP ISO-250\$5,354
- LP 10 inch & ISO-320\$5,700

Reverse Carriage: On standard VRC 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 \$213. to the price.

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 requiredno extra charge

Port Flange Spacer Washers: Aluminum flat washers, .090 thick to insert between two flanges that both have O-Rings. O.D. will fit inside of bolts on ANSI Flanges.

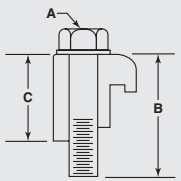
ANSI Size	Outside Diam	Bore	Part No.	Price
2 in ANSI	3.8 in O.D.	3.3 in Bore	X708403	\$32.00 ea
3 in ANSI	5.3 in O.D.	3.9 in Bore	X708404	\$45.00 ea
4 in ANSI	6.8 in O.D.	5.5 in Bore	X708405	\$47.00 ea
6 in ANSI	8.7 in O.D.	7.3 in Bore	X708406	\$54.00 ea
8 in ANSI	10.9 in O.D.	8.8 in Bore	X708407	\$61.00 ea
10 in ANSI	13.3 in O.D.	11.8 in Bore	X708408	\$70.00 ea

ISO Centering Rings and Claw Clamps

Aluminum Centering Ring with O-Ring				
ISO Flange Size	Part No.	List Price	Part No.	List Price
ISO 63	063-ALBU	\$17.00	063-ALVI	\$25.00
ISO 80	080-ALBU	\$20.00	080-ALVI	\$29.00
ISO 100	100-ALBU	\$23.00	100-ALVI	\$32.00
ISO 160	160-ALBU	\$48.00	160-ALVI	\$62.00
ISO 200	200-ALBU	\$97.00	200-ALVI	\$118.00
ISO 250	250-ALBU	\$120.00	250-ALVI	\$146.00
ISO 320	320-ALBU	\$157.00	320-ALVI	\$204.00
ISO 400	400-ALBU	\$325.00	400-ALVI	\$364.00
ISO 500	500-ALBU	\$400.00	500-ALVI	\$511.00
ISO 630	630-ALBU	Contact Factory	630-ALVI	Contact Factory

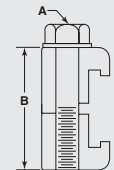
Replacement O-Ring Only				
ISO Flange Size	Buna-N O-Ring		Viton O-Ring	
	Part No.	List Price	Part No.	List Price
ISO 63	063-OBU	\$4.00	063-OVI	\$8.00
ISO 80	080-OBU	\$4.00	080-OVI	\$9.00
ISO 100	100-OBU	\$4.00	100-OVI	\$12.00
ISO 160	160-OBU	\$5.00	160-OVI	\$24.00
ISO 200	200-OBU	\$6.00	200-OVI	\$28.00
ISO 250	250-OBU	\$7.00	250-OVI	\$31.00
ISO 320	320-OBU	\$9.00	320-OVI	\$50.00
ISO 400	400-OBU	\$15.00	400-OVI	\$56.00
ISO 500	500-OBU	\$22.00	500-OVI	\$71.00
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 No.	Price Each
ISO 63 (4)	M8	35	24	100-SGLAL	\$5.00
ISO 83 (8)					
ISO 100 (8)					
ISO 160 (8)	M10	35	24	250-SGLAL	\$7.00
ISO 200 (12)					
ISO 250 (12)					
ISO 320 (12)	M12	50	30	630-SGLAL	\$7.00
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 No.	Price Each
ISO 63 (4)	M8	35	100-DBLAL	\$5.00
ISO 83 (4)				
ISO 100 (4)				
ISO 160 (4)	M10	35	250-DBLAL	\$7.00
ISO 200 (6)				
ISO 250 (6)				
ISO 320 (8)	M12	50	630-DBLAL	\$7.00
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.

NW Flanges

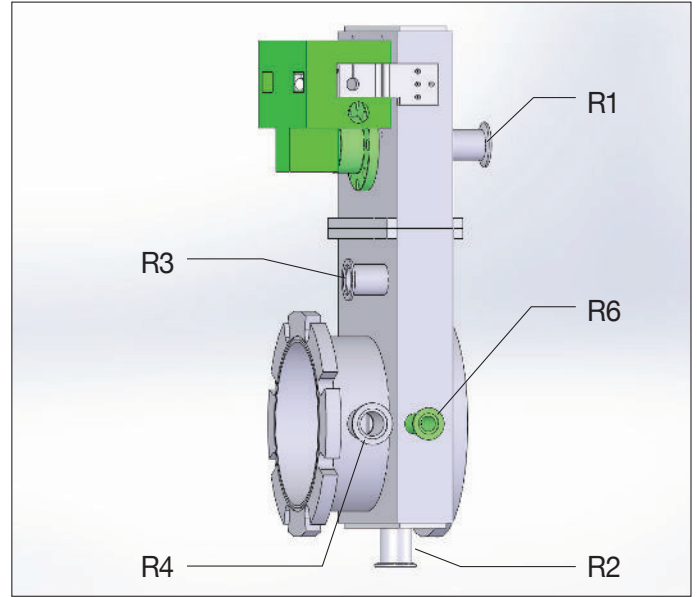
This is the least expensive style and is usually the easiest for the user because connection requires no tools. The NW port is welded to the valve in the location you select. Centering ring, clamp, and blank-off flange not included. The table below lists the 'NW' sizes available in each location. NW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

Location R-4

NW-16.....	\$231
NW-25.....	\$253
NW-40.....	\$290
NW-50.....	\$309

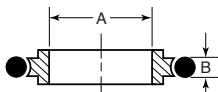
Locations R-1, R-2, R-3, R-6, R-7 & R-9

NW-16.....	\$194
NW-25.....	\$212
NW-40.....	\$251
NW-50.....	\$271



Gauge & Roughing Port Locations

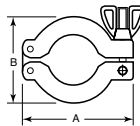
Nominal Valve Size	R-1	R-2	R-3	R-4 available only on valves with N5 or N6 necks	R-6 & R-8	R-7
2 inch and 63mm	NW-16 Nw-40 NW-25 NW-50	NW-16 Nw-40 NW-25	NW-16 NW-25	NW-16 NW-25	NW-16 NW-25	NW-16 Nw-40 NW-25 NW-50
3 inch and 80 mm	NW-16 Nw-40 NW-25 NW-50	NW-16 Nw-40 NW-25	not available	NW-16 NW-25	NW-16 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-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-25	NW-16 NW-25	NW-16 Nw-40 NW-25 NW-50
8 inch and 200mm	NW-16 Nw-40 NW-25 NW-50	NW-16 Nw-40 NW-25	not available	NW-16 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-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	not available	NW-16 NW-25	NW-16 NW-25	NW-16 Nw-40 NW-25 NW-50



Centering Rings

304 Stainless Steel With Viton O-Rings
(Buna-N O-Rings Available)

Flange Size	A	B	Part No	Price
NW-16	0.63 (16)	0.21 (5.3)	CTR-RING 16	\$8.00
NW-25	0.984 (25)	0.21 (5.3)	CTR-RING 25	\$9.00
NW-40	1.575 (40)	0.21 (5.3)	CTR-RING 40	\$12.00
NW-50	1.969 (50)	0.21 (5.3)	CTR-RING 50	\$15.00



Clamps

Aluminum Clamps With Wing Nut & Screw Fastener

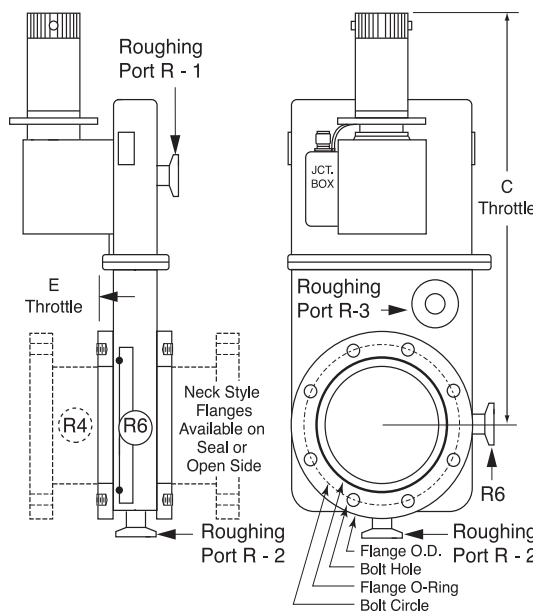
Flange Size	A	B	Thickness	Part No	Price
NW-16	2.24 (57)	1.69 (43)	0.63 (16)	AL-Clamp 16	\$8.00
NW-25	2.76 (70)	2.17 (55)	0.63 (16)	AL-Clamp 25	\$9.00
NW-40	3.39 (88)	3.39 (88)	0.63 (16)	AL-Clamp 40	\$12.00
NW-50	4.33 (110)	4.33 (110)	0.79 (20)	AL-Clamp 50	\$15.00

Electric Motor Actuators for LPWA Series Gate Valves (115 or 230 VAC/1-Phase Motors)



12 In. Stainless Valve with Electric Motor Actuator
All Valves (RoHS) 2015/863/EU 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 the Throttlemaster® specifications in this catalog.



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 13 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 and open/close switch with 25 ft. of cable.

Power Required

5 A @ 115V 50/60 Hz at the valve site, 230 V optional.

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 to 8 inch ANSI or 63 to 200 mm ISO Port LPWA or LPSS Valve Electric Motor Actuator

Contact Factory

10 inch ANSI; or 250 mm ISO Port LPWA or LPSS Valve Electric Motor Actuator

Contact Factory

Greater than 10 inch ANSI; or 250 mm ISO Port Electric Actuator

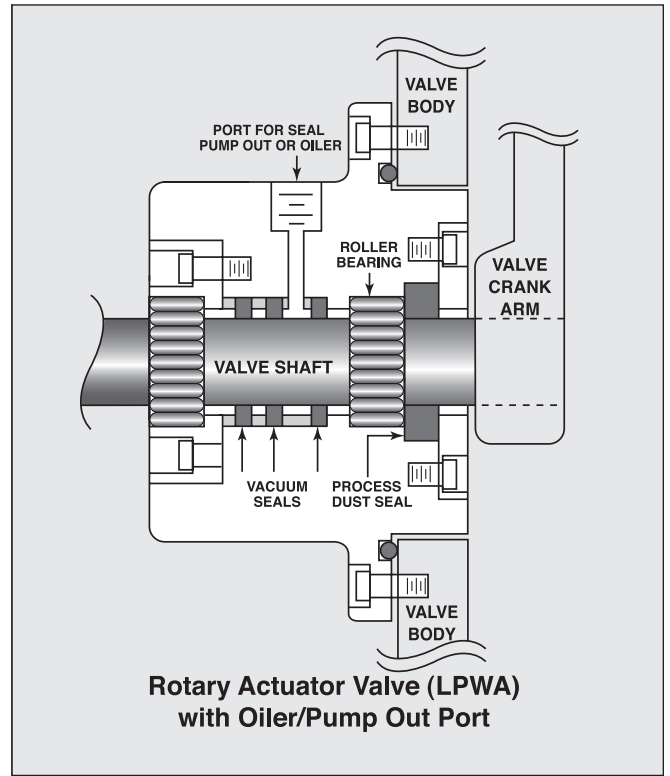
Position Indicators (Optional)

GMR - Gate Magnet Style

Magnets on the gate activate reed switches mounted in IP-65 enclosures on the outside of the valve body.

Contacts: non-inductive 15A, 125-277 VAC; 5A, 125-250 VDC. Inductive 5A, 125 VAC; 0.2A, 250 VDC.

p/n: X706014 add \$1,065/pair



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.

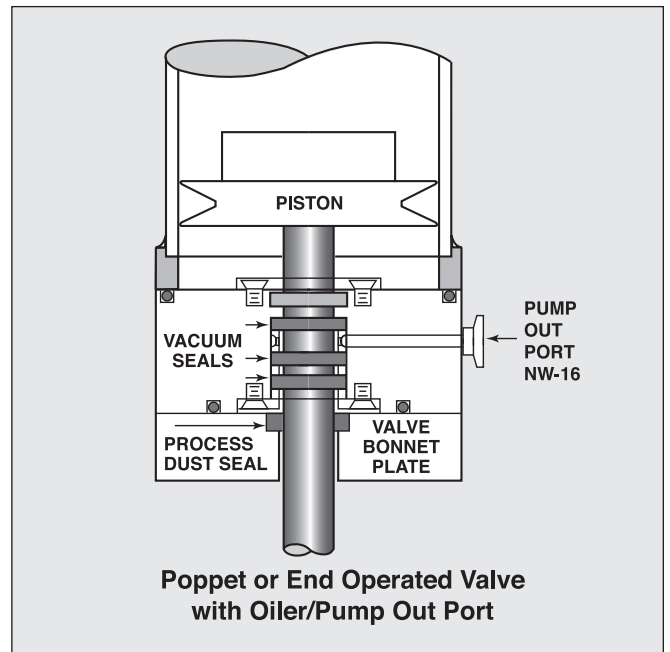
In these situations one of the most popular options is to apply a rough vacuum of approximately 0.1 Torr between the stages of the seal on the valve actuator shaft. Keeping a low pressure differential between seal stages can greatly extend the useful life of the seal.

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.