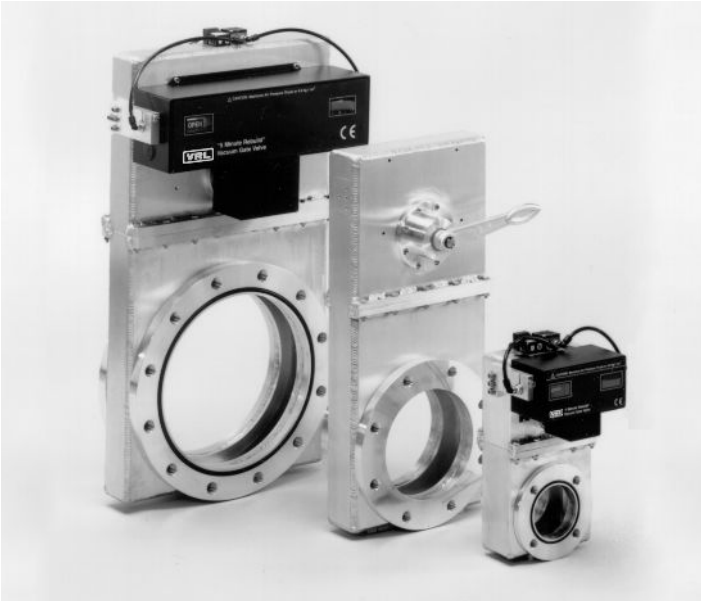
Stainless and Aluminum Gate Valves



Aluminum valves with (left to right): Electro Pneumatic, Manual, and Motor Actuators. Stainless Steel valves also available.

ANSI, ISO, JIS, or Special Flanges
These Vacuum Research 5 minute rebuild valves are available with virtually any flange or combination of flanges at no extra charge. Combinations of ISO on one flange and ANSI on the other are easily accommodated. Even different sizes such as 4 inch on one flange and 6 inch on the other.

Insertable "Flangeless" Valves
It is sometimes helpful to keep the flange-to-flange dimension ("A" dimension on the dimensions pages) as short as possible. In such cases your valves can be provided with no port flanges at all and with either O-Ring grooves machined into the valve body or with a precision machined surface on the body to seal against the O-rings on your pump or chamber. Contact the factory for prices.

Aluminum or Stainless Steel
Vacuum Research Bonnet Style valves are available in stainless steel or 6061 aluminum. Smooth surface finish gives low outgassing and fast pump down.

High Conductance
In addition to the oversize ports used in the LPWA Series for the last 40 years, we now offer the X-LPWA Series where a 4 inch valve has a 6 inch port, an 8 inch valve has a 10 inch port, etc. Conductance values are shown on page 39.

Fail Safe
All Vacuum Research Bonnet Style Valves can be installed for fast close on power failure and air operated valves can be manually positioned without air or electricity.

Long Life
More than 250,000 cycles for aluminum valves. That's one cycle every 2 minutes, 24 hours/day for a year.

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.

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 out-gassing compiled by Dr. M. Wong at Fermi Labs can be found at http://home.fnal.gov/~mlwong/outgas_rev.htm. See page 40 for more information

Vacuum & Pressure
Vacuum Research valves stay sealed with vacuum or atmosphere on either side.

Satisfaction Guaranteed
Vacuum Research has been building high vacuum valves for almost 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.

No Leaks
All Vacuum Research valves have total leak rates of less than 5 X 10-10 std cc/sec. By total leak we mean that each completed valve is tested in a He filled bag.

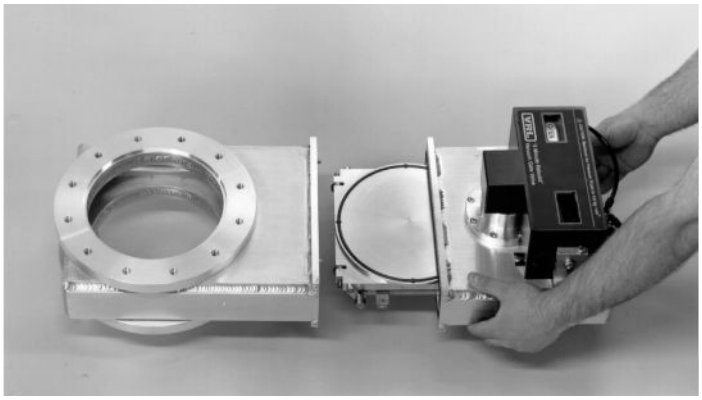
RoHS Compliant
All Valves are (RoHS) 2015/863/EU Compliant and carry the CE mark.

Electric Motor, Air or Manual Actuators
All Vacuum Research gate valves are available with 3 types of actuators. Manual actuators are the least expensive. Electro-pneumatic actuators use 70 psi (4.9 kg/cm) compressed air and include the solenoid (specify the solenoid voltage that is most convenient for you). Electric motor actuators use high torque servo motors and operate from 115V or 230V, 1Ø 50 or 60 Hz. CE Mark included.

Roughing and Gauge Ports
There are six locations for optional gauge and roughing ports described on page 43.

Position Indicators, Limit Switches
Visual indication of valve position is included on all valves. Limit switches for remote indication are available and are described on the Optional Features pages in the Accessories & Parts section.

Complete Rebuild in 5 Minutes.



With no special tools or training you can replace every moving part in your Vacuum Research Bonnet Style Valve in 5 minutes. (Our best guys can do it in less time, but they practice.)

Stainless Steel & Aluminum Gate Valves with Conflat® Flanges

Stainless steel & aluminum valves with Conflat® flanges. Aluminum has less outgassing than stainless steel. Up to 2 orders of magnitude less, see references on page 39.

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. Refer to page 40 for more information.

ORDERING INFORMATION

Model Number: Refer to page 2 for instructions to specify the features you need.

Electric Motor Actuators: Any Vacuum Research valve can be supplied with a high torque electric motor actuator. Refer to the "Electric Motor Actuator" page in the Accessories and Parts section of this catalog for pricing.

Special Features: Refer to pgs 40-43 for specifications of roughing & gauge ports, position indicators & other special features.

Viton® or 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. You may specify Viton® (or other materials) throughout the valve with a "V", "S", or "K" in the model number. For Viton® add the following to the price. (For Silicone or Kalrez® contact the factory for prices.)

63 mm	$75
100 mm	$113
160 mm	$141
200 mm	$222
250 mm	$289
320 mm	$373

Metal Bonnet Seal: Metal Bonnet Seal: To specify a metal (rather than elastomer) bonnet seal add "MBS" to the model number & add the cost below:

	Aluminum Valve	Stainless Steel
2.75 in. valves	$271	$331
3.38 in. valves	$271	$331
4.50 in. valves	$371	$331
6 in. valves	$315	$377
8 in. valves	$331	$603
10 in. valves	$526	$753
12 in. valves	$526	$753

CF® Flanges with Metric Threads: No extra charge for Conflat® flanges with metric threads. Bolt circle, gasket size, and other dimensions remain unchanged. Specify "CF-MET" in the model number.

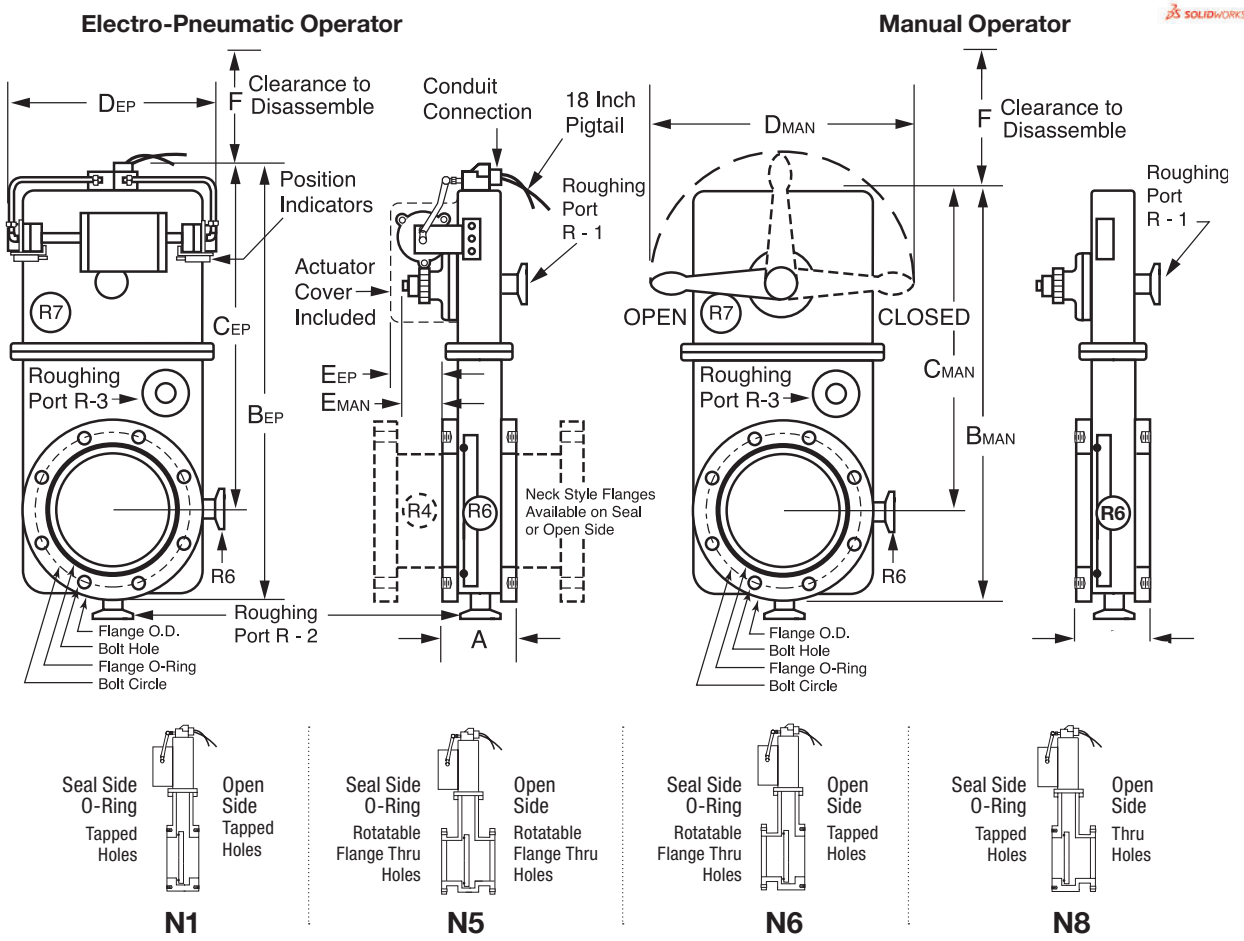
Valve Port Diam.	Flange O.D.	Bolts
38 mm	70 mm	6, M-6
63 mm	114 mm	8, M-8
100 mm	152 mm	16, M-8
150 mm	203 mm	20, M-8
200 mm	254 mm	24, M-8
250 mm	304 mm	32, M-8

Aluminum Conflat Gaskets®: Prices shown below are for packs of 10, or each, depending on Gasket size.

Flange O.D.	Gasket O.D.	Part No.	Price
1.33 in.	0.838 in.	X701G01.33A	$50/10
2.75 in.	1.895 in.	X701G02.75A	$77/10
3.375 in.	2.425 in.	X701G03.375A	$105/10
4.50 in.	3.25 in	X701G04.50A	$128/10
6.00 in.	4.75 in.	X701G06.00A	$178/10
8.00 in.	6.73 in.	X701G08.00A	$254/10
10.00 in.	8.73 in.	X701G010.00A	$284 /10
12.00 in.	10.73 in.	X701G012.00A	$42/ea
13.25 in.	11.55 in.	X701G013.25A	$50/ea
12.31 in.	12.31 in.	X701G014.00A	Contact Factory

Conflat® Outside Diameter	Conflat® Valves with Electro-Pneumatic Operator				Conflat® Valves with Manual Operator			
	Aluminum Model & Neck Style	Price	**Stainless Steel** Model & Neck Style	Price	**Aluminum** Model & Neck Style	Price	**Stainless Steel** Model & Neck Style	Price
2.75 in. Outside Diameter **Conflat® Flange** (1.63 in. Port)	OPWA-2.75-CF-N1-EP	$1,584	OPSS-2.75-CF-N1-EP	$5,737	OPWA-2.75-CF-N1-M	$1,410	OPSS-2.75-CF-N1-M	$5,392
	OPWA-2.75-CF-N5-EP	$1,763	OPSS-2.75-CF-N5-EP	$6,007	OPWA-2.75-CF-N5-M	$1,591	OPSS-2.75-CF-N5-M	$5,662
	OPWA-2.75-CF-N6-EP	$1,678	OPSS-2.75-CF-N6-EP	$5,872	OPWA-2.75-CF-N6-M	$1,505	OPSS-2.75-CF-N6-M	$5,528
	OPWA-2.75-CF-N8-EP	$1,678	OPSS-2.75-CF-N8-EP	$5,872	OPWA-2.75-CF-N8-M	$1,505	OPSS-2.75-CF-N8-M	$5,528
3.375 in. Outside Diameter **Conflat® Flange** (2.01 in. Port)	LPWA-3.375-CF-N1-EP	$2,036	LPSS-3.375-CF-N1-EP	$6,600	LPWA-3.375-CF-N1-M	$1,865	LPSS-3.375-CF-N1-M	$6,661
	LPWA-3.375-CF-N5-EP	$2,323	LPSS-3.375-CF-N5-EP	$6,937	LPWA-3.375-CF-N5-M	$2,152	LPSS-3.375-CF-N5-M	$6,593
	LPWA-3.375-CF-N6-EP	$2,303	LPSS-3.375-CF-N6-EP	$6,768	LPWA-3.375-CF-N6-M	$2,130	LPSS-3.375-CF-N6-M	$6,424
	LPWA-3.375-CF-N8-EP	$2,303	LPSS-3.375-CF-N8-EP	$6,768	LPWA-3.375-CF-N8-M	$2,130	LPSS-3.375-CF-N8-M	$6,424
4.50 in. Outside Diameter **Conflat® Flange** (2.51 in. Port)	LPWA-4.50-CF-N1-EP	$2,179	LPSS-4.50-CF-N1-EP	$6,680	LPWA-4.50-CF-N1-M	$1,995	LPSS-4.50-CF-N1-M	$6,337
	LPWA-4.50-CF-N5-EP	$2,757	LPSS-4.50-CF-N5-EP	$6,910	LPWA-4.50-CF-N5-M	$2,581	LPSS-4.50-CF-N5-M	$6,566
	LPWA-4.50-CF-N6-EP	$2,688	LPSS-4.50-CF-N6-EP	$6,863	LPWA-4.50-CF-N6-M	$2,503	LPSS-4.50-CF-N6-M	$7,652
	LPWA-4.50-CF-N8-EP	$2,688	LPSS-4.50-CF-N8-EP	$6,863	LPWA-4.50-CF-N8-M	$2,503	LPSS-4.50-CF-N8-M	$7,652
6.00 in. Outside Diameter **Conflat® Flange** (4.01 in. Port)	LPWA-6-CF-N1-EP	$2,581	LPSS-6-CF-N1-EP	$7,692	LPWA-6-CF-N1-M	$2,396	LPSS-6-CF-N1-M	$7,281
	LPWA-6-CF-N5-EP	$2,712	LPSS-6-CF-N5-EP	$8,110	LPWA-6-CF-N5-M	$2,533	LPSS-6-CF-N5-M	$8,110
	LPWA-6-CF-N6-EP	$2,595	LPSS-6-CF-N6-EP	$8,063	LPWA-6-CF-N6-M	$2,503	LPSS-6-CF-N6-M	$7,652
	LPWA-6-CF-N8-EP	$2,595	LPSS-6-CF-N8-EP	$8,063	LPWA-6-CF-N8-M	$2,503	LPSS-6-CF-N8-M	$7,652
8.00 in. Outside "Diameter **Conflat® Flange** (6.02 in. Port)	LPWA-8-CF-N1-EP	$2,950	LPSS-8-CF-N1-EP	$9,177	LPWA-8-CF-N1-M	$2,688	LPSS-8-CF-N1-M	$8,766
	LPWA-8-CF-N5-EP	$3,318	LPSS-8-CF-N5-EP	$10,189	LPWA-8-CF-N5-M	$3,066	LPSS-8-CF-N5-M	$9,778
	LPWA-8-CF-N6-EP	$3,066	LPSS-8-CF-N6-EP	$9,683	LPWA-8-CF-N6-M	$2,927	LPSS-8-CF-N6-M	$9,272
	LPWA-8-CF-N8-EP	$3,066	LPSS-8-CF-N8-EP	$9,683	LPWA-8-CF-N8-M	$2,927	LPSS-8-CF-N8-M	$9,272
10.00 in. Outside Diameter **Conflat® Flange** (8.02 in. Port)	LPWA-10-CF-N1-EP	$4,866	LPSS-10-CF-N1-EP	$9,105	LPWA-10-CF-N1-M	$4,357	LPSS-10-CF-N1-M	$9,238
	LPWA-10-CF-N5-EP	$5,242	LPSS-10-CF-N5-EP	$10,732	LPWA-10-CF-N5-M	$4,727	LPSS-10-CF-N5-M	$10,317
	LPWA-10-CF-N6-EP	$5,103	LPSS-10-CF-N6-EP	$10,189	LPWA-10-CF-N6-M	$4,543	LPSS-10-CF-N6-M	$9,778
	LPWA-10-CF-N8-EP	$5,103	LPSS-10-CF-N8-EP	$10,189	LPWA-10-CF-N8-M	$4,543	LPSS-10-CF-N8-M	$9,778
12.00 in. Outside Diameter **Conflat® Flange** (10.02 in. Port)	LPWA-12-CF-N1-EP	$6,544	LPSS-12-CF-N1-EP	$15,520	LPWA-12-CF-N1-M	$6,120	LPSS-12-CF-N1-M	$14,689
	LPWA-12-CF-N5-EP	$6,960	LPSS-12-CF-N5-EP	$17,004	LPWA-12-CF-N5-M	$6,582	LPSS-12-CF-N5-M	$16,174
	LPWA-12-CF-N6-EP	$6,674	LPSS-12-CF-N6-EP	$16,261	LPWA-12-CF-N6-M	$6,397	LPSS-12-CF-N6-M	$15,432
	LPWA-12-CF-N8-EP	$6,674	LPSS-12-CF-N8-EP	$16,261	LPWA-12-CF-N8-M	$6,397	LPSS-12-CF-N8-M	$15,432

Contact factory for SolidWorks 3D *.STEP format files. 2D drawing below for outline dimension reference.



For valves with ports up to 8 inches the actuator is on the same side as the gate seal, valves with ports 10 inches and larger have the actuator opposite the gate seal side.

Nominal CF Flange O.D.	Model No ANSI Flange All dimensions in inches	Port Diam.	Flange O.D	Flange Thick-ness	Bolt Circle	(no of bolts) x bolt size	A Alum Flange to Flange	A St. Steel Flange to Flange	BMAN Manual Overall Height	BEP EP Overall Height	DEP EP Overall Width	F Disassy. Clearance	Weight lbs. Aluminum Net	Weight lbs. Aluminum Ship
2.75 in.	OPWA 2.75 N1	1.50	2.75	0.500	2.312	(6) ¼ - 28	3.88	2.38	10.41	11.13	6.75	2.63	8	13
2.75 in.	OPWA 2.75 N5	1.50	2.75	0.500	2.312	.265 thru hold on neck	6.63	5.12	10.41	11.13	6.75	2.63	8	13
2.75 in.	OPWA 2.75 N6 & N8	1.50	2.75	0.500	2.312		5.25	3.75	10.41	11.13	6.75	2.63	8	13
3.375 in.	LPWA 3.375 N1	2.01	3.38	0.625	2.85	(6) 5/16 - 24	3.88	2.630	10.41	11.13	6.75	2.63	8	13
3.375 in.	LPWA 3.375 N5	2.01	3.38	0.625	2.85	.332 thru hold on neck	7.13	5.88	10.41	11.13	6.75	2.63	8	13
3.375 in.	LPWA 3.375 N6 & N8	2.01	3.38	0.625	2.85		5.51	4.26	10.41	11.13	6.75	2.63	8	13
4.50 in.	LPWA 4.50 N1	2.51	4.50	0.680	3.628	(8) 5/16 - 24	3.88	2.74	10.75	11.5	6.75	2.63	8	13
4.50 in.	LPWA 4.50 N5	2.51	4.50	0.680	3.628	.332 thru hold on neck	7.35	6.21	10.75	11.5	6.75	2.63	8	13
4.50 in.	LPWA 4.50 N6 & N8	2.51	4.50	0.680	3.628		5.62	4.48	10.75	11.5	6.75	2.63	8	13
6 in.	LPWA 6 N1	4.01	6.00	0.780	5.128	(16) 5/16 - 24	4.43	2.94	14.18	14.93	7.80	4.0	10	15
6 in.	LPWA 6 N5	4.01	6.00	0.780	5.128	.332 thru hold on neck	8.30	6.81	14.18	14.93	7.80	4.0	10	15
6 in.	LPWA 6 N6 & N8	4.01	6.00	0.780	5.128		6.37	4.88	14.18	14.93	7.80	4.0	10	15
8 in.	LPWA 8 N1	6.02	8.00	0.880	7.128	(20) 5/16 - 24	4.63	3.14	19.75	20.5	10.50	4.48	14	21
8 in.	LPWA 8 N5	6.02	8.00	0.880	7.128	.332 thru hold on neck	8.90	7.41	19.75	20.5	10.50	4.48	14	21
8 in.	LPWA 8 N6 & N8	6.02	8.00	0.880	7.128		6.77	5.28	19.75	20.5	10.50	4.48	14	21
10 in.	LPWA 10 N1	8.02	10.00	0.970	9.128	(24) 5/16 - 24	4.81	4.05	25.81	26.6	12.0	5.15	25	30
10 in.	LPWA 10 N5	8.02	10.00	0.970	9.128	.332 thru hold on neck	9.44	8.68	25.81	26.6	12.0	5.51	25	30
10 in.	LPWA 10 N6 & N8	8.02	10.00	0.970	9.128		7.12	6.36	25.81	26.6	12.0	5.51	25	30
12 in.	LPWA 12 N1	10.02	12.00	1.020	11.18	(32) 5/16 - 24	4.91	4.15	25.75	26.5	16.50	5.51	50	59
12 in.	LPWA 12 N5	10.02	12.00	1.020	11.18	.332 thru hold on neck	9.74	8.98	25.75	26.5	16.51	5.51	50	59
12 in.	LPWA 12 N6 & N8	10.02	12.00	1.020	11.18		7.32	6.56	25.75	26.5	16.50	5.51	50	59

Model Numbering System

VRC Valves are Manufactured in the USA.

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 illustrated 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) 2015/863/EU Compliant.

Basic Valve Style

LPWA..... Bonnet Style, Large Port Aluminum
TBWA ..... Thick Body Valves for Dirty Environments
X-LPWA..... Bonnet Style, Extra Large Port Aluminum
LPSS..... Bonnet Style, Large Port Stainless Steel
X-LPSS..... Bonnet Style, Extra Large Port Stainless Steel
BEL ..... Bellows Seal, Welded Aluminum
END STD..... Standard Port Aluminum Gate Valves
END LP..... Oversize Large Port Aluminum Gate Valves
AVAL..... Aluminum Poppet Style Valves
AVMS..... Mild Steel Poppet Valves
REB..... Rectangular Port, Bellows Seal
REQ ..... Rectangular Port, Quad Ring Seal

Roughing & Gauge Ports

Specify location (R-1, R-2, etc.) and size of port (NW-16, NW-25, etc.) Refer to page 42 in this catalog: Roughing and Gauge Ports, for the range of port sizes available in each location for your basic valve style.

Limit Switches (Position Indicators)

Visual Position Indicators are included on All Bonnet Gate Valves. Limit switches are described in the "Optional Features and Accessories" section on page 41. (Sold by the pair, 1 for open, 1 for closed)

LSS ..... Enclosed Limit Switch (SPDT)
LSD..... Enclosed Limit Switch (DPDT)
LSO..... Open Type Limit Switch (SPDT)
LSE ..... Electronic Type Limit Switch (SPDT)
LSX-C... Explosion Proof, Grps. C, D (SPDT)
LSX-B ... Explosion Proof, Grp. B (SPDT)

Flange Bolt Pattern

ASA.....ANSI Bolt Pattern
CF .....Conflat® Flanges
CF-MET....Metric Conflat®
JIS.....Japan Industrial Std.
DEP.....Dependex Flanges
ISO.....ISO Bolt Pattern
SPEC .....Customer Special Flange
BLANK .....No Holes or O-Ring

Flange O-Rings

2O O-Rings both flanges
NO No flange O-Rings
1O O-Ring Open Side
1S O-Ring Seal Side

LPWA - 12 - ASA - N8 - 2O - B - R2 - NW-16 - EP - 115 - LSS

Port Flange Neck Style

N1.....Tapped Holes Both Sides
N5.....Neck Flange on Both Sides
N6 .....Neck Flange on Seal Side
N8.....Neck Flange on Open Side
TAP ....Tapped Holes on Neck Flanges

Our standard neck style valves (N5, N6, N8) have slots rather than holes for bolts. For tapped holes instead of slots add "TAP" to Model number. No extra charge.

Type of Operator

EP.....Electro-Pneumatic
A.....Air Pilot
3 POS ....3 Position Electro-Pneumatic
P.....Pneumatic only (no solenoid)
M.....Manual Lever
T.....Manual Throttle
MO.....Motor Actuator

Normal Valve Port Size

Inches: 2, 3, 4, 6, 8, 10, 12, 16, 20, 24, 32
ISO: 63 mm to 630 mm
JIS: 63 mm to 630 mm
Conflat®: 2.75, 4.5, 6, 8, 10, 12 inch OD

O-Ring Material

B Buna-N
V Viton®
S Silicone
K Kalrez®
C Chemraz®

Solenoid Voltage (Only Used with EP Operator)

115.....115V, 50/60 Hz
220.....220-240 V, 50 Hz
24D .....24 VDC
115 EX.....Expl. Proof 115V, 50/60 Hz
220 EX.....Expl. Proof 220V, 50 Hz
24 EX.....Expl. Proof 24 VDC

Call our toll free number (800) 426-9340, or (412) 261-7630 to place orders or for customer service. Our FAX number is (412) 261-7220. Address orders by mail to Vacuum Research Corporation, 100 Chapel Harbor Drive, #4, Pittsburgh, PA 15238 USA. Prices in this catalog are FOB factory. CIF or C&F prices available. Contact factory for pro forma invoice or price quotation. Terms are Net 30 days.

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