



Corrosion & Ozone Resistant Valves

COMPACT VACUUM VALVES

Description

This valve is designed for use in harsh environments. The Corrosion and Ozone Resistant Valve employs a Patented Technology to completely seal off the valve bellows while the valve is in the open processing position. It can be purchased with either an aluminum or stainless shield which protects the bellows from corrosive process gases. A unique umbrella valve (vent valve) can be used to exhaust trapped gases if applicable. Manufactured using superior techniques and high quality materials, the Corrosion Resistant Valve is extremely durable and dependable. It has a small profile, is light, low in cost and is easy to maintain.

Another standard feature is a TIG fusion welded vacuum grade body made of highly, corrosion resistant, 304 stainless steel, creating fewer entrapment areas, resulting in less contamination buildup. The Corrosion Resistant Valve is available in angle and inline configurations. Port sizes include NW 40 and NW 50 using maximum internal diameters for greater conductance. For leak tight operation, elastomer seals are available in Viton® for typical vacuum operating conditions, or Kalrez®, Chemraz®, Perlast® or Gumlast® for higher temperature conditions and increased chemical resistance.

Options for the Corrosion Resistant Valve include an air solenoid for electro-pneumatic control of the valve and a limit switch assembly for remote "open or closed" position indication. In the event of power loss, the Corrosion and Ozone Resistant Valve will automatically close.

MKS offers the largest line of bellows-sealed poppet valves for vacuum systems. For more information, please contact MKS at 1-800-227-8766 or visit our website at www.mksinst.com.

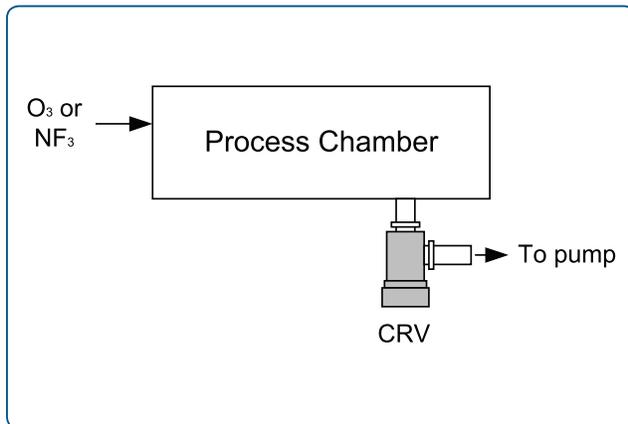
Features & Benefits

- Shielded bellows, keeps reactive and corrosive gases such as O₃, NF₃ and CL₂ from contacting and collecting on the bellows surface when the valve is open
- Bellows sealed poppet valve, ensures high cycle life and easy maintenance
- Compact, low profile design fits into small, tight places
- High flow inlet and outlet ports, designed for maximum conductance
- Normally closed valve utilizes air to open and spring to close for safety
- Greater sealing force, provides better leak integrity
- High purity, 6061 aluminum, 304 and 316 stainless steel materials, to minimize corrosion
- Easily accommodated into existing systems, using industry standard dimensions
- Angle or inline option, for ease of integration into new tool new designs
- Heatable to 185°C when needed to eliminate byproduct condensation and solidification
- Available in port diameters of NW 40 and NW 50
- Multiple seal options to meet process needs
- Patent pending

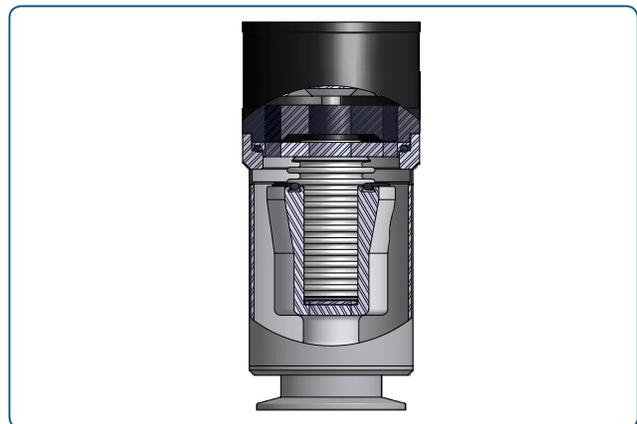
Applications

The Corrosion and Ozone Resistant Valve is designed to provide long life in extremely harsh semiconductor or solar processes. This is achieved by shielding the thin wall bellows, limiting bellows exposure to corrosive or reactive gases.

Typical processes that require a corrosion resistant valve are CVD and Etch. These processes use gases such as fluorine, chlorine, bromide or ozone. An aluminum shield is recommended for fluorine or ozone while a stainless shield should be used when chlorine or bromide are used. This valve can also be used in exhaust line applications to avoid corrosion of the valve bellows.



Application Schematic



Valve Cut View Showing Shield

Specifications

Vacuum Range

Atmosphere to 1.0×10^{-9} Torr

Cylinder Air Pressure

90 psig \pm 30 psig

Helium Leak Rate

1.0×10^{-9} std cc/sec

Limit Switch Rating

5A - 250 VAC

Single Pole, Single Throw

5A - 30 VDC

Typical Life (mm)

1,000,000 cycles

Port Size in. (NW)

NW 40

NW 50

Weight ISO-KF, Pneumatic lb. (kg)

1.5 (38.1)

2.0 (50.8)

Angle

3.0 (1.4)

5.4 (2.5)

Inline

3.1 (1.4)

6.4 (2.9)

Cylinder Volume in³ (cm³)

2.2 (36)

6.4 (105)

Actuation Time at 100 psi opening (closing) (msec)

270 (530)

450 (1130)

Blow-By Pressure (psia)

50

45

Heater Specifications

Temperature

Nominal Set Point

170°C (338°F)

Exterior Range

60°-70°C (140°-158°F)

Interior Range

135°-180°C (275°-356°F)

Environment

Indoor use only

Electrical Duty Cycle

100 volts 72%

120 volts 50%

Power Cord Current

12 A maximum

Materials

Molded silicone foam, fiberglass reinforced silicone, Teflon insulated wire

Foam Thickness in. (mm)

0.5 (12.7)

Connectors

Midget Twist-Lock, nylon, NEMA ML-1

Weight Range lb. (kg)

0.5 to 1.5 (0.23 to 0.68)

Compliance

CE, UL E52951 2JR

LTA Monitor Specifications

Enclosure

Black plastic

Power Requirements

90-130 VAC input, 12 VDC \pm 3 VDC output

Power Consumption

0.3 W

Relay Contact Rating

SPDT, 2 A @ 50 VAC resistive, 1 A @ 30 VDC

Input/Output Wiring

1 Thermal switch line IN

2 Thermal switch line OUT

3 Normally closed

4 Common

5 Normally open

2.58 x 4.76 x 1.46 (66 x 121 x 37)

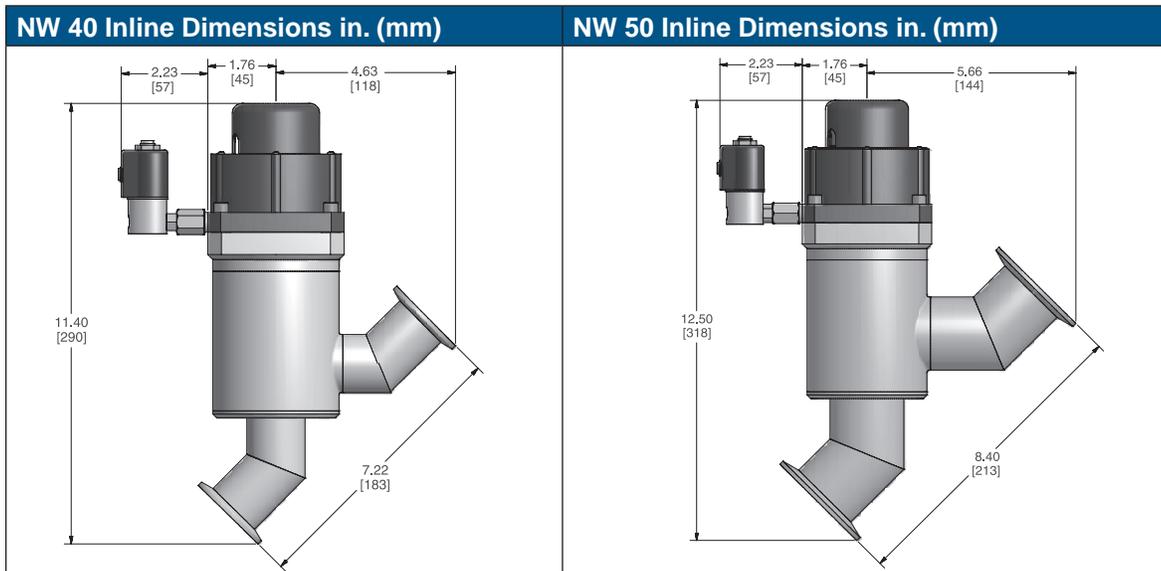
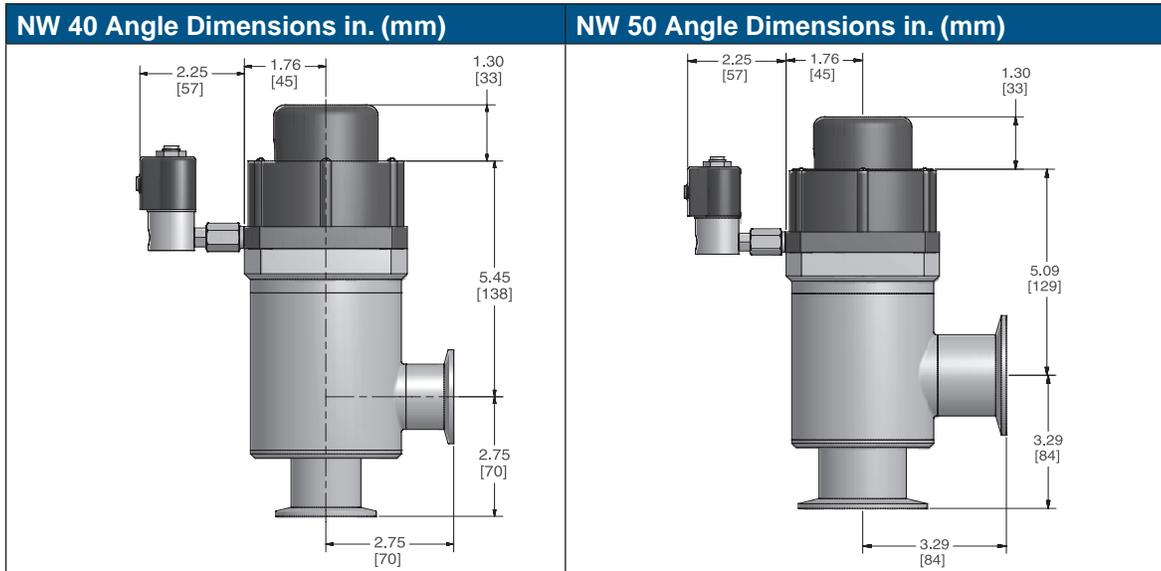
CE

Dimensions (L x H x D) in. (mm)

Compliance



Dimensional Drawings & Ordering Information



| NW 40 and NW 50 Corrosion Resistant Valve Ordering Information | | | | | |
|--|--|--|---|---|---|
| Body Configuration CRV-XX-XX | Shield Configuration -XX | Limit Switch -X | Seal Type X | Heater XXX | Solenoid -XXX |
| Select 1 | Select 1 | Select 1 | Select 1 | Select 1 | Select 1 |
| CRV-40-AK KF 40 Angle CRV-40-IK KF 40 Inline CRV-50-AK KF 50 Angle CRV-50-IK KF 50 Inline | AN Aluminum no vent AV Aluminum w/vent SN Stainless Steel no vent SV Stainless Steel w/vent | L With Limit Switch N No Limit Switch | V Viton® K Kalrez® Z Chemraz® P Perlast® G Gumlast® | XXX No Heater R6A Angle Body Heater R6I In-line Body Heater L6A Angle Body LTA Heater L6I In-line Body LTA Heater | 12D 12 VDC 24D 24 VDC 24A 24 VAC 50/60 Hz 120 120 VAC 50/60 Hz 240 240 VAC 50/60 Hz None 1/8" NPT |

Add the price of the options to the price of the body. Sample part number: CRV-40-AK-AN-NVXXX.



Ordering Information

Internal Rebuild Kit

| Valve Size | Aluminum Shield, no vent | Aluminum Shield, with vent | Stainless Steel Shield, no vent | Stainless Steel Shield, with vent |
|------------|--------------------------|----------------------------|---------------------------------|-----------------------------------|
| | Part Number | Part Number | Part Number | Part Number |
| NW 40/50 | 1000016170 | 1000016171 | 1000016172 | 1000016173 |

Seal Set

| Valve Size | Viton Seal Set | Kalrez Seal Set | Chemraz Seal Set | Perlast Seal Set |
|------------|----------------|-----------------|------------------|------------------|
| | Part Number | Part Number | Part Number | Part Number |
| NW 40/50 | 100016174 | 100016175 | 100016176 | 100016177 |

Replacement Solenoids

| Voltage | Watts | Part Number |
|---------|-------|-------------|
| 12 VDC | 7.0 | 100008539 |
| 24 VDC | 7.0 | 100008163 |
| 24 VAC | 6.0 | 100008164 |
| 120 VAC | 7.5 | 100008165 |
| 240 VAC | 7.5 | 100008167 |

Limit Switch Retrofit Kit

| Valve Size | Part Number |
|------------|-------------|
| NW 40/50 | 100016165 |



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