



HIGH VACUUM APPARATUS

MODEL KEY GUIDE

1 = Standard Cycle
2 = Million Cycle
3 = Long Life
8 = Aluminum
9 = Special

1 = Manual
2 = Pneumatic
3 = Pneumatic Throttle
5 = Spring Loaded
7 = 3-Position
8 = Throttle System
9 = Special

0 = No Solenoid
1 = 24 VDC
2 = 120 VAC
3 = 220 VAC
4 = 24 VAC
9 = Special

0 = CF-F Port (UNF)
1 = ANSI Flanges*
2 = ANSI Flanges*
3 = KF/ISO Bolted
4 = Metric CF-F Port
5 = JIS Flanges*
6 = ISO Clamped
9 = Special Flanges
X = No Port Flanges**

R = Reed Switch
M = Micro Switch
P = Reed Switch + 6 pin connector
Q = Micro Switch + 6 pin connector
Z = Special
X = No Switch

Product Line
1 1

Actuator
2 1

Solenoid Voltage
2 - 0

Flange Type
1 5 0

Position Indicator
R * *

Valve Type
1 = Gate Valve
2 = Rectangular
3 = Laminar Flow
4 = Angle
5 = Inline
9 = Special

Gate & Bonnet Seal
1 = Viton Gate/Bonnet
2 = Viton Gate/Metal Bonnet
3 = Kalrez Gate/Metal Bonnet
4 = Quick Clamp Bonnet
9 = Special

Gate, Angle & Inline Valve Sizes (Use 3 Digits Only)

002 = 2.50"	025 = 2.5"	140 = 14.0"
003 = 3.75"	030 = 3.0"	160 = 16.0"
005 = 5.00"	040 = 4.0"	180 = 18.0"
006 = 6.25"	060 = 6.0"	200 = 20.0"
007 = 7.50"	080 = 8.0"	210 = 21.0"
010 = 1.0"	100 = 10.0"	240 = 24.0"
015 = 1.5"	107 = 10.75"	320 = 32.0"
020 = 2.0"	120 = 12.0"	360 = 36.0"

Port Options
A = KF 25 Port
B = KF 40 Port
C = 1.33 CF-F Port
D = 2.75 CF-F Port
E = .750 Gauge Port
F = 1.0" Gauge Port
S = Special
X = No Port Option

Rectangular Valve Sizes (Use 4 Digits Only)

0106 = 1 x 6	0208 = 2 x 8	0308 = 3 x 8	0412 = 4 x 12	0516 = 5 x 16	0616 = 6 x 16
0108 = 1 x 8	0209 = 2 x 9	0310 = 3 x 10	0416 = 4 x 16	0520 = 5 x 20	0620 = 6 x 20
0109 = 1 x 9	0210 = 2 x 10	0312 = 3 x 12	0420 = 4 x 20	0524 = 5 x 24	0624 = 6 x 24
0110 = 1 x 10	0212 = 2 x 12	0316 = 3 x 16	0424 = 4 x 24	0530 = 5 x 30	0630 = 6 x 30
0112 = 1 x 12	0213 = 2 x 13	0320 = 3 x 20	0430 = 4 x 30	0532 = 5 x 32	0632 = 6 x 32
0113 = 1 x 13	0216 = 2 x 16	0324 = 3 x 24	0432 = 4 x 32	0536 = 5 x 36	0636 = 6 x 36
0116 = 1 x 16	0218 = 2 x 18	0330 = 3 x 30	0436 = 4 x 36	0540 = 5 x 40	0640 = 6 x 40
0120 = 1 x 20	0220 = 2 x 20	0408 = 4 x 8	0510 = 5 x 10	0610 = 6 x 10	0648 = 6 x 48
0206 = 2 x 6	0306 = 3 x 6	0410 = 4 x 10	0512 = 5 x 12	0612 = 6 x 12	0650 = 6 x 50

Rectangular Body Configuration Options
B = Bolted
C = Clamped
D = 50mm Bolted MESC
E = 70mm Bolted MESC
F = 50mm Clamped MESC
G = 70mm Clamped MESC
H = 50mm Clamped with mounting holes (mmxsc)
I = 70mm Clamped with mounting holes (mmxsc)
S = Special

**Please specify if o-ring groove is required. O-ring must be ordered separately.*

**** No Port Flanges Applies to Angle & Inline only.**

*** Applies only if selecting options.**

Model Number Example

MM	INCH	MODEL NUMBER	CONDUCTANCE LITERS/SEC ↕	SHIPPING WEIGHT LBS.	KG
38	1.5	11212-0150R	128	10	5
50	2.0	11212-0200R	279	13	6
63	2.5	11212-0250R	524	18	8



HIGH VACUUM APPARATUS

HVA GATE VALVE MAINTENANCE AND ADJUSTMENT PROCEDURE

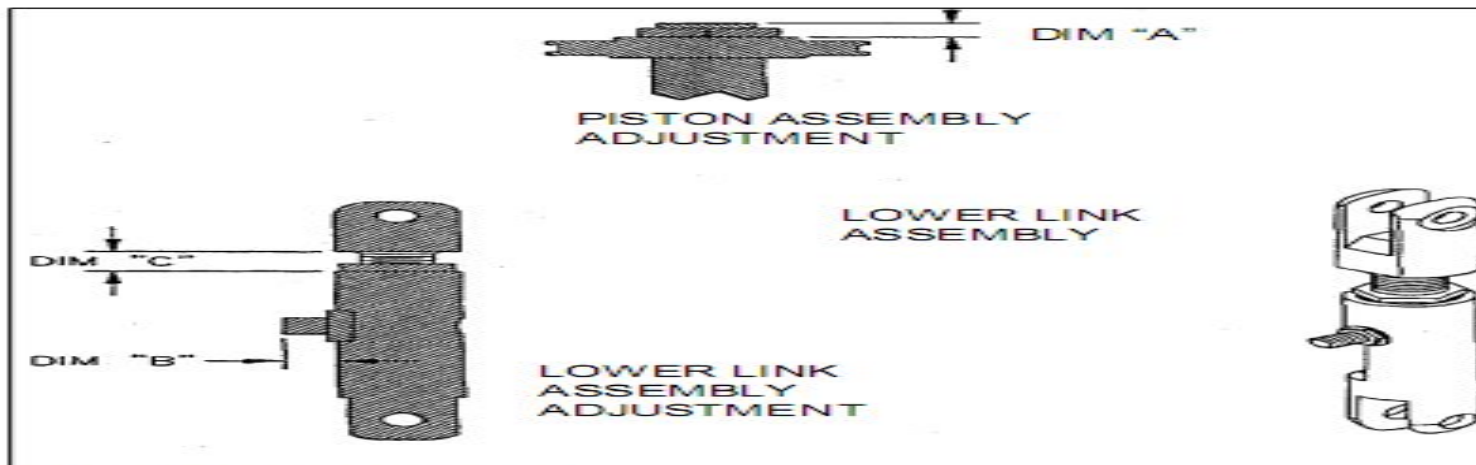
VI. VALVE ADJUSTMENT CHART

INSTRUCTION FOR VALVE ADJUSTMENT

VALVE SIZE	DIMENSION "A" PISTON ADJUST *	DIMENSION "B" OVERCENTER ADJUST	DIMENSION "B" NO OVERCENTER ADJUST	DIMENSION "C" COMPRESSION ADJUST	RECOMMENDED LOCKING AIR PRESSURE
1.50	.110 **	N/A	N/A	.210	20-30 PSI
2.00	.120 **	N/A	N/A	.360	35-50 PSI
2.50	.125 **	N/A	N/A	.190	35-55 PSI
3.00	.125 **	N/A	N/A	.390	60-65 PSI
4.00	N/A	.278	.360	.420	20-35 PSI
6.00	N/A	.085	.160	.350	35-45 PSI
8.00	N/A	.365	.465	.260	55-65 PSI
10.00	N/A	--	.800	.720	25-35 PSI
10.75	N/A	.635	1.035	.550	30-40 PSI
12.00	N/A	.640	1.035	.550	30-40 PSI
14.00	N/A	--	--	--	45-55 PSI
16.00	N/A	.540	.760	.540	65-80 PSI
18.00	N/A	--	--	--	--
21.00	N/A	--	--	--	--

ALL DIMENSIONS IN INCHES
 * = STARTING ADJUSTMENT
 ** = PISTON ADJUSTMENT CONTROLS OVER-CENTER ADJUSTMENT

VALVE ADJUSTMENT TABLE



DIMENSIONS "A", "B", "C"



HIGH VACUUM APPARATUS

11000 Series Stainless Steel Gate Valves

VALVE SPECIFICATIONS

- Leak Rate: 2×10^{-10} ATM.CC. / Second
- Pressure Range:
 1×10^{-9} torr \rightarrow 760 torr Viton seal bonnet
 1×10^{-10} torr \rightarrow 760 torr Metal seal bonnet
- Differential Pressure:
760 torr in either direction
- Maximum Δ pressure before opening: 20 torr
- Cycles until service: 100,000 (application dependent)
- Estimated time to service:
 $1 \frac{1}{2}$ " \rightarrow 8" Seal Kit = 1 hour
Carriage rebuild = 3 hours
10" \rightarrow 16" Seal Kit = 1 1/2" hours
Carriage rebuild = 4 hours
- Bake-out Limitation:
Valve:
150° C Viton Seal Bonnet & Gate (w/Reed Switches)
200° C OFHC Copper Sealed Bonnet Viton Gate (w/Micro Switches)
250° C With OFHC Copper Sealed Bonnet & Kalrez Seal Gate (solenoid not mounted on valve, position indicators removed) *High temperature switches and bake-out jacket also available.
60° C *(High Temperature Actuator optional)
- Material: Actuator:
 Body:
 Gate:
 Bellows:
304 Stainless steel/Electropolished
304 Stainless steel/Electropolished
AM-350
*(Inconel for corrosive environment)
- Seals:
Standard: Viton o-ring, gate and bonnet
M.S.B.: OFHC Copper Seal bonnet, Viton O-Ring gate
*Kalrez O-Ring Gate for higher bake-out temps.
- Solenoid:
Available Voltages: 24 V AC 50/60 Hz; 200V AC 50/60 Hz;
120V AC 50/60 Hz; 240V AC 50/60 Hz;
12V DC 24V DC
- Power required: 4.0 Watts
- Position Indicator:



HIGH VACUUM APPARATUS

11000 Series Stainless Steel Gate Valves KF, ISO ANSI AND JIS FLANGE MODELS

Applications

KF Flanges, ISO Bolted and Clamped Flanges, ANSI and JIS Models are designed for high vacuum applications specifically when vacuum ranges approximate 10^{-9} and bake-out temperatures do not exceed 200°C . The international KF/ISO configurations and Viton O-Ring flanges are used in areas requiring an easily mountable and demountable flange type seal. These valves provide valving for cryopumps, turbomolecular pumps, ion pumps, and other applications requiring clean, low outgassing valves.





HIGH VACUUM APPARATUS

13000 Series Laminar Flow Gate Valves

VALVE SPECIFICATIONS

• Leak Rate:	2 x 10 ⁻¹⁰ ATM. CC./ Second	
• Pressure Range:	1 x 10 ⁻⁹ torr → 760 torr Viton seal bonnet	
• Differential Pressure:	760 torr in either direction	
• Maximum Δ pressure before opening:	20 torr	
• Cycles until service:	50,000 (application dependent)	
• Bake-out Limitation: Valve:	150° C Viton Seal Bonnet & Gate (w/Reed Switches) 200° C Metal Seal Bonnet (w/micro switches) 60° C (*High Temperature Actuator optional)	
• Material:	*Actuator:	
	Body:	304 Stainless steel
	Gate:	304 Stainless steel
	Bellows:	AM-350 *(Inconel/316L for corrosive environment)
• Seals:	Standard:	Viton o-ring, gate and bonnet
	MSB:	Viton o-ring gate, copper seal bonnet (CP-F models)
• Solenoid:		
Available Voltages:	24V AC 50/60 Hz; 120V AC 50/60 Hz; 12V DC	200V AC 50/60 Hz; 240V AC 50/60 Hz; 24V DC
Power required:	4.0 Watts	
• Position Indicator: Reed Switch:	115 VAC MAX or 28 VDC MAX - 20 mA MAX	
*Micro Switch:	5 AMPS @ 115 VAC - 5 AMPS @ 250 VAC 5 AMPS @ 28 VDC - Resistive Load 3 AMPS @ 28 VDC - Inductive Load	

*Options: Kalrez O-Rings, Chemraz O-Rings Inconel or 316L Bellows, Bake-out jackets, Micro-switches, High-Temp Micro-switches, High-Temp Actuator.



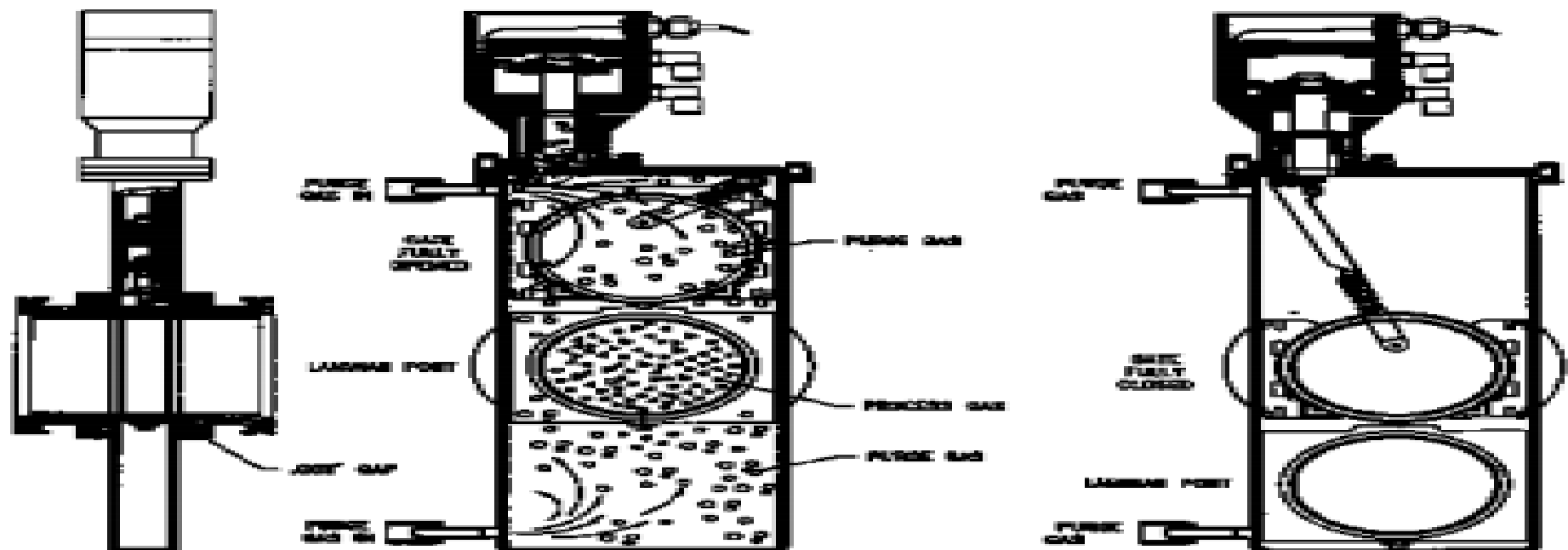
HIGH VACUUM APPARATUS

13000 Series Laminar Flow Gate Valves

Applications

The 13000 Series Laminar Flow Viton Seal Bonnet Gate Valves are designed for processes that require high pumping speed and pressures reaching 10^{-9} torr (and higher). These valves can be used with Cryo pumps, Turbomolecular pumps, Ion pumps and in any applications requiring clean, low outgassing valves with laminar flow characteristics. Available in all flange configurations, KF, ISO, ANSI, JIS, and CF-F.

The 13000 Series Laminar Flow Viton Seal Bonnet Gate Valves are also designed for uses in etching, CVD, and any other process that uses highly corrosive gasses which may be damaging to other valves. The Laminar Flow orifice effectively seals the valve mechanism from the gas stream. For additional protection, purge ports are installed in both the upper and lower body areas to allow an inert gas flow to prevent intrusion of the process gas into these areas.





HIGH VACUUM APPARATUS

21200 Series Million Cycle Gate Valves

VALVE SPECIFICATIONS

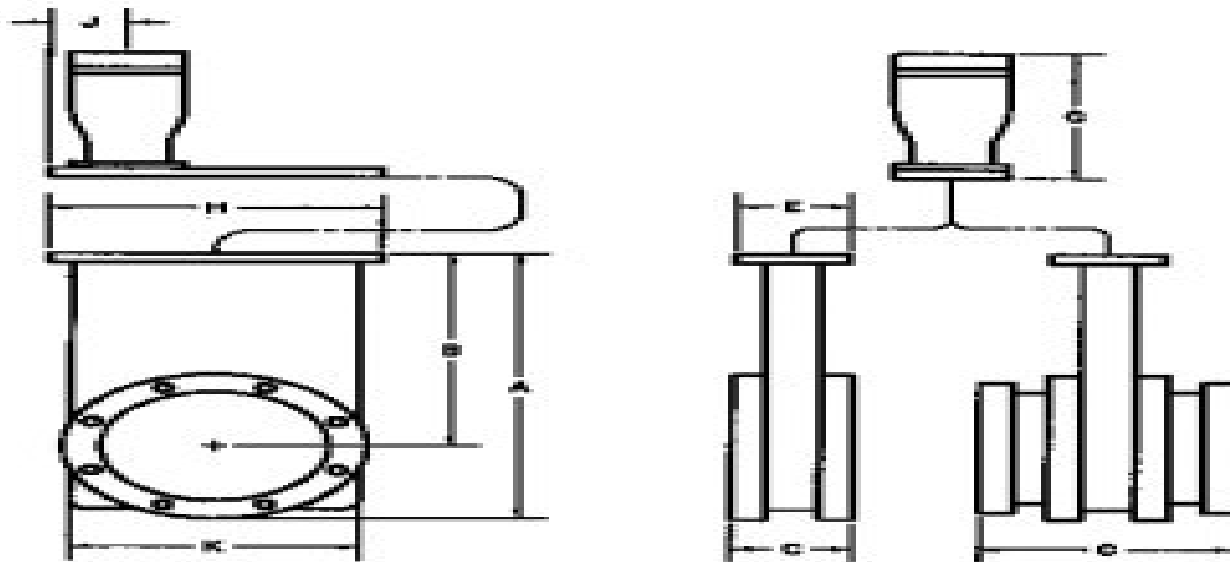
• Leak Rate:	2 x 10 ⁻¹⁰ ATM. CC./ Second	
• Pressure Range:	1 x 10 ⁻⁹ torr → 760 torr Vison seal bonnet	
• Differential Pressure:	760 torr in either direction	
• Maximum Δ pressure before opening:	20 torr	
• Cycles until service:	1,000,000 (application dependent)	
• Estimated time to service:	1 1/2" → 8" Seal kit = 1 hour Carriage rebuild = 3 hours 10" → 16" Seal Kit = 1 1/2" hours Carriage rebuild = 4 hours	
• Bake-out Limitation:	150° C Vison Seal Bonnet & Gate (w/Reed Switches) 60° C	
• Material:	Actuator:	60° C
	Body:	304 Stainless steel/Electropolished
	Gate:	304 Stainless steel/Electropolished
	Bellows:	AM-350
	Drive shaft/pins:	Hardened stainless steel/Electropolished
• Seals:	Standard:	Vison o-ring, gate and bonnet
• Solenoid:		
Available Voltages:	24V AC 50/60 Hz; 120V AC 50/60 Hz; 12V DC	200V AC 50/60 Hz; 240V AC 50/60 Hz; 24V DC
Power required:	4.0 Watts	
• Position Indicator:		
Reed Switch:	115 VAC MAX or 28 VDC MAX - 20 mA MAX	
*Micro Switch:	5 AMPS @ 115 VAC - 5 AMPS @ 250 VAC 5 AMPS @ 28 VDC - Resistive Load 3 AMPS @ 28 VDC - Inductive Load	
• *Options:	Micro-switches Custom Flanges Quick Clamp Bonnet Metal Seal Bonnet Latching-type Solenoid (Valve maintains same position in the event of power failure)	



HIGH VACUUM APPARATUS

21200 Series Million Cycle Gate Valves KF AND ISO PORT FLANGE MODELS

Valve Dimensions



NOML L.D.		A	B	C	E	G	H	J	K
16	mm.	55	38	40	38	54	48	24	33
.625"	inch.	2.15	1.49	1.56	1.49	2.14	1.88	0.94	1.31

NOML L.D.		A	B	C	E	G	H	J	K
40	mm.	121	86	51	51	130	84	31	62
1.5"	inch.	4.76	3.39	1.99	1.99	5.12	3.31	1.23	2.46
50	mm.	142	105	51	51	130	97	31	76
2.0"	inch.	5.60	4.12	1.99	1.99	5.12	3.81	1.23	2.99
63	mm.	188	122	52	51	130	111	31	90
2.5" bolted	inch.	7.37	4.81	2.03	1.99	5.12	4.37	1.23	3.54
63	mm.	188	122	88	51	130	111	31	90
2.5" clamped	inch.	7.37	4.81	3.46	1.99	5.12	4.37	1.23	3.54

Due to ongoing product development, prices/dimensions subject to change without notice.



HIGH VACUUM APPARATUS

82000 Series Aluminum Rectangular Valves

VALVE SPECIFICATIONS

• Leak Rate:	2 x 10 ⁻⁹ ATM. CC. / Second
• Pressure Range:	1 x 10 ⁻⁹ torr → 760 torr Viton seal bonnet
• Differential Pressure:	760 torr in either direction
• Maximum Δ pressure before opening:	20 torr
• Cycles until service:	1,000,000 (application dependent)
• Bake-out Limitation:	150° C Viton Seal Bonnet & Gate (without solenoid)
• Material:	60° C
Actuator:	
Body:	6061 T6 Aluminum/Electropolished/Anodized
Gate:	6061 T6 Aluminum/Electropolished/Anodized
Bellows:	AM-350 *(316L or Inconel optional)
• Seals:	
Standard:	Viton O-Ring, gate and bonnet *Kalrez or Chemraz Gate-O-Ring
• Solenoid:	Latching-type solenoid, valve to remain in same position in the event of a power loss.
Available Voltages:	24V AC 50/60 Hz; 200V AC 50/60 Hz; 120V AC 50/60 Hz; 240V AC 50/60 Hz; 12V DC 24V DC
Power required:	4.3 Watts
• Position Indicator:	
Reed Switch:	115 VAC MAX or 28 VDC MAX - 20 mA MAX
*Micro Switch:	5 AMPS @ 115 VAC - 5 AMPS @ 250 VAC 5 AMPS @ 28 VDC - Resistive Load 3 AMPS @ 28 VDC - Inductive Load

*Options: Micro-Switches, Kalrez O-Rings, Chemraz O-Rings
Inconel, 316L Bellows
Roughing Ports, Gauge Ports
See Model Key page for options

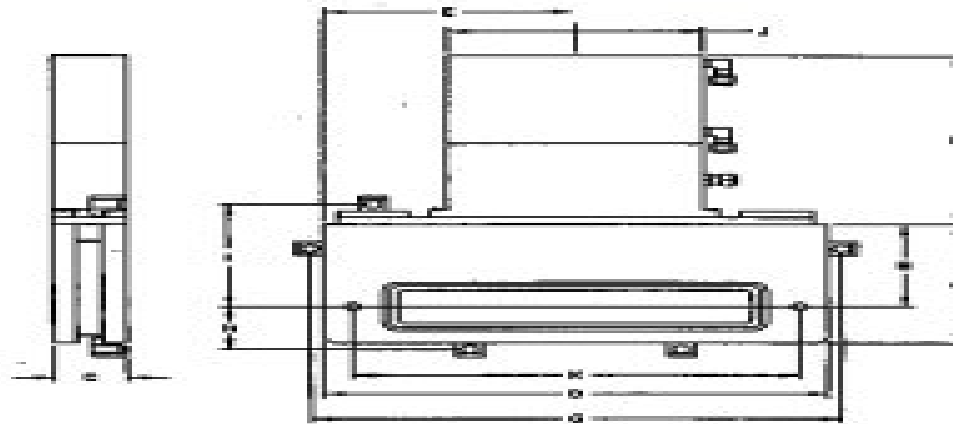


HIGH VACUUM APPARATUS

82000 Series Aluminum Rectangular Valves

MESC COMPATIBLE ALUMINUM MODELS

Valve Dimensions/Clamped



Viton Sealing Port Flange

NO. / LD.		A	B	C*	D	E	F	G	H	I	J	K
32 x 232	mm.	164	114	70	320	160	230	358	50	141	178	300
1.26 x 8.74	inch	6.46	4.49	2.76	12.60	6.30	9.10	14.11	1.97	5.55	7.00	11.81
46 x 236	mm.	164	114	70	320	160	230	358	50	141	178	300
1.81 x 9.29	inch	6.46	4.49	2.76	12.60	6.30	9.10	14.11	1.97	5.55	7.00	11.81
32 x 332	mm.	164	114	70	420	210	230	458	50	141	178	400
1.26 x 13.07	inch	6.46	4.49	2.76	16.54	8.27	9.10	18.05	1.97	5.55	7.00	15.75
46 x 336	mm.	164	114	70	420	210	230	458	50	141	178	400
1.81 x 13.23	inch	6.46	4.49	2.76	16.54	8.27	9.10	18.05	1.97	5.55	7.00	15.75
*32 x 232	mm.	164	114	50	320	160	240	358	50	141	178	300
1.26 x 8.74	inch	6.46	4.49	1.97	12.60	6.30	9.48	14.11	1.97	5.55	7.00	11.81
*46 x 236	mm.	164	114	50	320	160	240	358	50	141	178	300
1.81 x 9.29	inch	6.46	4.49	1.97	12.60	6.30	9.48	14.11	1.97	5.55	7.00	11.81
*32 x 332	mm.	164	114	50	420	210	240	458	50	141	178	400
1.26 x 13.07	inch	6.46	4.49	1.97	16.54	8.27	9.48	18.05	1.97	5.55	7.00	15.75
*46 x 336	mm.	164	114	50	420	210	240	458	50	141	178	400
1.81 x 13.23	inch	6.46	4.49	1.97	16.54	8.27	9.48	18.05	1.97	5.55	7.00	15.75

*Standard C dimension on MESC valve is 50mm, O-Ring groove on seal side.
Consult factory for valve dimensions on your specific requirements.

Due to ongoing product development, prices/dimensions subject to change without notice.