

VRC Valves are  
Manufactured in the USA.



**Aluminum  
Valves  
*with*  
Aluminum  
Conflat<sup>®</sup>  
Flanges**



*Put our vacuum equipment experience to work for you.*

**[www.vacuumresearch.com](http://www.vacuumresearch.com)**



### Aluminum Conflat® Flanges

Valves with VRC Aluminum Conflat® flanges use a hardened 6061 aluminum knife edge and dead soft aluminum gaskets to give a leak tight seal for hundreds of closures.

### Less Outgassing Than Stainless

Up to 2 orders of magnitude less outgassing from aluminum compared to stainless steel. 70 peer reviewed papers about outgassing compiled by M. Wong at Fermi Labs can be found on the web: [http://home.fnal.gov/~mlwong/outgas\\_rev.htm](http://home.fnal.gov/~mlwong/outgas_rev.htm)

### Mate Directly to Stainless Steel Conflat® Flanges

The bolt circle, number of holes, threads, flange diameter, etc. match stainless steel flanges and mate using aluminum gaskets.

### Metal Bonnet Seals

Our standard bonnet & hub seal is Viton® but metal seals are optional. Kalrez®, silicone and other elastomers also available.

### Rotatable Flanges

Rotatable flanges are available on one or both sides for all valve sizes. Our rotatable flanges have through holes; fixed flanges have tapped holes.

### Fast Pumpdown

VRC aluminum valve bodies are not cast. The internal surfaces are smooth extruded or machined aluminum and pump down at speeds comparable to stainless steel but with less outgassing.

### No Hydrogen Outgassing

Aluminum valves and flanges are not saturated with hydrogen as stainless steel is and therefore do not add any hard to pump H<sub>2</sub> background to your system.

### Fail Safe

Vacuum Research air operated valves can easily be configured for fast close on power failure.

### High Speed

Closing speeds as fast as 75 mSeconds.

### Roughing and Gauge Ports

See the back page for optional gauge and roughing port locations. Table shows maximum roughing port sizes.

### Satisfaction Guaranteed

VRC has been building high vacuum valves for almost 70 years earning a reputation for world class product quality and customer service. If you are not satisfied with our valve just send it back.

### Quick & Easy to Repair

In under 5 minutes you can replace every moving part in a Vacuum Research valve with no special tools or training. The valve body stays in your system to support the pump and vacuum lines.

### Electro-pneumatic Actuators

VRC end operated valves use 70 psi (4.9 kg/cm) compressed air and include the solenoid (specify the solenoid voltage that is most convenient for you.)

### Optional Throttle or Electric Motor Actuators for any Flange Style

**Throttle actuators** use electronic positioners for 3 position or downstream control on valves up to 20 inch (500 mm). Throttle control can be driven by your PLC or PID controller, or from a set point on front panel.

**Electric motor actuators** use high torque servo motors, which operate from 115 volt, single phase, 50 or 60 Hz.

### No Leaks

VRC valves have total leak rates of less than 5 X 10<sup>-10</sup> std. cc/sec. By total leak we mean that each completed valve is tested in a Helium filled bag.

### Long Life

More than 250,000 cycles for standard valves. That's one cycle every 2 minutes, 24 hours/day for a year. An optional million cycle design is available.

### SolidWorks \*.STEP Files

Contact us to obtain SolidWorks 3D \*.STEP format modeling files that plug formatted VRC valve 3-D models into your computer-aided design projects.



### Lock-Out / Tag-Out Option

Hasps for lock-out / tag-out are available on all valves.

### Electronic Position Indicators

Limit switches for remote indication of valve position with contact closure of open and closed. Details shown on foldover at right.

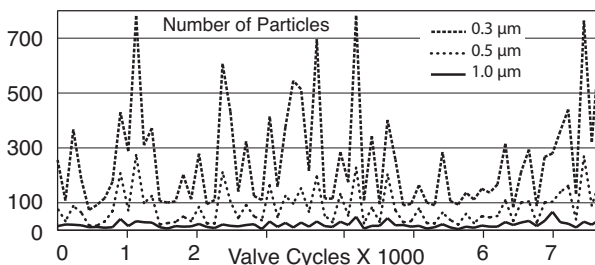


**Aluminum Conflat® Flanges:** The Aluminum Conflat® Flanges on the VRC valves provide an all metal reusable seal using low cost solid aluminum gaskets (available from VRC, see catalog page 16).

**Mate Directly to Stainless Steel Conflat® Flanges:** The bolt circle, number of holes, threads, flange diameter, etc. are the same as stainless steel CF flanges, and mate directly to stainless steel flanges using aluminum gaskets.

**Less Outgassing Than Stainless Steel:** Dozens of papers show the 6000 Series aluminum used in VRC valves outgasses up to 2 orders of magnitude less than 300 Series stainless steel and of course no hydrogen. A bibliography of 70 peer reviewed papers about outgassing compiled by Dr. M. Wong at Fermi Labs can be found at [http://home.fnal.gov/~mlwong/outgas\\_rev.htm](http://home.fnal.gov/~mlwong/outgas_rev.htm).

**Low Particle Generation:**



**Aluminum Conflat® Valves, Electro-Pneumatic Operator**

Conflat® Outside Diameter	Viton® Gate & Bonnet Seal	Price	Viton® Gate Seal, Metal Bonnet Seal Insert "Metal" in Model No.	Price
<b>2.75 in.</b> Outside Diameter <b>Conflat® Flange</b> (1.6 in. Port)	END-2.75-CF-N1-EP	\$1,618	END-2.75-CF-N1-METAL-EP	\$2,025
	END-2.75-CF-N5-EP	\$1,803	END-2.75-CF-N5-METAL-EP	\$2,226
	END-2.75-CF-N6-EP	\$1,611	END-2.75-CF-N6-METAL-EP	\$2,130
	END-2.75-CF-N8-EP	\$1,715	END-2.75-CF-N8-METAL-EP	\$2,130
<b>3.375 in.</b> Outside Diameter <b>Conflat® Flange</b> (2 in. Port)	END-3.375-CF-N1-EP	\$2,082	END-3.375-CF-N1-METAL-EP	\$2,535
	END-3.375-CF-N5-EP	\$2,377	END-3.375-CF-N5-METAL-EP	\$2,857
	END-3.375-CF-N6-EP	\$2,356	END-3.375-CF-N6-METAL-EP	\$2,834
	END-3.375-CF-N8-EP	\$2,356	END-3.375-CF-N8-METAL-EP	\$2,834
<b>4.50 in.</b> Outside Diameter <b>Conflat® Flange</b> (2.5 in. Port)	END-4.50-CF-N1-EP	\$2,428	END-4.50-CF-N1-METAL-EP	\$2,913
	END-4.50-CF-N5-EP	\$2,824	END-4.50-CF-N5-METAL-EP	\$3,304
	END-4.50-CF-N6-EP	\$2,612	END-4.50-CF-N6-METAL-EP	\$3,116
	END-4.50-CF-N8-EP	\$2,612	END-4.50-CF-N8-METAL-EP	\$3,116
<b>6.00 in.</b> Outside Diameter <b>Conflat® Flange</b> (4 in. Port)	END-6-CF-N1-EP	\$3,091	END-6-CF-N1-METAL-EP	\$3,803
	END-6-CF-N5-EP	\$3,501	END-6-CF-N5-METAL-EP	\$3,999
	END-6-CF-N6-EP	\$3,335	END-6-CF-N6-METAL-EP	\$4,070
	END-6-CF-N8-EP	\$3,335	END-6-CF-N8-METAL-EP	\$4,070
<b>8.00 in.</b> Outside Diameter <b>Conflat® Flange</b> (6 in. Port)	END-8-CF-N1-EP	\$3,885	END-8-CF-N1-METAL-EP	\$4,801
	END-8-CF-N5-EP	\$4,326	END-8-CF-N5-METAL-EP	\$5,285
	END-8-CF-N6-EP	\$4,144	END-8-CF-N6-METAL-EP	\$5,082
	END-8-CF-N8-EP	\$4,144	END-8-CF-N8-METAL-EP	\$5,082
<b>10.00 in.</b> Outside Diameter <b>Conflat® Flange</b> (8 in. Port)	END-10-CF-N1-EP	\$5,414	END-10-CF-N1-METAL-EP	\$6,643
	END-10-CF-N5-EP	\$5,929	END-10-CF-N5-METAL-EP	\$7,209
	END-10-CF-N6-EP	\$5,745	END-10-CF-N6-METAL-EP	\$7,008
	END-10-CF-N8-EP	\$5,745	END-10-CF-N8-METAL-EP	\$7,008
<b>12.00 in.</b> Outside Diameter <b>Conflat® Flange</b> (10 in. Port)	END-12-CF-N1-EP	\$6,548	END-12-CF-N1-METAL-EP	\$10,196
	END-12-CF-N5-EP	\$7,195	END-12-CF-N5-METAL-EP	\$10,842
	END-12-CF-N6-EP	\$7,063	END-12-CF-N6-METAL-EP	\$10,601
	END-12-CF-N8-EP	\$7,063	END-12-CF-N8-METAL-EP	\$10,601
<b>Optional Operation to 10 Bar, 147 PSIG; 200 PSI Shaft Seal.....add \$355</b>				
<b>Aluminum Conflat Gaskets® Packs of 10, except larger sizes.....See next page</b>				

**High Speed** Closing speeds as fast as 75 mSeconds available.

**Fast Pumpdown** VRC valve bodies are not cast. The internal surfaces are smooth extruded or machined 6061 aluminum and pump down at speeds comparable to or faster than stainless steel.

**Satisfaction Guaranteed** Vacuum Research has been building high vacuum valves for more than 50 years and has earned a reputation for world class product quality and customer service. If you are not satisfied with our valve just send it back.

**Metal Bonnet Seals** Our standard bonnet & hub seal is Viton® but metal seals are available. Kalrez® is optional.

**Rotatable Flanges** Rotatable flanges are available on one or both sides of all valve sizes. Our rotatable flanges have through holes. Our fixed flanges have tapped holes.

**Maximum Temperature** All VRC valves use Viton® for the gate seal which can operate up to 190°C (375°F). Kalrez® available.

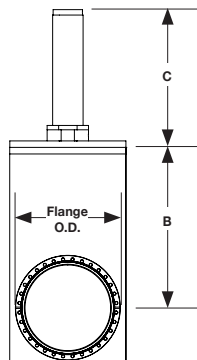
**Fail Safe** All Vacuum Research air operated valves can be installed for fast close on power failure.

**Long Life** More than 250,000 cycles for standard valves.

**No Leaks** All VRC valves have total leak rates of less than

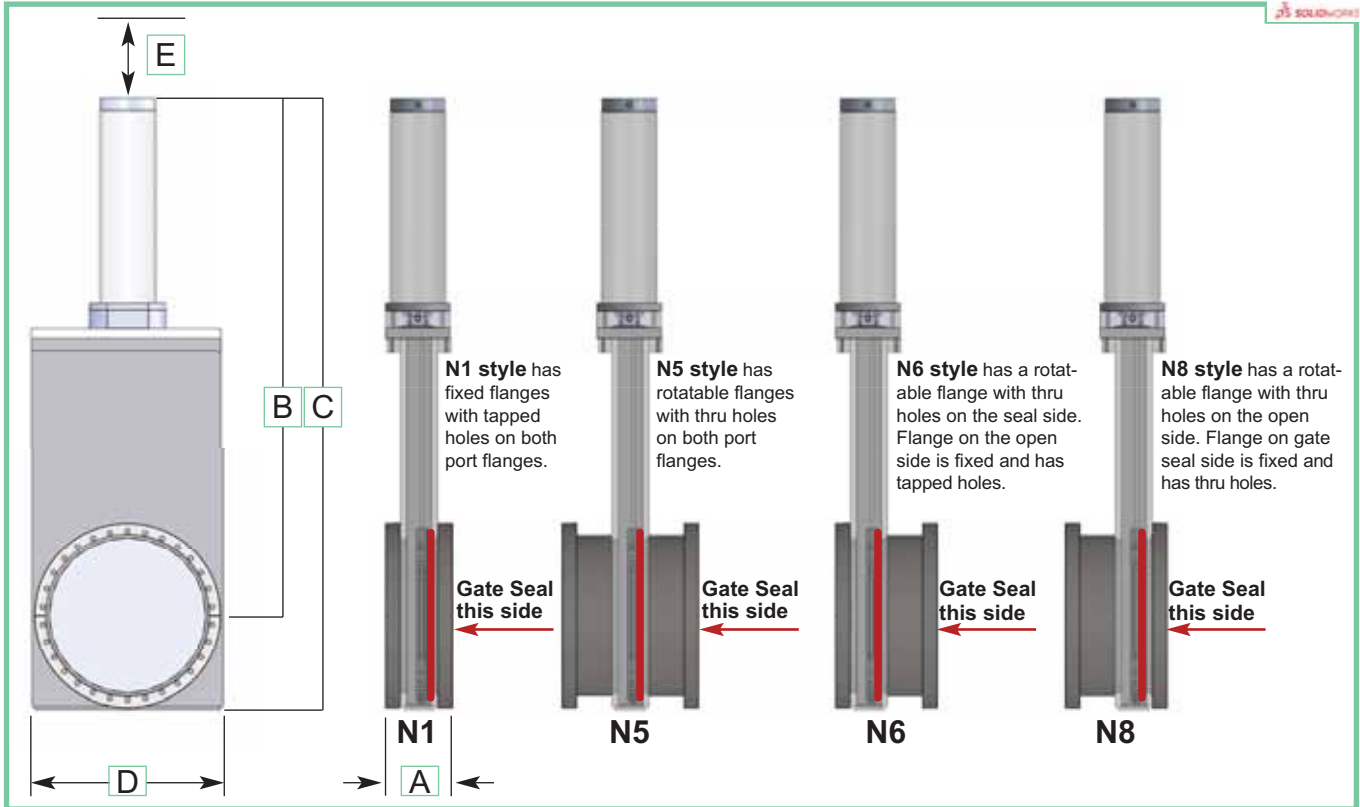
5 X 10<sup>-10</sup> std. cc/sec. By total leak we mean that each completed valve is tested in a He filled bag.

**RoHS Compliant and CE Mark** All Valves (RoHS) 002/95/EC Compliant, and carry the CE Mark.



Conflat® Flange O.D.	Flange to Flange	B Port C/L to Top	C Actuator Height	B Body Width	B (Number) Bolt Size
<b>2.75 in.</b> (1.6 in. Port)	3.1	6.3	7.4	4.63	(6) 1/4-28
<b>3.375 in.</b> (2 in. Port)	3.4	6.3	7.4	4.63	(8) 5/16-24
<b>4.50 in.</b> (2.5 in. Port)	3.5	8.38	9.4	6.48	(8) 5/16-24
<b>6.00 in.</b> (4 in. Port)	4.3	8.38	9.4	6.48	(16) 5/16-24
<b>8.00 in.</b> (6 in. Port)	4.5	11.38	11.66	9.0	(20) 5/16-24
<b>10.00 in.</b> (8 in. Port)	4.7	14.3	12.72	11.0	(24) 5/16-24
<b>12.00 in.</b> (10 in. Port)	5.0	19.0	16.0	13.63	(32) 5/16-24

Contact factory for SolidWorks 3D \*.STEP format files. 2D drawing in box for reference to table below. Dimensions listed in table shown in inch units.



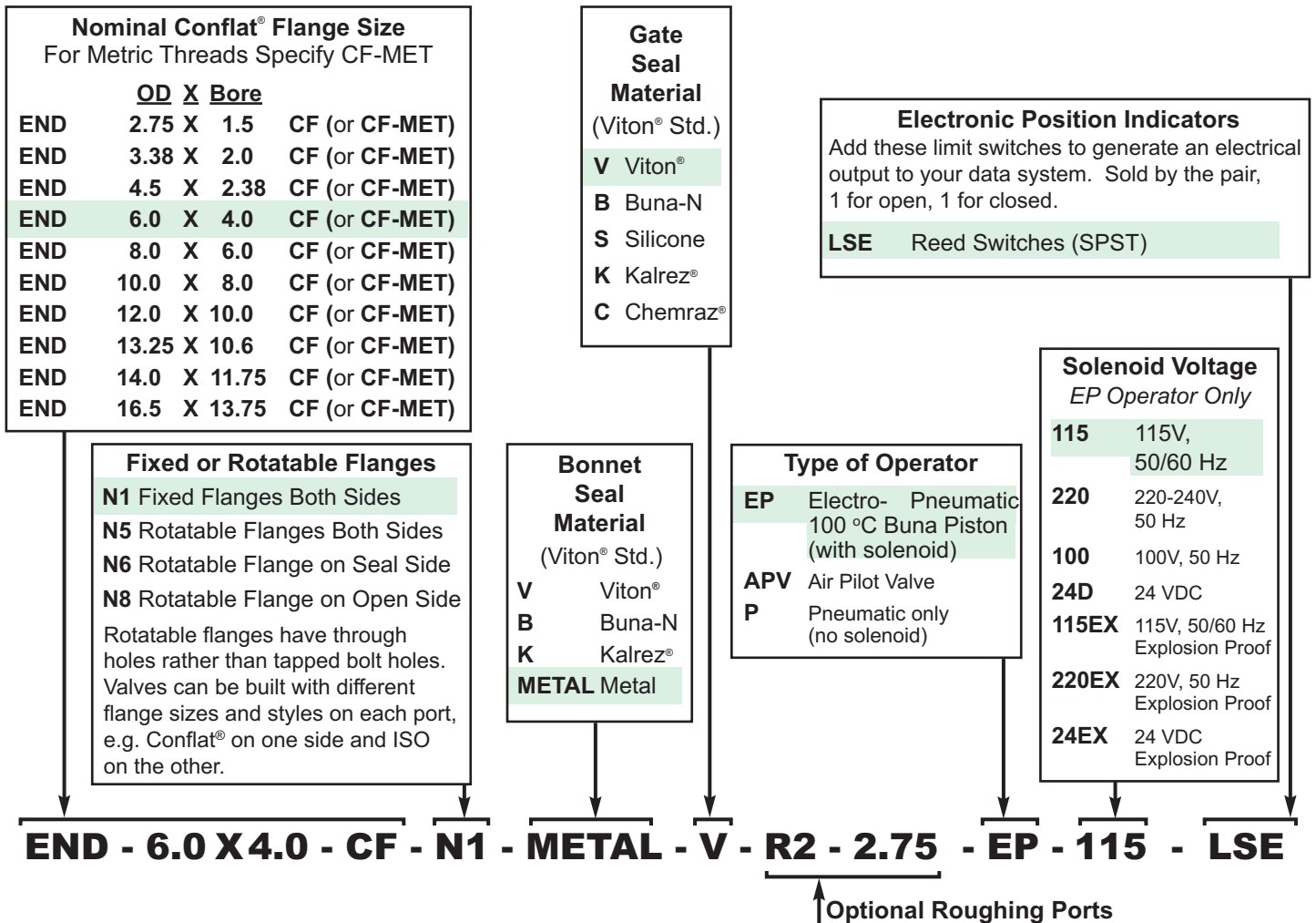
Nominal Conflat Flange Outside Diameter	Model Number Conflat® Flange (dimensions shown same as -METRIC- model valves)	Port Dia.	Flange Outside Diameter	Flange Thickness	Same Dimensions as Stainless Steel Conflats				A Flange to Flange	B Top to Center Line $\bar{C}$	C Overall Height	D Overall Width	E Disassy. Clearance	Weight lbs.	
					Bolt Circle	(# of bolts) x bolt size Inch	(# of bolts) x bolt size Metric	Knife Edge Diameter						Aluminum	net ship
2.75 inch	END-2.75-CF-N1-EP	1.5	2.75	0.50	2.312	(6) 1/4 - 28	(6), M-6	1.64	3.125	13.63	16.0	4.625	12.25	16	25
2.75 inch	END-2.75-CF-N5-EP	1.5	2.75	0.50	2.312	0.265 thru hole on rotatable flange	(6), M-6	1.64	6.125	13.63	16.0	4.625	12.25	16	25
2.75 inch	END-2.75-CF-N6 & N8-EP	1.5	2.75	0.50	2.312		(6), M-6	1.64	4.625	13.63	16.0	4.625	12.25	16	25
3.375 inch	END-3.375-CF-N1-EP	2.0	3.375	0.68	2.85	(8) 5/16 - 24	(8), M-8	2.178	3.5	13.63	16.0	4.625	12.25	16	25
3.375 inch	END-3.375-CF-N5-EP	2.0	3.375	0.68	2.85	0.332 thru hole on rotatable flange	(8), M-8	2.178	7.25	13.63	16.0	4.625	12.25	16	25
3.375 inch	END-3.375-CF-N6 & N8-EP	2.0	3.375	0.68	2.85		(8), M-8	2.178	5.38	13.63	16.0	4.625	12.25	16	25
4.50 inch	END-4.50-CF-N1-EP	2.5	4.50	0.68	3.628	(8) 5/16 - 24	(8), M-8	3.04	3.5	13.63	16.0	4.625	12.25	18	27
4.50 inch	END-4.50-CF-N5-EP	2.5	4.50	0.68	3.628	0.332 thru hole on rotatable flange	(8), M-8	3.04	7.25	13.63	16.0	4.625	12.25	18	27
4.50 inch	END-4.50-CF-N6 & N8-EP	2.5	4.50	0.68	3.628		(8), M-8	3.04	5.38	13.63	16.0	4.625	12.25	18	27
6 inch	END-6-CF-N1-EP	4.0	6.0	0.78	5.128	(16) 5/16 - 24	(16), M-8	4.54	4.31	17.78	20.66	6.5	15.78	24	35
6 inch	END-6-CF-N5-EP	4.0	6.0	0.78	5.128	0.332 thru hole on rotatable flange	(16), M-8	4.54	8.31	17.78	20.66	6.5	15.78	24	35
6 inch	END-6-CF-N6 & N8-EP	4.0	6.0	0.78	5.128		(16), M-8	4.54	6.31	17.78	20.66	6.5	15.78	24	35
8 inch	END-8-CF-N1-EP	6.0	8.0	0.88	7.128	(20) 5/16 - 24	(20), M-8	6.54	4.51	23.03	27.03	9.07	20.0	30	40
8 inch	END-8-CF-N5-EP	6.0	8.0	0.88	7.128	0.332 thru hole on rotatable flange	(20), M-8	6.54	9.0	23.03	27.03	9.07	20.0	30	40
8 inch	END-8-CF-N6 & N8-EP	6.0	8.0	0.88	7.128		(20), M-8	6.54	6.76	23.03	27.03	9.07	20.0	30	40
10 inch	END-10-CF-N1-EP	8.0	10.0	0.97	9.128	(24) 5/16 - 24	(24), M-8	8.54	4.7	27.9	32.97	11.0	23.9	40	50
10 inch	END-10-CF-N5-EP	8.0	10.0	0.97	9.128	0.332 thru hole on rotatable flange	(24), M-8	8.54	9.7	27.9	32.97	11.0	23.9	40	50
10 inch	END-10-CF-N6 & N8-EP	8.0	10.0	0.97	9.128		(24), M-8	8.54	7.2	27.9	32.97	11.0	23.9	40	50
12 inch	END-12-CF-N1-EP	10.0	12.0	1.02	11.18	(32) 5/16 - 24	(32), M-8	10.54	4.8	34.28	40.58	13.35	29.28	50	60
12 inch	END-12-CF-N5-EP	10.0	12.0	1.02	11.18	0.332 thru hole on rotatable flange	(32), M-8	10.54	9.92	34.28	40.58	13.35	29.28	50	60
12 inch	END-12-CF-N6 & N8-EP	10.0	12.0	1.02	11.18		(32), M-8	10.54	7.35	34.28	40.58	13.35	29.28	50	60



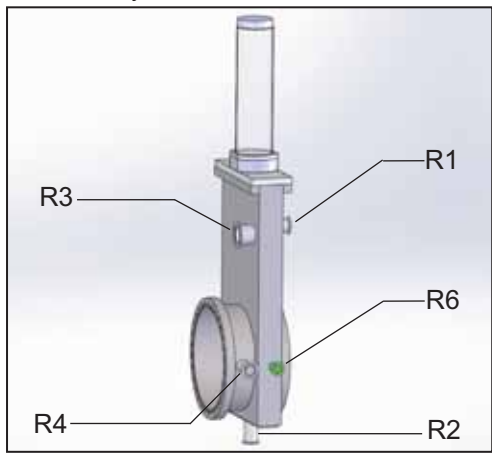
Vacuum Research valves are available with dozens of options to allow you to select exactly the features you need for your vacuum system. The model number system shown below will accurately describe most valves, but if you have any questions about the

best way to specify what you need, just call or fax our customer service department and we will be happy to help you.

All Valves are (RoHS) 2002/95/EC Compliant.



**Gauge and Roughing Port Locations**  
 Specify location (R-1, R-2, etc.) and size of port (2.75, NW-25 etc.) Refer to table at right for the range of port sizes available in each location for your valve size.



Valve with This Port Flange Outside Diameter	Maximum Size CF Flange for Roughing/Gauge Port (NW Port also Available)		
	R1 Position	R2 Position	R4 & R6 Position (N5, N6, N8 Only)
2.75	1.33 & 2.75	N/A	N/A
3.375	1.33 & 2.75	N/A	N/A
4.5	1.33 & 2.75	N/A	N/A
6.0	1.33 & 2.75	2.75	2.75
8.0	1.33 to 4.5	2.75	2.75
10.0	1.33 to 4.5	2.75	2.75
12.0	1.33 to 6.0	2.75	2.75
13.3	1.33 to 8.0	2.75	2.75
14.0	1.33 to 8.0	2.75	2.75
16.5	1.33 to 8.0	2.75	2.75
R1 & R2 CF 1.33 & 2.75	\$182	CF 4.5 \$216.	CF 6.0 \$252. CF 8.0 \$268.
R1&R2 NW16	\$173.	NW25 \$190.	NW40 \$224. NW50 \$241
R4 & R6 CF 2.75	\$176.		
N5, N6, N8 only NW16	\$211.	NW25 \$224.	NW40 \$259. NW50 \$276.

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# Ordering Information for Accessories and Options

To place orders or for customer service call our toll free number:  
(800) 426-9340 or PA area code (412) 261-7630.

Our email address is [vrcc@vacuumresearch.com](mailto:vrcc@vacuumresearch.com); FAX (412) 261-7220.  
Address orders by mail to Vacuum Research Corp. 100 Chapel Harbor Dr. #4, Pittsburgh, PA 15238 USA.

Prices shown are FOB factory. CIF or C&F prices available. Contact us for pro forma invoice or price quotation. Major credit cards accepted.



**Model Number:** The model number builds from the features you specify. A matrix is shown on the back page.

**Electric Motor Actuators:** Vacuum Research Corp. valves can be supplied with a high torque electric motor actuator. Refer to our LPWA series brochure for details and pricing.

**CF Flanges with Metric Threads:** There is no extra charge for flanges with metric threads. Bolt circle, gasket size, and other dimensions are the same for inch or metric. Specify "CF MET" in the model number. See dimension page for thread specifications.

**Kalrez® or Silicone O-Rings:** Our standard Valves use Viton® O-Rings. You may specify other elastomers throughout the valve by inserting the appropriate letter in the Model No. (e.g. "S" for Silicone, "K" for Kalrez®).



**Lock-Out / Tag-Out:** Hasps for lock-out / tag-out are available on all valves to meet compliance requirement of OSHA standard for the Control of Hazardous Energy (Lockout / Tagout) (29 CFR 1910.147).

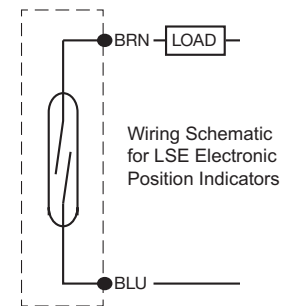
P/N: X810107 .....\$818

**Optional Operation to 10 Bar, 147 PSIG; 200 PSI Shaft Seal** .....add \$355

Additional options for these valves plus complete specifications and prices for all of our vacuum equipment products can be found in our Valve, Gauge and Pump Catalogs and on our web site: [www.vacuumresearch.com](http://www.vacuumresearch.com).

**Electronic Position Indicators (Limit Switches):** Provide electrical feed-back of valve position to your PLC or data system.

**LSE - Electronic Position Indicators for End Operated Gate Valves.** Two reed switches activated by a magnet inside the pneumatic actuator provide contact closure for open and closed position .....\$221./pair  
Contacts are SPST Form A (Normally Open)  
Contact Rating is 50 W maximum  
Voltage Rating is 200 VDC maximum; 141 VAC maximum  
Switching current is 1A maximum  
Initial Contact Resistance is 1 ohm maximum  
Voltage: 225 VDC, 275 VAC  
Temperature Range: -40 °F to 200 °F; (-40 °C to 93 °C)



## Aluminum Conflat Gaskets®

Flange O.D.	Gasket O.D.	Part No.	Price (pack of 10)
1.33 in.	0.84 in. (21.3)	X701G01.33A	\$50. / 10
2.75 in.	1.89 in. (48.1)	X701G02.75A	\$77. / 10
3.375 in.	2.42 in. (61.5)	X701G03.375A	\$105. / 10
4.50 in.	3.24 in. (82.4)	X701G04.50A	\$128. / 10
6.00 in.	4.74 in. (120.5)	X701G06.00A	\$178. / 10
8.00 in.	6.74 in. (171.3)	X701G08.00A	\$254. / 10
10.00 in.	8.74 in. (222.1)	X701G10.00A	\$284. / 10
12.00 in.	10.74 in. (272.7)	X701G12.00A	\$42. each
13.25 in.	11.58 in. (294.1)	X701G13.25A	\$50. each
14.00 in.	12.31 in. (312.7)	X701G14.00A	contact factory

