



Shielded Gate

Shielded Gate Valves 16000 Series

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Product Features

- Shielded gate design
- Single purge port on bonnet plate
- Standard sizes 1.5- to 14.0-inch, or custom
- Electropneumatic actuation standard
- Manual actuation optional

Description

The 16000 Series Shielded Gate Valves feature a travelling shield that moves with the gate to protect it from debris. These valves are used in extremely aggressive applications in which recurring down time is not an option. The shield, used with or without the purge port, greatly reduces particulate migration and prolongs the sealing integrity of the gate O-ring.

The body material is 304 stainless steel, which can be changed to other high temperature, non-corrosive materials for exceptionally aggressive applications. Alternative elastomer O-rings are also available.

The shielded gate valves are generally used in a pneumatically operated system and can also be configured for manual actuation. Standard flanges include CF-F metal seal flanges for UHV applications and KF/ ISO elastomer seal flanges for HV ranges. Other industry flanges or custom designed flanges are available upon request.

Applications

KF Flanges, ISO Bolted and Clamped Flanges, and optional ANSI or JIS Models are designed for high vacuum applications specifically when pressure ranges approximate 1×10^{-9} Torr and bakeout temperatures do not exceed 200°C. The international KF/ISO configurations and elastomer O-ring flanges are used in areas requiring an easily mountable and demountable flange seal. These valves provide valving for cryopumps, turbomolecular pumps, ion pumps and other applications requiring clean, low outgassing valves.

Long Life Configuration

The standard cycle operation between service is 100,000 cycles. The high vacuum, pneumatic gate valves may be configured for a 500,000 cycle operation until service. All cycling counts are application dependent.



Shielded Gate Valves Specifications

Standard Specifications

Materials

Valve body and mechanism	304 stainless steel
Welded bellows shaft seal	AM-350
Long Life drive shaft/pins	Hardened stainless steel
Bonnet / gate seals	
HV	Viton® elastomer
UHV	OFHC copper / Viton® elastomer

Purge Port

Standard	1/4-inch VCR
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Vacuum

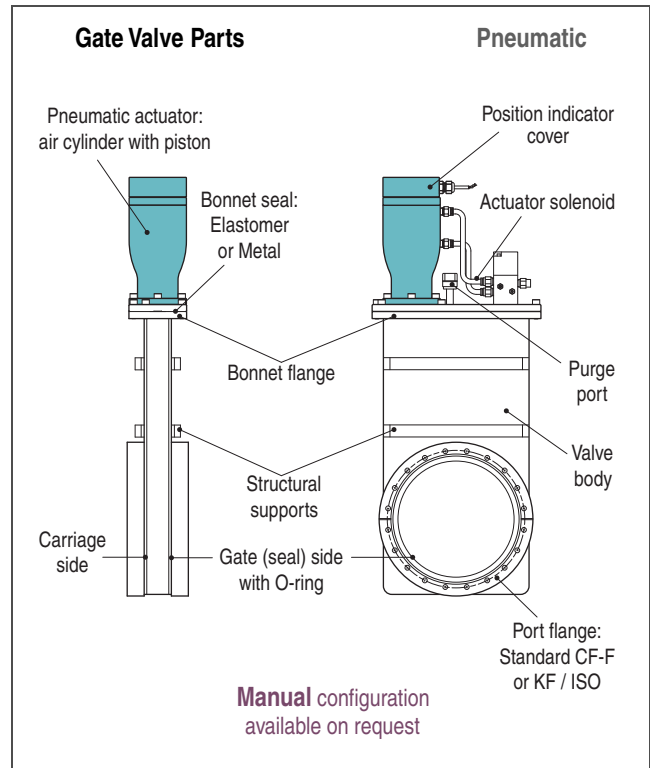
Pressure range	
HV	1 x 10 ⁻⁹ Torr
UHV	1 x 10 ⁻¹⁰ Torr
Leak rate	2 x 10 ⁻¹⁰ AtmCC/Sec
Differential pressure	760 Torr in either direction
Maximum Δ pressure before opening	20 Torr

Bakeout Temperature

	without solenoid
Elastomer sealed bonnet	150°C
Metal sealed bonnet	
Valve open	200°C
Valve closed	150°C
Actuator	
Manual	60°C
Pneumatic	60°C

Mechanism

Air service	80 psig
Solenoid	4.0 Watts
supplied voltage	120 VAC 50/60 Hz
optional voltages	24, 200, 240 VAC 50/60 Hz or 12, 24 VDC
Position indicator, max.	115 VAC or 28 VDC, 20 mA
Cycles until service, application dependent	100,000



Notes

- Dimensions given in U.S. System and [metric]
- Conductance ratings based on air, given in liters per second
- Due to ongoing product development, prices, dimensions and specifications subject to change without notice

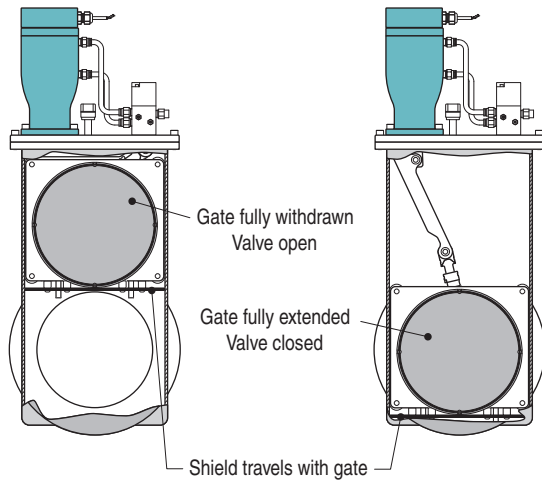
Options

All 16000 Series Valves may be equipped with alternative flanges, solenoids and seals. Contact HVA to discuss your requirements.

- Alternate voltage controls
- ANSI and JIS configurations
- Custom flange sizes
- Gauge ports
- Microswitches for position indicators
- Long Life configuration
- Manual actuators
- Motor operators
- Metal sealed bonnet
- QuickClamp Bonnet (patent pending)
- Roughing ports
- High temperature components, including O-rings, microswitches and actuator
- Custom materials, such as Inconel® or Kalrez®
- Bakeout jacket with or without regulators

Shielded Gate

Cutaway View



Theory of Operation

The Shielded Gate Valves incorporate a metal shield that travels with the gate during normal operation. When the gate is fully open the shield protects the gate from deposition materials. A purge port at the top of the bonnet provides evacuation of gases trapped by the withdrawn gate and shield.

When the gate is fully closed, the shield is at the bottom-most part of the valve body and completely out of the way of the gate. The gate closes normally.

A photo of the valve highlights the shield in an almost fully open position with the gate and shield withdrawn.

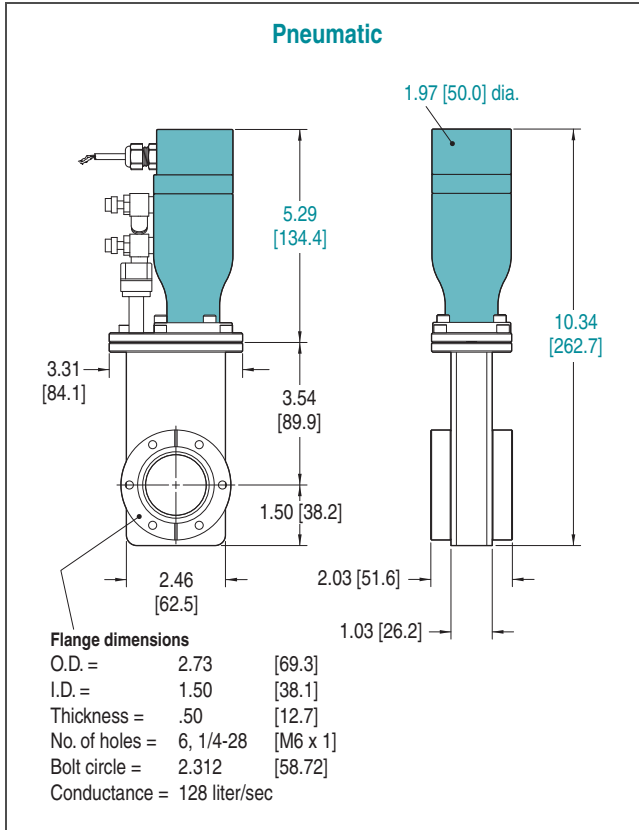
This concept can be added to almost any size valve that needs protection from the application process and contaminants originating from process work.

In order to ensure even greater protection, there is a Teflon® wiper attached to the shield.

In the fully open or withdrawn position, this wiper presses against all sides of the gate valve body interior. This positive fit is not a full seal, nevertheless it reasonably assures that the solid particles that are generated will not migrate onto the gate, gate seal and Strong Back assembly, which is the transport mechanism behind the gate.

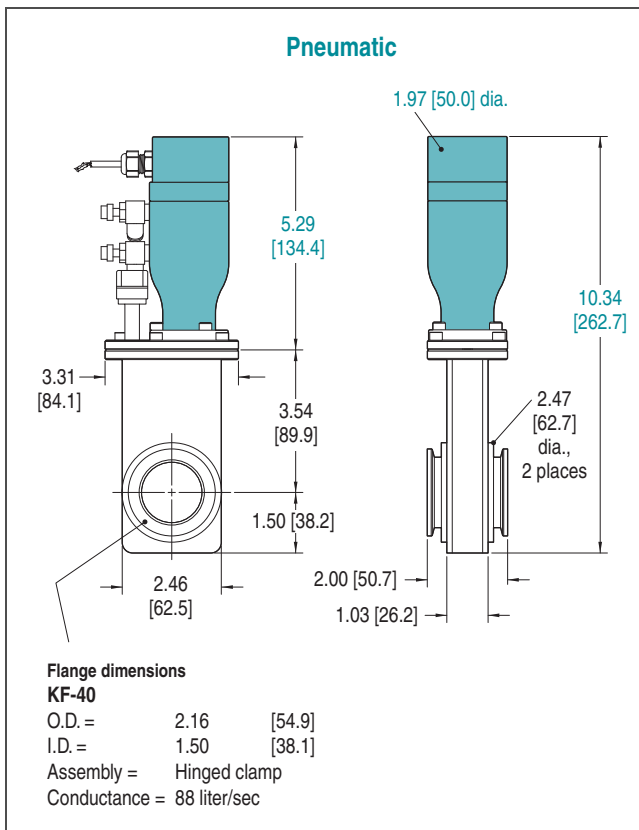
Photo highlighting the shield





CF-F 2.73 Flanges			40-mm 1.5-inch
Bonnet-Gate	Flange Type	Ship Wt lbs [kg]	Model Number *
Pneumatic			
Viton-Viton	U.S. Bolt	33 [15]	16212-0150R

* For metric flanges, replace last 0 in Model Number with 4
 For pneumatic valves,
 R = Reed switch, standard
 M = Microswitch, optional



KF-40 Flanges			40-mm 1.5-inch
Bonnet-Gate	Flange Type	Ship Wt lbs [kg]	Model Number *
Pneumatic			
Viton-Viton	Hinged Clamp	43 [20]	16212-0153R

* For pneumatic valves,
 R = Reed switch, standard
 M = Microswitch, optional

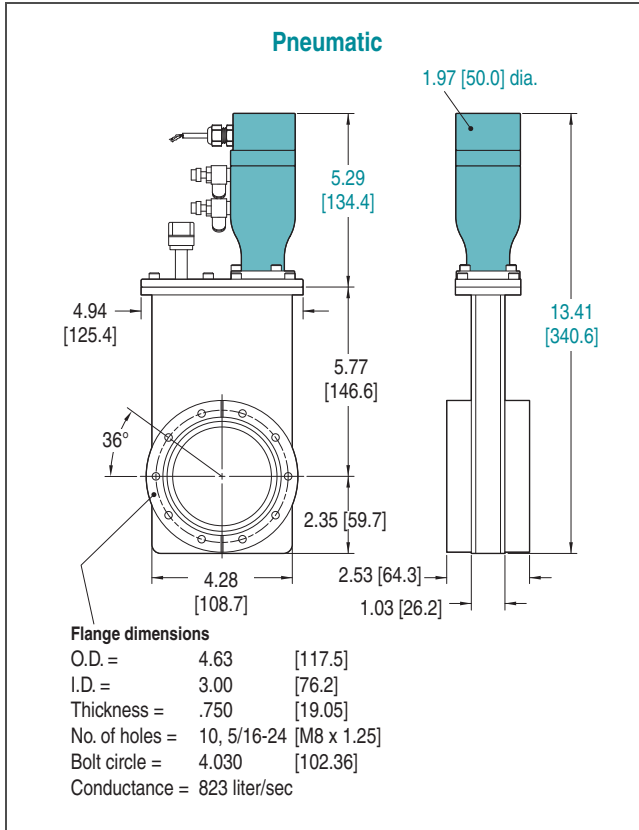
Shielded Gate

Shielded Gate Valves

75-mm 3.0-inch

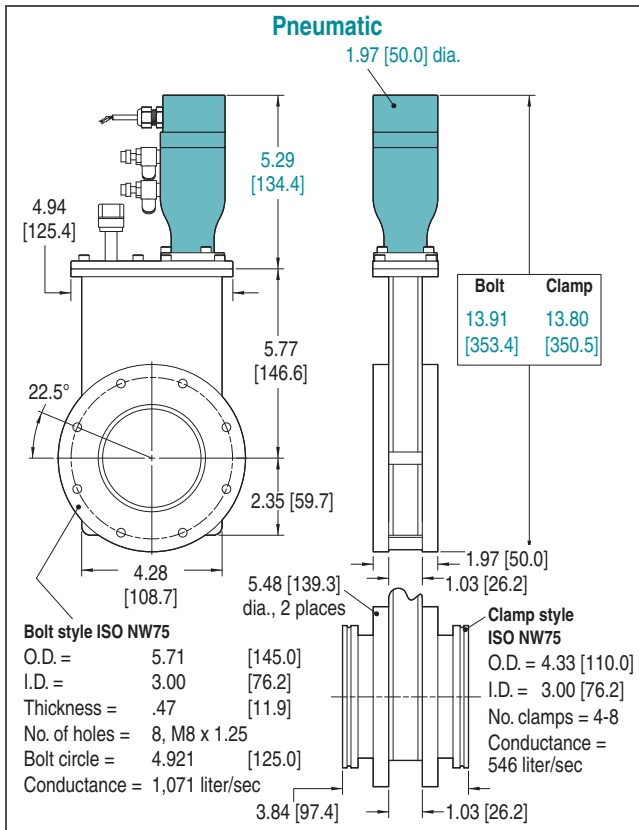


Shielded Gate



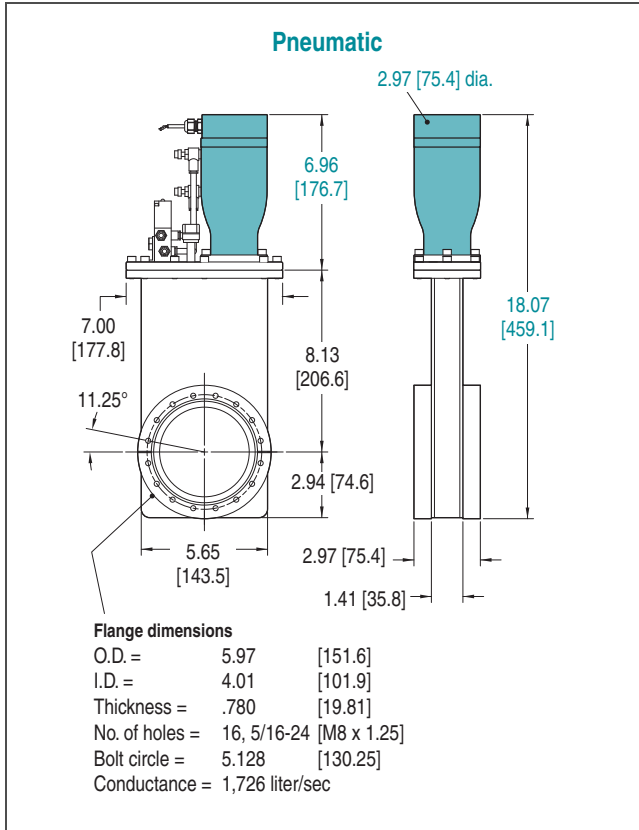
CF-F 4.62 Flanges			75-mm 3.0-inch
Bonnet-Gate	Flange Type	Ship Wt lbs [kg]	Model Number *
Pneumatic			
Viton-Viton	U.S. Bolt	33 [15]	16212-0300R

* For metric flanges, replace last 0 in Model Number with 4
 For pneumatic valves,
 R = Reed switch, standard
 M = Microswitch, optional



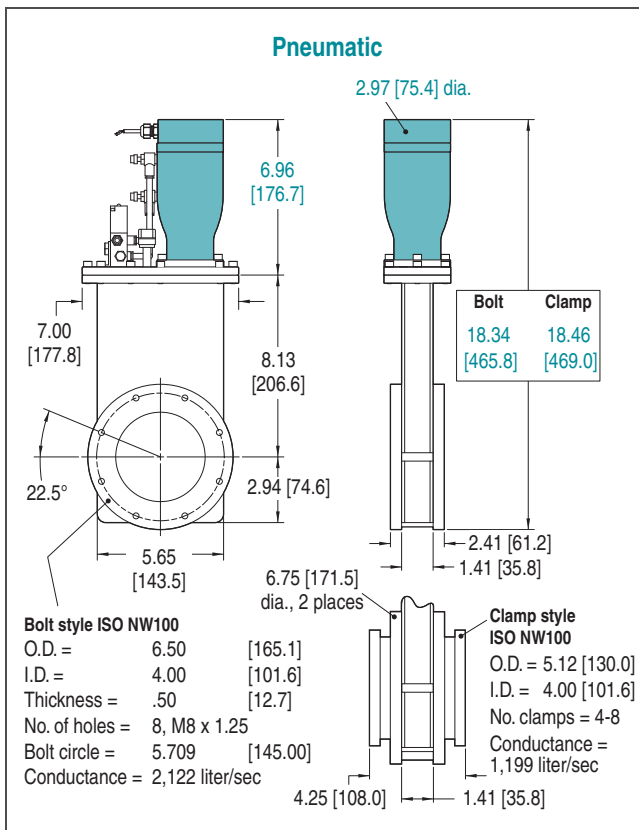
ISO-75 Flanges			75-mm 3.0-inch
Bonnet-Gate	Flange Type	Ship Wt lbs [kg]	Model Number *
Pneumatic			
Viton-Viton	Metric bolt	33 [15]	16212-0303R
Viton-Viton	Clamp	43 [20]	16212-0306R

* For pneumatic valves,
 R = Reed switch, standard
 M = Microswitch, optional



CF-F 6.00 Flanges			100-mm 4.0-inch
Bonnet-Gate	Flange Type	Ship Wt lbs [kg]	Model Number *
Pneumatic			
Viton-Viton	U.S. Bolt	33 [15]	16212-0400R

* For metric flanges, replace last 0 in Model Number with 4
For pneumatic valves,
R = Reed switch, standard
M = Microswitch, optional



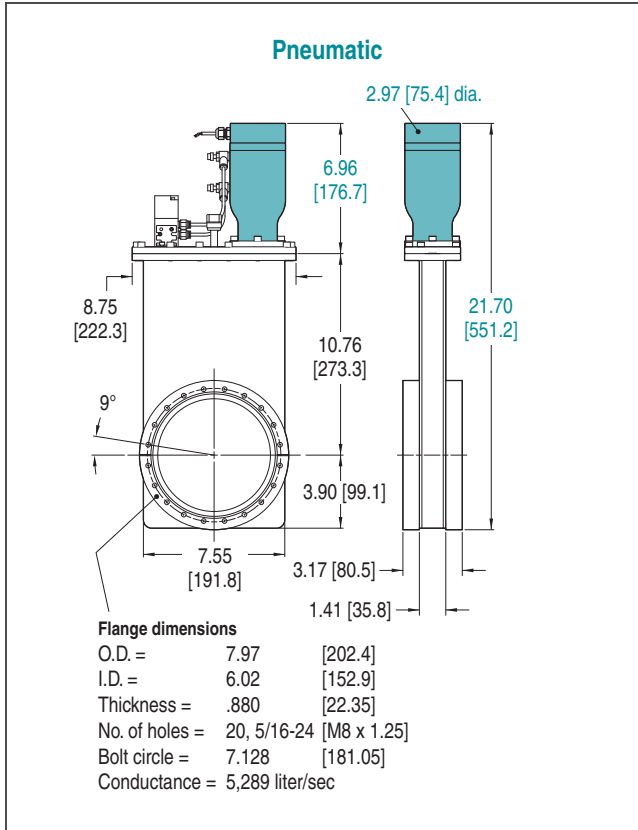
ISO-100 Flanges			100-mm 4.0-inch
Bonnet-Gate	Flange Type	Ship Wt lbs [kg]	Model Number *
Pneumatic			
Viton-Viton	Metric bolt	33 [15]	16212-0403R
Viton-Viton	Clamp	43 [20]	16212-0406R

* For pneumatic valves,
R = Reed switch, standard
M = Microswitch, optional

Shielded Gate Valves 150-mm 6.0-inch

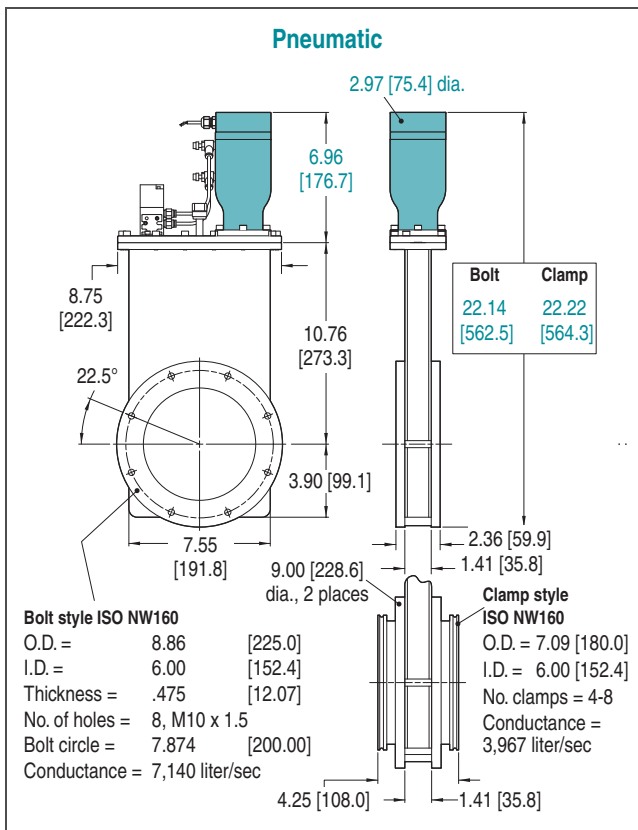


Shielded Gate



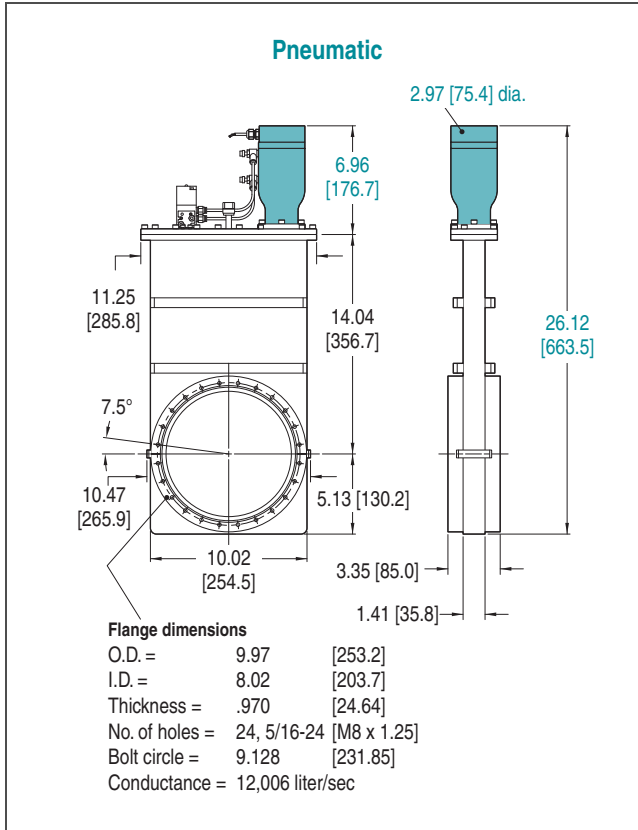
CF-F 8.00 Flanges			150-mm 6.0-inch
Bonnet-Gate	Flange Type	Ship Wt lbs [kg]	Model Number *
Pneumatic			
Viton-Viton	U.S. Bolt	50 [23]	16212-0600R

* For metric flanges, replace last 0 in Model Number with 4
For pneumatic valves,
R = Reed switch, standard
M = Microswitch, optional



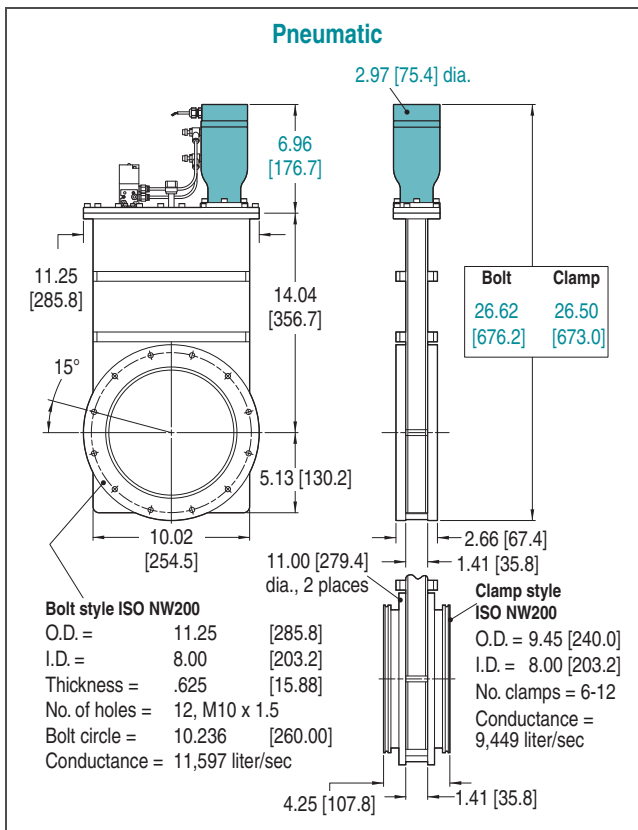
ISO-160 Flanges			150-mm 6.0-inch
Bonnet-Gate	Flange Type	Ship Wt lbs [kg]	Model Number *
Pneumatic			
Viton-Viton	Metric bolt	50 [23]	16212-0603R
Viton-Viton	Clamp	70 [32]	16212-0606R

* For pneumatic valves,
R = Reed switch, standard
M = Microswitch, optional



CF-F 10.00 Flanges			200-mm 8.0-inch
Bonnet-Gate	Flange Type	Ship Wt lbs [kg]	Model Number *
Pneumatic			
Viton-Viton	U.S. Bolt	33 [15]	16212-0800R

* For metric flanges, replace last 0 in Model Number with 4
For pneumatic valves,
R = Reed switch, standard
M = Microswitch, optional



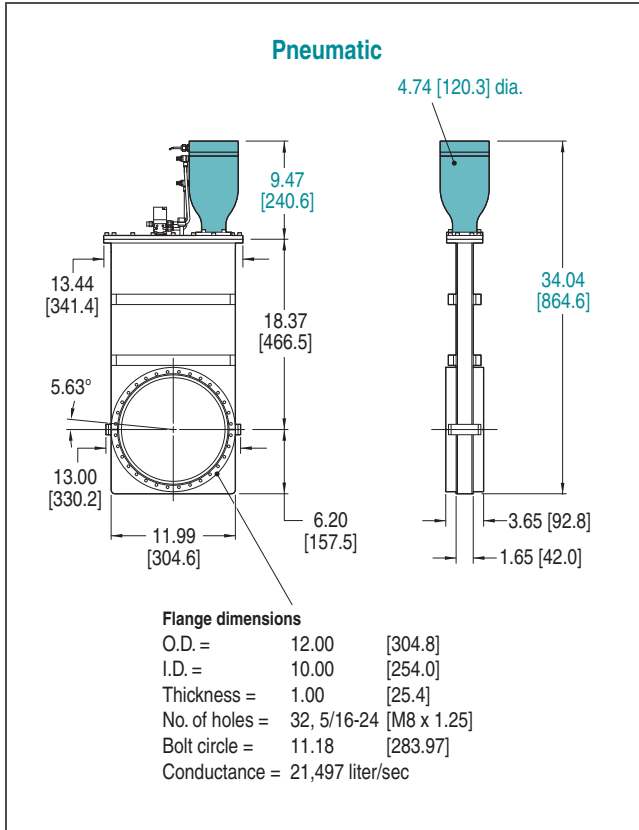
ISO-200 Flanges			200-mm 8.0-inch
Bonnet-Gate	Flange Type	Ship Wt lbs [kg]	Model Number *
Pneumatic			
Viton-Viton	Metric bolt	75 [34]	16212-0803R
Viton-Viton	Clamp	95 [43]	16212-0806R

* For pneumatic valves,
R = Reed switch, standard
M = Microswitch, optional

Shielded Gate Valves 250-mm 10.0-inch

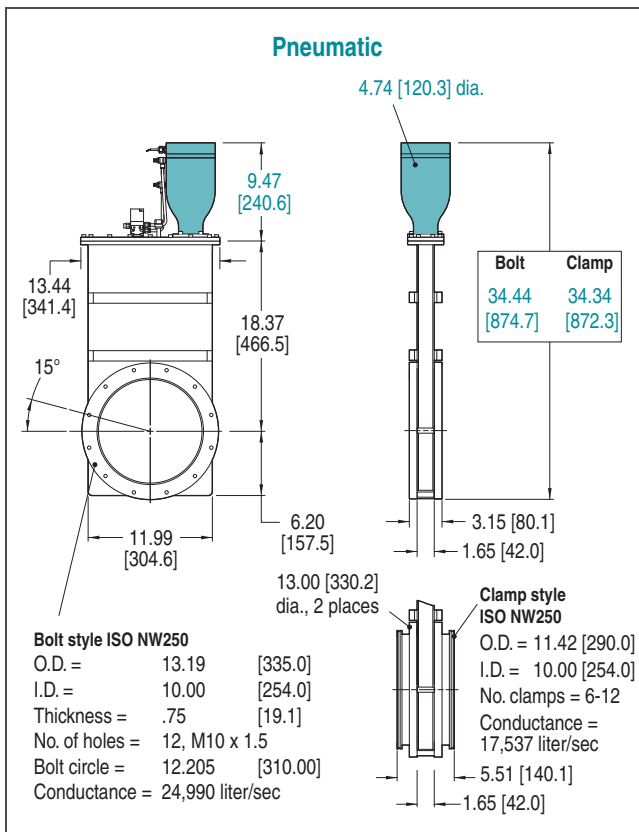


Shielded Gate



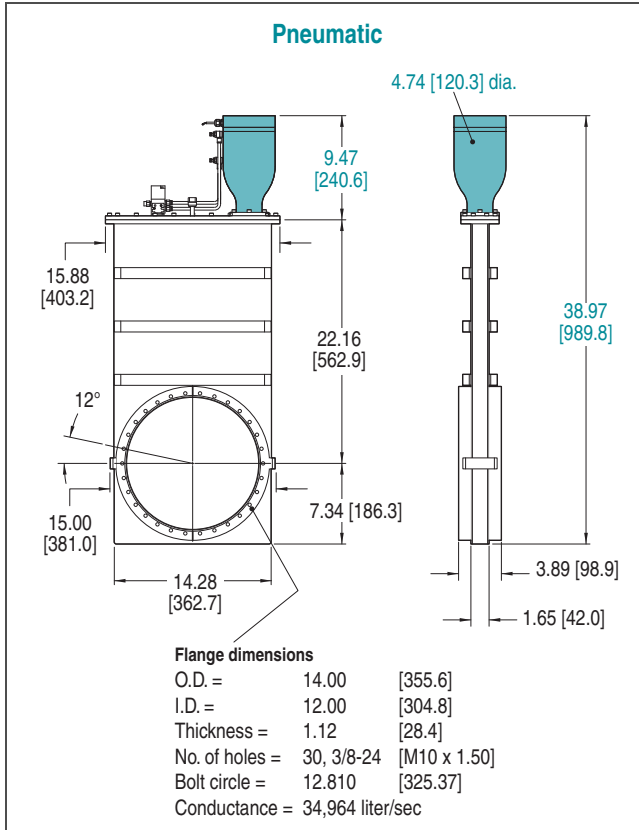
CF-F 12.00 Flanges		250-mm 10.0-inch	
Bonnet-Gate	Flange Type	Ship Wt lbs [kg]	Model Number *
Pneumatic			
Viton-Viton	U.S. Bolt	147 [67]	16212-1000R

* For metric flanges, replace last 0 in Model Number with 4
For pneumatic valves,
R = Reed switch, standard
M = Microswitch, optional



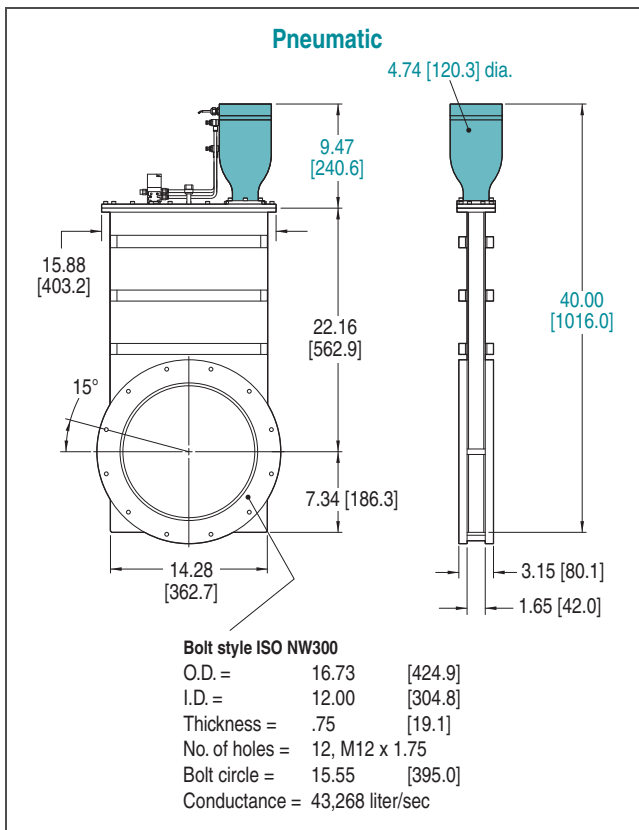
ISO-250 Flanges		250-mm 10.0-inch	
Bonnet-Gate	Flange Type	Ship Wt lbs [kg]	Model Number *
Pneumatic			
Viton-Viton	Metric bolt	160 [73]	16212-1003R
Viton-Viton	Clamp	190 [86]	16212-1006R

* For pneumatic valves,
R = Reed switch, standard
M = Microswitch, optional



CF-F 14.00 Flanges		300-mm 12.0-inch	
Bonnet-Gate	Flange Type	Ship Wt lbs [kg]	Model Number *
Pneumatic			
Viton-Viton	U.S. Bolt	170 [77]	16212-1200R

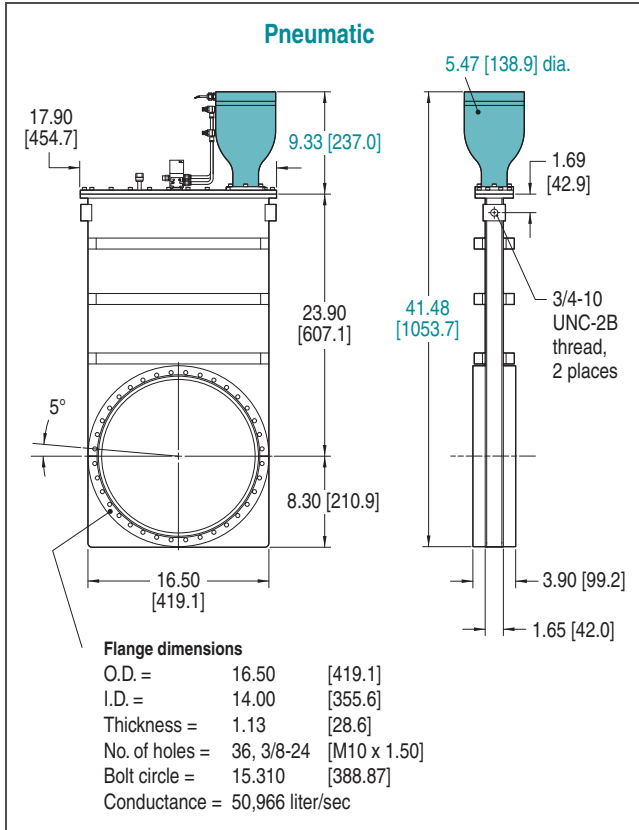
* For metric flanges, replace last 0 in Model Number with 4
For pneumatic valves,
R = Reed switch, standard
M = Microswitch, optional



ISO-300 Flanges		300-mm 12.0-inch	
Bonnet-Gate	Flange Type	Ship Wt lbs [kg]	Model Number *
Pneumatic			
Viton-Viton	Metric bolt	170 [77]	16212-1203R

* For pneumatic valves,
R = Reed switch, standard
M = Microswitch, optional

Shielded Gate Valves 350-mm 14.0-inch



CF-F 16.50 Flanges		350-mm 14.0-inch	
Bonnet-Gate	Flange Type	Ship Wt lbs [kg]	Model Number *
Pneumatic			
Viton-Viton	U.S. Bolt	315 [143]	16212-1400R

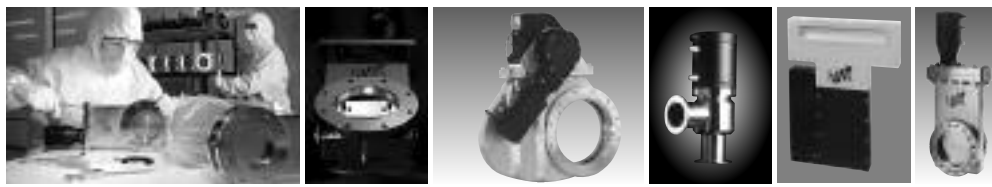
* For metric flanges, replace last 0 in Model Number with 4
 For pneumatic valves,
 R = Reed switch, standard
 M = Microswitch, optional

Shielded Gate



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Custom or special size valves are available with a range of options, including port flanges.

Please contact the factory to discuss your requirements.

Toll free: **1-800-551-4422**

HVA, LLC 12880 Moya Blvd. Reno, NV 89506
 Toll Free: (800) 551-4422 sales@highvac.com Fax: (775) 359-1369



Shielded Gate Valves ANSI, JIS & Custom Flanges

ANSI Flange Models

Optional ANSI Flange Models are designed for high vacuum applications, specifically when pressure ranges approximate 1×10^{-9} Torr and bakeout temperatures do not exceed 200°C. Contact HVA Technical Services to discuss your requirements.

The bonnet comes standard with a Viton® elastomer O-ring. These valves provide valving for cryopumps, turbomolecular pumps, ion pumps and other applications requiring clean, low outgassing valves.

Pneumatic valves are supplied with a 120 VAC solenoid and a Reed switch position indicator.

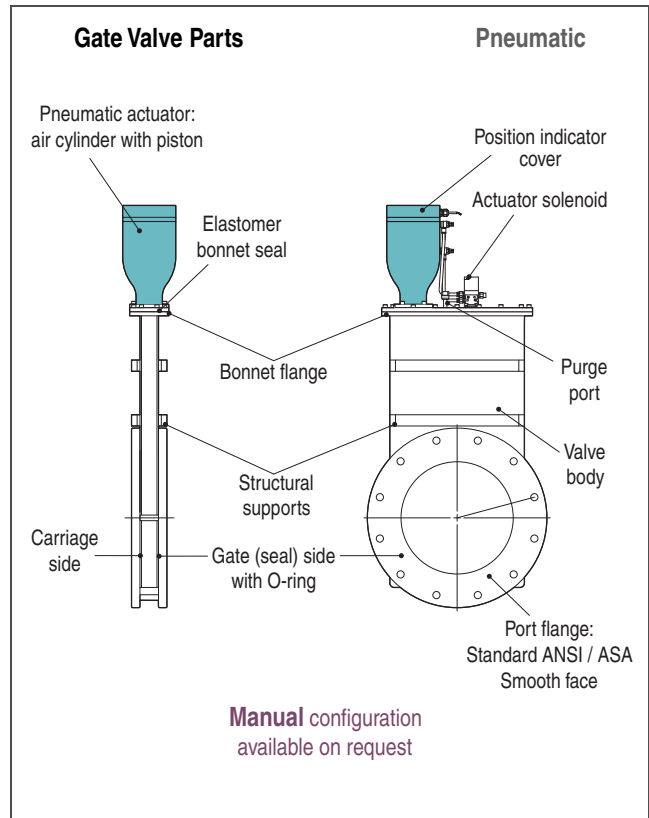
Standard flanges are smooth faced, non-rotatable and threaded. When O-ring grooves are required on flanges, please specify one of the following options:

- O-ring groove on gate side only
- O-ring groove on carriage side only
- O-ring grooves on both gate side and carriage side

O-ring groove I.D. is 0.250-inch larger than the valve I.D. Flange O-rings are not included with the valve, and may be purchased separately.

JIS and Custom Flange Models

Valves requiring JIS flanges may be obtained through HVA. Additionally, other specialty flanges for non-standard installations may be custom ordered through HVA. Contact HVA Technical Services to discuss your requirements.



Shielded Gate

ANSI Flange Dimensions

MM	Inch	Flange Size	Conductance liter/sec air	No. Holes	Thread	B.C. mm	B.C. inch	O.D. mm	O.D. inch	I.D. mm	I.D. inch
75	3.0	2.0 ANSI	1,029	4	3/8-16	121	4.75	152	6.00	76	3.00
75	3.0	3.0 ANSI	1,029	4	3/8-16	152	6.00	190	7.50	76	3.00
100	4.0	4.0 ANSI	2,122	8	3/8-16	190	7.50	229	9.00	102	4.00
150	6.0	6.0 ANSI	7,023	8	3/4-10	241	9.50	279	11.00	152	6.00
200	8.0	6.0 ANSI	14,374	8	3/4-10	241	9.50	279	11.00	203	8.00
200	8.0	8.0 ANSI	14,374	8	3/4-10	298	11.75	343	13.50	203	8.00
250	10.0	10.0 ANSI	24,990	12	3/4-10	362	14.25	406	16.00	254	10.00
300	12.0	10.0 ANSI	43,268	12	3/4-10	362	14.25	406	16.00	305	12.00
300	12.0	12.0 ANSI	43,268	12	3/4-10	432	17.00	483	19.00	305	12.00
350	14.0	14.0 ANSI	68,804	12	3/4-10	476	18.75	533	21.00	356	14.00



Shielded Gate

Shielded Gate Valves
16000 Series

End of Section

