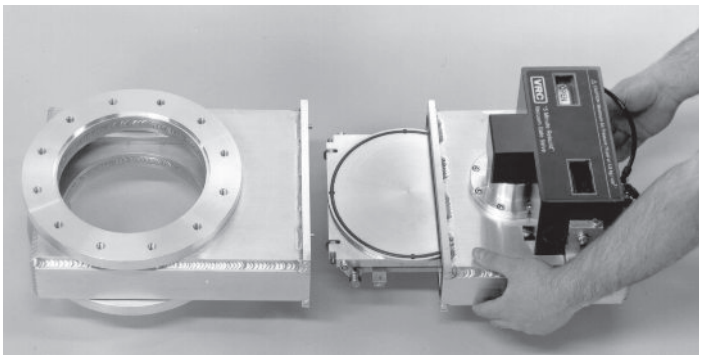
INSTRUCTION MANUAL

Vacuum Gate Valve with Rotary Actuator



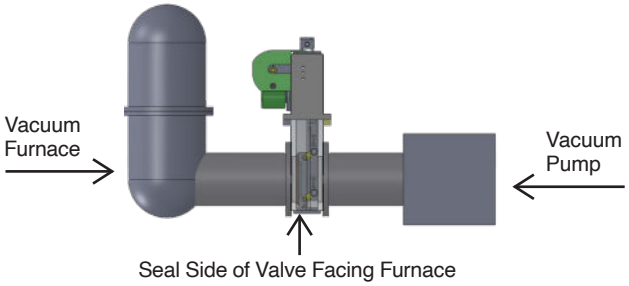
INTRODUCTION:
The uncomplicated design of these high vacuum gate valves makes servicing easier than on any other gate valve. The valves are welded from custom extrusions of aluminum. These extrusions have a very smooth and bright surface finish which is one of the reasons for the low outgassing and fast pump down of these valves. Dismantling requires no training or practice, and reassembly errors are almost impossible. There is only one way to put any part or assembly in place and there are no critical adjustments. With one motion the entire internal mechanism is lifted from the valve while the flanged port section stays bolted in the system. The short body sections make cleaning easier and faster. The centerline body flange makes this possible and reduces maintenance and servicing time to a minimum.

The diagram inside shows the rotary seal principle and the no-contact-gate action. The gate (disc) O-ring seals in a motion perpendicular to its seat, without O-ring scuffing. The gate carriage assembly stays securely locked in position at the open or closed position because of the dead centers at the extremes of the 180° arc. The half circle swing of the cam is rapid at mid-way point, slowing to stop at top or bottom. This makes very fast action possible without the hammer effect of a plunger type operator. It is built-in cushioning for the stroke which means negligible wear and a long operating life without maintenance.

The valves work equally well in any orientation. It should be determined that the valve and/or adjacent piping of the vacuum system will be adequately supported when assembled. Make certain the mating flanges are in-line, parallel and the correct distance apart to minimize the strain on the valve body. It is important to remember that the gate seal is on the operator or hub side of the valve on sizes 2" to 8". On sizes 10" and larger the operator is on the opposite, or open side.

NOTICE

If valve is to be opened with a pressure differential of 50 Torr or more it must be installed with the open side toward the pump & the seal side facing the chamber or furnace (Higher Pressure).



These valves hold vacuum in either direction. However, no gate valve opens easily in a vacuum-to-atmosphere condition with the pressure of atmosphere on the open side,or against the back of the gate. If opening is necessary with a vacuum to atmosphere differential, ensure gate faces upstream (toward atmosphere or higher pressures) or install a means of equalizing pressure prior to actuation. Gate valves will not close easily against atmosphere if the vacuum side is a large chamber where the inrush of atmosphere may approach very high velocity.

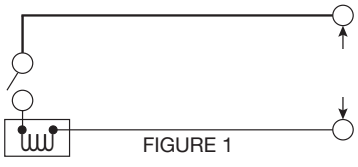
MAINTENANCE:
The valves do not require any routine maintenance. However, it is necessary to prevent the accumulation of dirt and debris inside the valve and if your vacuum system is extremely dusty or dirty, cleaning the interior of the valve will be required from time to time. When the valve is disassembled for cleaning, it is recommended that the O-rings be replaced. Note that cleaning O-rings with solvents is never recommended, because the solvent will be absorbed by the O-ring and will produce high outgassing for hours or even weeks after such cleaning. If vacuum grease is used on O-rings, it can also cause outgassing and 'burps' of gas. Only a thin, almost invisible, coating of grease should be used on O-rings in vacuum systems. Flange O-rings shipped with new valves and O-rings shipped as spare or replacement parts have not been greased prior to shipment.

ELECTRO PNEUMATIC (EP) ACTUATORS:
The 'EP' actuators include a 4-way solenoid valve actuator with 24" leads and are mounted, ready for wiring when valves are ordered for pneumatic operation. The one side of the solenoid bracket (stamped "C") is normally closed. The other side (stamped "D") is normally open. The "C" side opens the gate valve; the "D" side closes it. Recommended minimum air pres-sure is 65 psi (4.6 kg/cm^2) for valves with 2 inch and 3 inch ANSI flanges (NW-50 to ISO 80). Recommended minimum air pressure for valves with 6 inch to 16 inch ANSI flanges (ISO 100 to ISO 400) is 85 psi. (6 kg/cm^2). Recommended maximum air pressure for all sizes is 100 psi. (7 kg/cm^2).

⚠ WARNING

The air supplied to these valves must be free of oil, water and dirt for proper operation. If the air at your facility is not clean and dry you must install filters and traps upstream of the valve.

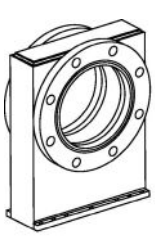
WIRING: The preferred method to preclude human error, employs SPST switches as in Fig. 1. Connect two wire leads to source with a SPST toggle switch in either line. When solenoid is energized, valve opens; when solenoid is de-energized, valve closes. Pressure remains in cylinder.



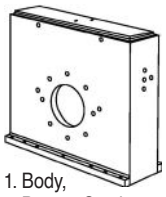
Select voltage to match the Solenoid e.g. 115, 220, 240 VAC to VDC

FIGURE 1

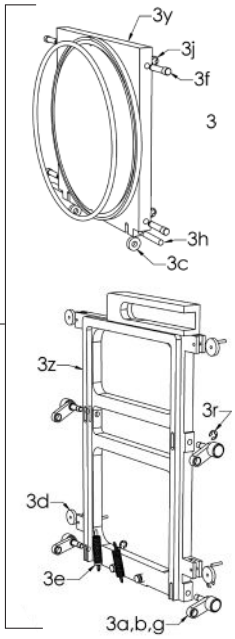
FAIL-SAFE: When connected this way, the valve will automatically close if power fails. To provide for manual operation during failure, a shut-off and a vent valve must be put in the air line to bleed off high pressure air in the cylinder. You can then operate the valve manually by turning the hex nut on stem with a wrench. With on/off switches, valves will open when power returns unless switched to "off" before power comes on.



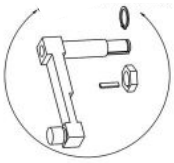
2. Body, Port Section



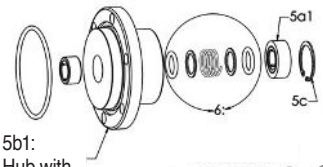
1. Body, Bonnet Section



3. Gate Carriage Assembly with O-Ring



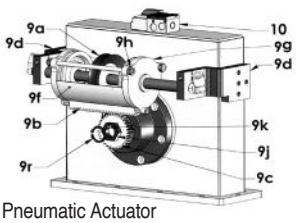
4. Stem Crank Assembly with Key, Retaining Ring and Nut



5b1: Hub with Bearing

6. Stem Seal Kit

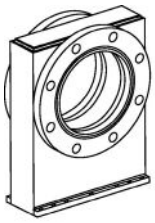
7. Manual Lever Kit



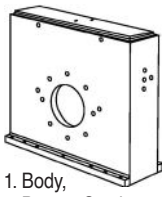
9. Pneumatic Actuator

VALVE PARTS

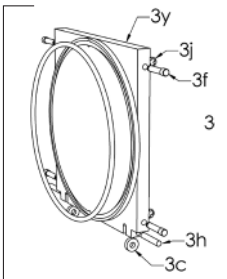
Description	P/N	PRICE	P/N	PRICE	P/N	PRICE
	LPWA 2 & LPWA-3 Built Before Sept. 2005)		LPWA-2 & LPWA-3 Built Sept. 2005 and Later ISO-80 & ISO-100 Any Date CF-6		LPWA-4 ISO-160 CF-8	
Clean & Test Valves (Freight pre-paid) to Pittsburgh, PA		$145.00		$145.00		$145.00
O-Rings						
Kit **BUNA-N**, 2 ea. Stem O-Rings, 1 ea. Hub Gate & Body (no flange).	X810771B	18.00	X810604B	18.00	X810601B	31.00
Kit **VITON**, 2 ea. Stem O-Rings, 1 ea. Hub Gate & Body (no flange).	X810771V	76.00	X810604V	76.00	X810601V	113.00
Kit **SILICONE**, 2 ea. Stem O-Rings, 1 ea. Hub Gate & Body (no flange).	X810771S	76.00	X810604S	76.00	X810601S	113.00
BUNA-N Flange O-Ring (one each)	2 inch: X701239B 3 inch: X701242B	5.00	2 inch: X701239B 3 inch: X701242B	5.00	X701256B	6.00
Viton Flange O-Ring (one each)	2 inch: X701329V 3 inch: X701242V	8.00	2 inch: X701239V 3 inch: X701242V	8.00	X701256V	8.00
Silicone Flange O-Ring (one each)	2 inch: X701239S 3 inch: X701242S	8.00	2 inch: X701239S 3 inch: X701242S	8.00	X701256S	8.00
Piston & Seal Kit for 'EP' Actuators						
Piston Cup, 2 Shaft & 2 End Cap O-Rings	X701204B	68.00	X701204B	68.00	X701404B	68.00
1. Contact VRC for bonnet and port body sections. Rail to rail dimension of 98 mm or 104 mm must be verified on current valve.						
2. Port section styles available are N1, no neck; N6, neck on seal side; N8, neck on open side; and N5, neck on both sides. If roughing ports are required specify as R1-NW-16 etc. Roughing port locations are described in Valve Catalog.						
3. Gate-Carriage Assembly with O-Ring	X706103rev1	535.00	X810084	634.00	X706203rev2	678.00
Reverse Gate-Carriage Assembly with O-Ring	N/A		N/A		X810057RC	1163.00
3 a,b,g Kit of 4 ea. Carriage Shaft, Roller & Link Assembly with Bushings & Retaining Ring	X806500	149.00	X806500	149.00	X806500	149.00
3c. Gate Rollers - Set of 2	X706102	29.00	X706102	29.00	X706202	54.00
3d. Carriage Side Rollers - Set of 4	X706108	37.00	X706108	37.00	X706108	37.00
3e. Sprint (set)	X706106	14.00	X706206	14.00	X706206	14.00
3f. Gate Link Shafts - Set of 4	X706110rev1	66.00	X706110rev1	66.00	X706110rev1	66.00
3h. Roll Pin-Set of 6 (2 Gate, 4 Carriage)	X706105	6.00	X706105	6.00	X706205	7.00
3j. Retaining Ring (Gate Shafts) Set/4	X706119	4.00	X706119	4.00	X706119	4.00
3r. Retain, Ring (Carriage Shafts) Set/4	X706119	4.00	X706119	4.00	X706119	4.00
3y. Gate w/o Shafts, Links, Rollers	X02WA116	332.00	X700051	332.00	X04WA116	340.00
3z. Carriage w/o Shafts, Links	X02LP117rev1	181.00	X700270	181.00	X04LP117rev1	198.00
3z. Reverse Carriage w/o Shafts, Links, Rollers					X04LPSK446	610.00
4. Stem-Crank Assembly with Key, Retaining Ring & Nut	X706116rev2	241.00	X810657	241.00	X706216rev2	275.00
5. Hub Assembly (spacer design) w/o seal kit	X706WA117	210.00	X706WA117	210.00	X706WA210	290.00
5-a1. Gland spacer with bearing	X02LP108A-WB	60.00	X02LP108A-WB	60.00	X04LP108A-WB	72.00
5-b1. Hub modified with bearing	X02WA118REV1	136.00	X02WA118REV1	136.00	X04WA118	227.00
5-c. Hub retaining Ring (internal type)	X702176	4.00	X702176	4.00	X702177	4.00
6. Steam Seal Kit: 2 O-Rings, (BUNA-N)	X706118	18.00	X706118	18.00	X706318	18.00
Stem Seal Kit: 2 washers, 1 spring (VITON)	X706118V	30.00	X706118V	30.00	X706318V	35.00
7. Manual Lever Kit Includes Handle, Washer, Key Retaining Ring	X706112rev1	114.00	X706112rev1	114.00	X706312rev1	121.00
8. Body Bolts, S.S. Complete set with nuts	1/4-20X1 (8)	18.00	1/4-20X1 (8)	18.00	1/4-20X1 1/4(6)	18.00
9. Pneumatic Operator (without solenoid)	X806104rev1	512.00	X810089	512.00	X806204rev1	816.00
Actuator Cylinder Assy. - 9a,b,f,g,h, seals,p-cup	X706004	422.00	X706004	422.00	X706005	526.00
9a. Piston Assembly (w/o O-Rings & Piston Cup)	X02LP200	227.00	X02LP200	227.00	X04LP200	272.00
9b. Rack Assembly	X706114	88.00	X706114	88.00	X706214	126.00
9c. Pinion Gear Assembly	X706126	100.00	X706126	100.00	X706226	158.00
9d. Mounting Brackets (2)	X706131	152.00	X706131	152.00	X706231	301.00
9e. Cylinder Air Lines (2)	X701101	25.00	X701101	25.00	X701101	25.00
9f. Cylinder	X02LP150	70.00	X02LP150	70.00	X04LP150	78.00
9g. Cylinder End Caps (2)	X706132	77.00	X706132	77.00	X706232	100.00
9h. Cylinder Studs & Nuts	X706130	65.00	X706130	65.00	X706230	79.00
9i. Guard OSHA Style	X02WA152	506.00	X811610	160.00	X04WA152	182.00
9j. Hex Nut	X02LP202	31.00	X02LP202	31.00	X04LP202	31.00
9k. Key	X02LP203	7.00	X02LP203	7.00	X04LP203	9.00
9r. Retaining ring (ext. fits stem crank)	X702171	4.00	X702170	4.00	X702171	4.00
10. Solenoid Valve only (specify voltage)						
24 VDC Solenoid	X703031	150.00	X703031	150.00	X703031	150.00
115 VAC Solenoid	X703005	150.00	X703005	150.00	X703005	150.00
220 VAC Solenoid	X134010	150.00	X134010	150.00	X134010	150.00
Mounting Hardware, Hose & Fittings (solenoid)	X810866	24.00	X810866	24.00	X810866	24.00



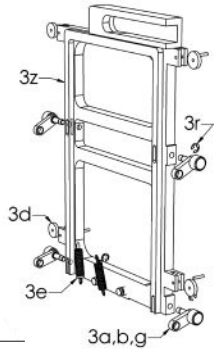
2. Body, Port Section

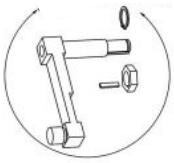


1. Body, Bonnet Section

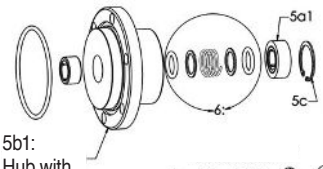


3. Gate Carriage Assembly with O-Ring





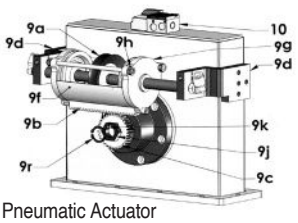
4. Stem Crank Assembly with Key, Retaining Ring and Nut



5b1: Hub with Bearing

6. Stem Seal Kit

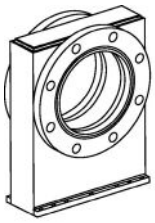
7. Manual Lever Kit



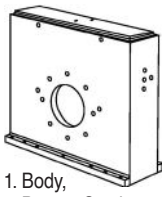
9. Pneumatic Actuator

VALVE PARTS

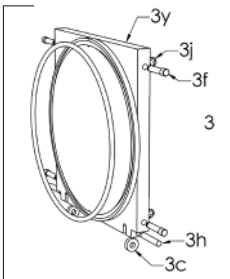
Description	LPWA-6 & LPWA-8 CF-10 ISO-200 P/N	PRICE	ISO-250 CF-12 For valves with Extruded Bodies (June '08 & Later) P/N	PRICE	LPWA-10 & LPWA-12 ISO-320, CF-14 Valves Extruded (After Aug 2001) ISO-250, CF-12 (Sept. '01 - May '08) P/N	PRICE
Clean & Test Valves (freight pre-paid) to Pittsburgh, PA		$235.00		$235.00		$235.00
O-Rings						
Kit **BUNA-N**, 2 ea. Stem O-Rings, 1 ea. Hub Gate & Body (no flange).	X810602B	66.000	X810772B	92.00	X810603B	92.00
Kit **VITON**, 2 ea. Stem O-Rings, 1 ea. Hub Gate & Body (no flange).	X810602V	188.00	X810772V	223.00	X810603V	223.00
Kit **SILICONE**, 2 ea. Stem O-Rings, 1 ea. Hub Gate & Body (no flange).	X810602S	18800	X810772S	223.00	X810603S	223.00
BUNA-N Flange O-Ring (one each)	6 inch: X701264B 8 inch: X701447B	6.00 7.00			LPVVA10:X701453B LPVVA10:X701455B	10.00 11.00
Viton Flange O-Ring (one each)	6 inch: X701264V 8 inch: X701447V	1200 29.00			LPVVA10:X701453V LPVVA12: X701455V	48.00 48.00
Silicone Flange O-Ring (one each)	6 inch: X701264S 8 inch: X701447S	1200 29.00			LPVVA10:X701453S LPVVA12:X701455S	48.00 48.00
Piston & Seal Kit for 'EP' Actuators						
Piston Cup, 2 Shaft & 2 End Cap O-Rings	X701404B	68.00	X7011004B	91.00	X7011004B	91.00
1. Contact VRC for bonnet and port body sections. Rail to rail dimension of 98 mm or 104 mm must be verified on current valve.						
2. Port section styles available are N1, no neck; N6, neck on seal side; N8, neck on open side; and N5, neck on both sides. If roughing ports are required specify as R1-NW-16 etc. Roughing port locations are described in Valve Catalog.						
3. Gate-Carriage Assembly with O-Ring	X706303rev2	799.00	X810439R1	1716.00	X810439	1716.00
3 a,b,g Kit of 4 ea. Carriage Shaft, Roller & Link Assembly with Bushings & Retaining Ring	X806500	149.00	X806502	586.00	X806502	586.00
3c. Gate Rollers - Set of 2	X706302	47.00	X810536	56.00	X810536	56.00
3d. Carriage Side Rollers - Set of 4	X706108	37.00	X706408	86.00	X706408	86.00
3e. Sprint (set)	X706306	28.00	X706406	37.00	X706406	37.00
3f. Gate Link Shafts - Set of 4	X706110rev1	66.00	X706410rev1	190.00	X706410rev1	190.00
3h. Roll Pin-Set of 6 (2 Gate, 4 Carriage)	X706205rev1	9.00	X706405rev1	9.00	X706405rev1	9.00
3j. Retaining Ring (Gate Shafts) Set/4	X706119	4.00	X706419	4.00	X706419	4.00
3r. Retain, Ring (Carriage Shafts) Set/4	X706119	4.00	X706419	4.00	X706119	4.00
3y. Gate w/o Shafts, Links, Rollers	X406116	347.00	X700044	634.00	X700269	634.00
3z. Carriage w/o Shafts, Links	X06LP117rev1	384.00	X708008	1097.00	X700285	1097.00
4. Stem-Crank Assembly with Key, Retaining Ring & Nut	X706316rev2	272.00	X706ISO416	416.00	X706WA416	416.00
5. Hub Assembly (spacer design) w/o seal kit	X706WA317	305.00	X706WA417	336.00	X706WA417	336.00
5-a1. Gland spacer with bearing	X04LP108A-WB	60.00	X10LP108A-WB	66.00	X10LP108A-WB	66.00
5-b1. Hub modified with bearing	X06WA118	241.00	X10WA118rev2	265.00	X10WA118rev2	265.00
5-c. Hub retaining Ring (internal type)	X702177	4.00	X702177	4.00	X702177	4.00
6. Steam Seal Kit: 2 O-Rings, (BUNA-N)	X706318	18.00	X706418	30.00	X706418	35.00
Stem Seal Kit: 2 washers, 1 spring (VITON)	X706318V	35.00	X706418V	63.00	X706418V	63.00
7. Manual Lever Kit: Handle, Washer, Key Retaining	X706312rev1	121.00	X706412rev1	130.00	X706412rev1	130.00
8. Body Bolts, S.S. Complete set with nuts	1/4-20X1 (8)	18.00	1/4-20X1 (8)	18.00	1/4-20X1 1/4 (6)	31.00
9. Pneumatic Operator (without solenoid)	X806304rev2	912.00	X806404rev3	1235.00	X806404rev3	1235.00
Actuator Cylinder Assy. - 9a,b,f,g,h, seals,p-cup	X706006	534.00	X706007	792.00	X706007	792.00
9a. Piston Assembly (w/o O-Rings & Piston Cup)	X06LP200	256.00	X10LP200rev2	378.00	X10LP200rev2	378.00
9b. Rack Assembly	X706314	127.00	X706414rev1	144.00	X706414rev1	144.00
9c. Pinion Gear Assembly	X706326	168.00	X706426rev1	354.00	X706426rev1	394.00
9d. Mounting Brackets (2)	X706231	301.00	X706431rev1	311.00	X706431rev1	311.00
9e. Cylinder Air Lines (2)	X701101	25.00	X701101	25.00	X701101	25.00
9f. Cylinder	X06LP150	84.00	X700337	126.00	X700337	126.00
9g. Cylinder End Caps	X706132	100.00	X706432	241.00	X706432	241.00
9h. Cylinder Studs & Nuts	X706330	86.00	X706430rev1	91.00	X706430rev1	91.00
9i. Guard OSHA Style	X06WA152	205.00	X703045	227.00	X700284	227.00
9j. Hex Nut	X04LP202	31.00	X10LP202	38.00	X10LP202	38.00
9k. Key	X04LP203	9.00	X04LP203	9.00	X04LP203	9.00
9r. Retaining ring (ext. fits stem crank)	X702171	4.00	X702172	4.00	X702172	4.00
10. Solenoid Valve only (specify voltage)						
24 VDC Solenoid	X703031	150.00	X703031	150.00	X703031	150.00
115 VAC Solenoid	X703005	150.00	X703005	150.00	X703005	150.00
220 VAC Solenoid	X134010	150.00	X134010	150.00	X134010	150.00
Mounting Hardware, Hose & Fittings (solenoid)	X810866	24.00	X810866	24.00	X810866	24.00



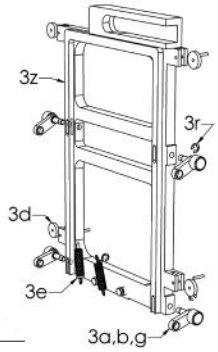
2. Body, Port Section

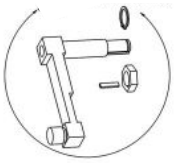


1. Body, Bonnet Section

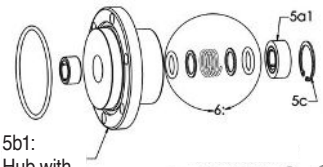


3. Gate Carriage Assembly with O-Ring





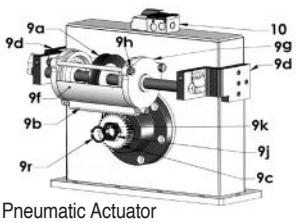
4. Stem Crank Assembly with Key, Retaining Ring and Nut



5b1: Hub with Bearing

6. Stem Seal Kit

7. Manual Lever Kit



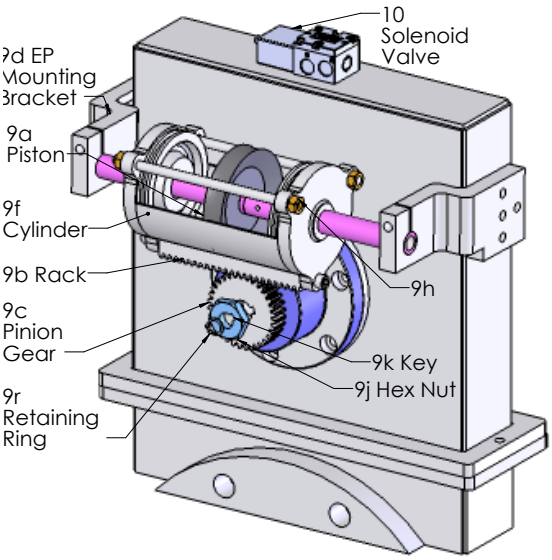
9. Pneumatic Actuator

VALVE PARTS

Description	P/N	PRICE	P/N	PRICE	P/N	PRICE
	LPWA 10 & LPWA-12 ISO-250 & ISO-320 Valves with Bodies Fabricated from Plates (Aug. '01 & Before)		**TBWA 10 & 12 PCWA 10 & 12 Thick Body valves** Valves Built for Dirty Environments Bonnet is 3.75" (95mm) Thick		**LPWA 14 & LPWA-16 ISO-400**	
Clean & Test Valves (freight pre-paid) to Pittsburgh, PA		$235.00		$270.00		$852.00
O-Rings						
Kit **BUNA-N**, 2 ea. Stem O-Rings, 1 ea. Hub Gate & Body (no flange).	X810603BPLAT	86.00	X706015B	94.00	X701WA1400B	102.00
Kit **VITON**, 2 ea. Stem O-Rings, 1 ea. Hub Gate & Body (no flange).	X810603VPLAT	182.00	X706015V	206.00	X701WA1400V	229.00
Kit **SILICONE**, 2 ea. Stem O-Rings, 1 ea. Hub Gate & Body (no flange).	X810603SPLAT	18.00	X706015S	206.00	X701WA1400S	229.00
BUNA-N Flange O-Ring (one each)	10 in.: X701453B 12 in.: X701455B	10.00 11.00	10 in.: X701453B 12 in.: X701455B	10.00 11.00	14 in.: X701459B 16 in.: X701464B	11.00 12.00
Viton Flange O-Ring (one each)	10 in.: X701453V 12 in.: X701455V	48.00 48.00	10 in.: X701453V 12 in.: X701455V	48.00 48.00	14 in.: X701459V 16 in.: X701464V	66.00 67.00
Silicone Flange O-Ring (one each)	10 in.: X701453S 12 in.: X701455S	48.00 48.00	10 in.: X701453S 12 in.: X701455S	48.00 48.00	14 in.: X701459S 16 in.: X701464S	66.00 67.00
Piston & Seal Kit for 'EP' Actuators						
Piston Cup, 2 Shaft & 2 End Cap O-Rings	X7011004B	91.00	X7011004B	91.00	X810396	270.00
1. Contact VRC for bonnet and port body sections. Rail to rail dimension of 98 mm or 104 mm must be verified on current valve.						
2. Port section styles available are N1, no neck; N6, neck on seal side; N8, neck on open side; and N5, neck on both sides. If roughing ports are required specify as R1-NW-16 etc. Roughing port locations are described in Valve Catalog.						
3. Gate-Carriage Assembly with O-Ring	X810507	2514.00	X810777	4663.00	X810624R1	6270.00
3 a,b,g Kit of 4 ea. Carriage Shaft, Roller & Link Assembly with Bushings & Retaining Ring	X806502	586.00	X810780	811.00	X810397R1	894.00
3c. Gate Rollers - Set of 2	X810536	56.00	X810778	163.00	X811027	210.00
3d. Carriage Side Rollers - Set of 4	X706408	86.00	X810779	79.00	X810635	400.00
3e. Sprint (set)	X706406	37.00	X706406	37.00	X810636	82.00
3f. Gate Link Shafts - Set of 4	X706410rev1	190.00	X810781	197.00	X810637	210.00
3h. Roll Pin-Set of 6 (2 Gate, 4 Carriage)	X706405rev1	9.00	X810782	9.00	X810638	218.00
3j. Retaining Ring (Gate Shafts) Set/4	X706419	4.00	X810783	20.00	X810639	30.00
3r. Retain, Ring (Carriage Shafts) Set/4	X706419	4.00	X810784	4.00	X810639	30.00
3y. Gate w/o Shafts, Links, Rollers	X10WA116	589.00	X700599	1679.00	X811680	2741.00
3z. Carriage w/o Shafts, Links, Rollers	X10WA117	1740.00	X740059revA	1840.00	X811670	3254.00
PCWAAux. Carriage w/ Shroud, no Rollers or Pins	N/A	0.00	X740063	164800	N/A	0.00
PCWAAux. Carriage Join Pin, Roller, Pin, E-Clip Kit	N/A	0.00	X810840	239.00	N/A	0.00
4. Stem-Crank Assembly with Key, Retaining Ring & Nut	X706WA416	416.00	X706016	496.00	X810641	1433.00
5. Hub Assembly (spacer design) w/o seal kit	X706WA417	336.00	X706WA417	336.00	X810642	554.00
5-a1. Gland spacer with bearing	X10LP108A-WB	66.00	X10LP108A-WB	66.00	X810643	102.00
5-b1. Hub modified with bearing	X10WA118rev2	265.00	X10WA118rev2	265.00	X810644	410.00
5-c. Hub retaining Ring (internal type)	X702177	4.00	X702177	4.00	X702092	9.00
6. Steam Seal Kit: 2 O-Rings, (BUNA-N)	X706418	35.00	X706418	35.00	X810645	115.00
Stem Seal Kit: 2 washers, 1 spring (VITON)	X706418V	63.00	X706418V	63.00	X810646	126.00
LPWA-16, 3 Quad Ring, 3 Spacers						
7. Manual Lever Kit Includes Handle, Washer, Key Retaining Ring	X706412rev1	130.00	X706412rev1	130.00	X810647	224.00
8. Body Bolts, S.S. Complete set with nuts	1/4-20X1 3/4 (16)	31.00	1/4-20X1 3/4 (10)	31.00	3/8-16X2 (12)	65.00
9. Pneumatic Operator (without solenoid)	X806404rev2	1235.00	X706019	1680.00	X810648	3400.00
Actuator Cylinder Assy. - 9a, b, f, g, h, seals, p-cup	X706026	792.00	X706024	798.00	X810950	2656.00
9a. Piston Assembly (w/o O-Rings & Piston Cup)	X10LP200rev1	378.00	X10LP200rev1	378.00	X810649	490.00
9b. Rack Assembly	X706414	144.00	X706414rev1	144.00	X810650	174.00
9c. Pinion Gear Assembly	X706426	394.00	X706426rev1	394.00	X810651	526.00
9d. Mounting Brackets (2)	X706431rev1	311.00	X706431rev1	311.00	X810652	456.00
9e. Cylinder Air Lines (2)	X701101	25.00	X701101	25.00	X810653	42.00
9f. Cylinder	X10LP150	126.00	X700337	126.00	X700581	310.00
9g. Cylinder End Caps	X706432	241.00	X706018	294.00	X810654	1094.00
9h. Cylinder Studs & Nuts	X706430	91.00	X706430rev1	91.00	X810655	106.00
9i. Guard OSHA Style	X10WA152	205.00	X740101	420.00	X700545	575.00
9j. Hex Nut	X10LP202	38.00	X10LP202	38.00	X700569	64.00
9k. Key	X04LP203	9.00	X04LP203	9.00	X700568	10.00
9r. Retaining ring (ext. fits stem crank)	X702172	4.00	X702172	4.00	X702092	7.00
10. Solenoid Valve only (specify voltage)						
24 VDC Solenoid	X703031	150.00	X703031	150.00	X134016	197.00
115 VAC Solenoid	X703005	150.00	X703005	150.00	X134012	197.00
220 VAC Solenoid	X134010	150.00	X134010	150.00	X134019	197.00
Mounting Hardware, Hose & Fittings (solenoid)	X810866	24..00	X810866	24.00	X810656	84.00

Vacuum Gate Valve with Rotary Actuator

PNEUMATIC OPERATOR ADJUSTMENT:



(1) Be sure that the air and power lines are disconnected. (2) This alignment procedure requires the valve to be completely assembled with gate carriage installed and the port and bonnet bolted together. (3) If your valve is equipped with position indicator switches remove them by removing the 3 screws that hold the switch bracket to the EP mounting bracket. Remove the protective EP cover so that the actuator cylinder and gears are visible. (4) Loosen the bolts that secure the EP mounting brackets so the rack and pinion gears (9b & 9c) can be disengaged.

After the gears are no longer in contact with each other, use a wrench to rotate the hex nut (9j) clockwise to move the gate to the full closed position (CW). Remove the E clip, hex nut, key, and top guide washer and pull the pinion gear off of the valve stem (Part No. 4). (5) After the pinion is removed, push or tap the EP cylinder (9f) to full closed position (see label on cylinder.) Then move the cylinder back toward the open position by the space of approximately 1/2 or 1 full gear tooth. (6) Now replace the pinion on the stem and engage it with the rack without moving the cylinder. (7) To ensure that rack and pinion properly engage without binding or skipping teeth you may tap lightly on the EP brackets to move the rack closer or farther from the pinion. Be sure that all bolts on EP mounting bracket are tight (9d). (8) Re-install the top guide washer, hex nut, key, and E-clip on the stem. (9) Reconnect electrical and air supply. (10) Operate valve and listen for gate locking in closed position.

DISASSEMBLY: With valve in open position, remove centerline body flange bolts and lift the bonnet section free. The entire internal mechanism comes free with this one motion. Then turn the manual lever, or the hex nut above the pinion gear on pneumatic valves, to release the carriage from its locked position. Pull on carriage and it will come out and slide off the crank roller. The flanged section stays bolted in the system unless the gate seat is damaged and needs polishing or machining.

When the stem seal area is also to be cleaned or needs new seals, the steps are easy: (1) Take off manual lever or pinion gear. (2) Use appropriate snap ring pliers to remove retaining ring 9-r and remove the gland spacer (5-a1) and hub flange screws. (3) Lift out hub by sliding over stem, which will bring stem seal assembly with it, which can then be lifted out with a finger. (4) The stem crank comes out easily through the centerline flange opening.

⚠ WARNING

Disconnect electrical & air supply before making any adjustment or repairs.

ASSEMBLY: Apply a very thin film of vacuum grease to the shaft and: (1) Grasp the stem crank by the roller end, tip the stem to the side, insert in the bonnet flange opening and bring the stem out through the hub opening. (2) Place hub O-ring seal in hub flange and slide hub onto stem while holding stem-crank up to make it easy to insert. (3) Replace and tighten the 1/4-20 hub flange screws evenly. (4) While holding the stem crank up with one hand and pushing to the farthest point through the stem housing in the hub, insert the stem seal assembly and be sure of the proper order. Slide over stem first, one O-ring; next, a washer. Then slide the spring over the stem; next a washer, and last, the second O-ring. Make sure this second O-ring is down over the shoulder on the stem. (5) While still holding up the stem, replace the stem gland spacer (push downward to overcome spring tension). Hold the internal retaining ring 5-C in position and seat it in the modified hub groove using appropriate snap ring pliers. (6) Replace manual lever or pinion gear of pneumatic operator with key in its slot. Retaining ring 9-r fits onto the stem crank. (7) Insert gate seal evenly, and with crank turned to expose its roller, slide carriage slot overroller and retract into bonnet by turning stem counterclockwise (with manual lever or a wrench on pinion head nut). (8) Insert body flange seal evenly and position the bonnet assembly on the flanged section—Gate toward its seat, with locator pins lined up with holes. (9) Replace and evenly tighten body bolts in centerline flanges.

⚠ WARNING

A valve wired to automatically close on power failure will also automatically open when power is restored. This reopening may be unsafe, and it is recommended that a latching relay be installed so that the valve will not just automatically reopen when power is restored, but will remain closed until an operator decides it is safe to reopen.

CONVERTING FROM MANUAL TO ELECTROPNEUMATIC (EP OPERATOR: Operators for conversion of manual valves are factory assembled, aligned and tested before shipment, with piston shafts tight to brackets. Simply tighten brackets to valve body, with “D” bracket on the “closed” side—to the right as you look at the face of the valve, with centerline flange down. If operators are removed from pneumatic valves, it is generally unnecessary to disassemble them. Leave the shaft tightened to brackets for easiest reassembly. With cylinder in place, brackets tightened, replace pinion gear parts on the stem in this order: (1) bronze thrust washer, (2) gear washer without key slot, (3) pinion gear, (4) key, (5) gear washer with key slot, (6) hex nut, (7) retaining ring. When placing pinion gear, engage the nearest rack tooth with it, with cylinder at farthest right, toward the “closed” side, and stem and gear key slots aligned. Slight movement of the cylinder may help to align key slots when inserting key (as in 4). Then proceed with (4) through (7). Secure solenoid actuator to the valve body, with “C” and “D” sides matching “C” and “D” on cylinder. Install air lines and tighten fittings, “C” with “C” and “D” with “D”.

P/N:4709112 May 2025