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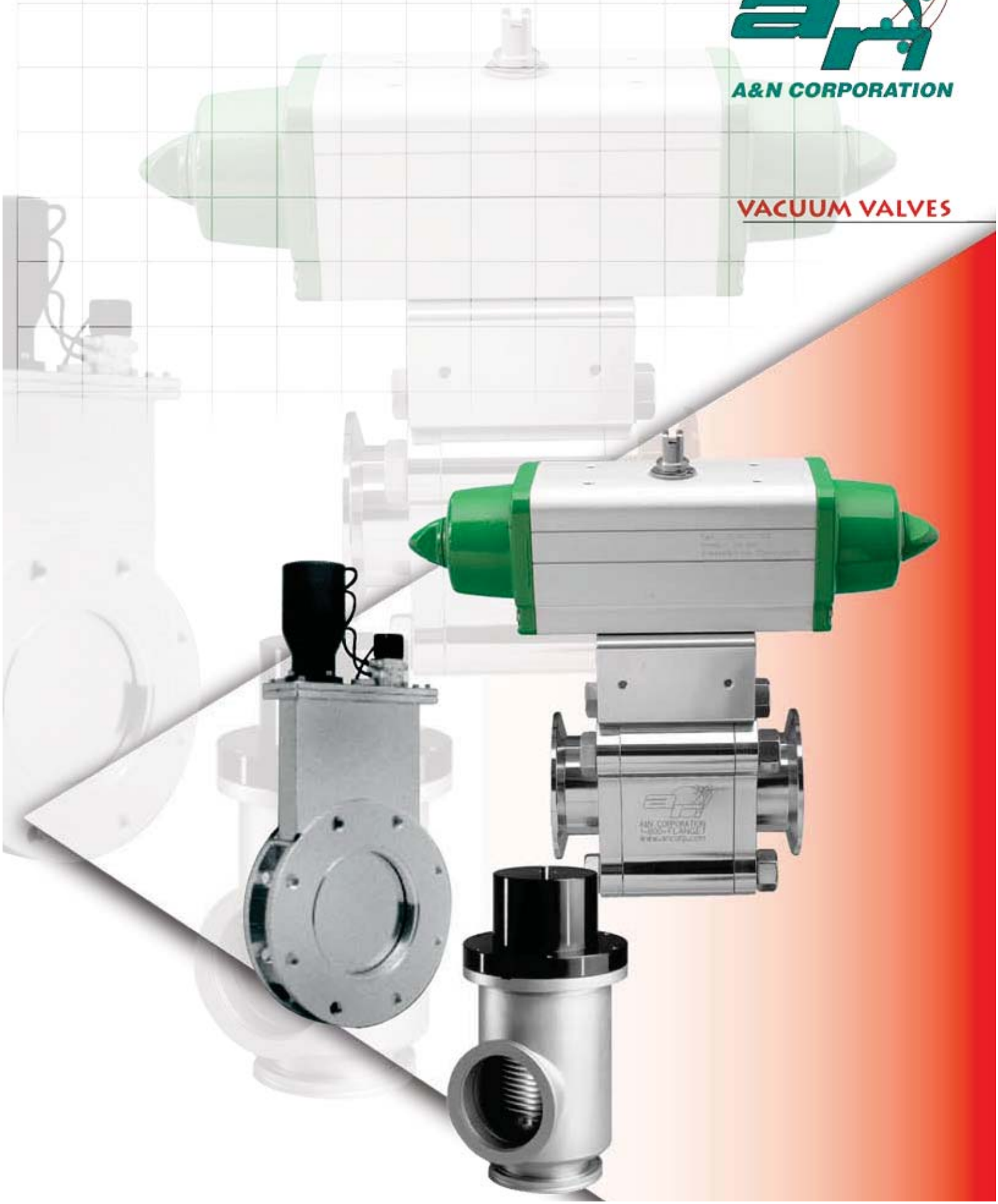
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A&N CORPORATION

# VACUUM VALVES



## Vacuum Valve Section General Introduction ..... 2.3

## Ball Valve Introduction ..... 2.4 & 2.5

Ball Valve Configurator ..... 2.6 & 2.7
B-Series Ball Valve ..... 2.8 & 2.9
C-Series Ball Valve ..... 2.10 & 2.11
D-Series Ball Valve ..... 2.12 & 2.13
E-Series Ball Valve ..... 2.14 & 2.15
F-Series Ball Valve ..... 2.16 & 2.17
G-Series Ball Valve ..... 2.18 & 2.19
H-Series Ball Valve ..... 2.20 & 2.21

## Poppet Valve Introduction ..... 2.22

3/4 in. Angle Valve – Manual (M) and Pneumatic (AS) ..... 2.22 & 2.23
1 in. Angle Valve – Manual (M) and Pneumatic (AS) ..... 2.24
1 1/2 in. and 2 in. Angle Valve – Manual (M) and Pneumatic (AS) ..... 2.25
2 1/2 in. Angle Valve – Manual (M) and Pneumatic (AS) ..... 2.26
3 in. Angle Valve – Manual (M) and Pneumatic (AS) ..... 2.27
4 in. Angle Valve – Manual (M) and Pneumatic (AS) ..... 2.28
4 in. and 6 in. Angle Valve – Pneumatic (AA) ..... 2.29
1 in. Offset In-Line Valve – Manual (M) and Pneumatic (AS) ..... 2.30
1 1/2 in. and 2 in. Offset In-Line Valve – Manual (M) and Pneumatic (AS) ..... 2.31
3/4 in. In-Line Valve – Manual (M) and Pneumatic (AS) ..... 2.32 & 2.33
1 in. In-Line Valve – Manual (M) and Pneumatic (AS) ..... 2.34
1 1/2 in. and 2 in. In-Line Valve – Manual (M) and Pneumatic (AS) ..... 2.35
2 1/2 in. In-Line Valve – Manual (M) and Pneumatic (AS) ..... 2.36
3 in. In-Line Valve – Manual (M) and Pneumatic (AS) ..... 2.37
4 in. In-Line Valve – Manual (M) and Pneumatic (AS) ..... 2.38

## Gate Valve Introduction ..... 2.39

Gate Valve – ISO-QF or LF Ports ..... 2.40 & 2.41
Gate Valve – ISO-LF Bolted Style Ports ..... 2.42 & 2.43
Gate Valve – ASA/ANSI Ports ..... 2.44 & 2.45
Gate Valve – CF Ports ..... 2.46 & 2.47
Gate Valve – CF Ports, Copper Bonnet Seal ..... 2.48 & 2.49

Vacuum Valves

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# Vacuum VALVES



## Comparing Valve Types

| | HIGH VACUUM BALL VALVE | HIGH VACUUM POPPET VALVE | HIGH VACUUM GATE VALVE |
|---|---|---|---|
| Maximum conductance | Yes | No | Yes |
| Minimum line length | No | No | Yes |
| Low to moderate particulates | Yes | Yes | No |
| Moderate to high particular | Yes | No | No |
| Bakeable to 100˚C | Yes | Yes | Yes |
| Bakeable over 100˚C | Yes[1] | Yes[1] | No |
| Large, full bore pass-through capability | Yes[2] | No | Yes |
| Positive pressure holding capability | Yes[3] | No | No |
| Pressure range ATM to $10^{-7}$ Torr. | Yes | Yes[4] | Yes |
| Corrosion resistance | Yes[5] | No | No |
| Pneumatic actuation | Yes | Yes[6] | Yes |
| Electric actuation | Yes | Yes | No |
| Seats wiped clean during cycling | Yes | No | No |
| In-line rebuild ability | Yes | No | No |
| Ease of rebuild | Yes | Yes | No |
| Catastrophic fail safe closed or open | Yes[7] | Yes | No |
| Adjustable cycle time with actuation | Yes | No | No |

Yes = recommended  No = not recommended

1 = Viton® begins to outgas and set at 150˚C.
Other seals can be substituted for higher temperature (200˚C).

**Metal seal poppet valves go up to 400˚C**

2 = Large bore pass-through capability of up to 5.8 inch available with tube bore high vacuum ball valves.
3 = Up to 6 ATM (100 psi)
4 = Metal seal poppet valves to $10^{-10}$ Torr.
5 = High vacuum ball valves manufactured from 316 L.

**Poppet and gate 304**

6 = Exception – metal-sealed valves
7 = With pneumatic fail safe actuator

## Overview:

A&N Corporation offers three main types of vacuum shut-off valves for your application. Each type regulates gas flow through your system with simple open or close commands. These valves are designed to perform fully opened or closed. The standard design is not meant for flow control, but is a simple off/on control mechanism for your vacuum system.

**Poppet Valves** are made of a body, actuator and internal poppet. The actuator transports the poppet linearly. When the poppet is moved toward the top of the valve the internal body cavity is open to the system and flow is unimpeded. Once the actuator moves the poppet to the bottom of the valve an elastomer sealing ring is compressed onto a sealing surface on the lower body of the valve. This creates a vacuum tight seal and stops flow. Poppet valves are available in three body styles; 90˚ Angle, Offset In-Line and In-Line.

**Gate Valves** provide straight through, unimpeded flow with the smallest valve body profile. Gate valves are ideal for space-constrained applications that require maximum conductance. A central carriage or gate is raised and lowered by the actuator within the body. In the open position the gate retracts completely from the tube aperture allowing unrestricted flow. In the closed position an elastomer sealing ring is compressed against a sealing surface on the inside of one of the body ports.

**Ball Valves** offer straight, unimpeded flow with minimal impact on system space needed to accommodate the valve body. Ball valves are durable valves that are less sensitive to particulate contamination than the other valve types and are especially useful in dirty vacuum applications. Ball valves are made of a body, stem, ball and end caps. The ball is compressed within the body by end caps creating a vacuum tight central cavity. The valve is opened and closed by turning the stem 90˚ back and forth. The hole in the ball provides unobstructed flow in the open position and the sealing seat for the ball wipes the ball clean as it is opened and closed providing a consistent seal.

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# High Vacuum Ball Valves & Actuators





***ORDERING NOTE**

*1 Other seals (e.g. Chemraz®, Kalraz®) available upon request

## Overview

A&N Ball valves offer straight-through, unimpeded flow with a minimal valve body footprint. Because of their unique design, ball valves are less sensitive than other vacuum valves to particulate contamination; therefore, they are especially useful in "dirty" vacuum applications. For example, ball valves are almost always used to isolate scrubbers and traps downstream of the rough pumping system.

A&N Ball valves consist of a body, stem, ball, and two end caps machined from corrosive resistant 316L stainless steel. Fluoroelastomers are used to seal the stem and end caps from atmosphere while the PTFE Teflon® seats are used to isolate the process when closed. The valve is opened and closed manually or pneumatically by ¼ turn, quick actuation. The PTFE Teflon® seats wipe the ball clean as it is opened and closed. This feature provides the "self-cleaning" action that makes this valve robust in particle-rich effluent streams.

## Specifications

### Vacuum and temperature ratings

- Vacuum rated to 1 X $10^{-8}$ Torr
- Helium leak rated less than 1 X $10^{-9}$ std. cc/sec
- Standard fluoroelastomer seal (i.e. Viton®): -26°C to 205°C (-15°F to 400°F)

### Materials

- Valve body, ball, stem, and end caps: machined from solid 316L stainless steel
- Standard seal: fluoroelastomer (i.e. Viton®) [1]
- Seats: PTFE Teflon®
- Lubricant: Dow Corning® High Vacuum Grease

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# Features

## General

- Straight-through, unimpeded flow
- Higher conductance than a comparable poppet valve
- Poppetless design has less wetted surface
- 1/4 turn, quick actuation
- “Self-cleaning” action prevents deposition buildup
- Configurable to meet system requirements (see page 2.6 - 2.7)
- Ball port sizes: 0.56 inch up to 3.27 inch
- Valves can be easily serviced with A&N's standard maintenance kits [2]

## Pneumatic

- Actuator operating pressure: 80 - 120 psig
- Actuator temperature range:
  - Moist air: 0°C to 150°C (32°F to 302°F)
  - Dry air: -20°C to 150°C (-4°F to 302°F)
- Both Air-to-Open, Spring-to-Close (AS) single acting actuators and Air-to-Open, Air-to-Close (AA) double acting actuators are available
- Fail safe open or fail safe closed configuration available for ball valves with AS actuators
- 1/8 NPT air line hook-up
- Visual and mechanical position indicators available
- Solenoids available for 120VAC, 240VAC or 24VDC versions

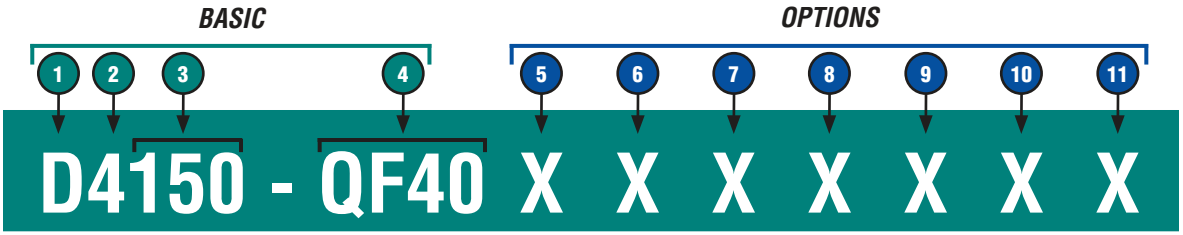
**For More Info...**

*2 See ball valve maintenance kits listed with their respective ball valve.

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## Build Your own Ball Valve!

To configure an A&N reference number for a basic high vacuum ball valve, use Steps 1 - 4. To add available options, use Steps 5 - 9.




***EXAMPLE 1:*** B4075-TE is a basic manual ball valve with a 0.57" ball port, stainless steel, 0.75" flange tube size and tube end port terminations.

***EXAMPLE 2:*** F4200-LF63-AS is an actuated ball valve with a 1.87" ball port, stainless steel, 2.0" Flange tube size, LF63 port terminations, air-to-spring actuator.

### 1 Body Series

The ball is machined from corrosive resistant 316L stainless steel bar. On the pump side of the ball is an evacuation hole preventing trapped gas and a subsequent burst when opening the valve. As the ball turns, it is wiped clean by the Teflon® seats. This "self-cleaning" action makes the ball valve ideal for "dirty" applications. The chart lists the various body series with their corresponding ball port size and flange type port terminations.

| Body Series | Ball Port Size | Flange Type Options |
|---|---|---|
| B | 0.56 in. | QF16, QF25, TE, SE |
| C | 0.81 in. | QF25, QF40, TE, SE |
| D | 1.25 in. | QF40, TE, SE |
| E | 1.50 in. | QF50, TE, SE |
| F | 1.87 in. | QF50, LF63, TE |
| G | 2.50 in. | LF80, TE |
| H | 3.27 in. | LF100, TE |

### 2 Valve Material

| | |
|---|---|
| 4 | 316L Stainless Steel |
| 1 | Brass |

Unlike cast or forged ball valves, A&N ball valves are machined from solid corrosive resistant 316L stainless steel bar. Our experience has shown that for vacuum applications cast and forged ball valves are subject to voids, microscopic leak paths, porosity and inclusions in the material. This leads to virtual leaks, outgassing, permeation and longer pump down times. For rough vacuum applications, brass is available.

### 3 Flange Tube Size

The Flange Tube Size is dependent on the Body Series selected in Step 1 and the Flange Type selected in Step 4.

| | | Body Series |
|---|---|---|
| 050 | 0.5 in. | B |
| 075 | 0.75 in. | B |
| 100 | 1.0 in. | B, C |
| 150 | 1.5 in. | C, D |
| 200 | 2.0 in. | E, F |
| 300 | 3.0 in. | G |
| 400 | 4.0 in. | H |

### 4 Port Termination (Flange Type)

The available port terminations are dependent on the Body Series selected in Step 1. Below is a current list of our standard configurations; however, other configurations are available upon request (i.e. ASA/ANSI, ConFlat®, etc).

| | | Body Series |
|---|---|---|
| -QF16 | ISO-Quick Flange | B |
| -QF25 | ISO-Quick Flange | B, C |
| -QF40 | ISO-Quick Flange | C, D |
| -QF50 | ISO-Quick Flange | E, F |
| -LF63 | ISO-Large Flange | F |
| -LF80 | ISO-Large Flange | G |
| -LF100 | ISO-Large Flange | H |
| -TE | Tube Ends | B - H |
| -SE | Pipe Ends | B - E |

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## 5 Actuator Type

Any valve can be configured with a pneumatic actuator. Air-to-spring or air-to-air are both available and have a temperature range of 20°C to 150°C (-4°F to 302°F).

| | |
|---|---|
| (Blank) | Manual |
| -AS | Air-to-Spring |
| -AA | Air-to-Air |

***NOTE:*** *Only for actuated valves.*

## 6 Position Indicator

If you chose an actuator in Step 5, you may want to add a position indicator. A position indicator has a visual indicator on the top as well as two mechanical or proximity switches for electrical output. Switches can be wired to provide signals when the valve is opened, closed or both.

| | |
|---|---|
| (Blank) | Not Present |
| -PI | Present |

***NOTE:*** *Only for actuated valves.*

## 7 Actuator Configuration

If you chose an air-to-spring actuator in Step 5, it can be configured spring to close (Normally Closed) or spring to open (Normally Opened). Normally closed is the standard fail safe configuration.

| | |
|---|---|
| (Blank) | Normally Closed |
| -NO | Normally Open |

***NOTE:*** *Only for spring return actuated valves.*

## 8 Heater Ready

The A&N ball valve can be assembled to allow space for a heater jacket. This space is referred to as a standoff. The standard standoff is 3/8” (038); however, the valve can be assembled with other sized standoffs to accommodate other sized heaters. Custom standoffs are represented with an "H" then three digits (XXX). For example, a 3/4” (0.75”) standoff is represented as 075.

| | |
|---|---|
| (Blank) | No Standoffs |
| -H | 3/8 in. standoffs |
| -HXXX | Custom Standoff (XXX = X.xx in.) |

***NOTE:*** *Only for D, E, & F valves.*

## 9 Solenoid

If an actuator is chosen in Step 5, it can be configured with a solenoid from the list below.

| | |
|---|---|
| (Blank) | No Solenoid |
| -S3A | 3-way 120 VAC (AS) |
| -S3B | 3-way 240 VAC (AS) |
| -S3C | 3-way 24 VDC (AS) |
| -S4A | 4-way 120 VAC (AA) |
| -S4B | 4-way 240 VAC (AA) |
| -S4C | 4-way 24 VDC (AA) |

***NOTE:*** *Only for actuated valves.*

## 10 Locking Kit

| | |
|---|---|
| (Blank) | No Locking Kit |
| -LK | Locking Kit Installed |

***NOTE:*** *Only for D, E, & F manual valves.*

## 11 Overall Length

All A&N ball valves have a standard overall length (OAL) from flange to flange which is represented as Dimension A. The ball valve can be manufactured with a custom OAL. If a custom length is preferred, use three digits to represent the OAL in inches. For example, an OAL of 4.56 inch would be represented as “456”.

| | |
|---|---|
| (Blank) | Standard |
| -XXX | Custom Length |

***NOTE:*** *Some custom lengths may not be available due to certain size and cost constraints, check with a technical sales representative before ordering a custom length.*

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# B-Series Ball Valves

## Specifications

### Vacuum and temperature ratings

- Vacuum rated to 1 X $10^{-8}$ Torr
- Helium leak rated less than 1 X $10^{-9}$ std. cc/sec
- Standard fluoroelastomer seal (i.e. Viton®): -26°C to 205°C (-15°F to 400°F)

### Materials:

- Valve body, ball, stem, and end caps: machined from solid 316L stainless steel
- Standard seal: fluoroelastomer (i.e. Viton®)?
- Seats: PTFE Teflon®
- Lubricant: Dow Corning® High Vacuum Grease

### Ball port size

- 0.56 inch

## Features

### General

- Straight-through, unimpeded flow
- Higher conductance than a comparable poppet valve
- Poppetless design has less wetted surface
- 1/4 turn, quick actuation
- “Self-cleaning” action prevents deposition buildup
- Valves can be easily serviced with A&N's standard maintenance kits

### Pneumatic

- Actuator operating pressure: 80 - 120 psig
- Actuator temperature range:
  - Moist air: 0°C to 150°C (32°F to 302°F)
  - Dry air: -20°C to 150°C (-4°F to 302°F)
- Both Air-to-Open, Spring-to-Close (AS) single acting actuators and Air-to-Open, Air-to-Close (AA) double acting actuators are available
- "Fail-safe open" or "fail-safe closed" configuration available for ball valves with AS actuators
- 1/8 NPT air line hook-up
- Visual and mechanical position indicators available
- Solenoids available for 120VAC, 240VAC or 24VDC versions

### Additional options: Call for price and availability

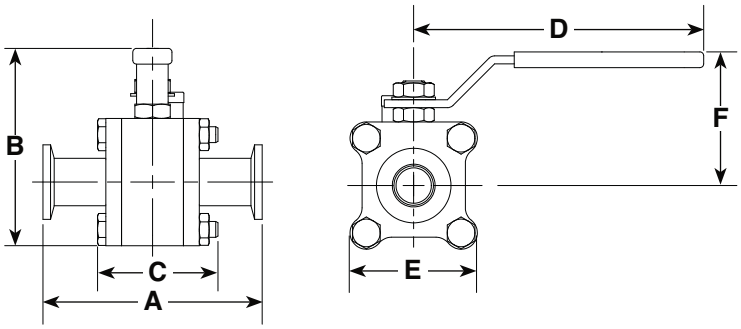
- Configurable to meet system requirements
  - Port terminations
  - Overall length
  - Heater ready
  - Fail-safe position

***ORDERING NOTE**

*1 Other seals (e.g. Chemraz®, Kalraz®) available upon request



## B-Series Ball Valves Manual




| PART NUMBER | REFERENCE NUMBER | END CAP TYPE | END CAP TUBE SIZE | CONDUCT. (L/SEC) | A | B | C | D | E | F |
|---|---|---|---|---|---|---|---|---|---|---|
| 3000028 | B4075-QF16 | QF16 | 3/4 in. O.D. | 5 | 3.47 | 3.1 | 1.9 | 4.7 | 2.0 | 2.1 |

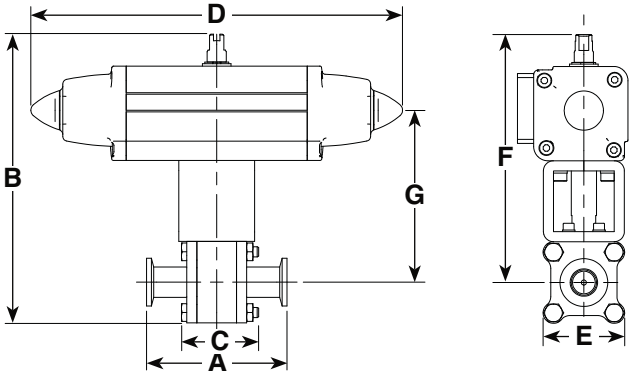
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## B-Series Ball Valves Pneumatic




| PART NUMBER | REFERENCE NUMBER | END CAP TYPE | END CAP TUBE SIZE | CONDUCT. (L/SEC) | A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 3009120 | B4075-QF16-AS | QF16 | 3/4 in. O.D. | 5 | 3.47 | 7.1 | 1.9 | 9.2 | 2.0 | 6.1 | 4.2 |
| 3008120 | B4075-QF16-AA | QF16 | 3/4 in. O.D. | 5 | 3.47 | 6.9 | 1.9 | 6.2 | 2.0 | 5.8 | 4.1 |



### Solenoids

| OPTION NUMBER | DESCRIPTION |
|---|---|
| -S3A | 3-way 120VAC (AS) |
| -S3B | 3-way 240VAC (AS) |
| -S3C | 3-way 24VDC (AS) |
| -S4A | 4-way 120VAC (AA) |
| -S4B | 4-way 240VAC (AA) |
| -S4C | 4-way 24VDC (AA) |

### Position Indicator

| PART NUMBER | REFERENCE NUMBER | DESCRIPTION |
|---|---|---|
| 3122065 | SB-PI-04 | Standard Switchbox - 2-switch mechanical w/4 bare wires |

### Maintenance Kits for all B-Series Ball Valves

| PART NUMBER | REFERENCE NUMBER | DESCRIPTION |
|---|---|---|
| 3010068 | B-RK-S | B Series Maintenance Kit |

***Kit Contains:*** (1) stem o-ring, (2) body o-rings, (2) Teflon® seats, (1) Teflon® spacer, (1) PEEK® stem bushing, (1) nylon lock nut

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# C-Series Ball Valves

## Specifications

### Vacuum and temperature ratings

- Vacuum rated to 1 X $10^{-8}$ Torr
- Helium leak rated less than 1 X $10^{-9}$ std. cc/sec
- Standard fluoroelastomer seal (i.e. Viton®): -26°C to 205°C (-15°F to 400°F)

### Materials:

- Valve body, ball, stem, and end caps: machined from solid 316L stainless steel
- Standard seal: fluoroelastomer (i.e. Viton®)?
- Seats: PTFE Teflon®
- Lubricant: Dow Corning® High Vacuum Grease

### Ball port size

- 0.56 inch

## Features

### General

- Straight-through, unimpeded flow
- Higher conductance than a comparable poppet valve
- Poppetless design has less wetted surface
- 1/4 turn, quick actuation
- “Self-cleaning” action prevents deposition buildup
- Valves can be easily serviced with A&N's standard maintenance kits

### Pneumatic

- Actuator operating pressure: 80 - 120 psig
- Actuator temperature range:
  - Moist air: 0°C to 150°C (32°F to 302°F)
  - Dry air: -20°C to 150°C (-4°F to 302°F)
- Both Air-to-Open, Spring-to-Close (AS) single acting actuators and Air-to-Open, Air-to-Close (AA) double acting actuators are available
- "Fail-safe open" or "fail-safe closed" configuration available for ball valves with AS actuators
- 1/8 NPT air line hook-up
- Visual and mechanical position indicators available
- Solenoids available for 120VAC, 240VAC or 24VDC versions

### Additional options: Call for price and availability

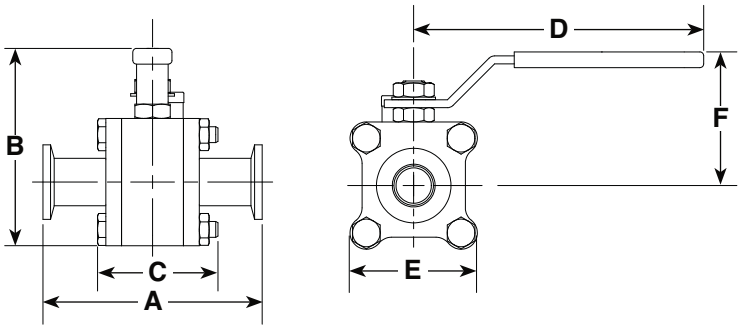
- Configurable to meet system requirements
  - Port terminations
  - Overall length
  - Heater ready
  - Fail-safe position

***ORDERING NOTE**

*1 Other seals (e.g. Chemraz®, Kalraz®) available upon request



## C-Series Ball Valves Manual




| PART NUMBER | REFERENCE NUMBER | END CAP TYPE | END CAP TUBE SIZE | CONDUCT. (L/SEC) | A | B | C | D | E | F |
|---|---|---|---|---|---|---|---|---|---|---|
| 3000030 | C4100-QF25 | QF25 | 1 in. O.D. | 13 | 3.92 | 3.7 | 2.5 | 5.8 | 2.4 | 2.5 |

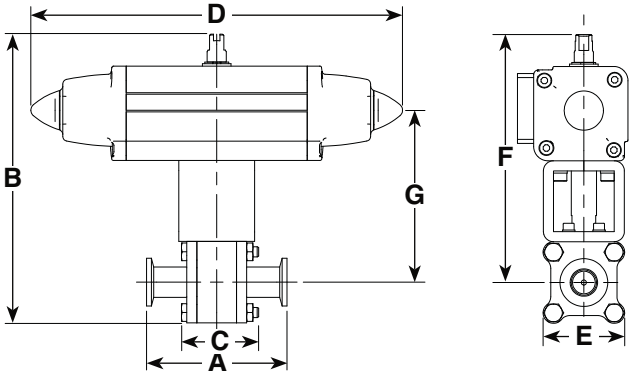
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## C-Series Ball Valves Pneumatic




| PART NUMBER | REFERENCE NUMBER | END CAP TYPE | END CAP TUBE SIZE | CONDUCT. (L/SEC) | A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 3009128 | C4100-QF25-AS | QF25 | 1 in. O.D. | 13 | 3.92 | 7.5 | 2.5 | 9.2 | 2.4 | 6.3 | 4.4 |
| 3008128 | C4100-QF25-AA | QF25 | 1 in. O.D. | 13 | 3.92 | 7.5 | 2.5 | 6.3 | 2.4 | 6.0 | 4.3 |



### Solenoids

| OPTION NUMBER | DESCRIPTION |
|---|---|
| -S3A | 3-way 120VAC (AS) |
| -S3B | 3-way 240VAC (AS) |
| -S3C | 3-way 24VDC (AS) |
| -S4A | 4-way 120VAC (AA) |
| -S4B | 4-way 240VAC (AA) |
| -S4C | 4-way 24VDC (AA) |

### Position Indicator

| PART NUMBER | REFERENCE NUMBER | DESCRIPTION |
|---|---|---|
| 3122065 | SB-PI-04 | Standard Switchbox - 2-switch mechanical w/4 bare wires |

### Maintenance Kits for all C-Series Ball Valves

| PART NUMBER | REFERENCE NUMBER | DESCRIPTION |
|---|---|---|
| 3010109 | C-RK-S | C Series Maintenance Kit |

***Kit Contains:*** (1) stem o-ring, (2) body o-rings, (2) Teflon® seats, (1) Teflon® spacer, (1) PEEK® stem bushing, (1) nylon lock nut

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# D-Series Ball Valves

## Specifications

### Vacuum and temperature ratings

- Vacuum rated to 1 X $10^{-8}$ Torr
- Helium leak rated less than 1 X $10^{-9}$ std. cc/sec
- Standard fluoroelastomer seal (i.e. Viton®): -26°C to 205°C (-15°F to 400°F)

### Materials:

- Valve body, ball, stem, and end caps: machined from solid 316L stainless steel
- Standard seal: fluoroelastomer (i.e. Viton®)?
- Seats: PTFE Teflon®
- Lubricant: Dow Corning® High Vacuum Grease

### Ball port size

- 1.25 inch

## Features

### General

- Straight-through, unimpeded flow
- Higher conductance than a comparable poppet valve
- Poppetless design has less wetted surface
- 1/4 turn, quick actuation
- “Self-cleaning” action prevents deposition buildup
- Valves can be easily serviced with A&N's standard maintenance kits

### Pneumatic

- Actuator operating pressure: 80 - 120 psig
- Actuator temperature range:
  - Moist air: 0°C to 150°C (32°F to 302°F)
  - Dry air: -20°C to 150°C (-4°F to 302°F)
- Both Air-to-Open, Spring-to-Close (AS) single acting actuators and Air-to-Open, Air-to-Close (AA) double acting actuators are available
- "Fail-safe open" or "fail-safe closed" configuration available for ball valves with AS actuators
- 1/8 NPT air line hook-up
- Visual and mechanical position indicators available
- Solenoids available for 120VAC, 240VAC or 24VDC versions

### Additional options: Call for price and availability

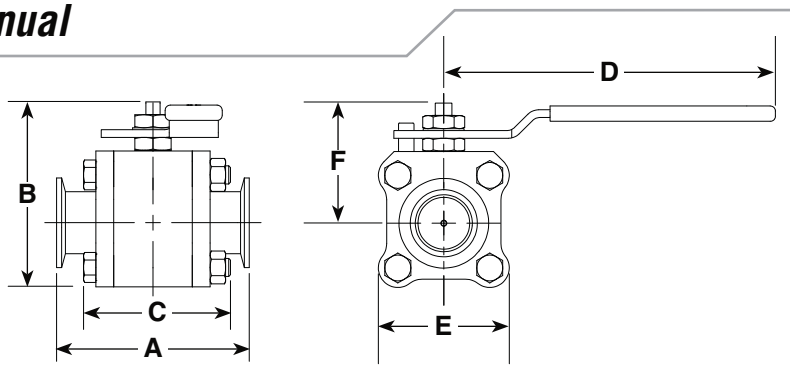
- Configurable to meet system requirements
  - Port terminations
  - Overall length
  - Heater ready
  - Fail-safe position

***ORDERING NOTE**

*1 Other seals (e.g. Chemraz®, Kalraz®) available upon request



## D-Series Ball Valves Manual




| PART NUMBER | REFERENCE NUMBER | END CAP TYPE | END CAP TUBE SIZE | CONDUCT. (L/SEC) | A | B | C | D | E | F |
|---|---|---|---|---|---|---|---|---|---|---|
| 3000032 | D4150-QF40 | QF40 | 1 1/2 in. O.D. | 35 | 4.65 | 4.5 | 3.5 | 8.0 | 3.2 | 2.9 |

### Lock Kits for Manual Ball Valve

| PART NUMBER | REFERENCE NUMBER | DESCRIPTION |
|---|---|---|
| 3023005 | D/E/F-LK | Lock Kit for D, E, or F Manual Ball Valve |

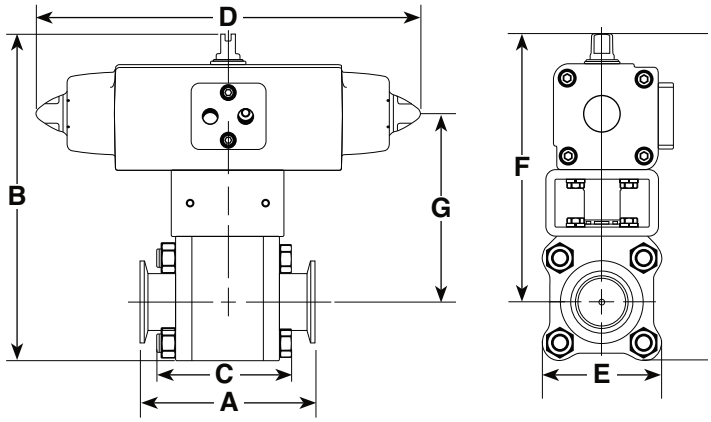
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## D-Series Ball Valves Pneumatic




| PART NUMBER | REFERENCE NUMBER | END CAP TYPE | END CAP TUBE SIZE | CONDUCT. (L/SEC) | A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 3009135 | D4150-QF40-AS | QF40 | 1 1/2 in. O.D. | 35 | 4.65 | 8.6 | 3.5 | 10.2 | 3.2 | 7.0 | 5.0 |
| 3008135 | D4150-QF40-AA | QF40 | 1 1/2 in. O.D. | 35 | 4.65 | 8.6 | 3.5 | 7.8 | 3.2 | 7.0 | 5.0 |



### Solenoids

| OPTION NUMBER | DESCRIPTION |
|---|---|
| -S3A | 3-way 120VAC (AS) |
| -S3B | 3-way 240VAC (AS) |
| -S3C | 3-way 24VDC (AS) |
| -S4A | 4-way 120VAC (AA) |
| -S4B | 4-way 240VAC (AA) |
| -S4C | 4-way 24VDC (AA) |

### Position Indicator

| PART NUMBER | REFERENCE NUMBER | DESCRIPTION |
|---|---|---|
| 3122065 | SB-PI-04 | Standard Switchbox - 2-switch mechanical w/4 bare wires |

### Maintenance Kits for all D-Series Ball Valves

| PART NUMBER | REFERENCE NUMBER | DESCRIPTION |
|---|---|---|
| 3010141 | D-RK-S | D Series Maintenance Kit |

***Kit Contains:***

(1) stem o-ring, (2) body o-rings, (2) Teflon® seats, (1) Teflon® spacer, (1) PEEK® stem bushing, (1) nylon lock nut, (2) brass stem bushings

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# E-Series Ball Valves

## Specifications

### Vacuum and temperature ratings

- Vacuum rated to 1 X $10^{-8}$ Torr
- Helium leak rated less than 1 X $10^{-9}$ std. cc/sec
- Standard fluoroelastomer seal (i.e. Viton®): -26°C to 205°C (-15°F to 400°F)

### Materials:

- Valve body, ball, stem, and end caps: machined from solid 316L stainless steel
- Standard seal: fluoroelastomer (i.e. Viton®)?
- Seats: PTFE Teflon®
- Lubricant: Dow Corning® High Vacuum Grease

### Ball port size

- 1.50 inch

## Features

### General

- Straight-through, unimpeded flow
- Higher conductance than a comparable poppet valve
- Poppetless design has less wetted surface
- 1/4 turn, quick actuation
- “Self-cleaning” action prevents deposition buildup
- Valves can be easily serviced with A&N's standard maintenance kits

### Pneumatic

- Actuator operating pressure: 80 - 120 psig
- Actuator temperature range:
  - Moist air: 0°C to 150°C (32°F to 302°F)
  - Dry air: -20°C to 150°C (-4°F to 302°F)
- Both Air-to-Open, Spring-to-Close (AS) single acting actuators and Air-to-Open, Air-to-Close (AA) double acting actuators are available
- "Fail-safe open" or "fail-safe closed" configuration available for ball valves with AS actuators
- 1/8 NPT air line hook-up
- Visual and mechanical position indicators available
- Solenoids available for 120VAC, 240VAC or 24VDC versions

### Additional options: Call for price and availability

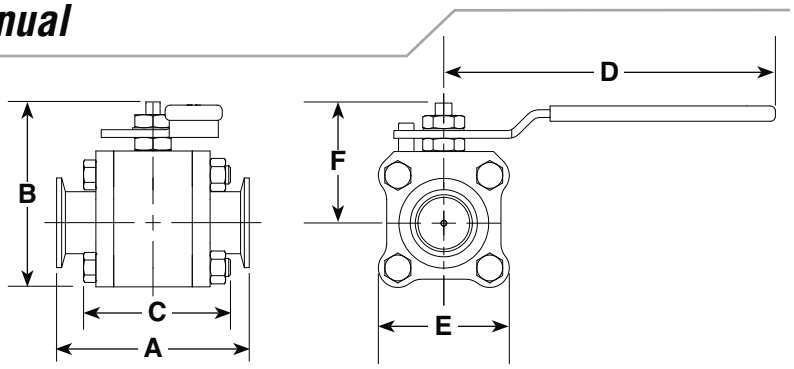
- Configurable to meet system requirements
  - Port terminations
  - Overall length
  - Heater ready
  - Fail-safe position

***ORDERING NOTE**

*1 Other seals (e.g. Chemraz®, Kalraz®) available upon request



## E-Series Ball Valves Manual




| PART NUMBER | REFERENCE NUMBER | END CAP TYPE | END CAP TUBE SIZE | CONDUCT. (L/SEC) | A | B | C | D | E | F |
|---|---|---|---|---|---|---|---|---|---|---|
| 3000035 | E4200-QF50 | QF50 | 2 in. O.D. | 57 | 4.97 | 4.9 | 3.9 | 8.0 | 3.5 | 3.1 |

### Lock Kits for Manual Ball Valve

| PART NUMBER | REFERENCE NUMBER | DESCRIPTION |
|---|---|---|
| 3023005 | D/E/F-LK | Lock Kit for D, E, or F Manual Ball Valve |

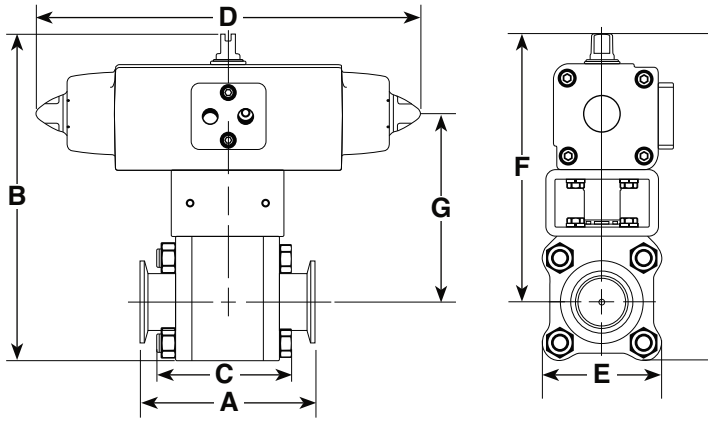
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## E-Series Ball Valves Pneumatic




| PART NUMBER | REFERENCE NUMBER | END CAP TYPE | END CAP TUBE SIZE | CONDUCT. (L/SEC) | A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 3009150 | E4200-QF50-AS | QF50 | 2 in. O.D. | 57 | 4.97 | 9.0 | 3.9 | 10.2 | 3.5 | 7.2 | 5.2 |
| 3008150 | E4200-QF50-AA | QF50 | 2 in. O.D. | 57 | 4.97 | 9.0 | 3.9 | 7.8 | 3.5 | 7.2 | 5.2 |



### Solenoids

| OPTION NUMBER | DESCRIPTION |
|---|---|
| -S3A | 3-way 120VAC (AS) |
| -S3B | 3-way 240VAC (AS) |
| -S3C | 3-way 24VDC (AS) |
| -S4A | 4-way 120VAC (AA) |
| -S4B | 4-way 240VAC (AA) |
| -S4C | 4-way 24VDC (AA) |

### Position Indicator

| PART NUMBER | REFERENCE NUMBER | DESCRIPTION |
|---|---|---|
| 3122065 | SB-PI-04 | Standard Switchbox - 2-switch mechanical w/4 bare wires |

### Maintenance Kits for all E-Series Ball Valves

| PART NUMBER | REFERENCE NUMBER | DESCRIPTION |
|---|---|---|
| 3010181 | E-RK-S | E Series Maintenance Kit |

***Kit Contains:***

(1) stem o-ring, (2) body o-rings, (2) Teflon® seats, (1) Teflon® spacer, (1) PEEK® stem bushing, (1) nylon lock nut, (2) brass stem bushings

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# F-Series Ball Valves

## Specifications

### Vacuum and temperature ratings

- Vacuum rated to 1 X $10^{-8}$ Torr
- Helium leak rated less than 1 X $10^{-9}$ std. cc/sec
- Standard fluoroelastomer seal (i.e. Viton®): -26°C to 205°C (-15°F to 400°F)

### Materials:

- Valve body, ball, stem, and end caps: machined from solid 316L stainless steel
- Standard seal: fluoroelastomer (i.e. Viton®)?
- Seats: PTFE Teflon®
- Lubricant: Dow Corning® High Vacuum Grease

### Ball port size

- 1.87 inch

## Features

### General

- Straight-through, unimpeded flow
- Higher conductance than a comparable poppet valve
- Poppetless design has less wetted surface
- 1/4 turn, quick actuation
- “Self-cleaning” action prevents deposition buildup
- Valves can be easily serviced with A&N's standard maintenance kits

### Pneumatic

- Actuator operating pressure: 80 - 120 psig
- Actuator temperature range:
  - Moist air: 0°C to 150°C (32°F to 302°F)
  - Dry air: -20°C to 150°C (-4°F to 302°F)
- Both Air-to-Open, Spring-to-Close (AS) single acting actuators and Air-to-Open, Air-to-Close (AA) double acting actuators are available
- "Fail-safe open" or "fail-safe closed" configuration available for ball valves with AS actuators
- 1/8 NPT air line hook-up
- Visual and mechanical position indicators available
- Solenoids available for 120VAC, 240VAC or 24VDC versions

### Additional options: Call for price and availability

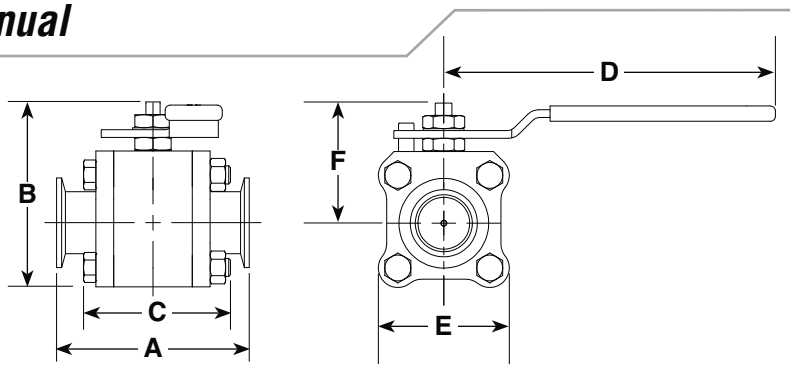
- Configurable to meet system requirements
  - Port terminations
  - Overall length
  - Heater ready
  - Fail-safe position

***ORDERING NOTE**

*1 Other seals (e.g. Chemraz®, Kalraz®) available upon request



## F-Series Ball Valves Manual




| PART NUMBER | REFERENCE NUMBER | END CAP TYPE | END CAP TUBE SIZE | CONDUCT. (L/SEC) | A | B | C | D | E | F |
|---|---|---|---|---|---|---|---|---|---|---|
| 3002035 | F4200-QF50 | QF50 | 2 in. O.D. | 87 | 6.31 | 5.4 | 4.3 | 8.0 | 4.1 | 3.5 |

### Lock Kits for Manual Ball Valve

| PART NUMBER | REFERENCE NUMBER | DESCRIPTION |
|---|---|---|
| 3023005 | D/E/F-LK | Lock Kit for D, E, or F Manual Ball Valve |

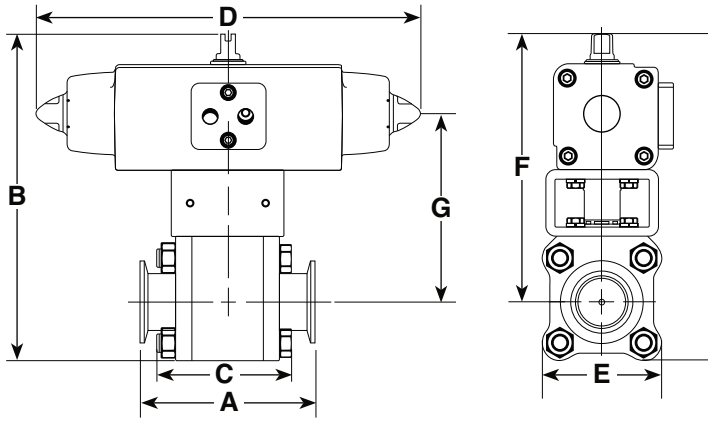
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## F-Series Ball Valves Pneumatic




| PART NUMBER | REFERENCE NUMBER | END CAP TYPE | END CAP TUBE SIZE | CONDUCT. (L/SEC) | A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 3009165 | F4200-QF50-AS | QF50 | 2 in. O.D. | 87 | 6.31 | 10.0 | 4.3 | 12.0 | 4.1 | 8.0 | 5.7 |
| 3008165 | F4200-QF50-AA | QF50 | 2 in. O.D. | 87 | 6.31 | 10.0 | 4.3 | 9.3 | 4.1 | 8.0 | 5.7 |



### Solenoids

| OPTION NUMBER | DESCRIPTION |
|---|---|
| -S3A | 3-way 120VAC (AS) |
| -S3B | 3-way 240VAC (AS) |
| -S3C | 3-way 24VDC (AS) |
| -S4A | 4-way 120VAC (AA) |
| -S4B | 4-way 240VAC (AA) |
| -S4C | 4-way 24VDC (AA) |

### Position Indicator

| PART NUMBER | REFERENCE NUMBER | DESCRIPTION |
|---|---|---|
| 3122065 | SB-PI-04 | Standard Switchbox - 2-switch mechanical w/4 bare wires |

### Maintenance Kits for all F-Series Ball Valves

| PART NUMBER | REFERENCE NUMBER | DESCRIPTION |
|---|---|---|
| 3010084 | F-RK-S | F Series Maintenance Kit |

***Kit Contains:***

(1) stem o-ring, (2) body o-rings, (2) Teflon® seats, (1) Teflon® spacer, (1) PEEK® stem bushing, (1) nylon lock nut, (2) brass stem bushings

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# G-Series Ball Valves

## Specifications

### Vacuum and temperature ratings

- Vacuum rated to 1 X $10^{-8}$ Torr
- Helium leak rated less than 1 X $10^{-9}$ std. cc/sec
- Standard fluoroelastomer seal (i.e. Viton®): -26°C to 205°C (-15°F to 400°F)

### Materials:

- Valve body, ball, stem, and end caps: machined from solid 316L stainless steel
- Standard seal: fluoroelastomer (i.e. Viton®)?
- Seats: PTFE Teflon®
- Lubricant: Dow Corning® High Vacuum Grease

### Ball port size

- 2.50 inch

## Features

### General

- Straight-through, unimpeded flow
- Higher conductance than a comparable poppet valve
- Poppetless design has less wetted surface
- 1/4 turn, quick actuation
- “Self-cleaning” action prevents deposition buildup
- Valves can be easily serviced with A&N's standard maintenance kits

### Pneumatic

- Actuator operating pressure: 80 - 120 psig
- Actuator temperature range:
  - Moist air: 0°C to 150°C (32°F to 302°F)
  - Dry air: -20°C to 150°C (-4°F to 302°F)
- Both Air-to-Open, Spring-to-Close (AS) single acting actuators and Air-to-Open, Air-to-Close (AA) double acting actuators are available
- "Fail-safe open" or "fail-safe closed" configuration available for ball valves with AS actuators
- 1/8 NPT air line hook-up
- Visual and mechanical position indicators available
- Solenoids available for 120VAC, 240VAC or 24VDC versions

### Additional options: Call for price and availability

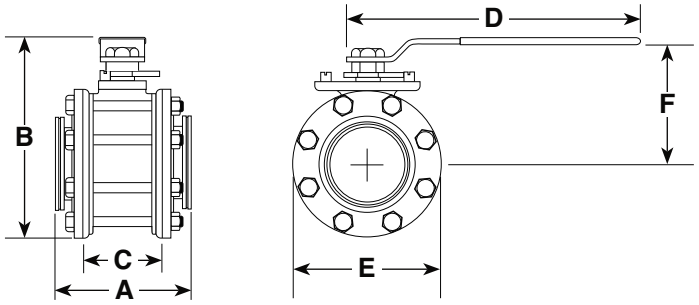
- Configurable to meet system requirements
  - Port terminations
  - Overall length
  - Heater ready
  - Fail-safe position

***ORDERING NOTE**

*1 Other seals (e.g. Chemraz®, Kalraz®) available upon request



## G-Series Ball Valves Manual




| PART NUMBER | REFERENCE NUMBER | END CAP TYPE | END CAP TUBE SIZE | CONDUCT. (L/SEC) | A | B | C | D | E | F |
|---|---|---|---|---|---|---|---|---|---|---|
| 3000037 | G4300-LF80 | LF80 | 3 in. O.D. | 260 | 6.59 | 9.4 | 5.3 | 15.0 | 6.4 | 6.2 |

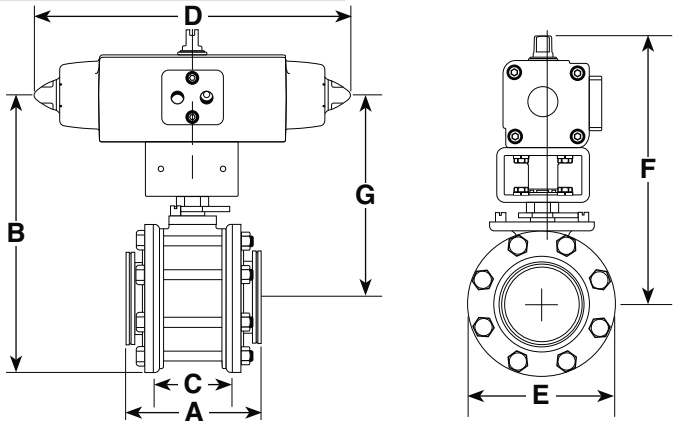
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## G-Series Ball Valves Pneumatic




| PART NUMBER | REFERENCE NUMBER | END CAP TYPE | END CAP TUBE SIZE | CONDUCT. (L/SEC) | A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 3009170 | G4300-LF80-AS | LF80 | 3 in. O.D. | 260 | 6.59 | 16.5 | 5.3 | 16.1 | 6.4 | 13.3 | 10.1 |
| 3008170 | G4300-LF80-AA | LF80 | 3 in. O.D. | 260 | 6.59 | 16.4 | 5.3 | 11.4 | 6.4 | 13.2 | 10.2 |



### Solenoids

| OPTION NUMBER | DESCRIPTION |
|---|---|
| -S3A | 3-way 120VAC (AS) |
| -S3B | 3-way 240VAC (AS) |
| -S3C | 3-way 24VDC (AS) |
| -S4A | 4-way 120VAC (AA) |
| -S4B | 4-way 240VAC (AA) |
| -S4C | 4-way 24VDC (AA) |

### Position Indicator

| PART NUMBER | REFERENCE NUMBER | DESCRIPTION |
|---|---|---|
| 3122065 | SB-PI-04 | Standard Switchbox - 2-switch mechanical w/4 bare wires |

### Maintenance Kits for all G-Series Ball Valves

| PART NUMBER | REFERENCE NUMBER | DESCRIPTION |
|---|---|---|
| 3010197 | G-RK-S | G Series Maintenance Kit |

***Kit Contains:***

(1) stem o-ring, (2) body o-rings, (2) Teflon® seats, (1) Teflon® spacer, (1) PEEK® stem bushing, (1) nylon lock nut, (2) brass stem bushings

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# H-Series Ball Valves

## Specifications

### Vacuum and temperature ratings

- Vacuum rated to 1 X $10^{-8}$ Torr
- Helium leak rated less than 1 X $10^{-9}$ std. cc/sec
- Standard fluoroelastomer seal (i.e. Viton®): -26°C to 205°C (-15°F to 400°F)

### Materials:

- Valve body, ball, stem, and end caps: machined from solid 316L stainless steel
- Standard seal: fluoroelastomer (i.e. Viton®)?
- Seats: PTFE Teflon®
- Lubricant: Dow Corning® High Vacuum Grease

### Ball port size

- 3.27 inch

## Features

### General

- Straight-through, unimpeded flow
- Higher conductance than a comparable poppet valve
- Poppetless design has less wetted surface
- 1/4 turn, quick actuation
- “Self-cleaning” action prevents deposition buildup
- Valves can be easily serviced with A&N's standard maintenance kits

### Pneumatic

- Actuator operating pressure: 80 - 120 psig
- Actuator temperature range:
  - Moist air: 0°C to 150°C (32°F to 302°F)
  - Dry air: -20°C to 150°C (-4°F to 302°F)
- Both Air-to-Open, Spring-to-Close (AS) single acting actuators and Air-to-Open, Air-to-Close (AA) double acting actuators are available
- "Fail-safe open" or "fail-safe closed" configuration available for ball valves with AS actuators
- 1/8 NPT air line hook-up
- Visual and mechanical position indicators available
- Solenoids available for 120VAC, 240VAC or 24VDC versions

### Additional options: Call for price and availability

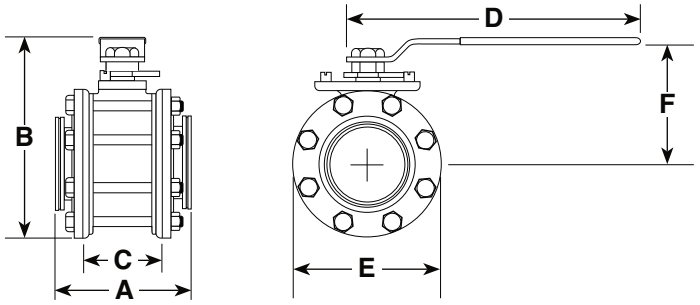
- Configurable to meet system requirements
  - Port terminations
  - Overall length
  - Heater ready
  - Fail-safe position

***ORDERING NOTE**

*1 Other seals (e.g. Chemraz®, Kalraz®) available upon request



## H-Series Ball Valves Manual




| PART NUMBER | REFERENCE NUMBER | END CAP TYPE | END CAP TUBE SIZE | CONDUCT. (L/SEC) | A | B | C | D | E | F |
|---|---|---|---|---|---|---|---|---|---|---|
| 3000039 | H4400-LF100 | LF100 | 4 in. O.D. | 490 | 7.63 | 11.0 | 6.4 | 15.1 | 8.1 | 7.0 |

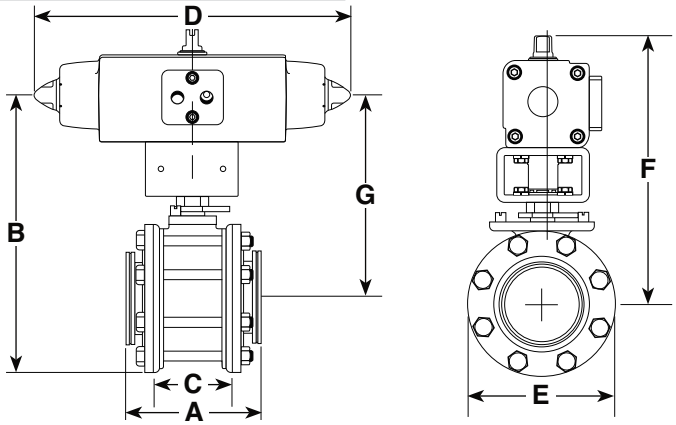
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## H-Series Ball Valves Pneumatic




| PART NUMBER | REFERENCE NUMBER | END CAP TYPE | END CAP TUBE SIZE | CONDUCT. (L/SEC) | A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 3009180 | H4400-LF100-ASLF100 | 4 in. O.D. | | 490 | 7.63 | 18.1 | 6.4 | 16.1 | 8.1 | 14.0 | 10.9 |
| 3008180 | H4400-LF100-AALF100 | 4 in. O.D. | | 490 | 7.63 | 18.0 | 6.4 | 11.4 | 8.1 | 13.9 | 10.8 |



### Solenoids

| OPTION NUMBER | DESCRIPTION |
|---|---|
| -S3A | 3-way 120VAC (AS) |
| -S3B | 3-way 240VAC (AS) |
| -S3C | 3-way 24VDC (AS) |
| -S4A | 4-way 120VAC (AA) |
| -S4B | 4-way 240VAC (AA) |
| -S4C | 4-way 24VDC (AA) |

### Position Indicator

| PART NUMBER | REFERENCE NUMBER | DESCRIPTION |
|---|---|---|
| 3122065 | SB-PI-04 | Standard Switchbox - 2-switch mechanical w/4 bare wires |

### Maintenance Kits for all H-Series Ball Valves

| PART NUMBER | REFERENCE NUMBER | DESCRIPTION |
|---|---|---|
| 3010211 | H-RK-S | H Series Maintenance Kit |

***Kit Contains:***

(1) stem o-ring, (2) body o-rings, (2) Teflon® seats, (1) Teflon® spacer, (1) PEEK® stem bushing, (1) nylon lock nut, (2) brass stem bushings

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## Features

- Choice of CF, QF or tube end ports.
- High purity, corrosion resistant, 304 stainless steel body.
- Made from a formed 321 stainless steel bellows which prevents outgassing, virtual leaks, and particle entrapment between bellows convolutions and extends the life cycle.
- Bonnet seals are Viton®. Other seals available on request.
- Upon electrical control voltage or pneumatic supply failure, the valve fails closed.
- Function reliably in applications ranging from semiconductor manufacturing to high energy physics research to nuclear accelerators.
- Solenoid coils are available for use with a wide range of voltages and frequencies.
- Available in port sizes 3/4 to 4 inch manual or pneumatic Air-to-Spring (AS). Also available in 4 and 6 inch Air-to-Air (AA).

## Options for Poppet Valves

***When ordering options, please add the option number(s) to the end of the reference number for the valve you are ordering.***

### Solenoids for 3/4 inch to 4 inch Pneumatic Poppet Valves Air-to-Spring

| PART NUMBER | REFERENCE NUMBER | OPTION NUMBER | DESCRIPTION |
|---|---|---|---|
| 3106090 | PPV-S3A | -S3A | 3-Way 120VAC 50/60 HZ 7.5 Watt |
| 3106091 | PPV-S3B | -S3B | 3-Way 220VAC 50/60 HZ 7.5 Watt |
| 3106092 | PPV-S3C | -S3C | 3-Way 24VDC 7 Watt |
| 3106093 | PPV-S3D | -S3D | 3-Way 208VAC 50/60 HZ 7.5 Watt |
| 3106094 | PPV-S3E | -S3E | 3-Way 24VAC 50/60 HZ 6 Watt |
| 3106095 | PPV-S3F | -S3F | 3-Way 12 VDC 7 Watt |

### Solenoids for 4 inch to 6 inches Pneumatic Poppet Valves Air-to-Air

| PART NUMBER | REFERENCE NUMBER | OPTION NUMBER | DESCRIPTION |
|---|---|---|---|
| 3109090 | PPV-S4A | -S4A | 4-Way 100-120V/50 HZ 110-130V/60 HZ 8.5 Watt |
| 3109091 | PPV-S4B | -S4B | 4-Way 210-240V/50 HZ 220-250V/60 HZ 6.1 Watt |
| 3109092 | PPV-S4C | -S4C | 4-Way 24VDC 6.7 Watt |
| 3109093 | PPV-S4E | -S4E | 4-Way 24VAC 50/60 HZ 4.5 Watt |

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# 3/4 inch Angle Valves Manual (M) & Pneumatic (AS)

***Maximum Bakeout Temperature***

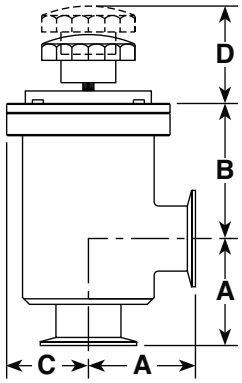
- Body: 150° C
- Cylinder: 70° C

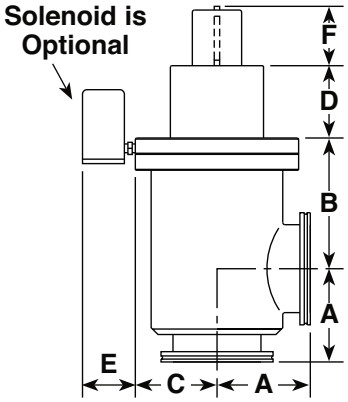
***Helium Leak Rate***: 1.0 X $10^{-9}$ std cc/sec

***Vacuum Range***: 1.0 X $10^{-9}$ Torr to 15 psig

***General***

- Installs in any position
- Visual indication of valve position
- Pneumatic connection - 1/8 inch NPT-F




| PART NUMBER | REFERENCE NUMBER | CONDUCTANCE (L//SEC) | ACTUATION SEC* | C/L A | B | C | D | E | F |
|---|---|---|---|---|---|---|---|---|---|
| 3106000 | PAV075-CF-E-M | 6 | - | 1.97 | 3.31 | 1.62 | 2.46 | - | - |
| 3106003 | PAV075-CF-E-AS | 6 | .5 (1) | 1.97 | 3.86 | 1.62 | 0.87 | 1.84 | 1.33 |
| 3106001 | PAV075-QF-E-M | 6 | - | 1.57 | 3.31 | 1.62 | 2.46 | - | - |
| 3106004 | PAV075-QF-E-AS | 6 | .5 (1) | 1.57 | 3.86 | 1.62 | 0.87 | 1.84 | 1.33 |
| 3106002 | PAV075-TE-E-M | 6 | - | 1.50 | 3.31 | 1.62 | 2.46 | - | - |
| 3106005 | PAV075-TE-E-AS | 6 | .5 (1) | 1.50 | 3.86 | 1.62 | 0.87 | 1.84 | 1.33 |

* opening (closing)

## Accessories for .75 inch Manual & Pneumatic Poppet Valves

| PART NUMBER | REFERENCE NUMBER | DESCRIPTION |
|---|---|---|
| 3106080 | PPV-MI-075 | 3/4 in. Pneumatic Valve Limit Switch |
| 3106061 | PPV-VSS-075-M | 3/4 in. Manual Poppet Valve Viton® Seal Set |
| 3106060 | PPV-VSS-075-P | 3/4 in. Pneumatic Poppet Valve Viton® Seal Set |
| 3106071 | PPV-VIK-075-M | 3/4 in. Manual Poppet Valve Internal Replacement Kit |
| 3106070 | PPV-VIK-075-P | 3/4 in. Pneumatic Poppet Valve Internal Replacement Kit |

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## Specifications and Features

***Maximum Bakeout Temperature:*** 150°C

***Helium Leak Rate:*** 1.0 X $10^{-9}$ Torr std cc/sec

***Vacuum Range:*** 1.0 X $10^{-9}$ Torr to Atmosphere

***General***

- Small footprint allows for an easy fit into existing vacuum systems
- 1,000,000 cycle life and ease of maintenance greatly increase system uptime

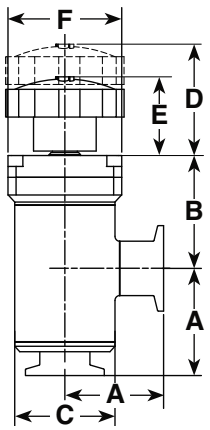
## Accessories

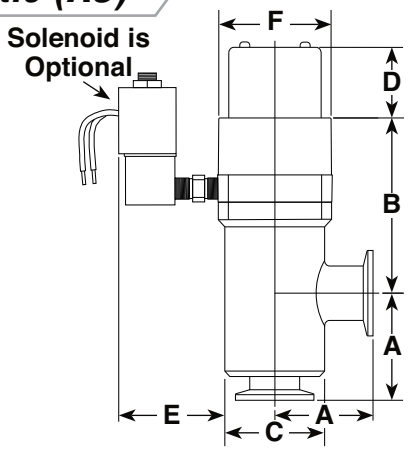
### Accessories for 1 inch, 1 1/2 inch, & 2 inch Manual & Pneumatic Poppet Valves

| PART NUMBER | REFERENCE NUMBER | DESCRIPTION |
|---|---|---|
| 3106580 | PPV-MI-100 | 1 in. Pneumatic Valve Limit Switch |
| 3106560 | PPV-VSS-100 | 1 in. Poppet Valve Viton® Seal Set |
| 3106573 | PPV-VIK-100-M | 1 in. Manual Poppet Valve Internal Replacement Kit |
| 3106572 | PPV-VIK-100-P | 1 in. Pneumatic Poppet Valve Internal Replacement Kit |
| 3107080 | PPV-MI-150 | 1 1/2 in. Pneumatic Valve Limit Switch |
| 3107060 | PPV-VSS-150 | 1 1/2 in. Poppet Valve Viton® Seal Set |
| 3107073 | PPV-VIK-150-M | 1 1/2 in. Manual Poppet Valve Internal Replacement Kit |
| 3107072 | PPV-VIK-150-P | 1 1/2 in. Pneumatic Poppet Valve Internal Replacement Kit |
| 3107580 | PPV-MI-200 | 2 in. Pneumatic Valve Limit Switch |
| 3107560 | PPV-VSS-200 | 2 in. Poppet Valve Viton® Seal Set |
| 3107571 | PPV-VIK-200-M | 2 in. Manual Poppet Valve Internal Replacement Kit |
| 3107570 | PPV-VIK-200-P | 2 in. Pneumatic Poppet Valve Internal Replacement Kit |



## 1 inch Angle Valves Manual (M) & Pneumatic (AS)




| PART NUMBER | REFERENCE NUMBER | CONDUCTANCE (L//SEC) | ACTUATION SEC* | A C/L | B | C | D | E | F |
|---|---|---|---|---|---|---|---|---|---|
| 3106500 | LPAV100-CF-E-M | - | 2.02 | 2.07 | 2.00 | 2.05 | 1.45 | 2.27 | |
| 3106503 | LPAV100-CF-E-AS | .04 (.09) | 2.02 | 3.22 | 2.00 | 1.30 | 3.13 | 2.25 | |
| 3106501 | LPAV100-QF-E-M | - | 1.97 | 2.07 | 2.00 | 2.05 | 1.45 | 2.27 | |
| 3106504 | LPAV100-QF-E-AS | .04 (.09) | 1.97 | 3.22 | 2.00 | 1.30 | 3.13 | 2.25 | |
| 3106502 | LPAV100-TE-E-M | - | 1.88 | 2.07 | 2.00 | 2.05 | 1.45 | 2.27 | |
| 3106505 | LPAV100-TE-E-AS | .04 (.09) | 1.88 | 3.22 | 2.00 | 1.30 | 3.13 | 2.25 | |

* opening (closing)

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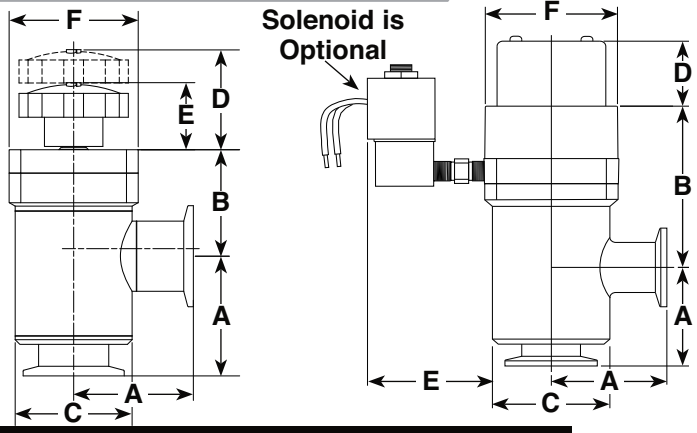
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## 1 1/2 inch Angle Valves
## Manual (M) & Pneumatic (AS)

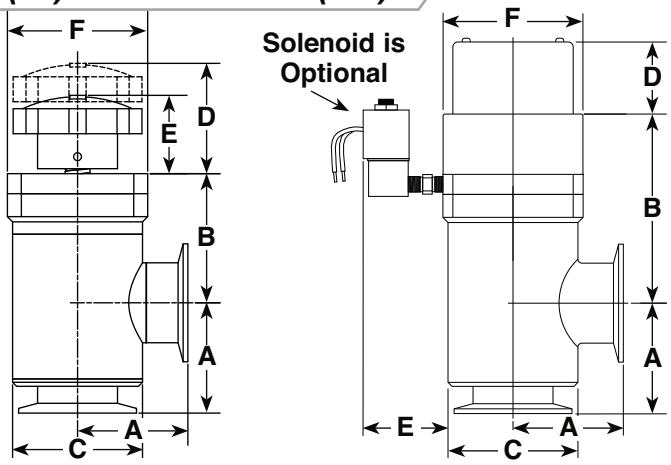



| PART NUMBER | REFERENCE NUMBER | CONDUCTANCE (L//SEC) | ACTUATION SEC* | A C/L | B | C | D | E | F |
|---|---|---|---|---|---|---|---|---|---|
| 3107000 | LPAV150-CF-E-M | - | 2.43 | 2.28 | 2.50 | 2.14 | 1.43 | 2.76 | |
| 3107003 | LPAV150-CF-E-AS | .06 (.09) | 2.43 | 3.41 | 2.50 | 1.30 | 3.38 | 2.75 | |
| 3107001 | LPAV150-QF-E-M | - | 2.56 | 2.28 | 2.50 | 2.14 | 1.43 | 2.76 | |
| 3107004 | LPAV150-QF-E-AS | .06 (.09) | 2.56 | 3.41 | 2.50 | 1.30 | 3.38 | 2.75 | |
| 3107002 | LPAV150-TE-E-M | - | 2.25 | 2.28 | 2.50 | 2.14 | 1.43 | 2.76 | |
| 3107005 | LPAV150-TE-E-AS | .06 (.09) | 2.25 | 3.41 | 2.50 | 1.30 | 3.38 | 2.75 | |

* opening (closing)



## 2 inch Angle Valves
## Manual (M) & Pneumatic (AS)




| PART NUMBER | REFERENCE NUMBER | CONDUCTANCE (L//SEC) | ACTUATION SEC* | A C/L | B | C | D | E | F |
|---|---|---|---|---|---|---|---|---|---|
| 3107500 | LPAV200-CF-E-M | - | 3.19 | 3.23 | 3.25 | 2.76 | 1.96 | 3.51 | |
| 3107503 | LPAV200-CF-E-AS | .16 (.22) | 3.19 | 4.73 | 3.25 | 1.80 | 3.75 | 3.50 | |
| 3107501 | LPAV200-QF-E-M | - | 2.76 | 3.23 | 3.25 | 2.76 | 1.96 | 3.51 | |
| 3107504 | LPAV200-QF-E-AS | .16 (.22) | 2.76 | 4.73 | 3.25 | 1.80 | 3.75 | 3.50 | |
| 3107502 | LPAV200-TE-E-M | - | 3.19 | 3.23 | 3.25 | 2.76 | 1.96 | 3.51 | |
| 3107505 | LPAV200-TE-E-AS | .16 (.22) | 3.19 | 4.73 | 3.25 | 1.80 | 3.75 | 3.50 | |

* opening (closing)

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## Specifications and Features

***Maximum Bakeout Temperature***
- Body: 150° C
- Cylinder: 70° C

***Helium Leak Rate***: 1.0 X $10^{-9}$ std cc/sec

***Vacuum Range***: 1.0 X $10^{-9}$ Torr to 15 psig

***General***
- Installs in any position
- Visual indication of valve position
- Pneumatic connection - 1/8 inch NPT-F

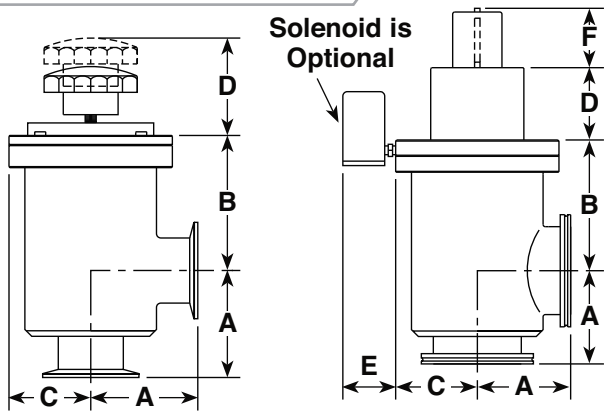
## Accessories

### Accessories for 2 1/2 inch & 3 inch Manual & Pneumatic Poppet Valves

| PART NUMBER | REFERENCE NUMBER | DESCRIPTION |
|---|---|---|
| 3108080 | PPV-MI-250 | 2 1/2 in. Pneumatic Valve Limit Switch |
| 3108061 | PPV-VSS-250-M | 2 1/2 in. Manual Poppet Valve Viton® Seal Set |
| 3108060 | PPV-VSS-250-P | 2 1/2 in. Pneumatic Poppet Valve Viton® Seal Set |
| 3108071 | PPV-VIK-250-M | 2 1/2 in. Manual Poppet Valve Internal Replacement Kit |
| 3108070 | PPV-VIK-250-P | 2 1/2 in. Pneumatic Poppet Valve Internal Replacement Kit |
| 3108580 | PPV-MI-300 | 3 in. Pneumatic Valve Limit Switch |
| 3108561 | PPV-VSS-300-M | 3 in. Manual Poppet Valve Viton® Seal Set |
| 3108560 | PPV-VSS-300-P | 3 in. Pneumatic Poppet Valve Viton® Seal Set |
| 3108571 | PPV-VIK-300-M | 3 in. Manual Poppet Valve Internal Replacement Kit |
| 3108570 | PPV-VIK-300-P | 3 in. Pneumatic Poppet Valve Internal Replacement Kit |



## 2 1/2 inch Angle Valves Manual (M) & Pneumatic (AS)




| PART NUMBER | REFERENCE NUMBER | CONDUCTANCE (L//SEC) | ACTUATION SEC* | A C/L | B | C | D | E | F |
|---|---|---|---|---|---|---|---|---|---|
| 3108000 | PAV250-CF-E-M | 120 | - | 3.35 | 4.25 | 2.35 | 3.62 | - | - |
| 3108003 | PAV250-CF-E-AS | 120 | 2 (2) | 3.35 | 4.80 | 2.35 | 1.57 | 2.44 | 1.93 |
| 3108001 | PAV250-LF-E-M | 120 | - | 3.46 | 4.25 | 2.35 | 3.62 | - | - |
| 3108004 | PAV250-LF-E-AS | 120 | 2 (2) | 3.46 | 4.80 | 2.35 | 1.57 | 2.44 | 1.93 |
| 3108002 | PAV250-TE-E-M | 120 | - | 3.00 | 4.25 | 2.35 | 3.62 | - | - |
| 3108005 | PAV250-TE-E-AS | 120 | 2 (2) | 3.00 | 4.80 | 2.35 | 1.57 | 2.44 | 1.93 |

* opening (closing)

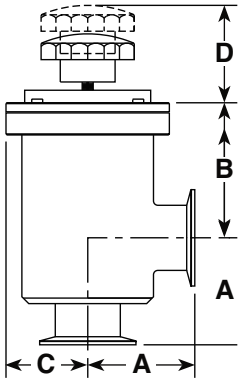
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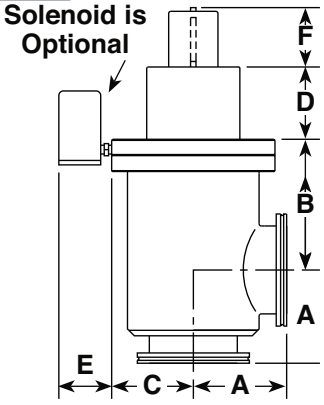


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## 3 inch Angle Valves
## Manual (M) & Pneumatic (AS)




| PART NUMBER | REFERENCE NUMBER | CONDUCTANCE (L//SEC) | ACTUATION SEC* | A C/L | B | C | D | E | F |
|---|---|---|---|---|---|---|---|---|---|
| 3108500 | PAV300-CF-E-M | 190 | - | 3.50 | 5.08 | 2.93 | 3.87 | - | - |
| 3108503 | PAV300-CF-E-AS | 190 | 2 (2) | 3.50 | 5.63 | 2.93 | 2.03 | 2.44 | 2.24 |
| 3108501 | PAV300-LF-E-M | 190 | - | 3.86 | 5.08 | 2.93 | 3.87 | - | - |
| 3108504 | PAV300-LF-E-AS | 190 | 2 (2) | 3.86 | 5.63 | 2.93 | 2.03 | 2.44 | 2.24 |
| 3108502 | PAV300-TE-E-M | 190 | - | 3.25 | 5.08 | 2.93 | 3.87 | - | - |
| 3108505 | PAV300-TE-E-AS | 190 | 2 (2) | 3.25 | 5.63 | 2.93 | 2.03 | 2.44 | 2.24 |

* opening (closing)

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## Specifications and Features

***Maximum Bakeout Temperature***

- Body: 150° C
- Cylinder: 70° C

***Helium Leak Rate***: 1.0 X $10^{-9}$ std cc/sec

***Vacuum Range***: 1.0 X $10^{-9}$ Torr to 15 psig

***General***

- Installs in any position
- Visual indication of valve position
- Pneumatic connection - 1/8 inch NPT-F

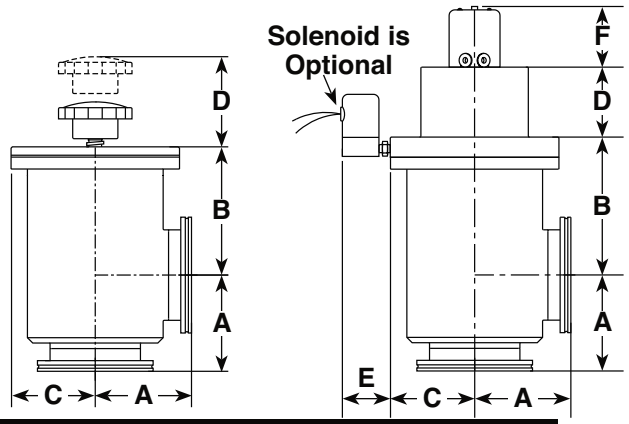
## Accessories

### Accessories for 4 inch Manual & Pneumatic Poppet Valves

| PART NUMBER | REFERENCE NUMBER | DESCRIPTION |
|---|---|---|
| 3109080 | PPV-MI-400 | 4 in. Pneumatic Valve Limit Switch |
| 3109062 | PPV-VSS-400-M | 4 in. Manual Poppet Valve Viton® Seal Set |
| 3109061 | PPV-VSS-400-AS | 4 in. Air-to-Spring Poppet Valve Viton® Seal Set |
| 3109072 | PPV-VIK-400-M | 4 in. Manual Poppet Valve Internal Replacement Kit |
| 3109071 | PPV-VIK-400-AS | 4 in. Air-to-Spring Poppet Valve Internal Replacement Kit |



### 4 inch Angle Valves Manual (M) & Pneumatic (AS)




| PART NUMBER | REFERENCE NUMBER | CONDUCTANCE (L//SEC) | ACTUATION SEC* | A C/L | B | C | D | E | F |
|---|---|---|---|---|---|---|---|---|---|
| 3109000 | PAV400-CF-E-M | 390 | - | 5.28 | 5.67 | 3.71 | 4.24 | - | - |
| 3109003 | PAV400-CF-E-AS | 390 | 2 (2) | 5.28 | 6.11 | 3.73 | 3.10 | 2.69 | 2.13 |
| 3109001 | PAV400-LF-E-M | 390 | - | 4.25 | 5.67 | 3.71 | 4.24 | - | - |
| 3109004 | PAV400-LF-E-AS | 390 | 2 (2) | 4.25 | 6.11 | 3.73 | 3.10 | 2.69 | 2.13 |
| 3109002 | PAV400-TE-E-M | 390 | - | 4.00 | 5.67 | 3.71 | 4.24 | - | - |
| 3109005 | PAV400-TE-E-AS | 390 | 2 (2) | 4.00 | 6.11 | 3.73 | 3.10 | 2.69 | 2.13 |

* opening (closing)

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## Specifications and Features

***Maximum Bakeout Temperature***

- Body: 150° C
- Cylinder: 70° C

***Helium Leak Rate***: 1.0 X $10^{-9}$ std cc/sec

***Vacuum Range***: 1.0 X $10^{-9}$ Torr to 15 psig

***General***

- Installs in any position
- Visual indication of valve position
- Pneumatic connection - 1/4 inch NPT-F

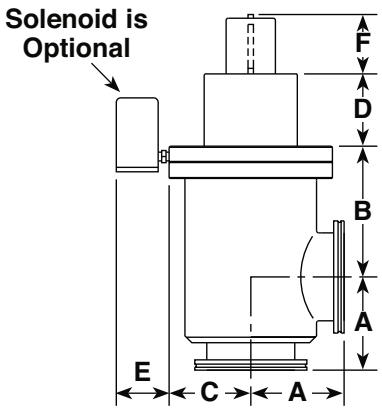
## Accessories

### Accessories for 4 inch & 6 inch Pneumatic Poppet Valves (AA)

| PART NUMBER | REFERENCE NUMBER | DESCRIPTION |
|---|---|---|
| 3109080 | PPV-MI-400 | 4 in. Pneumatic Valve Limit Switch |
| 3109060 | PPV-VSS-400-AA | 4 in. Air-to-Air Poppet Valve Viton® Seal Set |
| 3109070 | PPV-VIK-400-AA | 4 in. Air-to-Air Poppet Valve Internal Replacement Kit |
| 3109580 | PPV-MI-600 | 6 in. Pneumatic Valve Limit Switch |
| 3109560 | PPV-VSS-600-AA | 6 in. Air-to-Air Poppet Valve Viton® Seal Set |



## 4 inch & 6 inch Angle Valves Pneumatic (AA)




| PART NUMBER | REFERENCE NUMBER | CONDUCTANCE (L//SEC) | ACTUATION SEC* | A C/L | B | C | D | E | F |
|---|---|---|---|---|---|---|---|---|---|
| 3109006 | PAV400-CF-E-AA | 390 | 2 (2) | 5.28 | 6.12 | 3.72 | 3.10 | 1.70 | 2.72 |
| 3109007 | PAV400-LF-E-AA | 390 | 2 (2) | 4.25 | 6.12 | 3.72 | 3.10 | 1.70 | 2.72 |
| 3109008 | PAV400-TE-E-AA | 390 | 2 (2) | 4.00 | 6.12 | 3.72 | 3.10 | 1.70 | 2.72 |
| 3109500 | PAV600-CF-E-AA | 1040 | 3 (3) | 6.56 | 9.94 | 3.72 | 4.05 | 2.33 | 3.51 |
| 3109501 | PAV600-LF-E-AA | 1040 | 3 (3) | 5.43 | 9.94 | 3.72 | 4.05 | 2.33 | 3.51 |
| 3109502 | PAV600-TE-E-AA | 1040 | 3 (3) | 5.18 | 9.94 | 3.72 | 4.05 | 2.33 | 3.51 |

* opening (closing)

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## Specifications and Features

***Maximum Bakeout Temperature:*** 150°C

***Helium Leak Rate:*** 1.0 X $10^{-9}$ Torr std cc/sec

***Vacuum Range:*** 1.0 X $10^{-9}$ Torr to Atmosphere

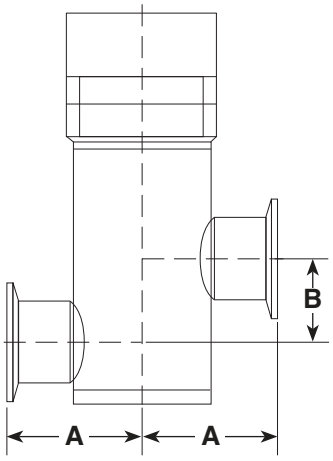
***General***

- Small footprint allows for an easy fit into existing vacuum systems
- 1,000,000 cycle life and ease of maintenance greatly increase system uptime

## Accessories

### Accessories for 1 inch, 1 1/2 inch, & 2 inch Manual & Pneumatic Poppet Valves

| PART NUMBER | REFERENCE NUMBER | DESCRIPTION |
|---|---|---|
| 3106580 | PPV-MI-100 | 1 in. Pneumatic Valve Limit Switch |
| 3106560 | PPV-VSS-100 | 1 in. Poppet Valve Viton® Seal Set |
| 3106573 | PPV-VIK-100-M | 1 in. Manual Poppet Valve Internal Replacement Kit |
| 3106572 | PPV-VIK-100-P | 1 in. Pneumatic Poppet Valve Internal Replacement Kit |
| 3107080 | PPV-MI-150 | 1 1/2 in. Pneumatic Valve Limit Switch |
| 3107060 | PPV-VSS-150 | 1 1/2 in. Poppet Valve Viton® Seal Set |
| 3107073 | PPV-VIK-150-M | 1 1/2 in. Manual Poppet Valve Internal Replacement Kit |
| 3107072 | PPV-VIK-150-P | 1 1/2 in. Pneumatic Poppet Valve Internal Replacement Kit |
| 3107580 | PPV-MI-200 | 2 in. Pneumatic Valve Limit Switch |
| 3107560 | PPV-VSS-200 | 2 in. Poppet Valve Viton® Seal Set |
| 3107571 | PPV-VIK-200-M | 2 in. Manual Poppet Valve Internal Replacement Kit |
| 3107570 | PPV-VIK-200-P | 2 in. Pneumatic Poppet Valve Internal Replacement Kit |




## 1 inch Offset In-Line Valves Manual (M) & Pneumatic (AS)

| PART NUMBER | REFERENCE NUMBER | A C/L | B |
|---|---|---|---|
| 3106512 | LPIV100-CF-E-M | 2.05 | 1.37 |
| 3106515 | LPIV100-CF-E-AS | 2.05 | 1.37 |
| 3106513 | LPIV100-QF-E-M | 2.03 | 1.37 |
| 3106516 | LPIV100-QF-E-AS | 2.03 | 1.37 |
| 3106514 | LPIV100-TE-E-M | 1.88 | 1.37 |
| 3106517 | LPIV100-TE-E-AS | 1.88 | 1.37 |

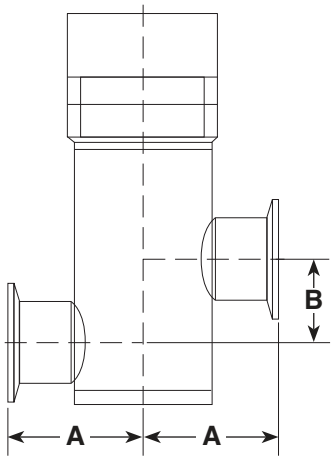
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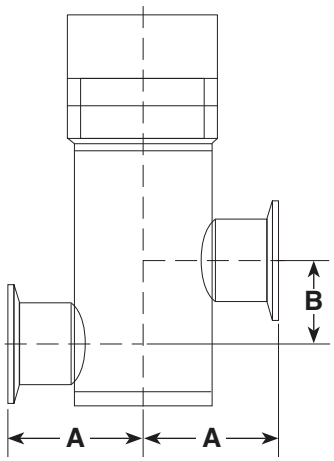
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## 1 1/2 inch Offset In-Line Valves Manual (M) & Pneumatic (AS)




| PART NUMBER | REFERENCE NUMBER | A C/L | B |
|---|---|---|---|
| 3107012 | LPIV150-CF-E-M | 2.45 | 1.88 |
| 3107015 | LPIV150-CF-E-AS | 2.45 | 1.88 |
| 3107013 | LPIV150-QF-E-M | 2.40 | 1.88 |
| 3107016 | LPIV150-QF-E-AS | 2.40 | 1.88 |
| 3107014 | LPIV150-TE-E-M | 2.25 | 1.88 |
| 3107017 | LPIV150-TE-E-AS | 2.25 | 1.88 |

## 2 inch Offset In-Line Valves Manual (M) & Pneumatic (AS)




| PART NUMBER | REFERENCE NUMBER | A C/L | B |
|---|---|---|---|
| 3107512 | LPIV200-CF-E-M | 3.48 | 2.62 |
| 3107515 | LPIV200-CF-E-AS | 3.48 | 2.62 |
| 3107513 | LPIV200-QF-E-M | 3.40 | 2.62 |
| 3107516 | LPIV200-QF-E-AS | 3.40 | 2.62 |
| 3107514 | LPIV200-TE-E-M | 3.25 | 2.62 |
| 3107517 | LPIV200-TE-E-AS | 3.25 | 2.62 |

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## Features

- Choice of CF, QF or tube end ports.
- High purity, corrosion resistant, 304 stainless steel body.
- Made from a formed 321 stainless steel bellows which prevents outgassing, virtual leaks, and particle entrapment between bellows convolutions and extends the life cycle.
- Bonnet seals are Viton®. Other seals available on request.
- Upon electrical control voltage or pneumatic supply failure, the valve fails closed.
- Function reliably in applications ranging from semiconductor manufacturing to high energy physics research to nuclear accelerators.
- Solenoid coils are available for use with a wide range of voltages and frequencies.
- Available in port sizes .75 inch to 4 inch manual or pneumatic "air-to-spring".

## Options for Poppet Valves

***When ordering options, please add the option number(s) to the end of the reference number for the valve you are ordering.***

### *Solenoids for 3/4 inch to 4 inch Pneumatic Poppet Valves Air-to-Spring*

| PART NUMBER | REFERENCE NUMBER | OPTION NUMBER | DESCRIPTION |
|---|---|---|---|
| 3106090 | PPV-S3A | -S3A | 3-Way 120VAC 50/60 HZ 7.5 Watt |
| 3106091 | PPV-S3B | -S3B | 3-Way 220VAC 50/60 HZ 7.5 Watt |
| 3106092 | PPV-S3C | -S3C | 3-Way 24VDC 7 Watt |
| 3106093 | PPV-S3D | -S3D | 3-Way 208VAC 50/60 HZ 7.5 Watt |
| 3106094 | PPV-S3E | -S3E | 3-Way 24VAC 50/60 HZ 6 Watt |
| 3106095 | PPV-S3F | -S3F | 3-Way 12 VDC 7 Watt |

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# 3/4 inch In-Line Valves
# Manual (M) & Pneumatic (AS)

***Maximum Bakeout Temperature***

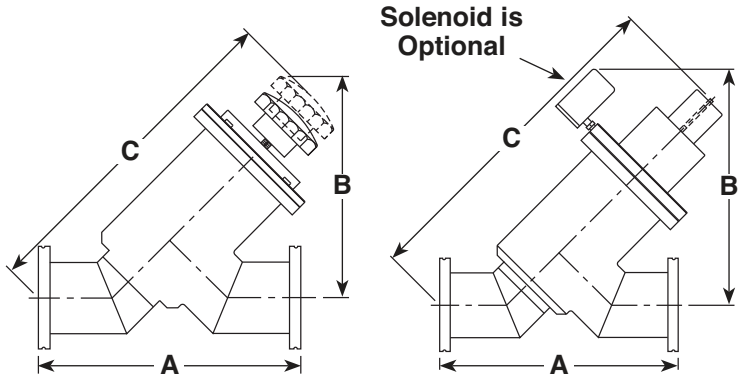
- Body: 150° C
- Cylinder: 70° C

***Helium Leak Rate***: 1.0 X $10^{-9}$ std cc/sec

***Vacuum Range***: 1.0 X $10^{-9}$ Torr to 15 psig

***General***

- Installs in any position
- Visual indication of valve position
- Pneumatic connection - 1/8 inch NPT-F




| PART NUMBER | REFERENCE NUMBER | CONDUCTANCE (L//SEC) | ACTUATION SEC* | A C/L | B | C | D |
|---|---|---|---|---|---|---|---|
| 3106006 | PAIV075-CF-E-M | 6 | - | 3.94 | 5.88 | 7.55 | - |
| 3106009 | PAIV075-CF-E-AS | 6 | .5 (1) | 3.94 | 6.59 | 7.91 | - |
| 3106007 | PAIV075-QF-E-M | 6 | - | 3.14 | 5.88 | 7.59 | - |
| 3106010 | PAIV075-QF-E-AS | 6 | .5 (1) | 3.14 | 6.59 | 7.94 | - |
| 3106008 | PAIV075-TE-E-M | 6 | - | 3.00 | 5.88 | 7.30 | - |
| 3106011 | PAIV075-TE-E-AS | 6 | .5 (1) | 3.00 | 6.59 | 7.66 | - |

* opening (closing)

## *Accessories for .75 inch Manual & Pneumatic Poppet Valves*

| PART NUMBER | REFERENCE NUMBER | DESCRIPTION |
|---|---|---|
| 3106080 | PPV-MI-075 | 3/4 in. Pneumatic Valve Limit Switch |
| 3106061 | PPV-VSS-075-M | 3/4 in. Manual Poppet Valve Viton® Seal Set |
| 3106060 | PPV-VSS-075-P | 3/4 in. Pneumatic Poppet Valve Viton® Seal Set |
| 3106071 | PPV-VIK-075-M | 3/4 in. Manual Poppet Valve Internal Replacement Kit |
| 3106070 | PPV-VIK-075-P | 3/4 in. Pneumatic Poppet Valve Internal Replacement Kit |

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## Specifications and Features

***Maximum Bakeout Temperature:*** 150° C

***Helium Leak Rate:*** 1.0 X $10^{-9}$ Torr std cc/sec

***Vacuum Range:*** 1.0 X $10^{-9}$ Torr to Atmosphere

***General***

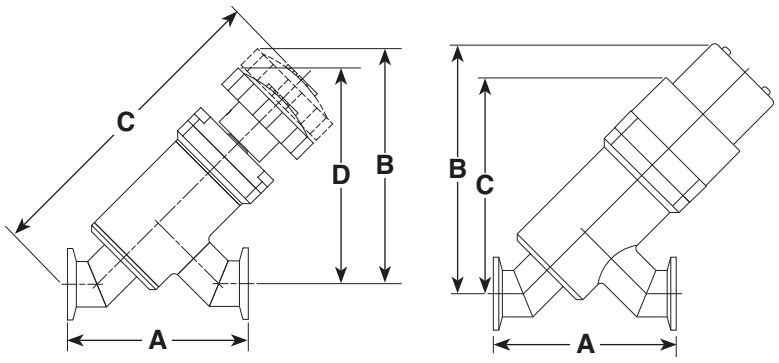
- Small footprint allows for an easy fit into existing vacuum systems
- 1,000,000 cycle life and ease of maintenance greatly increase system uptime

## Accessories

### Accessories for 1 inch, 1 1/2 inch, & 2 inch Manual & Pneumatic Poppet Valves

| PART NUMBER | REFERENCE NUMBER | DESCRIPTION |
|---|---|---|
| 3106580 | PPV-MI-100 | 1 in. Pneumatic Valve Limit Switch |
| 3106560 | PPV-VSS-100 | 1 in. Poppet Valve Viton® Seal Set |
| 3106573 | PPV-VIK-100-M | 1 in. Manual Poppet Valve Internal Replacement Kit |
| 3106572 | PPV-VIK-100-P | 1 in. Pneumatic Poppet Valve Internal Replacement Kit |
| 3107080 | PPV-MI-150 | 1 1/2 in. Pneumatic Valve Limit Switch |
| 3107060 | PPV-VSS-150 | 1 1/2 in. Poppet Valve Viton® Seal Set |
| 3107073 | PPV-VIK-150-M | 1 1/2 in. Manual Poppet Valve Internal Replacement Kit |
| 3107072 | PPV-VIK-150-P | 1 1/2 in. Pneumatic Poppet Valve Internal Replacement Kit |
| 3107580 | PPV-MI-200 | 2 in. Pneumatic Valve Limit Switch |
| 3107560 | PPV-VSS-200 | 2 in. Poppet Valve Viton® Seal Set |
| 3107571 | PPV-VIK-200-M | 2 in. Manual Poppet Valve Internal Replacement Kit |
| 3107570 | PPV-VIK-200-P | 2 in. Pneumatic Poppet Valve Internal Replacement Kit |

## 1 inch In-Line Valves Manual (M) & Pneumatic (AS)




| PART NUMBER | REFERENCE NUMBER | ACTUATION SEC* | A C/L | B | C | D |
|---|---|---|---|---|---|---|
| 3106506 | LPAIV100-CF-E-M | - | 4.62 | 5.17 | 6.93 | 4.74 |
| 3106509 | LPAIV100-CF-E-AS | .04 (.09) | 4.62 | 5.35 | 4.65 | - |
| 3106507 | LPAIV100-QF-E-M | - | 3.94 | 5.17 | 6.93 | 4.74 |
| 3106510 | LPAIV100-QF-E-AS | .04 (.09) | 3.94 | 5.35 | 4.65 | - |
| 3106508 | LPAIV100-TE-E-M | - | 4.35 | 5.17 | 6.93 | 4.74 |
| 3106511 | LPAIV100-TE-E-AS | .04 (.09) | 4.35 | 5.35 | 4.65 | - |

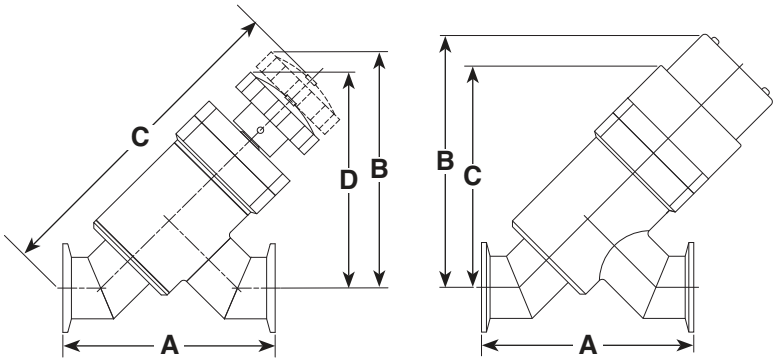
* opening (closing)

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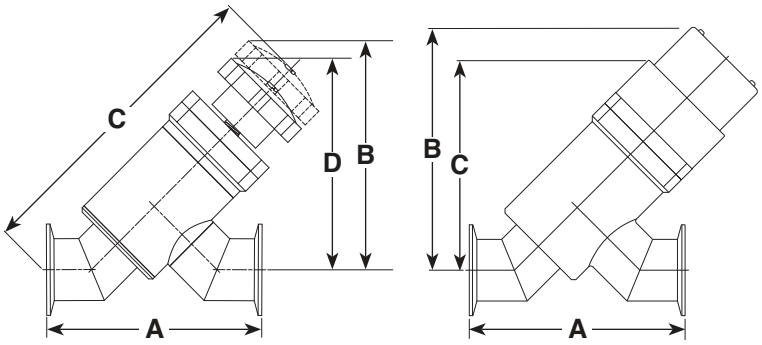
## 1 1/2 inch In-Line Valves
## Manual (M) & Pneumatic (AS)




| PART NUMBER | REFERENCE NUMBER | ACTUATION SEC* | A C/L | B | C | D |
|---|---|---|---|---|---|---|
| 3107006 | LPAIV150-CF-E-M | - | 5.19 | 5.76 | 7.94 | 5.27 |
| 3107009 | LPAIV150-CF-E-AS | .06 (.09) | 5.19 | 6.08 | 5.34 | - |
| 3107007 | LPAIV150-QF-E-M | - | 5.12 | 5.76 | 7.94 | 5.27 |
| 3107010 | LPAIV150-QF-E-AS | .06 (.09) | 5.12 | 6.08 | 5.34 | - |
| 3107008 | LPAIV150-TE-E-M | - | 4.83 | 5.76 | 7.94 | 5.27 |
| 3107011 | LPAIV150-TE-E-AS | .06 (.09) | 4.83 | 6.08 | 5.34 | - |

* opening (closing)

## 2 inch In-Line Valves
## Manual (M) & Pneumatic (AS)




| PART NUMBER | REFERENCE NUMBER | ACTUATION SEC* | A C/L | B | C | D |
|---|---|---|---|---|---|---|
| 3107506 | LPAIV200-CF-E-M | - | 7.88 | 7.40 | 10.30 | 6.84 |
| 3107509 | LPAIV200-CF-E-AS | .16 (.22) | 7.88 | 7.84 | 6.80 | - |
| 3107507 | LPAIV200-QF-E-M | - | 7.00 | 7.40 | 10.30 | 6.84 |
| 3107510 | LPAIV200-QF-E-AS | .16 (.22) | 7.00 | 7.84 | 6.80 | - |
| 3107508 | LPAIV200-TE-E-M | - | 7.20 | 7.40 | 10.30 | 6.84 |
| 3107511 | LPAIV200-TE-E-AS | .16 (.22) | 7.20 | 7.84 | 6.80 | - |

* opening (closing)

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## Specifications and Features

***Maximum Bakeout Temperature***
- Body: 150° C
- Cylinder: 70° C

***Helium Leak Rate***: 1.0 X $10^{-9}$ std cc/sec

***Vacuum Range***: 1.0 X $10^{-9}$ Torr to 15 psig

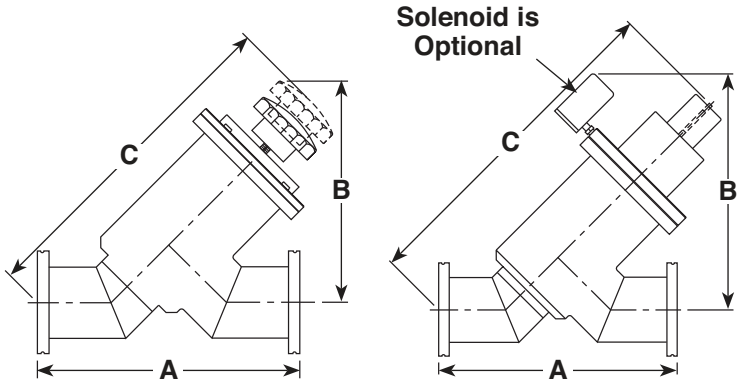
***General***
- Installs in any position
- Visual indication of valve position
- Pneumatic connection - 1/8 inch NPT-F

## Accessories

### Accessories for 2 1/2 inch & 3 inch Manual & Pneumatic Poppet Valves

| PART NUMBER | REFERENCE NUMBER | DESCRIPTION |
|---|---|---|
| 3108080 | PPV-MI-250 | 2 1/2 in. Pneumatic Valve Limit Switch |
| 3108061 | PPV-VSS-250-M | 2 1/2 in. Manual Poppet Valve Viton® Seal Set |
| 3108060 | PPV-VSS-250-P | 2 1/2 in. Pneumatic Poppet Valve Viton® Seal Set |
| 3108071 | PPV-VIK-250-M | 2 1/2 in. Manual Poppet Valve Internal Replacement Kit |
| 3108070 | PPV-VIK-250-P | 2 1/2 in. Pneumatic Poppet Valve Internal Replacement Kit |
| 3108580 | PPV-MI-300 | 3 in. Pneumatic Valve Limit Switch |
| 3108561 | PPV-VSS-300-M | 3 in. Manual Poppet Valve Viton® Seal Set |
| 3108560 | PPV-VSS-300-P | 3 in. Pneumatic Poppet Valve Viton® Seal Set |
| 3108571 | PPV-VIK-300-M | 3 in. Manual Poppet Valve Internal Replacement Kit |
| 3108570 | PPV-VIK-300-P | 3 in. Pneumatic Poppet Valve Internal Replacement Kit |

## 2 1/2 inch In-Line Valves Manual (M) & Pneumatic (AS)




| PART NUMBER | REFERENCE NUMBER | CONDUCTANCE (L//SEC) | ACTUATION SEC* | A C/L | B | C | D |
|---|---|---|---|---|---|---|---|
| 3108006 | PAIV250-CF-E-M | 120 | - | 8.44 | 8.87 | 12.29 | - |
| 3108009 | PAIV250-CF-E-AS | 120 | 2 (2) | 8.44 | 9.36 | 12.22 | - |
| 3108007 | PAIV250-LF-E-M | 120 | - | 8.25 | 8.87 | 12.33 | - |
| 3108010 | PAIV250-LF-E-AS | 120 | 2 (2) | 8.25 | 9.36 | 12.26 | - |
| 3108008 | PAIV250-TE-E-M | 120 | - | 7.75 | 8.87 | 12.10 | - |
| 3108011 | PAIV250-TE-E-AS | 120 | 2 (2) | 7.75 | 9.36 | 12.03 | - |

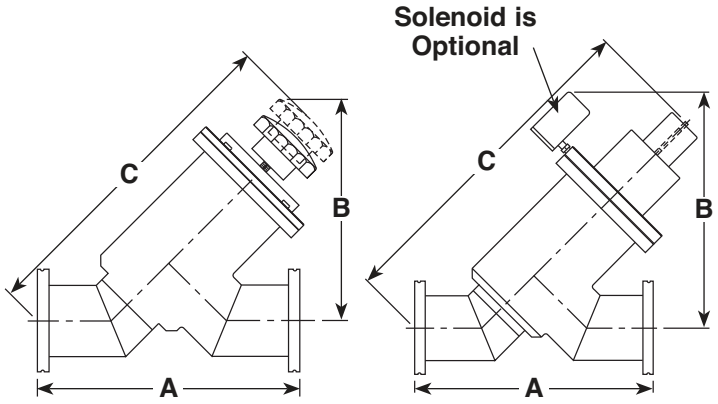
* opening (closing)

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## 3 inch In-Line Valves
## Manual (M) & Pneumatic (AS)




| PART NUMBER | REFERENCE NUMBER | CONDUCTANCE (L//SEC) | ACTUATION SEC* | A C/L | B | C | D |
|---|---|---|---|---|---|---|---|
| 3108506 | PAIV300-CF-E-M | 190 | - | 10.55 | 9.64 | 14.31 | - |
| 3108509 | PAIV300-CF-E-AS | 190 | 2 (2) | 10.55 | 10.79 | 14.95 | - |
| 3108507 | PAIV300-LF-E-M | 190 | - | 10.55 | 9.64 | 14.35 | - |
| 3108510 | PAIV300-LF-E-AS | 190 | 2 (2) | 10.55 | 10.79 | 14.99 | - |
| 3108508 | PAIV300-TE-E-M | 190 | - | 10.06 | 9.64 | 14.12 | - |
| 3108511 | PAIV300-TE-E-AS | 190 | 2 (2) | 10.06 | 10.79 | 14.00 | - |

* opening (closing)

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## Specifications and Features

***Maximum Bakeout Temperature***
- Body: 150° C
- Cylinder: 70° C

***Helium Leak Rate***: 1.0 X $10^{-9}$ std cc/sec

***Vacuum Range***: 1.0 X $10^{-9}$ Torr to 15 psig

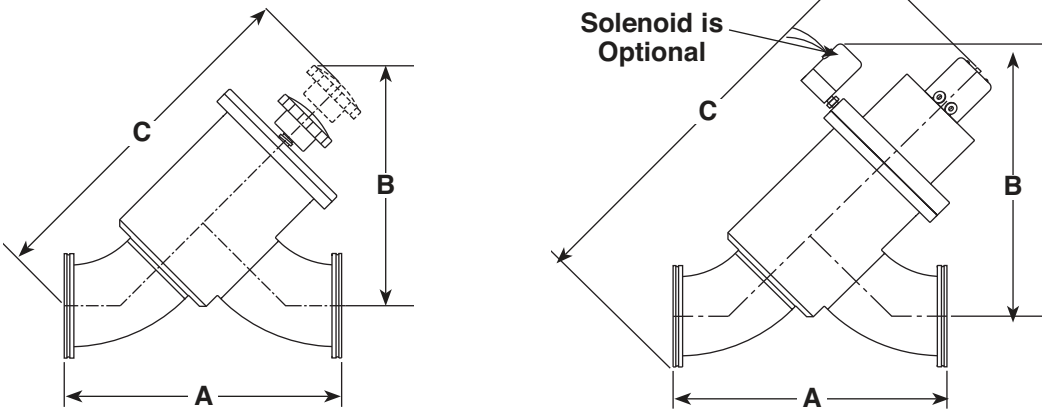
***General***
- Installs in any position
- Visual indication of valve position
- Pneumatic connection - 1/8 inch NPT-F

## Accessories

### Accessories for 4 inch Manual & Pneumatic Poppet Valves

| PART NUMBER | REFERENCE NUMBER | DESCRIPTION |
|---|---|---|
| 3109080 | PPV-MI-400 | 4 in. Pneumatic Valve Limit Switch |
| 3109062 | PPV-VSS-400-M | 4 in. Manual Poppet Valve Viton® Seal Set |
| 3109061 | PPV-VSS-400-AS | 4 in. Air-to-Spring Poppet Valve Viton® Seal Set |
| 3109072 | PPV-VIK-400-M | 4 in. Manual Poppet Valve Internal Replacement Kit |
| 3109071 | PPV-VIK-400-AS | 4 in. Air-to-Spring Poppet Valve Internal Replacement Kit |

### 4 inch In-Line Valves Manual (M) & Pneumatic (AS)




| PART NUMBER | REFERENCE NUMBER | CONDUCTANCE (L//SEC) | ACTUATION SEC* | A C/L | B | C | D |
|---|---|---|---|---|---|---|---|
| 3109009 | PAIV400-CF-E-M | 390 | - | 13.89 | 11.93 | 17.61 | - |
| 3109012 | PAIV400-CF-E-AS | 390 | 2 (2) | 13.89 | 13.73 | 21.50 | - |
| 3109010 | PAIV400-LF-E-M | 390 | - | 13.59 | 11.93 | 17.61 | - |
| 3109013 | PAIV400-LF-E-AS | 390 | 2 (2) | 13.59 | 13.73 | 21.50 | - |
| 3109011 | PAIV400-TE-E-M | 390 | - | 13.07 | 11.93 | 17.61 | - |
| 3109014 | PAIV400-TE-E-AS | 390 | 2 (2) | 13.07 | 13.73 | 21.50 | - |

* opening (closing)

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## Specifications

- 1.5 inch to 12 inch ports
- 100,000 cycles before service*
- Acme threads
- Viton® bonnet seal: 1 x $10^{-9}$ Torr vacuum rating
- Copper bonnet seal: 1 x $10^{-10}$ Torr vacuum rating
- Helium leak rate 2 x $10^{-10}$ std cc/sec
- 304 stainless steel vacuum brazed body
- AM-350 welded bellows
- Electropolished inside and out
- Manual and electro-pneumatic operation
- Valve closes in the event of power failure
- Minimal vibrations during cycling

## Bakeability

- Viton® bonnet seal: 150˚c
- Copper bonnet seal: 200˚c
- Pneumatically actuated valves: actuator 60˚c
- Copper bonnet valves with Kalrez® optional gate o-ring: 250˚C
- Heater jackets for bakeouts up to 200˚C are available for valves - call your A&N sales representative.

**Expected cycle life is application dependent.*

## Overview:

The A&N line of gate valves combines innovative design, superior grade materials, generous standard equipment and a large offering of options to give this valve unparalleled flexibility to meet your requirements.

The body of the valve is made of 304 stainless steel and is vacuum brazed to 1100˚C at $10^{-6}$ Torr. This insures joint integrity and eliminates the possibility of "virtual leaks." It is then electropolished inside and out. The compact design provides a thin profile greatly reducing both the space needed for the valve and the valve's volume. Reduction of volume decreases outgassing and pump down time.

Design of the valve provides service for 100,000 cycles before maintenance for most applications. During maintenance the carriage is easily removable along with the solenoid without removing the valve from the system.

Pneumatically actuated valves close in the event of a power failure. Linear actuation allows the use of an AM-350 welded bellows to seal the actuator. This eliminates the use of rotary seals and the short stroke increases cycle life. Unique air cylinder design reduces vibrations during cycling. This is particularly important for semiconductor and other sensitive processes.

A&N Gate Valves are available with QF (NW, KF®), LF (ISO) claw clamp style, LF (ISO) bolted style, ASA and CF flanges, manual or pneumatic actuation and Viton® or copper sealed bonnet. Valve sizes range from 1.5 inch to 12 inch nominal I.D. Larger sizes available per quote.

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# Gate Valve with QF or LF Flanges



## Specifications

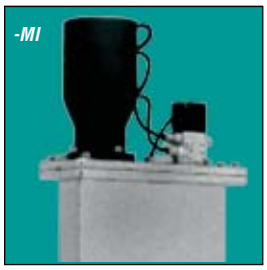
- 1.5 inch to 12 inch Nom I.D.
- Acme threads
- Viton® Bonnet Seal
- $10^{-9}$ Torr vacuum rating

## Pneumatically Actuated Valves

- 80 psig operating air pressure
- Reed switch position indicator standard
- 120 VAC; 50/60Hz air solenoid standard
- Air-to-open, air-to-close

## Options




| OPTION NUMBER | DESCRIPTION |
|---|---|
| GV-S4A | 4-way 120 VAC air control solenoid valve |
| GV-S4B | 4-way 240 VAC air control solenoid valve |
| GV-S4C | 4-way 24 VDC air control solenoid valve |
| GV-S4D | 4-way 220 VAC air control solenoid valve |
| GV-S4E | 4-way 24 VAC air control solenoid valve |
| GMI | Micro-switch position indicator |

***When ordering options, please add the option number(s) to the end of the reference number for the valve you are ordering.***

## Accessories



### QF/LF Flange Hardware

- Clamps
- Centering rings
- O-rings

*For prices and information see QF/LF catalog section: QF clamps and seals or LF fasteners and seals.*

## Replacement Parts

### Gate Valve Seal Replacement Kits

| REFERENCE NUMBER | NOMINAL VALVE I.D. |
|---|---|
| GV-SK150 | 1.5 |
| GV-SK200 | 2.0 |
| GV-SK250 | 2.5 |
| GV-SK300 | 3.0 |
| GV-SK400 | 4.0 |

| REFERENCE NUMBER | NOMINAL VALVE I.D. |
|---|---|
| GV-SK600 | 6.0 |
| GV-SK800 | 8.0 |
| GV-SK1000 | 10.0 |
| GV-SK1200 | 12.0 |



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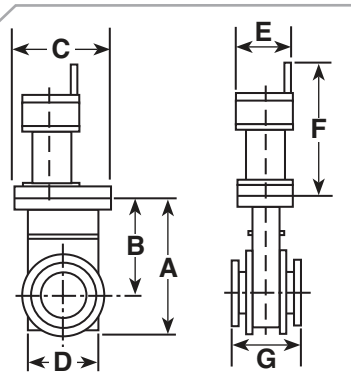
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## Manually Operated Gate Valves

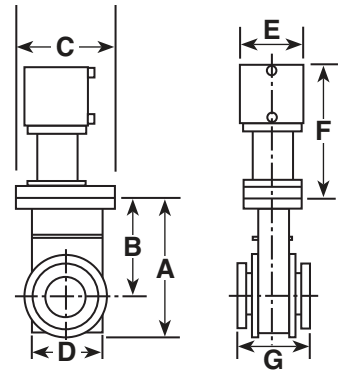
- High Vacuum elastomer sealed bonnets - bakeable to 150˚C
- Viton® bonnet seal intermittently - bakeable to 200˚C




| PART NUMBER | REFERENCE NUMBER | SIZE | PORT FLANGES | CONDUCT. (L/SEC) | A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 3200000 | GV150-QF-E-M | 1.5 | QF40 | 88 | 4.76 | 3.39 | 3.31 | 2.46 | 1.99 | 3.34 | 2.00 |
| 3200001 | GV200-QF-E-M | 2 | QF50 | 317 | 5.60 | 4.12 | 3.81 | 2.96 | 1.99 | 3.34 | 2.00 |
| 3200002 | GV250-LF-E-M | 2.5 | LF63 | 363 | 7.36 | 4.80 | 4.37 | 3.52 | 1.99 | 3.34 | 3.46 |
| 3200003 | GV300-LF-E-M | 3 | LF80 | 546 | 8.62 | 5.76 | 4.94 | 4.28 | 1.99 | 3.34 | 3.84 |
| 3200004 | GV400-LF-E-M | 4 | LF100 | 1199 | 11.38 | 8.12 | 7.00 | 5.67 | 2.99 | 9.33 | 4.25 |
| 3200005 | GV600-LF-E-M | 6 | LF160 | 3967 | 15.07 | 10.63 | 8.75 | 7.55 | 3.00 | 9.33 | 4.25 |
| 3200006 | GV800-LF-E-M | 8 | LF200 | 9449 | 19.48 | 13.91 | 11.25 | 10.02 | 3.00 | 8.59 | 4.25 |
| 3200007 | GV1000-LF-E-M | 10 | LF250 | 17537 | 24.81 | 18.21 | 13.44 | 11.99 | 3.49 | 11.00 | 5.51 |
| 3200008 | GV1200-LF-E-M | 12 | LF320 | 24500 | 30.40 | 22.03 | 15.88 | 14.28 | 3.49 | 11.00 | 5.51 |

## Pneumatically Actuated Gate Valves

- High vacuum elastomer sealed bonnets - bakeable to 150˚c
- Viton® bonnet seal intermittently - bakeable to 200˚c
- 120 VAC air solenoid standard
- Reed switch position indicator standard




| PART NUMBER | REFERENCE NUMBER | SIZE | PORT FLANGES | CONDUCT. (L/SEC) | A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 3200009 | GV150-QF-E-P | 1.5 | QF40 | 88 | 4.76 | 3.39 | 3.31 | 2.46 | 1.99 | 5.12 | 2.00 |
| 3200010 | GV200-QF-E-P | 2 | QF50 | 317 | 5.60 | 4.12 | 3.81 | 2.98 | 1.99 | 5.12 | 2.00 |
| 3200011 | GV250-LF-E-P | 2.5 | LF63 | 363 | 7.36 | 4.80 | 4.37 | 3.52 | 1.99 | 5.29 | 3.46 |
| 3200012 | GV300-LF-E-P | 3 | LF80 | 546 | 8.62 | 5.76 | 4.94 | 4.28 | 1.99 | 5.29 | 3.84 |
| 3200013 | GV400-LF-E-P | 4 | LF100 | 1199 | 11.38 | 8.12 | 7.00 | 5.67 | 2.99 | 7.33 | 4.25 |
| 3200014 | GV600-LF-E-P | 6 | LF160 | 3967 | 15.07 | 10.63 | 8.75 | 7.55 | 3.00 | 7.33 | 4.25 |
| 3200015 | GV800-LF-E-P | 8 | LF200 | 9449 | 19.48 | 13.91 | 11.25 | 10.02 | 3.00 | 6.59 | 4.25 |
| 3200016 | GV1000-LF-E-P | 10 | LF250 | 17537 | 24.81 | 18.21 | 13.44 | 11.99 | 3.49 | 9.28 | 5.51 |
| 3200017 | GV1200-LF-E-P | 12 | LF320 | 24500 | 30.40 | 22.03 | 15.87 | 14.28 | 3.49 | 9.28 | 5.51 |

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# Gate Valve with LF Bolted Style Flanges



## Specifications

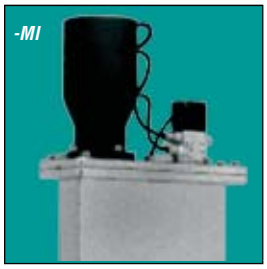
- 1.5 inch to 12 inch nom i.D.
- Acme threads
- Viton® bonnet seal
- $10^{-9}$ Torr vacuum rating

## Pneumatically Actuated Valves

- 80 psig operating air pressure
- Reed switch position indicator standard
- 120 VAC; 50/60Hz air solenoid standard
- Air-to-open, air-to-close

## Options




| OPTION NUMBER | DESCRIPTION |
|---|---|
| GV-S4A | 4-way 120 VAC air control solenoid valve |
| GV-S4B | 4-way 240 VAC air control solenoid valve |
| GV-S4C | 4-way 24 VDC air control solenoid valve |
| GV-S4D | 4-way 220 VAC air control solenoid valve |
| GV-S4E | 4-way 24 VAC air control solenoid valve |
| GMI | Micro-switch position indicator |

***When ordering options, please add the option number(s) to the end of the reference number for the valve you are ordering.***

## Accessories



### QF/LF Flange Hardware

- Clamps
- Centering rings
- O-rings

*For prices and information see QF/LF catalog section: QF clamps and seals or LF fasteners and seals.*

## Replacement Parts

### Gate Valve Seal Replacement Kits

| REFERENCE NUMBER | NOMINAL VALVE I.D. |
|---|---|
| GV-SK150 | 1.5 |
| GV-SK200 | 2.0 |
| GV-SK250 | 2.5 |
| GV-SK300 | 3.0 |
| GV-SK400 | 4.0 |

| REFERENCE NUMBER | NOMINAL VALVE I.D. |
|---|---|
| GV-SK600 | 6.0 |
| GV-SK800 | 8.0 |
| GV-SK1000 | 10.0 |
| GV-SK1200 | 12.0 |



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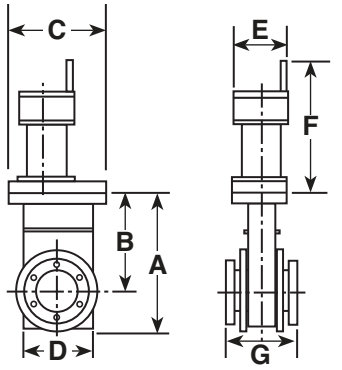
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## Manually Operated Gate Valves

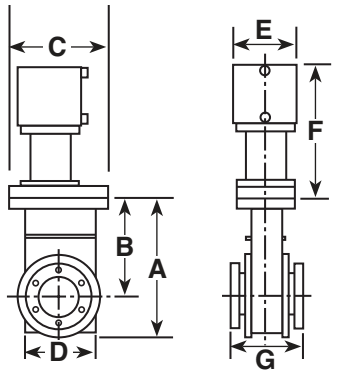
- High vacuum elastomer sealed bonnets - bakeable to 150˚c
- Threaded bolt holes are standard
- Viton® bonnet seal intermittently - bakeable to 200˚c




| PART NUMBER | REFERENCE NUMBER | SIZE | PORT FLANGES | CONDUCT. (L/SEC) | A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 3200018 | GV250-LFB-E-M | 2.5 | LFB63 | 615 | 7.36 | 4.80 | 4.37 | 3.52 | 1.99 | 3.34 | 2.03 |
| 3200019 | GV300-LFB-E-M | 3 | LFB80 | 1071 | 8.50 | 5.76 | 4.94 | 4.28 | 1.99 | 3.34 | 1.97 |
| 3200020 | GV400-LFB-E-M | 4 | LFB100 | 2122 | 11.50 | 8.12 | 7.00 | 5.67 | 2.99 | 9.33 | 2.41 |
| 3200021 | GV600-LFB-E-M | 6 | LFB160 | 7140 | 15.13 | 10.63 | 8.75 | 7.55 | 3.00 | 9.33 | 2.36 |
| 3200022 | GV800-LFB-E-M | 8 | LFB200 | 11597 | 19.41 | 13.91 | 11.25 | 10.02 | 3.00 | 8.59 | 2.66 |
| 3200023 | GV1000-LFB-E-M | 10 | LFB250 | 24999 | 24.71 | 18.21 | 13.44 | 11.99 | 3.49 | 11.00 | 3.15 |
| 3200024 | GV1200-LFB-E-M | 12 | LFB320 | 43268 | 29.31 | 22.03 | 15.88 | 14.28 | 3.49 | 11.00 | 3.15 |

## Pneumatically Actuated Gate Valves

- High vacuum elastomer sealed bonnets - bakeable to 150˚c
- Viton® bonnet seal intermittently - bakeable to 200˚c
- 120 VAC air solenoid standard
- Reed switch position indicator standard




| PART NUMBER | REFERENCE NUMBER | SIZE | PORT FLANGES | CONDUCT. (L/SEC) | A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 3200025 | GV250-LFB-E-P | 2.5 | LFB63 | 615 | 7.36 | 4.80 | 4.37 | 3.52 | 1.99 | 5.29 | 2.03 |
| 3200026 | GV300-LFB-E-P | 3 | LFB80 | 1071 | 8.50 | 5.76 | 4.94 | 4.28 | 1.99 | 5.29 | 1.97 |
| 3200027 | GV400-LFB-E-P | 4 | LFB100 | 2122 | 11.50 | 8.12 | 7.00 | 5.67 | 2.99 | 7.33 | 2.41 |
| 3200028 | GV600-LFB-E-P | 6 | LFB160 | 7140 | 15.13 | 10.63 | 8.75 | 7.55 | 3.00 | 7.33 | 2.36 |
| 3200029 | GV800-LFB-E-P | 8 | LFB200 | 11597 | 19.41 | 13.91 | 11.25 | 10.02 | 3.00 | 6.59 | 2.66 |
| 3200030 | GV1000-LFB-E-P | 10 | LFB250 | 24999 | 24.71 | 18.21 | 13.44 | 11.99 | 3.49 | 9.28 | 3.15 |
| 3200031 | GV1200-LFB-E-P | 12 | LFB320 | 43268 | 29.31 | 22.03 | 15.87 | 14.28 | 3.49 | 9.28 | 3.15 |

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## Specifications

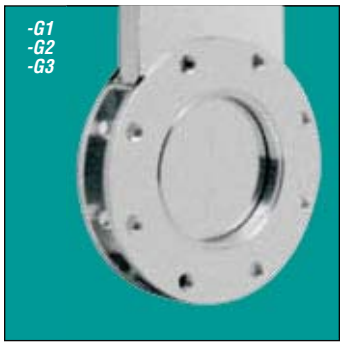
- 1.5 inch to 12 inch nom I.D.
- Acme threads
- Viton® bonnet seal
- $10^{-9}$ Torr vacuum rating

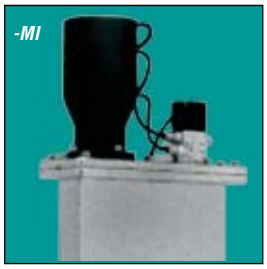
## Pneumatically Actuated Valves

- 80 psig operating air pressure
- Reed switch position indicator standard
- 120 VAC; 50/60Hz air solenoid standard
- Air-to-open, air-to-close

## Options




| OPTION NUMBER | DESCRIPTION |
|---|---|
| GVS4A | 4-way 120 VAC air control solenoid valve |
| GVS4B | 4-way 240 VAC air control solenoid valve |
| GVS4C | 4-way 24 VDC air control solenoid valve |
| GVS4D | 4-way 220 VAC air control solenoid valve |
| GVS4E | 4-way 24 VAC air control solenoid valve |
| GMI | Micro-switch position indicator |
| G1 | O-ring groove on flange; gate side only1 |
| G2 | O-ring groove on flange; carriage side only1 |
| G3 | O-ring groove on flange; both sides of valve1 |

*[1]O-ring groove I.D. on gate valves is .250 in. larger than the valve I.D.*

***When ordering options, please add the option number(s) to the end of the reference number for the valve you are ordering.***

## Accessories



### ASA Flange Hardware

- Stainless steel nuts, bolts & washers

*For prices and information see ASA Catalog section: ASA flange hardware.*

## Replacement Parts

### Gate Valve Seal Replacement Kits

| REFERENCE NUMBER | NOMINAL VALVE I.D. |
|---|---|
| GV-SK150 | 1.5 |
| GV-SK200 | 2.0 |
| GV-SK250 | 2.5 |
| GV-SK300 | 3.0 |
| GV-SK400 | 4.0 |

| REFERENCE NUMBER | NOMINAL VALVE I.D. |
|---|---|
| GV-SK600 | 6.0 |
| GV-SK800 | 8.0 |
| GV-SK1000 | 10.0 |
| GV-SK1200 | 12.0 |



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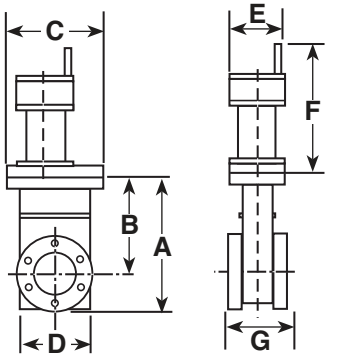
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## Manually Operated Gate Valves

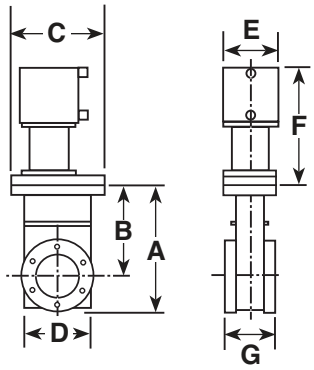
- High vacuum elastomer sealed bonnets - bakeable to 150˚c
- Threaded bolt holes are standard
- Viton® bonnet seal intermittently - bakeable to 200˚c




| PART NUMBER | REFERENCE NUMBER | SIZE | PORT FLANGES | CONDUCT. (L/SEC) | A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 3200032 | GV250-ASA-E-M | 2.5 | ASA200 | ASA200 | 7.80 | 4.80 | 4.37 | 3.52 | 1.99 | 3.34 | 2.03 |
| 3200033 | GV300-ASA-E-M | 3 | ASA300 | ASA300 | 9.50 | 5.76 | 4.94 | 4.28 | 1.99 | 3.34 | 2.03 |
| 3200034 | GV400-ASA-E-M | 4 | ASA400 | ASA400 | 12.58 | 8.12 | 7.00 | 5.67 | 2.99 | 7.50 | 2.41 |
| 3200035 | GV600-ASA-E-M | 6 | ASA600 | ASA600 | 16.15 | 10.63 | 8.75 | 7.55 | 2.99 | 7.50 | 2.41 |
| 3200036 | GV800-ASA-E-M | 8 | ASA600 | ASA600 | 19.41 | 13.91 | 11.25 | 10.02 | 2.99 | 7.50 | 2.76 |
| 3200037 | GV1000-ASA-E-M | 10 | ASA1000 | ASA1000 | 26.13 | 18.13 | 13.56 | 11.99 | 3.50 | 11.00 | 3.15 |
| 3200038 | GV1200-ASA-E-M | 12 | ASA1000 | ASA1000 | 30.07 | 22.03 | 15.88 | 14.28 | 3.50 | 11.00 | 3.15 |

## Pneumatically Actuated Gate Valves

- High vacuum elastomer sealed bonnets - bakeable to 150˚c
- Viton® bonnet seal intermittently - bakeable to 200˚c
- 120 VAC air solenoid standard
- Reed switch position indicator standard




| PART NUMBER | REFERENCE NUMBER | SIZE | PORT FLANGES | CONDUCT. (L/SEC) | A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 3200039 | GV250-ASA-E-P | 2.5 | ASA200 | 615 | 7.80 | 4.80 | 4.37 | 3.52 | 1.99 | 5.12 | 2.03 |
| 3200040 | GV300-ASA-E-P | 3 | ASA300 | 1029 | 9.50 | 5.76 | 4.94 | 4.28 | 1.99 | 5.12 | 2.03 |
| 3200041 | GV400-ASA-E-P | 4 | ASA400 | 2122 | 12.58 | 8.12 | 7.00 | 5.67 | 2.99 | 6.69 | 2.41 |
| 3200042 | GV600-ASA-E-P | 6 | ASA600 | 7023 | 16.15 | 10.63 | 8.75 | 7.55 | 2.99 | 6.69 | 2.41 |
| 3200043 | GV800-ASA-E-P | 8 | ASA600 | 14374 | 19.41 | 13.91 | 11.25 | 10.02 | 2.99 | 6.69 | 2.76 |
| 3200044 | GV1000-ASA-E-P | 10 | ASA1000 | 24990 | 26.13 | 18.13 | 13.56 | 11.99 | 3.50 | 9.24 | 3.15 |
| 3200045 | GV1200-ASA-E-P | 12 | ASA1000 | 43268 | 30.07 | 22.07 | 15.88 | 14.28 | 3.50 | 9.24 | 3.15 |

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# Gate Valve with CF Flanges



## Specifications

- 1.5 inch to 12 inch nom I.D.
- Acme threads
- Viton® bonnet seal
- $10^{-9}$ Torr vacuum rating

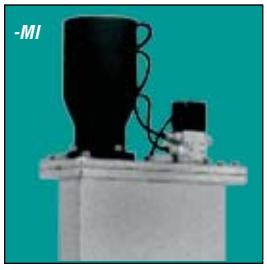
## Pneumatically Actuated Valves

- 80 psig operating air pressure
- Reed switch position indicator standard
- 120 VAC; 50/60Hz air solenoid standard
- Air-to-open, air-to-close

## Options




| OPTION NUMBER | DESCRIPTION |
|---|---|
| GVKP | Kalrez® high temperature gate seal |
| GVS4A | 4-way 120 VAC air control solenoid valve |
| GVS4B | 4-way 240 VAC air control solenoid valve |
| GVS4C | 4-way 24 VDC air control solenoid valve |
| GVS4D | 4-way 220 VAC air control solenoid valve |
| GVS4E | 4-way 24 VAC air control solenoid valve |
| GMI | Micro-switch position indicator |







***When ordering options, please add the option number(s) to the end of the reference number for the valve you are ordering.***

## Accessories



### CF Flange Hardware

- Gaskets
- Bolts, nut, washer kits
- Plate nut kits

*For prices and information see CF Catalog section: listed in the index as hardware.*

## Replacement Parts

### Gate Valve Seal Replacement Kits

| REFERENCE NUMBER | NOMINAL VALVE I.D. |
|---|---|
| GV-SK150 | 1.5 |
| GV-SK200 | 2.0 |
| GV-SK250 | 2.5 |
| GV-SK300 | 3.0 |
| GV-SK400 | 4.0 |

| REFERENCE NUMBER | NOMINAL VALVE I.D. |
|---|---|
| GV-SK600 | 6.0 |
| GV-SK800 | 8.0 |
| GV-SK1000 | 10.0 |
| GV-SK1200 | 12.0 |



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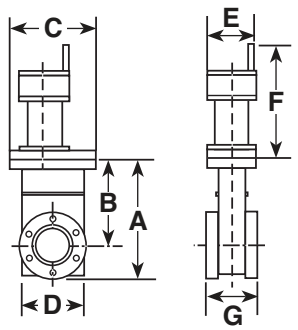
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## Manually Operated Gate Valves

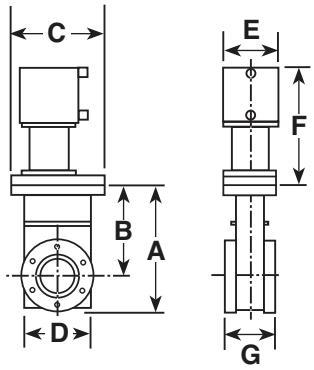
- High vacuum elastomer sealed bonnets - bakeable to 150˚c
- Threaded bolt holes are standard
- Viton® bonnet seal intermittently - bakeable to 200˚C




| PART NUMBER | REFERENCE NUMBER | SIZE | PORT FLANGES | CONDUCT. (L/SEC) | A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 3200046 | GV150-CF-E-M | 1.5 | CF275 | 128 | 4.76 | 3.39 | 3.31 | 2.46 | 1.99 | 3.34 | 2.03 |
| 3200047 | GV200-CF-E-M | 2 | CF338 | 279 | 5.81 | 4.12 | 3.81 | 2.98 | 1.99 | 3.34 | 2.28 |
| 3200048 | GV250-CF-E-M | 2.5 | CF450 | 524 | 7.05 | 4.80 | 4.37 | 3.52 | 1.99 | 3.34 | 2.40 |
| 3200049 | GV300-CF-E-M | 3 | CF462 | 823 | 8.06 | 5.76 | 4.94 | 4.28 | 1.99 | 3.34 | 2.53 |
| 3200050 | GV400-CF-E-M | 4 | CF600 | 1726 | 11.12 | 8.12 | 7.00 | 5.67 | 2.99 | 7.50 | 2.97 |
| 3200051 | GV600-CF-E-M | 6 | CF800 | 5289 | 14.65 | 10.63 | 8.75 | 7.55 | 2.99 | 7.50 | 3.17 |
| 3200052 | GV800-CF-E-M | 8 | CF1000 | 12006 | 18.91 | 13.91 | 11.25 | 10.02 | 2.99 | 7.50 | 3.35 |
| 3200053 | GV1000-CF-E-M | 10 | CF1325 | 25073 | 24.28 | 18.13 | 13.56 | 11.99 | 3.50 | 11.00 | 3.65 |
| 3200054 | GV1200-CF-E-M | 12 | CF1400 | 34964 | 29.07 | 22.03 | 15.88 | 14.28 | 3.50 | 11.00 | 3.89 |

## Pneumatically Actuated Gate Valves

- High vacuum elastomer sealed bonnets - bakeable to 150˚c
- Viton® bonnet seal intermittently - bakeable to 200˚c
- 120 VAC air solenoid standard
- Reed switch position indicator standard




| PART NUMBER | REFERENCE NUMBER | SIZE | PORT FLANGES | CONDUCT. (L/SEC) | A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 3200055 | GV150-CF-E-P | 1.5 | CF275 | 128 | 4.76 | 3.39 | 3.31 | 2.46 | 1.99 | 3.34 | 2.03 |
| 3200056 | GV200-CF-E-P | 2 | CF338 | 279 | 5.81 | 4.12 | 3.81 | 2.98 | 1.99 | 3.34 | 2.28 |
| 3200057 | GV250-CF-E-P | 2.5 | CF450 | 524 | 7.05 | 4.80 | 4.37 | 3.52 | 1.99 | 3.34 | 2.40 |
| 3200058 | GV300-CF-E-P | 3 | CF462 | 823 | 8.06 | 5.76 | 4.94 | 4.28 | 1.99 | 3.34 | 2.53 |
| 3200059 | GV400-CF-E-P | 4 | CF600 | 1726 | 11.12 | 8.12 | 7.00 | 5.67 | 2.99 | 7.50 | 2.97 |
| 3200060 | GV600-CF-E-P | 6 | CF800 | 5289 | 14.65 | 10.63 | 8.75 | 7.55 | 2.99 | 7.50 | 3.17 |
| 3200061 | GV800-CF-E-P | 8 | CF1000 | 12006 | 18.91 | 13.91 | 11.25 | 10.02 | 2.99 | 7.50 | 3.35 |
| 3200062 | GV1000-CF-E-P | 10 | CF1325 | 25073 | 24.28 | 18.13 | 13.56 | 11.99 | 3.50 | 11.00 | 3.65 |
| 3200063 | GV1200-CF-E-P | 12 | CF1400 | 34964 | 29.07 | 22.03 | 15.88 | 14.28 | 3.50 | 11.00 | 3.89 |

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# Gate Valve with CF Flanges-Copper Bonnet Seal



## Specifications

- 1.5 inch to 12 inch nom I.D.
- Acme threads
- Viton® bonnet seal
- $10^{-9}$ Torr vacuum rating

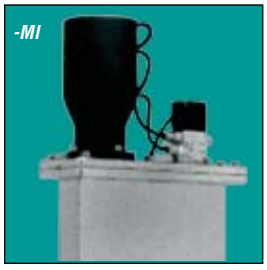
## Pneumatically Actuated Valves

- 80 psig operating air pressure
- Reed switch position indicator standard
- 120 VAC; 50/60Hz air solenoid standard
- Air-to-open, air-to-close

## Options




| OPTION NUMBER | DESCRIPTION |
|---|---|
| GVKP | Kalrez® high temperature gate seal |
| GVS4A | 4-way 120 VAC air control solenoid valve |
| GVS4B | 4-way 240 VAC air control solenoid valve |
| GVS4C | 4-way 24 VDC air control solenoid valve |
| GVS4D | 4-way 220 VAC air control solenoid valve |
| GVS4E | 4-way 24 VAC air control solenoid valve |
| GMI | Micro-switch position indicator |







**When ordering options, please add the option number(s) to the end of the reference number for the valve you are ordering.**

## Accessories



### CF Flange Hardware

- Gaskets
- Bolts, nut, washer kits
- Plate nut kits

*For prices and information see CF catalog section: listed in the index as hardware.*

## Replacement Parts

### Gate Valve Seal Replacement Kits

| REFERENCE NUMBER | NOMINAL VALVE I.D. |
|---|---|
| GV-SK150 | 1.5 |
| GV-SK200 | 2.0 |
| GV-SK250 | 2.5 |
| GV-SK300 | 3.0 |
| GV-SK400 | 4.0 |

| REFERENCE NUMBER | NOMINAL VALVE I.D. |
|---|---|
| GV-SK600 | 6.0 |
| GV-SK800 | 8.0 |
| GV-SK1000 | 10.0 |
| GV-SK1200 | 12.0 |



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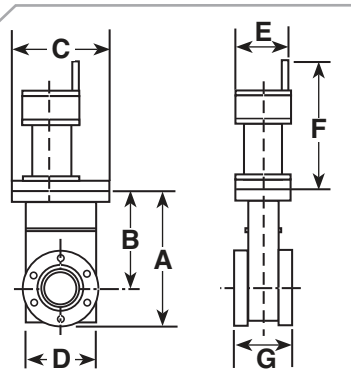
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## Manually Operated Gate Valves

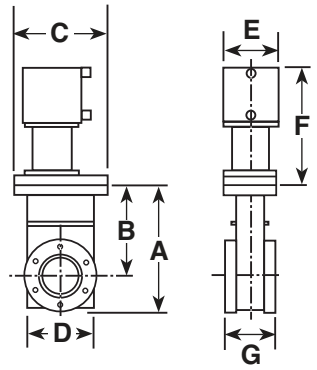
- High vacuum elastomer sealed bonnets - bakeable to 150˚c
- Threaded bolt holes are standard
- Viton® bonnet seal intermittently - bakeable to 200˚c




| PART NUMBER | REFERENCE NUMBER | SIZE | PORT FLANGES | CONDUCT. (L/SEC) | A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 3200064 | GV150-CF-C-M | 1.5 | CF275 | 128 | 4.76 | 3.39 | 3.31 | 2.46 | 1.99 | 3.34 | 2.03 |
| 3200065 | GV200-CF-C-M | 2 | CF338 | 279 | 5.81 | 4.12 | 3.81 | 2.98 | 1.99 | 3.34 | 2.28 |
| 3200066 | GV250-CF-C-M | 2.5 | CF450 | 524 | 7.05 | 4.80 | 4.37 | 3.52 | 1.99 | 3.34 | 2.40 |
| 3200067 | GV300-CF-C-M | 3 | CF462 | 823 | 8.06 | 5.76 | 4.94 | 4.28 | 1.99 | 3.34 | 2.53 |
| 3200068 | GV400-CF-C-M | 4 | CF600 | 1726 | 11.12 | 8.12 | 7.00 | 5.67 | 2.99 | 7.50 | 2.97 |
| 3200069 | GV600-CF-C-M | 6 | CF800 | 5289 | 14.63 | 10.65 | 8.75 | 7.55 | 2.99 | 7.50 | 3.17 |
| 3200070 | GV800-CF-C-M | 8 | CF1000 | 12006 | 18.91 | 13.91 | 11.25 | 10.02 | 2.99 | 7.50 | 3.35 |
| 3200071 | GV1000-CF-C-M | 10 | CF1325 | 25073 | 24.28 | 18.13 | 13.56 | 11.99 | 3.50 | 11.00 | 3.65 |
| 3200072 | GV1200-CF-C-M | 12 | CF1400 | 34964 | 29.07 | 22.03 | 15.88 | 14.28 | 3.50 | 11.00 | 3.89 |

## Pneumatically Actuated Gate Valves

- High vacuum elastomer sealed bonnets - bakeable to 150˚c
- Viton® bonnet seal intermittently - bakeable to 200˚c
- 120 VAC air solenoid standard
- Reed switch position indicator standard
- Threaded bolt holes are standard




| PART NUMBER | REFERENCE NUMBER | SIZE | PORT FLANGES | CONDUCT. (L/SEC) | A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 3200073 | GV150-CF-C-P | 1.5 | CF275 | 128 | 4.76 | 3.39 | 3.31 | 2.46 | 1.99 | 5.12 | 2.03 |
| 3200074 | GV200-CF-C-P | 2 | CF338 | 279 | 5.81 | 4.12 | 3.81 | 2.98 | 1.99 | 5.12 | 2.28 |
| 3200075 | GV250-CF-C-P | 2.5 | CF450 | 524 | 7.05 | 4.80 | 4.37 | 3.52 | 1.99 | 5.12 | 2.40 |
| 3200076 | GV300-CF-C-P | 3 | CF462 | 823 | 8.06 | 5.76 | 4.94 | 4.28 | 1.99 | 5.12 | 2.53 |
| 3200077 | GV400-CF-C-P | 4 | CF600 | 1726 | 11.12 | 8.12 | 7.00 | 5.67 | 2.99 | 6.69 | 2.97 |
| 3200078 | GV600-CF-C-P | 6 | CF800 | 5289 | 14.63 | 10.65 | 8.75 | 7.55 | 2.99 | 6.69 | 3.17 |
| 3200079 | GV800-CF-C-P | 8 | CF1000 | 12006 | 18.91 | 13.91 | 11.25 | 10.02 | 2.99 | 6.69 | 3.35 |
| 3200080 | GV1000-CF-C-P | 10 | CF1325 | 25073 | 24.28 | 18.13 | 13.56 | 12.00 | 3.50 | 9.24 | 3.65 |
| 3200081 | GV1200-CF-C-P | 12 | CF1400 | 34964 | 29.07 | 22.03 | 15.88 | 14.28 | 3.50 | 9.24 | 3.89 |

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# Notes

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