

# 83000

## All Aluminum Gate Valves

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## Introduction



Model Number 83210-0150R  
1.5" ID (DN40) Pneumatic 2.75" CF

### Product Features

- All aluminum body and internals for lower H<sub>2</sub> outgassing
- Precision machined from aluminum 6061-T6 billet
- Simple gate design with few moving parts
- 200,000 cycles
- Sizes from 1.5" ID (DN40) to 4" ID (DN100)
- Manual and pneumatic actuation
- Unique dual quad ring long life shaft seals
- Standard KF, ISO, CF, ANSI, JIS or custom flange options
- Easily customizable to work with almost any application
- Designed, manufactured and assembled in the USA

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### Description

The 83000 Series All Aluminum Gate Valves feature internals that are all made from 6061-T6 aluminum which make this valve ideal for applications requiring low H<sub>2</sub> outgassing. They also have dual quad ring shaft seals for long life and improved leak integrity. They also feature a simple dual containment design at the gate which seals on both sides. There are very few moving parts so the valves have reduced particle generation. The body and all major internal components are precision machined out of solid 6061-T6 aluminum billet. This eliminates pinhole and virtual leaks that are common in cast or welded aluminum bodies. The valve is also direct drive and uses a large diameter driveshaft for reduced vibration. For maintenance purposes, the body is split above the flange for minimal clearance when removing the internal parts for servicing, while the lower portion can remain on 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  $1 \times 10^{-7}$  mbar and bakeout temperatures do not exceed 150°C. They can be customized to work with almost any application.



# 83000 Series All Aluminum Gate Valves Specifications

## Standard Specifications

### Materials

Valve body and mechanism	6061-T6 aluminum
Shaft	6061-T6 aluminum
Gate	6061-T6 aluminum
Bonnet / gate / shaft seals	Viton®

### Vacuum

Pressure range	
HV (clear anodize)	$1 \times 10^{-7}$ mbar
Leak rate: gate	$< 2 \times 10^{-9}$ mbar l/s
Differential pressure	2 bar in either direction
Maximum $\Delta$ pressure before opening	$\leq 1$ bar

### Temperature

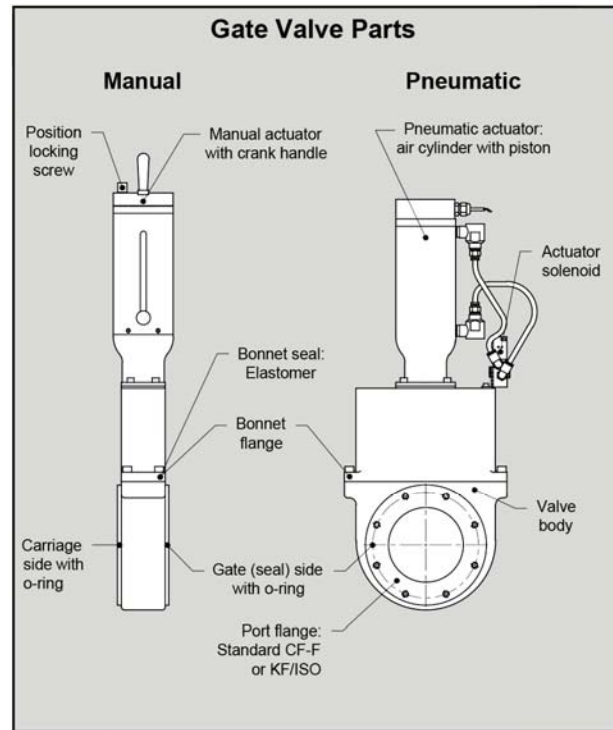
	without solenoid
Valve body and gate	150°C
Actuator	60°C

### 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

Sizes 1.5" to 4" [DN40 to 100] (Application dependent)	200,000
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### 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 83000 Series Valves may be equipped with alternative flanges, solenoids and seals. Contact HVA to discuss your requirements.

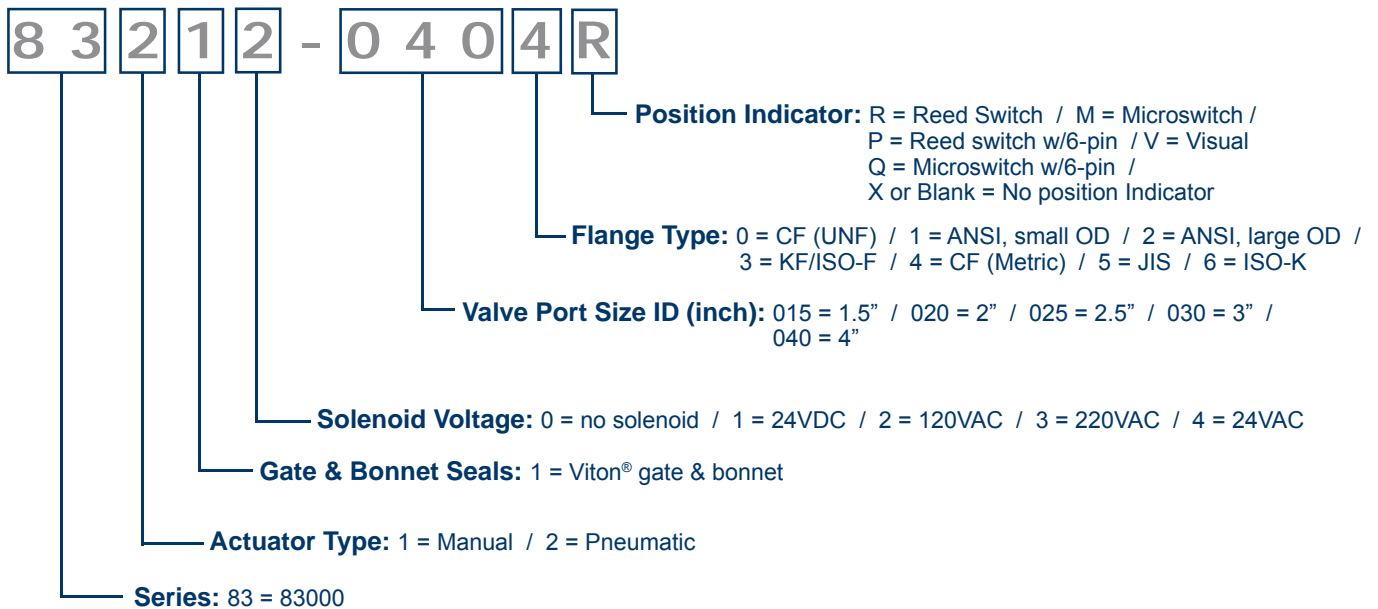
- Alternate voltage controls
- JIS configurations
- Custom flanges
- Microswitches and visual position indicators available on manual version.
- Hard anodizing and non-treated Aluminum
- Special solenoid or position indicator connectors

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## Model Key Guide

**Example:** 83212-0404R = 83000 Series gate valve, pneumatic actuator, Viton gate & bonnet seals, 120VAC solenoid, 4" ID CF (6" OD) flanges with Metric thread, reed switch position indicator



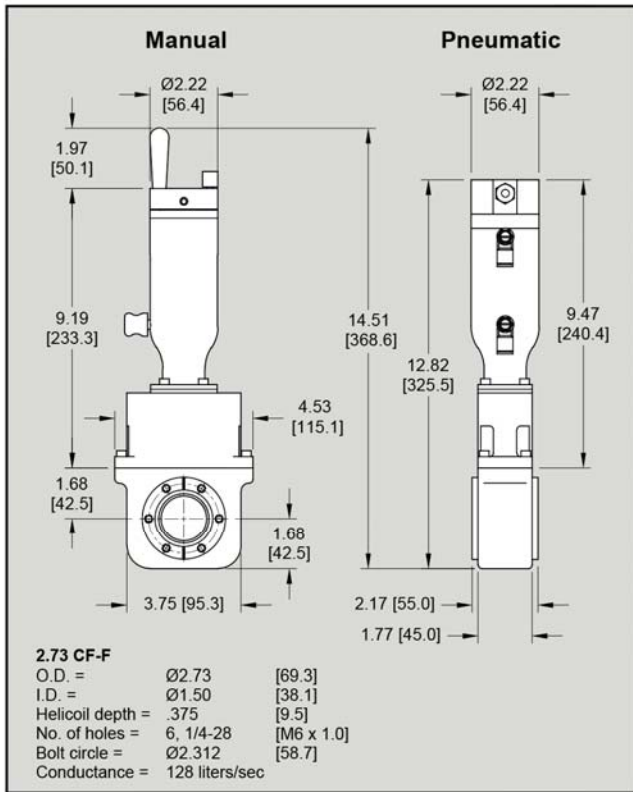
### Note

• 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.



# 83000 Series All Aluminum Gate Valves

## 40-mm 1.5-inch



CF-F 2.73 Flanges			40-mm 1.5-inch
Bonnet-Gate	Flange Type	Ship Wt. lbs [Kg]	Model Number *
<b>Manual</b>			
Viton-Viton (HV)	U.S. Bolt	12 [5]	83110-0150V
<b>Pneumatic</b>			
Viton-Viton (HV)	U.S. Bolt	12 [5]	83212-0150R

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

### Specifications

**HV Pressure Range:**

1 x 10<sup>-7</sup> mbar

**Helium Leak Rate: Materials:**

< 2 x 10<sup>-9</sup> mbar l/s

**Maximum Δ Pressure Before Opening:**

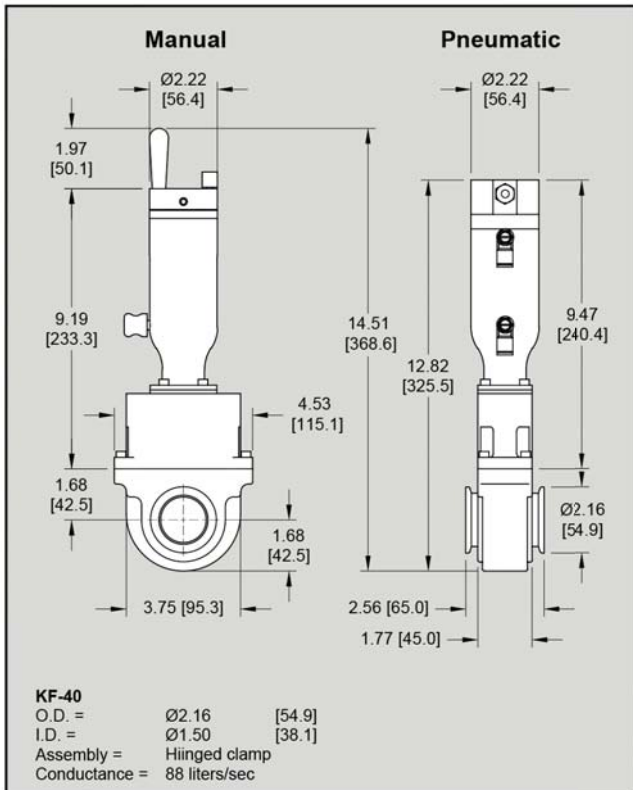
≤ 1 bar

**Materials:**

Body = 6061-T6 Aluminum  
 Gate = 6061-T6 Aluminum  
 Shaft Seal = Viton®  
 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

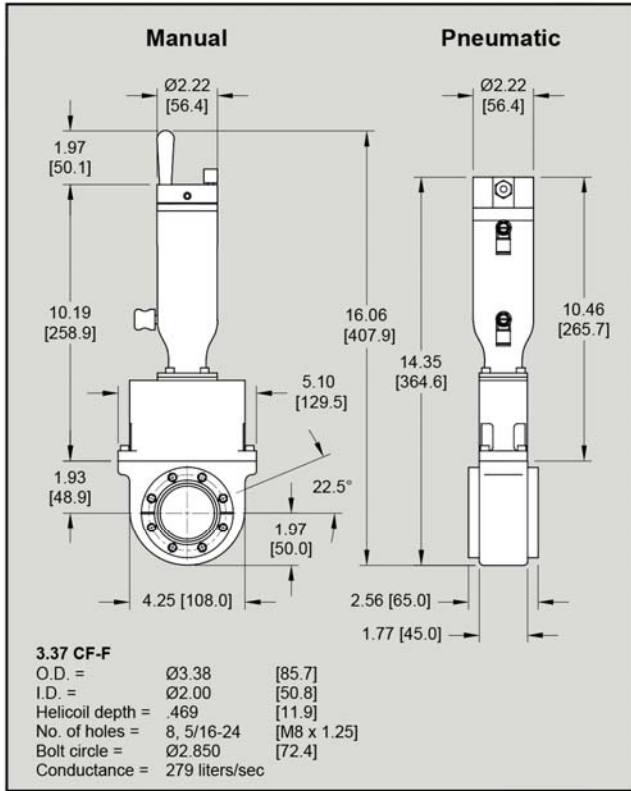


KF-40 Flanges			40-mm 1.5-inch
Bonnet-Gate	Flange Type	Ship Wt. lbs [Kg]	Model Number
<b>Manual</b>			
Viton-Viton (HV)	Hinged clamp	12 [5]	83110-0153V
<b>Pneumatic</b>			
Viton-Viton (HV)	Hinged clamp	10 [5]	83212-0153R

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# 83000 Series All Aluminum Gate Valves

50-mm 2.0-inch



CF-F 3.37 Flanges			50-mm 2.0-inch
Bonnet-Gate	Flange Type	Ship Wt. lbs [Kg]	Model Number *
<b>Manual</b>			
Viton-Viton (HV)	U.S. Bolt	12 [5]	83110-0200V
<b>Pneumatic</b>			
Viton-Viton (HV)	U.S. Bolt	12 [5]	83212-0200R

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

**Specifications**

**HV Pressure Range:**

**Helium Leak Rate: Materials:**

**Maximum Δ Pressure Before Opening:**

**Materials:**

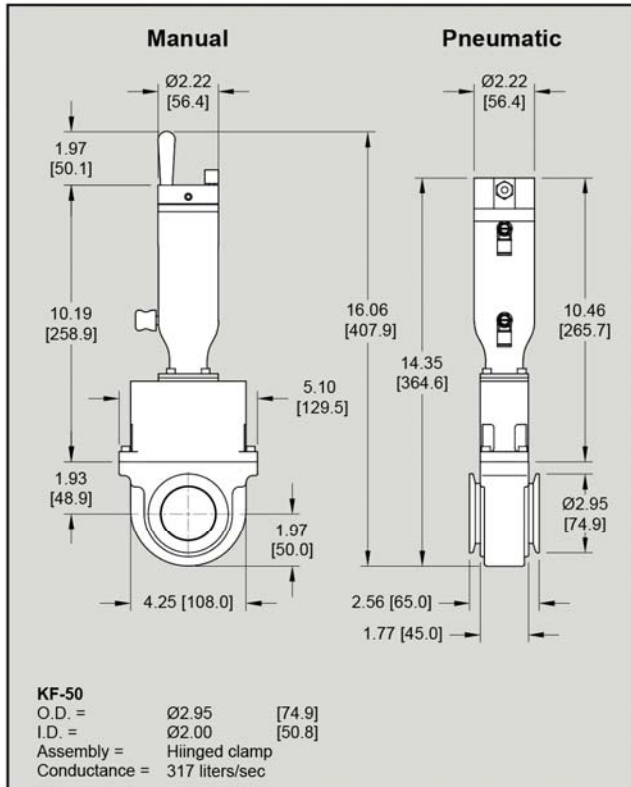
- Body = 6061-T6 Aluminum
- Gate = 6061-T6 Aluminum
- Shaft Seal = Viton®
- Actuator = 6061-T6 Aluminum

**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

1 x 10<sup>-7</sup> mbar  
 < 2 x 10<sup>-9</sup> mbar l/s  
 ≤ 1 bar

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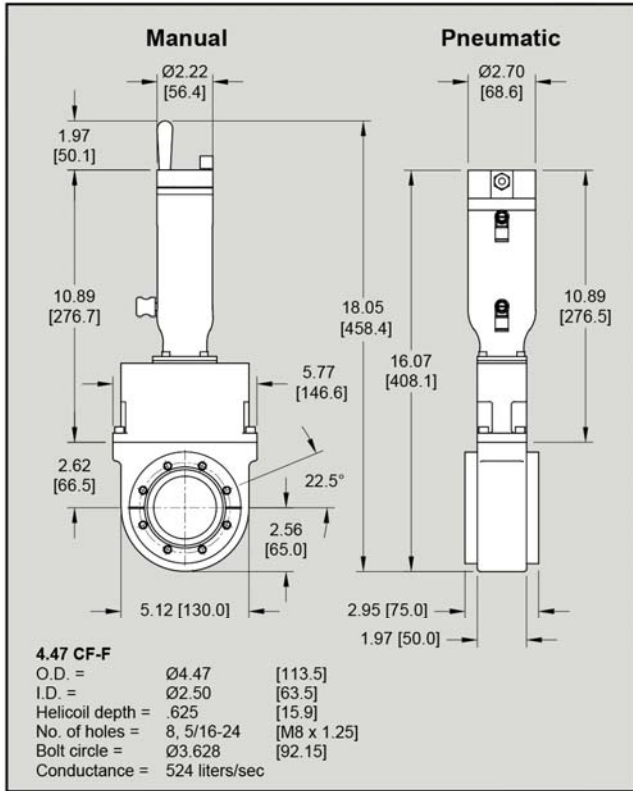


KF-50 Flanges			50-mm 2.0-inch
Bonnet-Gate	Flange Type	Ship Wt. lbs [Kg]	Model Number
<b>Manual</b>			
Viton-Viton (HV)	Hinged clamp	12 [5]	83110-0203V
<b>Pneumatic</b>			
Viton-Viton (HV)	Hinged clamp	12 [5]	83212-0203R



# 83000 Series All Aluminum Gate Valves

## 63-mm 2.5-inch



CF-F 4.47 Flanges			63-mm 2.5-inch
Bonnet-Gate	Flange Type	Ship Wt. lbs [Kg]	Model Number *
<b>Manual</b>			
Viton-Viton (HV)	U.S. Bolt	15 [7]	83110-0250V
<b>Pneumatic</b>			
Viton-Viton (HV)	U.S. Bolt	15 [7]	83212-0250R

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

### Specifications

**HV Pressure Range:**

1 x 10<sup>-7</sup> mbar

**Helium Leak Rate: Materials:**

< 2 x 10<sup>-9</sup> mbar l/s

**Maximum Δ Pressure Before Opening:**

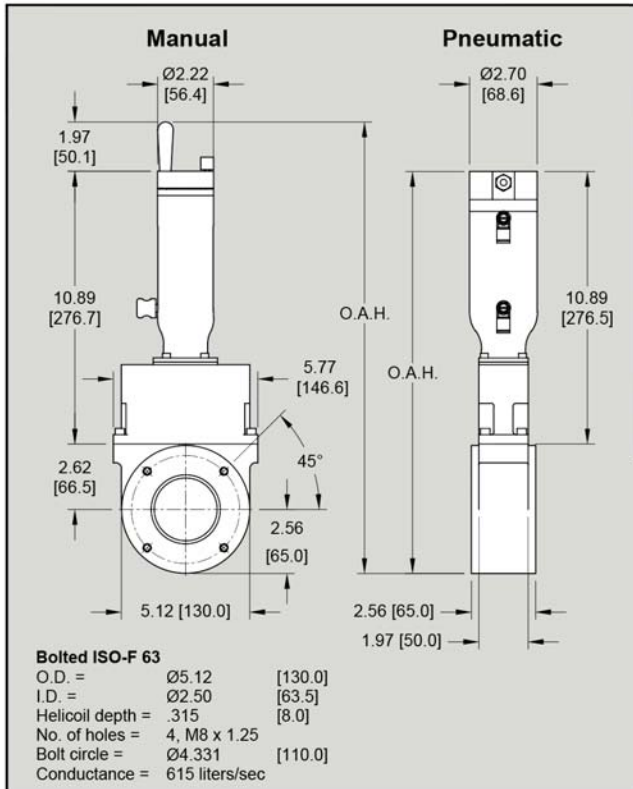
≤ 1 bar

**Materials:**

Body = 6061-T6 Aluminum  
 Gate = 6061-T6 Aluminum  
 Shaft Seal = Viton®  
 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



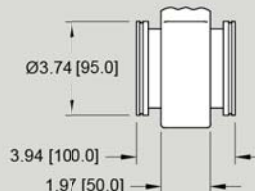
ISO-63 Flanges			63-mm 2.5-inch
Bonnet-Gate	Flange Type	Ship Wt. lbs [Kg]	Model Number
<b>Manual</b>			
Viton-Viton (HV)	Metric Bolt	15 [7]	83110-0253V
Viton-Viton (HV)	Clamp	15 [7]	83110-0256V
<b>Pneumatic</b>			
Viton-Viton (HV)	Metric Bolt	15 [7]	83212-0253R
Viton-Viton (HV)	Clamp	15 [7]	83212-0256R

### Overall Height, OAH

Style	Bolt	Clamp
Man.	18.05 [458.4]	17.85 [453.3]
Pneu.	16.07 [408.1]	15.87 [403.0]

### Clamped ISO-K 63

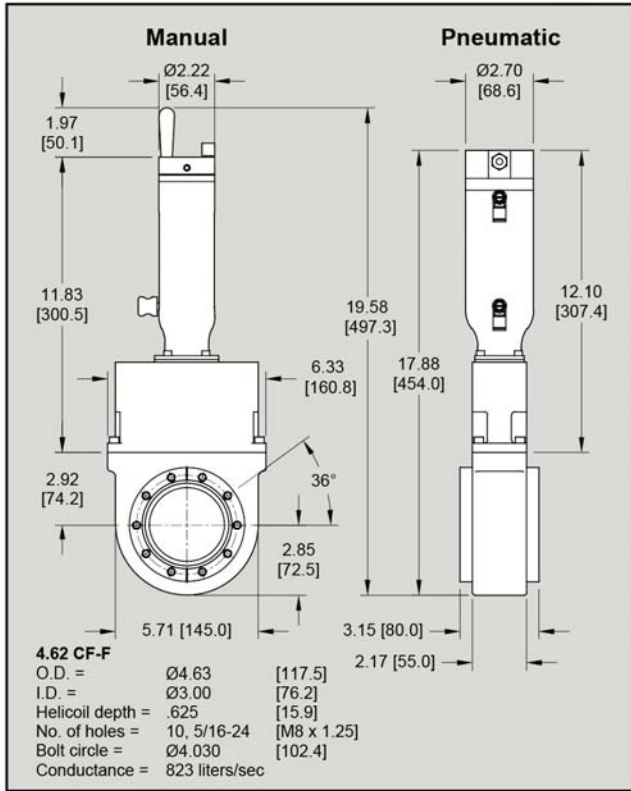
O.D. = Ø3.74 [95.0]  
 I.D. = Ø2.50 [63.5]  
 Thickness = .472 [12.0]  
 No. of clamps = 3-4  
 Conductance = 363 liters/sec



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# 83000 Series All Aluminum Gate Valves

## 75-mm 3.0-inch



CF-F 4.62 Flanges			75-mm 3.0-inch
Bonnet-Gate	Flange Type	Ship Wt. lbs [Kg]	Model Number *
<b>Manual</b>			
Viton-Viton (HV)	U.S. Bolt	17 [8]	83110-0300V
<b>Pneumatic</b>			
Viton-Viton (HV)	U.S. Bolt	17 [8]	83212-0300R

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

### Specifications

**HV Pressure Range:**

**Helium Leak Rate: Materials:**

**Maximum Δ Pressure Before Opening:**

**Materials:**

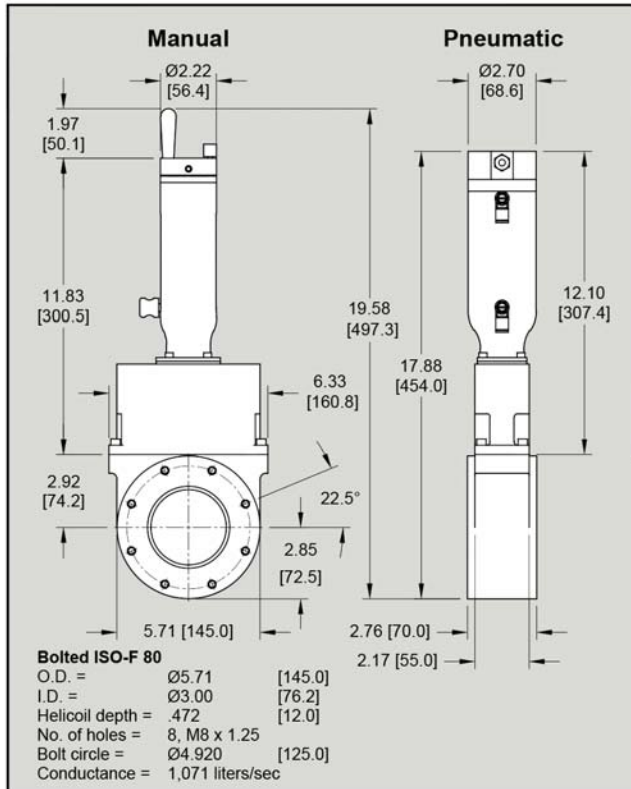
Body = 6061-T6 Aluminum  
 Gate = 6061-T6 Aluminum  
 Shaft Seal = Viton®  
 Actuator = 6061-T6 Aluminum

**Operating Temperature:**

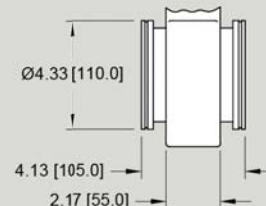
Body, Gate Open (Viton®) = 150°C  
 Body, Gate Closed (Viton®) = 150°C  
 Actuator w/out solenoid (Viton®) = 60°C  
 Position Indicator (Viton®) = 150°C

1 x 10<sup>-7</sup> mbar  
 < 2 x 10<sup>-9</sup> mbar l/s  
 ≤ 1 bar

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ISO-80 Flanges			75-mm 3.0-inch
Bonnet-Gate	Flange Type	Ship Wt. lbs [Kg]	Model Number
<b>Manual</b>			
Viton-Viton (HV)	Metric Bolt	17 [8]	83110-0303V
Viton-Viton (HV)	Clamp	17 [8]	83110-0306V
<b>Pneumatic</b>			
Viton-Viton (HV)	Metric Bolt	17 [8]	83212-0303R
Viton-Viton (HV)	Clamp	17 [8]	83212-0306R



### Clamped ISO-K 80

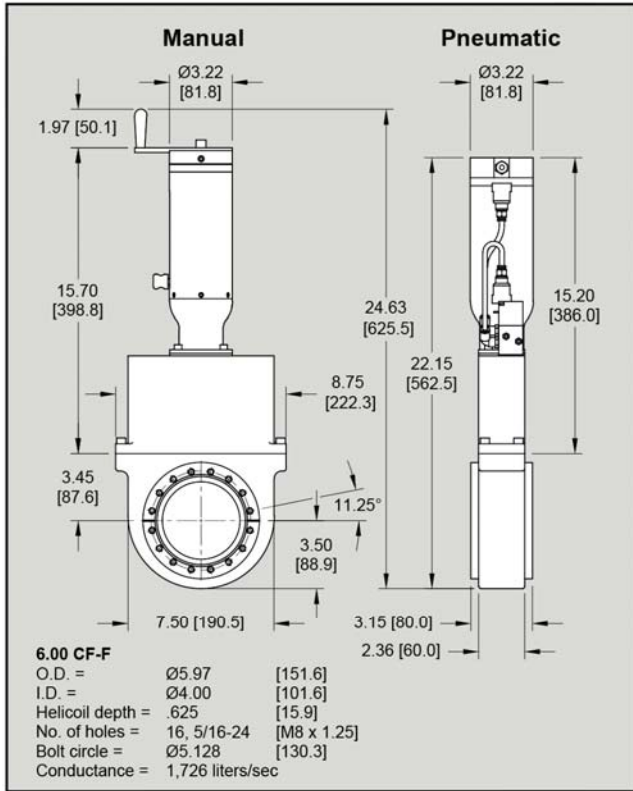
O.D. = Ø4.33 [110.0]  
 I.D. = Ø3.00 [76.2]  
 Thickness = .472 [12.0]  
 No. of clamps = 4-8  
 Conductance = 546 liters/sec





# 83000 Series All Aluminum Gate Valves

100-mm 4.0-inch



CF-F 6.00 Flanges			100-mm 4.0-inch
Bonnet-Gate	Flange Type	Ship Wt. lbs [Kg]	Model Number *
<b>Manual</b>			
Viton-Viton (HV)	U.S. Bolt	30 [14]	83110-0400V
<b>Pneumatic</b>			
Viton-Viton (HV)	U.S. Bolt	28 [13]	83212-0400R

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

### Specifications

**HV Pressure Range:**

1 x 10<sup>-7</sup> mbar

**Helium Leak Rate: Materials:**

< 2 x 10<sup>-9</sup> mbar l/s

**Maximum Δ Pressure Before Opening:**

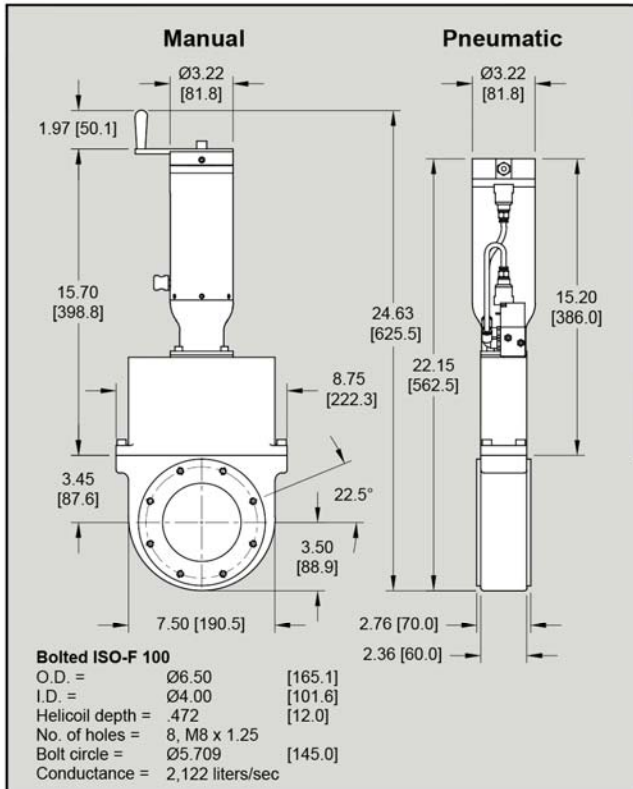
≤ 1 bar

**Materials:**

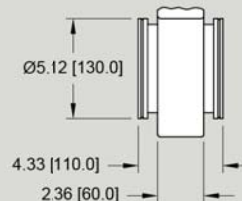
Body = 6061-T6 Aluminum  
 Gate = 6061-T6 Aluminum  
 Shaft Seal = Viton®  
 Actuator = 6061-T6 Aluminum

**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



ISO-100 Flanges			100-mm 4.0-inch
Bonnet-Gate	Flange Type	Ship Wt. lbs [Kg]	Model Number
<b>Manual</b>			
Viton-Viton (HV)	Metric Bolt	29 [13]	83110-0403V
Viton-Viton (HV)	Clamp	30 [14]	83110-0406V
<b>Pneumatic</b>			
Viton-Viton (HV)	Metric Bolt	27 [12]	83212-0403R
Viton-Viton (HV)	Clamp	28 [13]	83212-0406R



### 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

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4" ID (DN100) pneumatic CF-F