71000

Long Life Harsh Process Gate Valves

Table of Contents

Introduction

Model Number 71210-0403R
4” ID (DN100) Pneumatic ISO-F

Product Features

- Extreme durability for the most demanding processes
- Robust dual containment design and low particles
- > 250,000 cycles
- HV with machined stainless steel billet body
- Sizes from 2” ID (DN50) to 8” ID (DN200)
- Manual and pneumatic actuation
- Stainless steel welded bellows outside of process
- Standard KF, ISO, CF, ANSI, JIS or custom flange options
- High temperature options up to 250°C
- Easily customizable to work with almost any application
- Designed, manufactured and assembled in the USA

Description

The 71000 Series Gate Valves are machined out of solid stainless steel billet and feature a simple dual containment design at the gate that seals on both sides. There are very few moving parts, so the valves have low particle generation. With virtually no moving parts in the gate mechanism the movement is not affected by dirty processes that would normally interfere with a standard mechanical gate. The bellows is outside of process, and is protected by a wiper ring. The body and all major internal components are vacuum furnace brazed at 1100°C, at $1x10^{-6}$ mbar, ensuring maximum joint integrity. This eliminates the possibility of virtual leaks or entrapment areas and minimizes body distortion found in conventionally welded valves. For maintenance purposes, the carriage assembly can easily be removed from the body without removing the valve from the system.

Applications

KF Flanges, ISO Bolted and Clamped Flanges, ANSI and optional JIS Models are designed for high vacuum applications specifically when pressure ranges approximate $1x10^{-9}$ mbar and bakeout temperatures do not exceed 250°C. These valves provide valving for anything needing vacuum in a dirty or harsh environment. They can be customized to work with almost any application.

Internally Heated and Water-Cooled

These valves can easily be fitted with heaters to internally heat a process from the inside up to 250°C. See custom internally heated valve section on page 187. They can also be used to cool process internally via the gate and the flanges.

Standard Specifications

Materials

Valve body and mechanism	304 stainless steel
Welded bellows shaft seal	AM-350
Bonnet / gate seals	
HV	Viton® elastomer

Vacuum

Pressure range	
HV	1×10^{-9} mbar
Leak rate	$< 2 \times 10^{-9}$ mbar l/s
Differential pressure	2 bar in either direction
Maximum Δ pressure before opening	≤ 1 bar

Temperature

	without solenoid
Elastomer sealed bonnet	150°C
Actuator	
Manual	60°C
Pneumatic	60°C

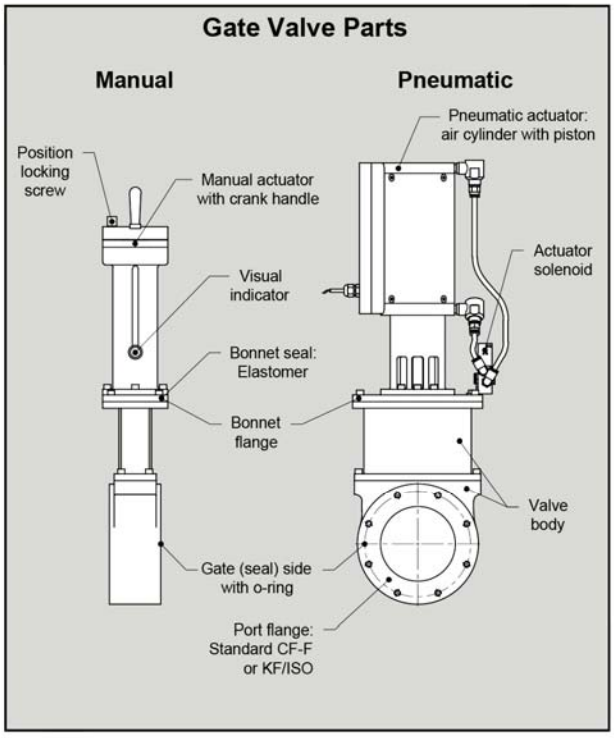
Mechanism

Air service	80 psig (5.5 bar)
Solenoid	4.0 Watts
supplied voltage	120 VAC 50/60 Hz
optional voltage	24, 200, 240 VAC 50/60 Hz or 12, 24 VDC
Position indicator, max.	115 VAC or 28 VDC, 20 mA

Cycles Until Service

> 250,000

(Application dependent)



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 are subject to change without notice

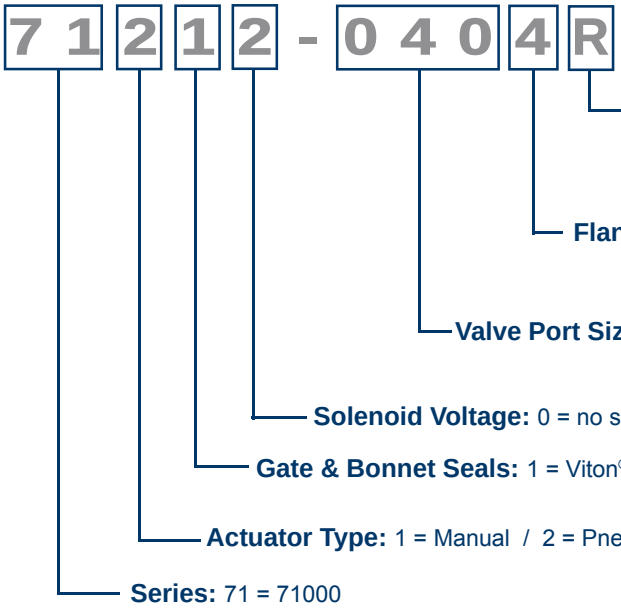
Options

All 71000 Series Valves may be equipped with alternative flanges, solenoids and seals. Contact HVA to discuss your requirements.

- Alternate voltage controls
- JIS configurations
- Custom flange sizes
- Gauge ports, roughing ports and purge ports
- Microswitches for position indicators
- High temperature components, including O-rings, microswitches and actuator
- Custom materials, such as Inconel® or Kalrez®
- Internally heated up to 250°C
- Water cooled gate and flanges
- Special solenoid or position indicator connectors

Model Key Guide

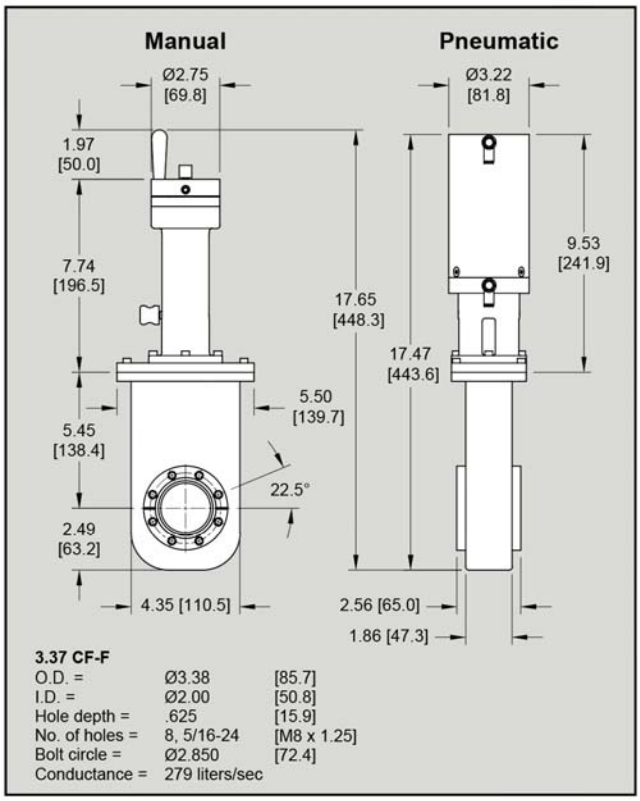
Example: 71212-0404R = 71000 Series gate valve, pneumatic actuator, Viton gate & bonnet seals, 120VAC solenoid, 4" ID CF (6" OD) flanges with Metric thread, reed switch position indicator



Note

- A suffix of -001 to -999 at the end of or a '9' or 'S' within a Model Number indicates a valve with custom configuration.
- If a roughing/gauge/purge port is needed add the following after the position indicator:

A = KF 25
B = KF 40
C = 1.33" OD CF fixed with thru holes
D = 2.75" OD CF fixed with thru holes
S = special/custom or other



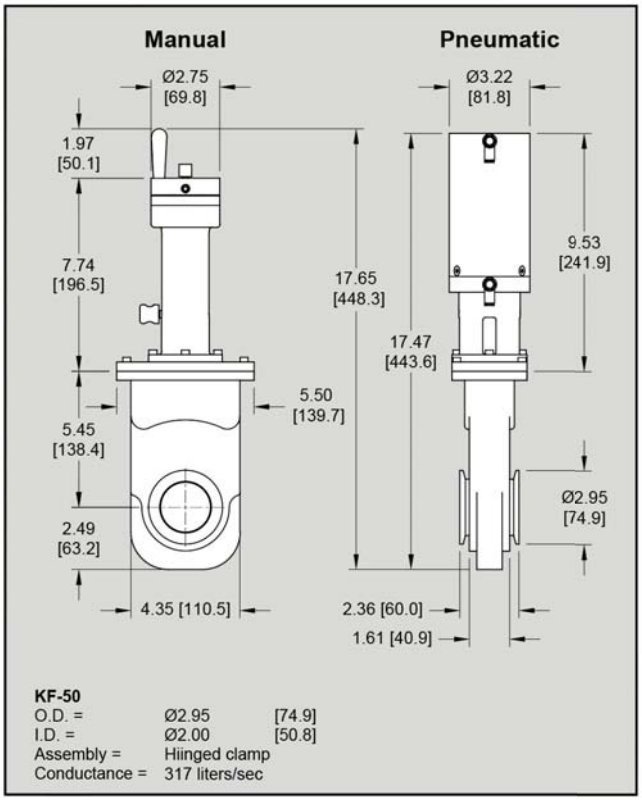
CF-F 3.37 Flanges			50-mm 2.0-inch
Bonnet-Gate	**Flange Type**	**Ship Wt. lbs [Kg]**	**Model Number ***
Manual			
Viton-Viton (HV)	U.S. Bolt	24 [11]	71110-0200V
Pneumatic			
Viton-Viton (HV)	U.S. Bolt	26 [12]	71212-0200R

* For metric flanges, replace last 0 in model number with 4

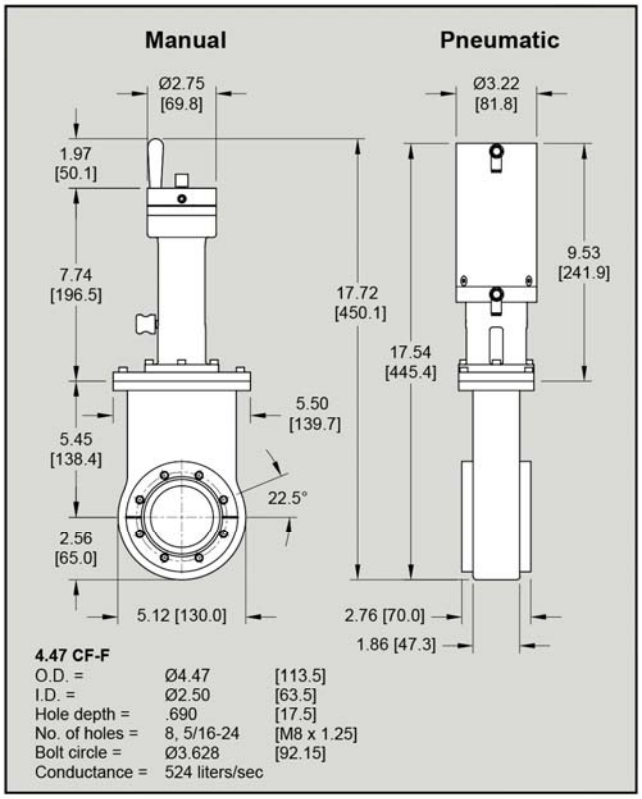
Specifications

HV Pressure Range:	1 x 10^{-9} mbar
Helium Leak Rate: Materials:	< 2 x 10^{-9} mbar l/s
Maximum Δ Pressure Before Opening:	≤ 1 bar
Materials:	
Body =	304 Stainless Steel
Gate =	304 Stainless Steel
Bellows =	AM-350
Actuator =	6061-T6 Aluminum
Operating Temperature:	
Body, Gate Open (Viton®) =	150°C*
Body, Gate Closed (Viton®) =	150°C*
Actuator w/out solenoid (Viton®) =	60°C*
Position Indicator (Viton®) =	150°C*

*250°C options available on request.



KF-50 Flanges			50-mm 2.0-inch
Bonnet-Gate	**Flange Type**	**Ship Wt. lbs [Kg]**	**Model Number**
Manual			
Viton-Viton (HV)	Hinged clamp	21 [9]	71110-0203V
Pneumatic			
Viton-Viton (HV)	Hinged clamp	23 [10]	71212-0203R



CF-F 4.47 Flanges			63-mm 2.5-inch
Bonnet-Gate	**Flange Type**	**Ship Wt. lbs [Kg]**	**Model Number ***
Manual			
Viton-Viton (HV)	U.S. Bolt	26 [12]	71110-0250V
Pneumatic			
Viton-Viton (HV)	U.S. Bolt	27 [12]	71212-0250R

* For metric flanges, replace last 0 in model number with 4

Specifications

HV Pressure Range:	1 x 10^{-9} mbar
Helium Leak Rate: Materials:	< 2 x 10^{-9} mbar l/s
Maximum Δ Pressure Before Opening:	≤ 1 bar

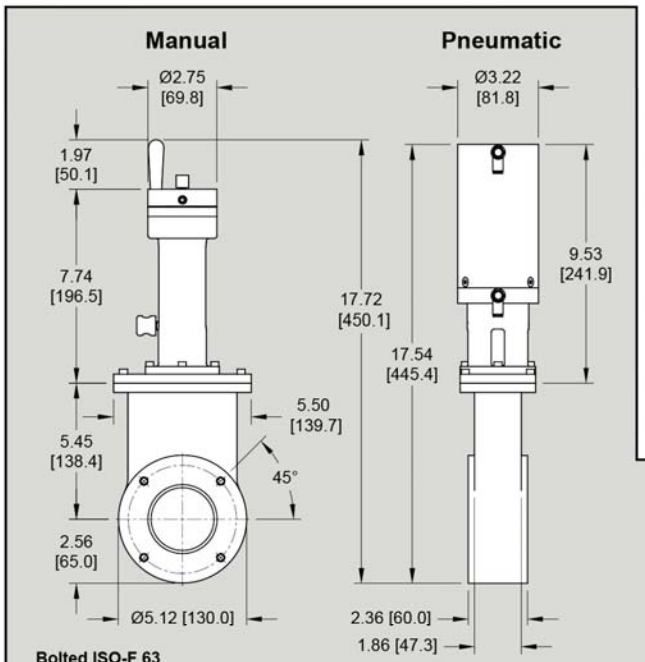
Materials:

Body = 304 Stainless Steel
Gate = 304 Stainless Steel
Bellows = AM-350
Actuator = 6061-T6 Aluminum

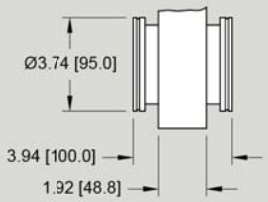
Operating Temperature:

Body, Gate Open (Viton®) =	150°C*
Body, Gate Closed (Viton®) =	150°C*
Actuator w/out solenoid (Viton®) =	60°C*
Position Indicator (Viton®) =	150°C*

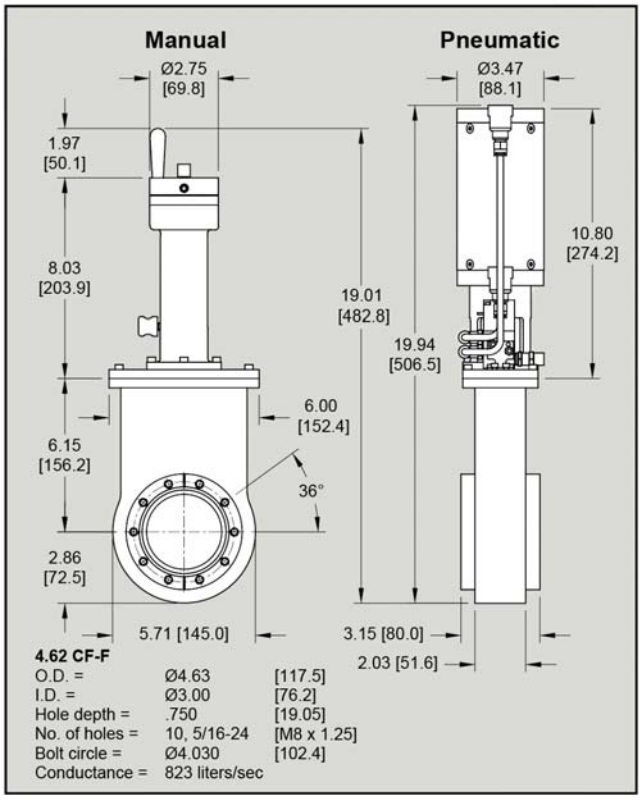
*250°C options available on request.



ISO-63 Flanges			63-mm 2.5-inch
Bonnet-Gate	**Flange Type**	**Ship Wt. lbs [Kg]**	**Model Number**
Manual			
Viton-Viton (HV)	Metric Bolt	25 [11]	71110-0253V
Viton-Viton (HV)	Clamp	26 [12]	71110-0256V
Pneumatic			
Viton-Viton (HV)	Metric Bolt	27 [12]	71212-0253R
Viton-Viton (HV)	Clamp	28 [13]	71212-0256R



Clamped ISO-K 63
O.D. = Ø3.74 [95.0]
I.D. = Ø2.50 [63.5]
Thickness = .472 [12.0]
No. of clamps = 3-4
Conductance = 363 liters/sec



CF-F 4.62 Flanges			75-mm 3.0-inch
Bonnet-Gate	**Flange Type**	**Ship Wt. lbs [Kg]**	**Model Number ***
Manual			
Viton-Viton (HV)	U.S. Bolt	28 [13]	71110-0300V
Pneumatic			
Viton-Viton (HV)	U.S. Bolt	32 [15]	71212-0300R

* For metric flanges, replace last 0 in model number with 4

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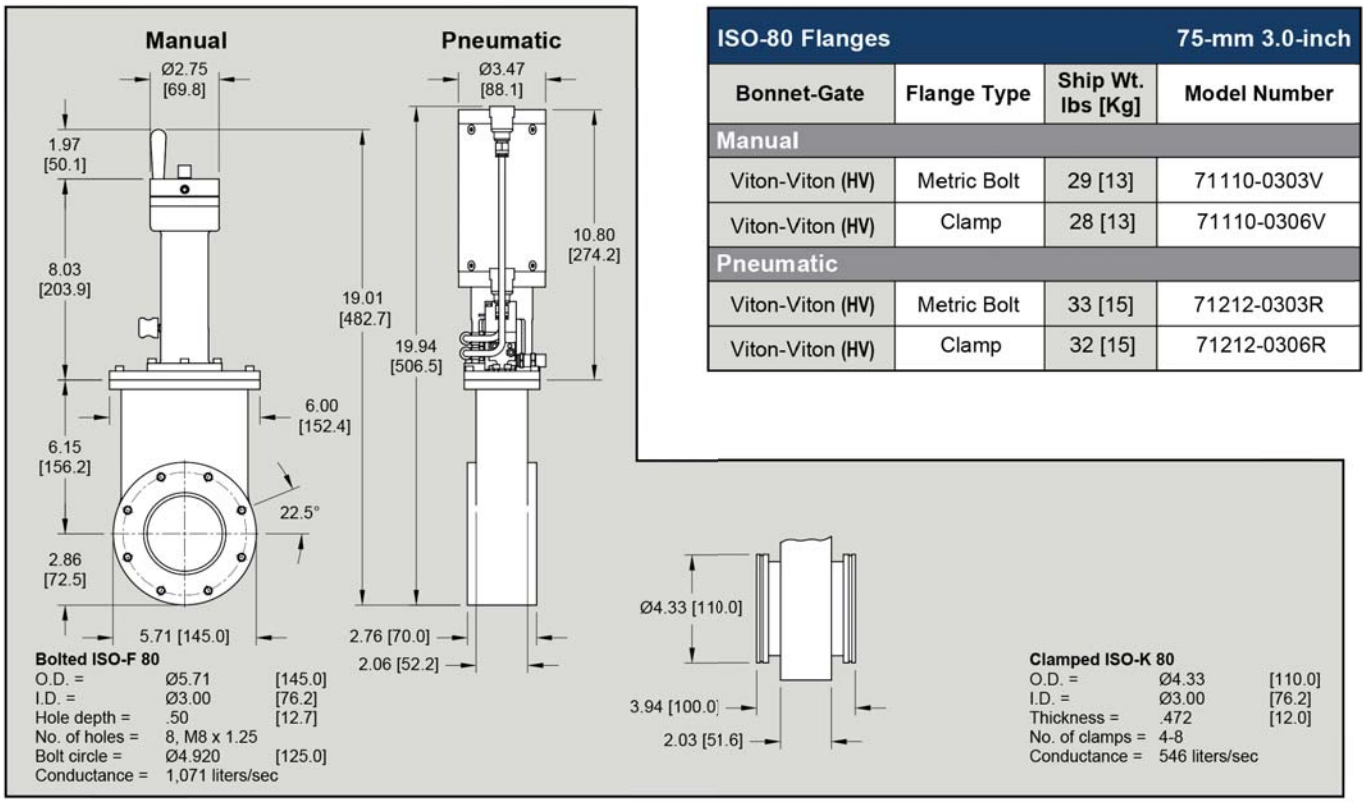
Specifications

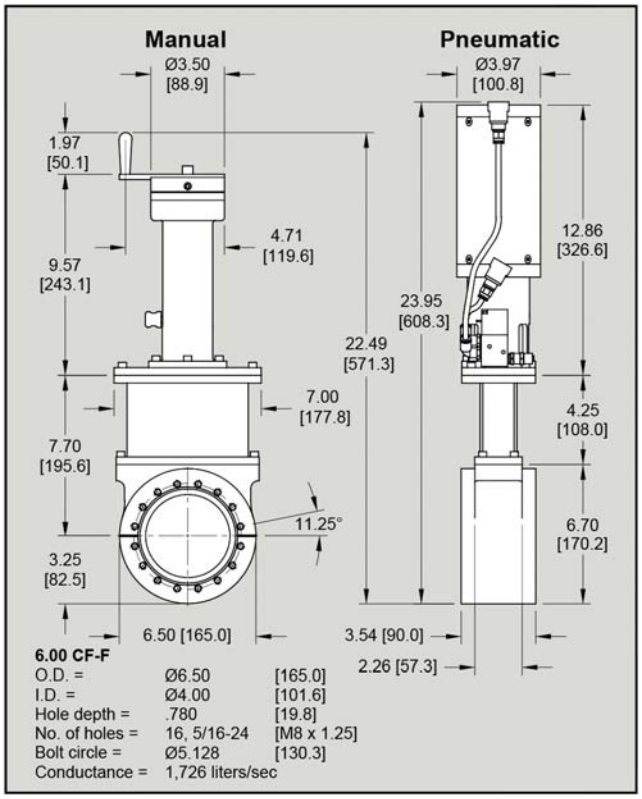
HV Pressure Range: 1 x 10^{-9} mbar
Helium Leak Rate: Materials: < 2 x 10^{-9} mbar l/s
Maximum Δ Pressure Before Opening: ≤ 1 bar
Materials:
Body = 304 Stainless Steel
Gate = 304 Stainless Steel
Bellows = AM-350
Actuator = 6061-T6 Aluminum

Operating Temperature:
Body, Gate Open (Viton®) = 150°C*
Body, Gate Closed (Viton®) = 150°C*
Actuator w/out solenoid (Viton®) = 60°C*
Position Indicator (Viton®) = 150°C*

**250°C options available on request.*



ISO-80 Flanges			75-mm 3.0-inch
Bonnet-Gate	**Flange Type**	**Ship Wt. lbs [Kg]**	**Model Number**
Manual			
Viton-Viton (HV)	Metric Bolt	29 [13]	71110-0303V
Viton-Viton (HV)	Clamp	28 [13]	71110-0306V
Pneumatic			
Viton-Viton (HV)	Metric Bolt	33 [15]	71212-0303R
Viton-Viton (HV)	Clamp	32 [15]	71212-0306R



CF-F 6.00 Flanges			100-mm 4.0-inch
Bonnet-Gate	**Flange Type**	**Ship Wt. lbs [Kg]**	**Model Number ***
Manual			
Viton-Viton (HV)	U.S. Bolt	41 [19]	71110-0400V
Pneumatic			
Viton-Viton (HV)	U.S. Bolt	45 [20]	71212-0400R

* For metric flanges, replace last 0 in model number with 4

Specifications

HV Pressure Range:	1 x 10^{-9} mbar
Helium Leak Rate: Materials:	< 2 x 10^{-9} mbar l/s
Maximum Δ Pressure Before Opening:	≤ 1 bar

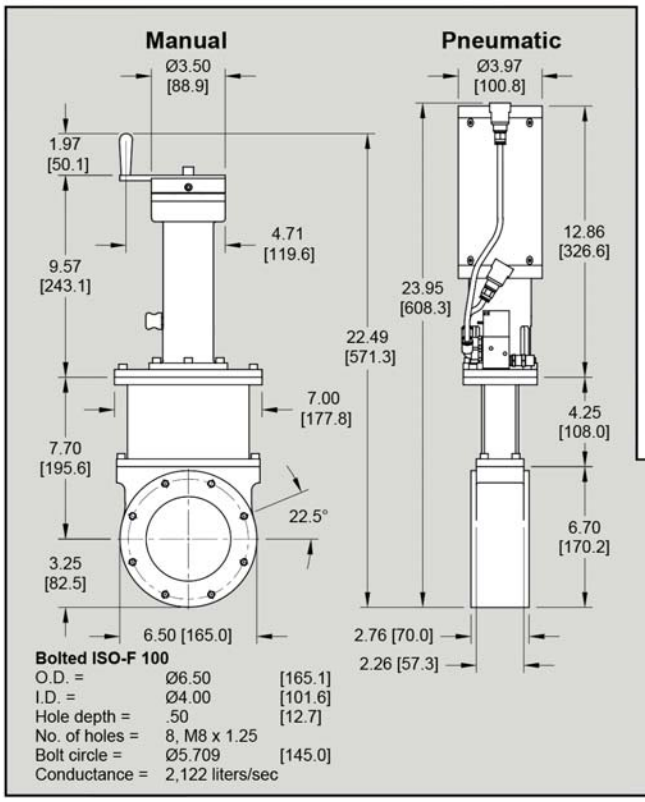
Materials:

Body = 304 Stainless Steel
Gate = 304 Stainless Steel
Bellows = AM-350
Actuator = 6061-T6 Aluminum

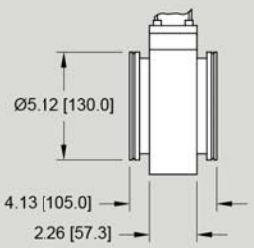
Operating Temperature:

Body, Gate Open (Viton®) =	150°C*
Body, Gate Closed (Viton®) =	150°C*
Actuator w/out solenoid (Viton®) =	60°C*
Position Indicator (Viton®) =	150°C*

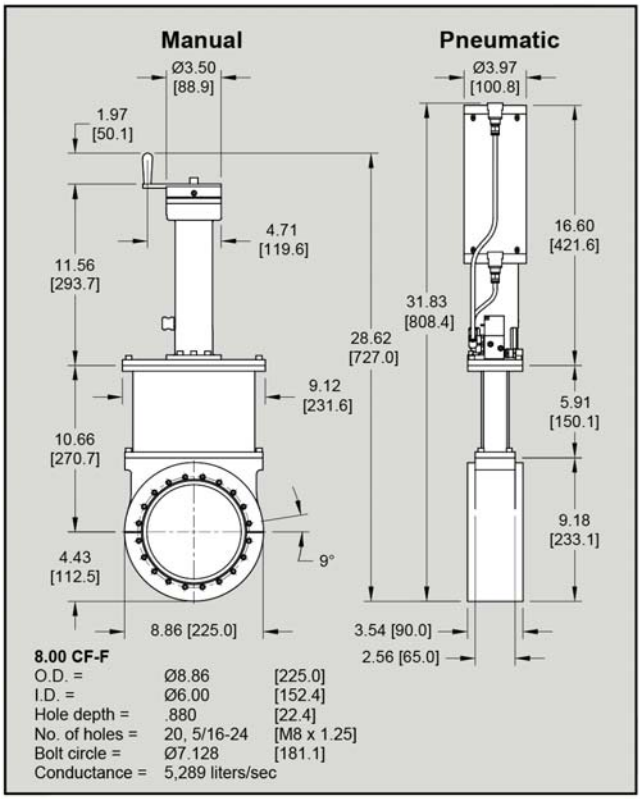
*250°C options available on request.



ISO-100 Flanges			100-mm 4.0-inch
Bonnet-Gate	**Flange Type**	**Ship Wt. lbs [Kg]**	**Model Number**
Manual			
Viton-Viton (HV)	Metric Bolt	37 [17]	71110-0403V
Viton-Viton (HV)	Clamp	37 [17]	71110-0406V
Pneumatic			
Viton-Viton (HV)	Metric Bolt	41 [19]	71212-0403R
Viton-Viton (HV)	Clamp	41 [19]	71212-0406R



Clamped ISO-K 100
O.D. = Ø5.12 [130.0]
I.D. = Ø4.00 [101.6]
Thickness = .472 [12.0]
No. of clamps = 4-8
Conductance = 1,199 liters/sec



CF-F 8.00 Flanges			150-mm 6.0-inch
Bonnet-Gate	**Flange Type**	**Ship Wt. lbs [Kg]**	**Model Number ***
Manual			
Viton-Viton (HV)	U.S. Bolt	56 [25]	71110-0600V
Pneumatic			
Viton-Viton (HV)	U.S. Bolt	91 [41]	71212-0600R

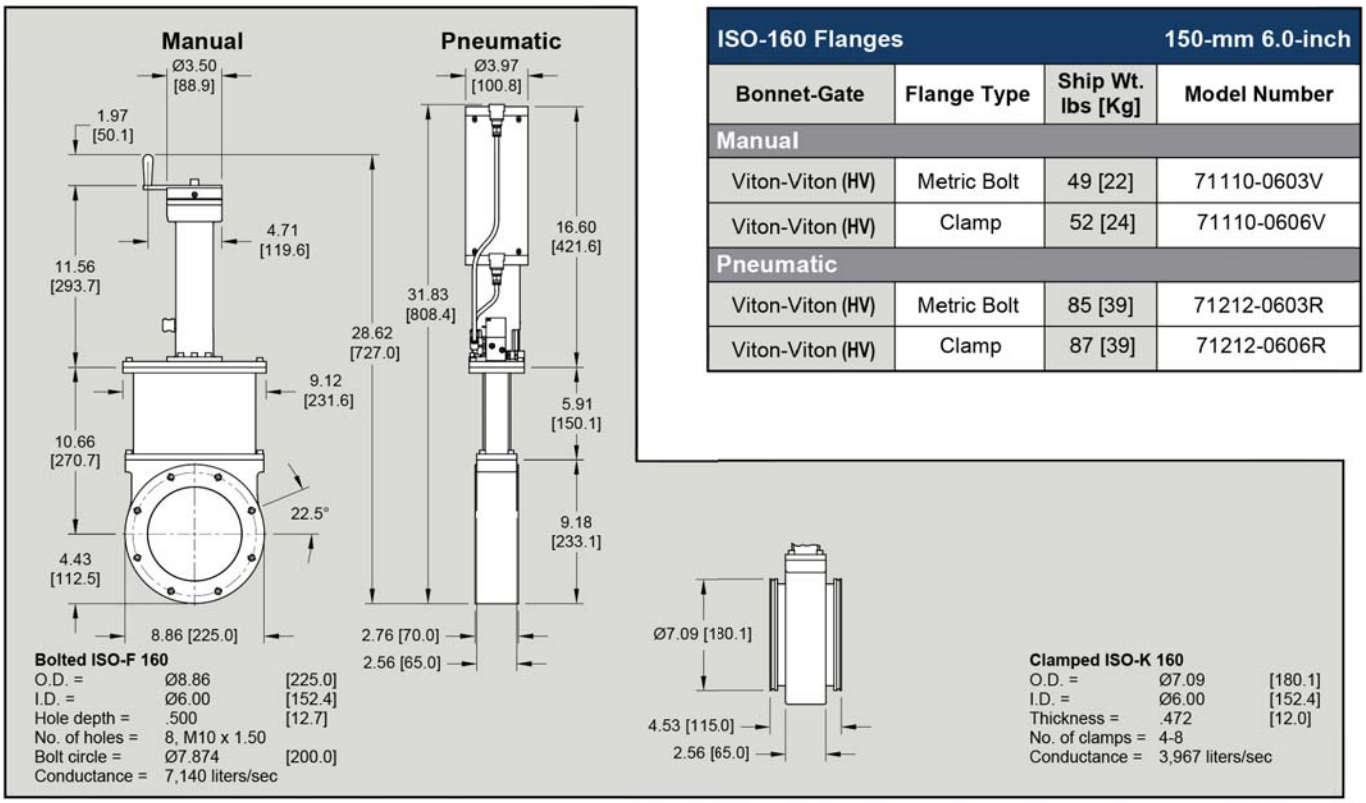
* For metric flanges, replace last 0 in model number with 4

Specifications

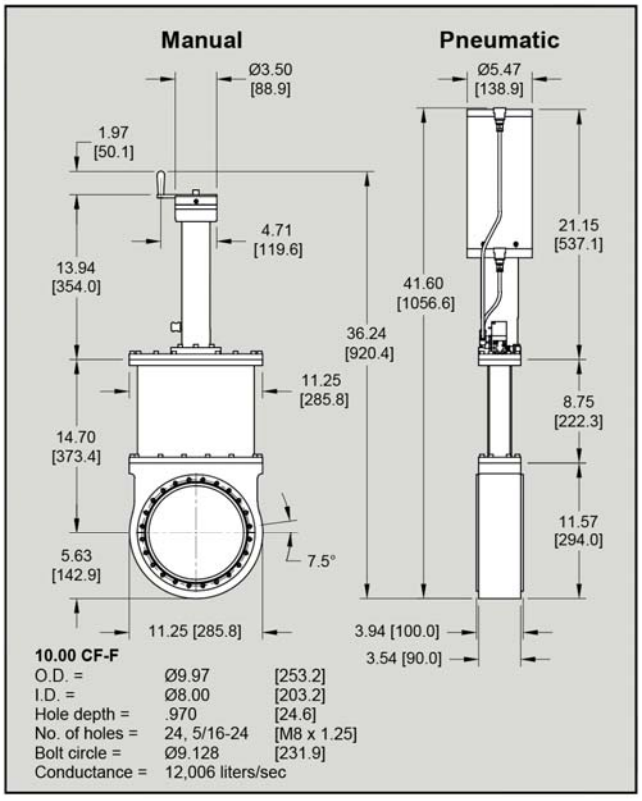
HV Pressure Range: 1 x 10^{-9} mbar
Helium Leak Rate: Materials: < 2 x 10^{-9} mbar l/s
Maximum Δ Pressure Before Opening: ≤ 1 bar
Materials:
Body = 304 Stainless Steel
Gate = 304 Stainless Steel
Bellows = AM-350
Actuator = 6061-T6 Aluminum

Operating Temperature:
Body, Gate Open (Viton®) = 150°C*
Body, Gate Closed (Viton®) = 150°C*
Actuator w/out solenoid (Viton®) = 60°C*
Position Indicator (Viton®) = 150°C*

*250°C options available on request.



ISO-160 Flanges			150-mm 6.0-inch
Bonnet-Gate	**Flange Type**	**Ship Wt. lbs [Kg]**	**Model Number**
Manual			
Viton-Viton (HV)	Metric Bolt	49 [22]	71110-0603V
Viton-Viton (HV)	Clamp	52 [24]	71110-0606V
Pneumatic			
Viton-Viton (HV)	Metric Bolt	85 [39]	71212-0603R
Viton-Viton (HV)	Clamp	87 [39]	71212-0606R



CF-F 10.00 Flanges			200-mm 8.0-inch
Bonnet-Gate	**Flange Type**	**Ship Wt. lbs [Kg]**	**Model Number ***
Manual			
Viton-Viton (HV)	U.S. Bolt	117 [53]	71110-0800V
Pneumatic			
Viton-Viton (HV)	U.S. Bolt	133 [60]	71212-0800R

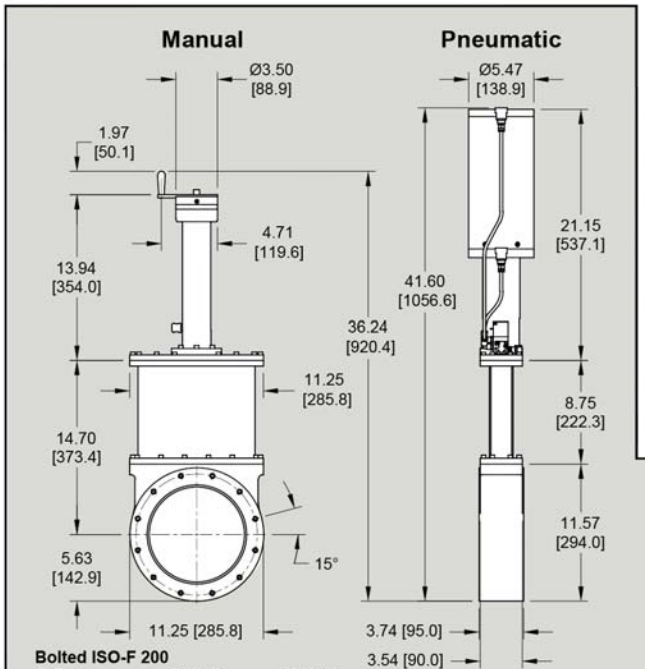
* For metric flanges, replace last 0 in model number with 4

Specifications

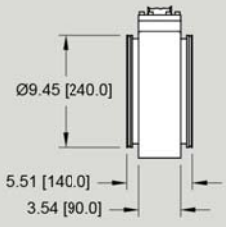
HV Pressure Range: 1 x 10^{-9} mbar
Helium Leak Rate: Materials: < 2 x 10^{-9} mbar l/s
Maximum Δ Pressure Before Opening: ≤ 1bar
Materials:
Body = 304 Stainless Steel
Gate = 304 Stainless Steel
Bellows = AM-350
Actuator = 6061-T6 Aluminum

Operating Temperature:
Body, Gate Open (Viton®) = 150°C*
Body, Gate Closed (Viton®) = 150°C*
Actuator w/out solenoid (Viton®) = 60°C*
Position Indicator (Viton®) = 150°C*

*250°C options available on request.



ISO-200 Flanges			200-mm 8.0-inch
Bonnet-Gate	**Flange Type**	**Ship Wt. lbs [Kg]**	**Model Number**
Manual			
Viton-Viton (HV)	Metric Bolt	117 [53]	71110-0803V
Viton-Viton (HV)	Clamp	122 [55]	71110-0806V
Pneumatic			
Viton-Viton (HV)	Metric Bolt	133 [60]	71212-0803R
Viton-Viton (HV)	Clamp	139 [63]	71212-0806R



Clamped ISO-K 200
O.D. = Ø9.45 [240.0]
I.D. = Ø8.00 [203.2]
Thickness = .472 [12.0]
No. of clamps = 6-12
Conductance = 9,449 liters/sec