Valve Solutions

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IDA™ Valve

IN-SITU DIAGNOSTICS ACCESS VALVE

The MKS IDA Valve increases the accuracy of, and reduces the time needed for, gauge or capacitance manometer zeroing and calibration during preventative maintenance intervals. It also provides a safe, controlled, cost-effective process chamber access port that enables additional functions, such as system leak checks and diagnostics.

Accurate, absolute pressure measurement in-situ with the IDA Valve ensures uniformity and repeatability on a system and a system-to-system basis. Process system uptime and productivity are also enhanced, and costs are reduced.

The IDA Valve joins a pneumatically actuated primary valve with a manually actuated secondary valve (as shown conceptually in Figure 1), both based on the MKS Cv Valve design. Functionally, it resembles a pair of two-way valves joined by a tee (Figure 2) where V1 is the primary valve and V2 is the secondary valve. This configuration allows for two standard, mirror-image port orientations for your system: a left-oriented body and a right-oriented body.

Features & Benefits

- Cost-effective zeroing or calibration of your capacitance manometer or gauge in-situ
- Warm-up and stabilization time minimized when working with temperature-controlled sensors
- Dual-valve design provides safe and controlled reference port access, independent of gauge isolation valve
- Multi-function capability, such as direct access to process chamber, for leak checks or system diagnostics
- High conductance for improved gauge response time
- Manual actuator and safety detent pin for access port ensures no need to change existing system software
- Modular concept allows for many application-specific designs
- Retrofit into existing systems cost-effectively

Applications

The MKS IDA™ Valve (In-situ Diagnostics Access Valve) is a multi-purpose, multi-port, dual valve designed to replace the standard isolation valve used in capacitance manometer and other types of gauge isolation in the semiconductor industry. It is an extension of the proven family of compact, high conductance modular MKS Cv™ Valves.

Modes of Operation

Gauge Operation and Gauge Isolation

As shown in Figure 3, with Vl open and V2 closed, the gauge operates the same as most systems having an ordinary isolation valve in series with the high accuracy manometer. For gauge isolation, Vl is closed as in Figure 4. In retrofitting system designs having an ordinary isolation valve, no procedural or computer software changes are required.

Gauge Diagnostics and Calibration Verification

In Figure 5, the gauge is isolated from the process chamber (Vl closed). Valve V2 is then opened, creating a short, high conductance access path for in-situ gauge zeroing or calibration. This can be done via a high quality leak detector/high vacuum system or a complete transportable calibration system.

System Diagnostics

As in Figure 6, both valves are open to access the process chamber in a static or dynamic process mode with the gauge enabled for various diagnostic practices. By using port F3 in this way, the need, and subsequently the cost, for another valve and port is eliminated.

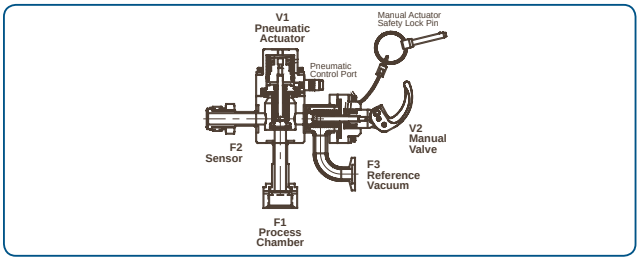


Figure 1 — Cross Sectional View

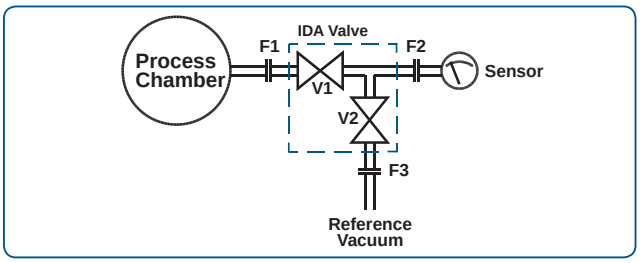


Figure 2 — Piping Schematic

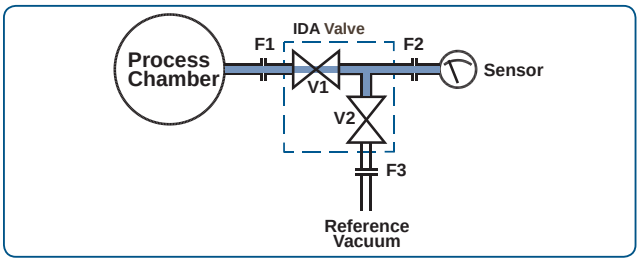


Figure 3 — Gauge Operation

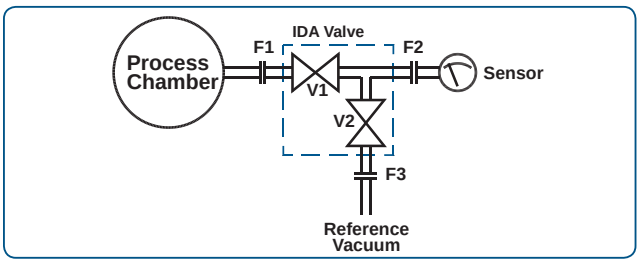


Figure 4 — Gauge Isolation

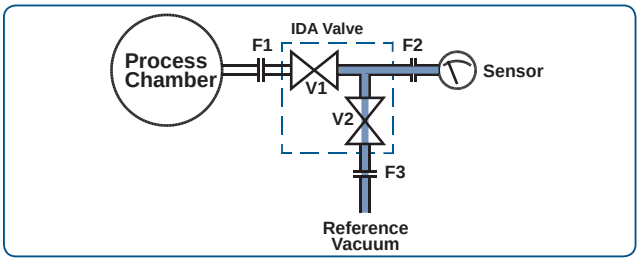


Figure 5 — Diagnostics/Calibration

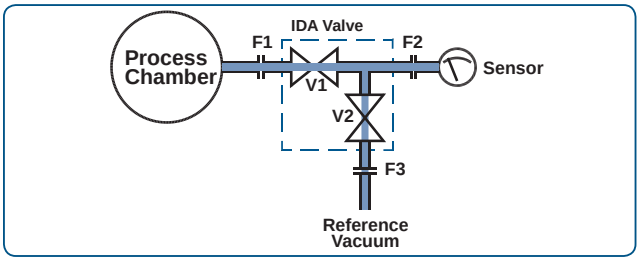
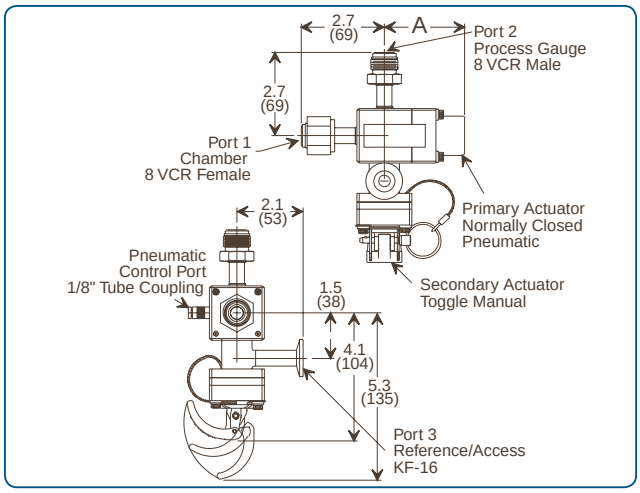
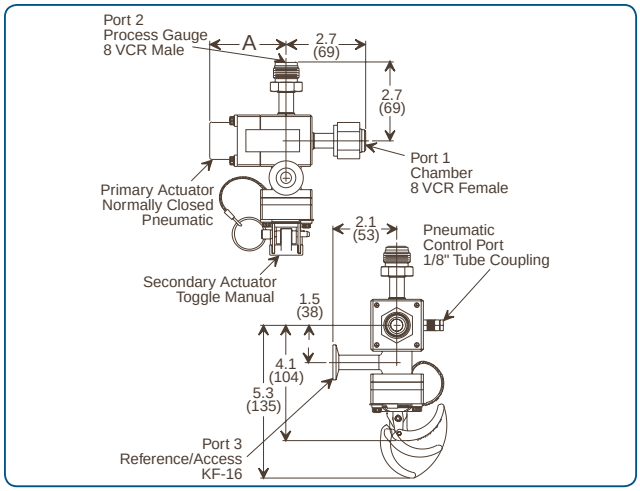


Figure 6 — System Diagnostics

Specifications



Left-Oriented Body Dimensional Drawing



Right-Oriented Body Dimensional Drawing

Left/Right Orientation Distinction

On the x-y-z axis to the bottom left, a right-oriented valve body is shown as an example. Ports F1, F2, and F3 (process chamber, gauge, and reference/access ports, respectively) correspond to the axes as follows:

A right-oriented valve body has its three vacuum ports, F1, F2, and F3, aligned with the +x, +y, and +z axes, respectively.

A left-oriented valve body has its three vacuum ports, F1, F2, and F3, aligned with the +x, -y, and +z axes, respectively.

Dimension A

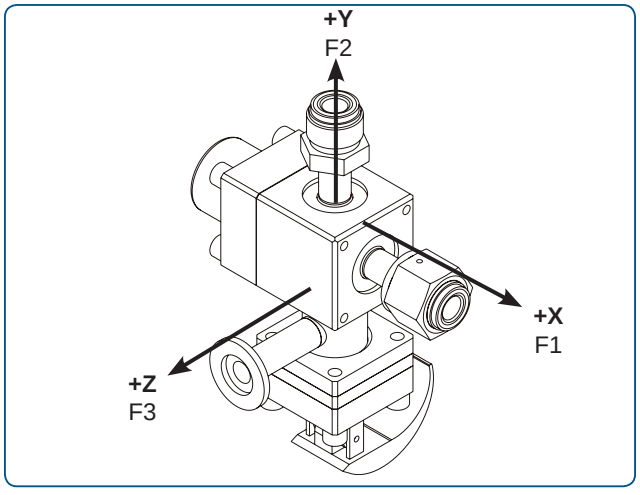
Elastomer Seal 2.6 (66) Metal Seal 2.7 (69)

Dimensions: inches (mm)

Custom Configurations

There may be situations where the standard left and right-oriented IDA™ Valve bodies cannot be easily accommodated into a previously designed vacuum system.

MKS can design an application-specific IDA Valve that allows for drop-in replacement for common vacuum process systems. Please contact MKS Instruments to design an IDA Valve for use in your system.



Right-Oriented Example

Shown above is a popular application-specific configuration with an MKS Baratron® capacitance manometer, and one of the optional toggle clamp accessories available.

Ordering Information

Seal Material		Fittings / Interface				Orientation	Part Number
Nose Piece	Other	Control Port	Gauge Port	Chamber Port	Access Port		
Viton®	Viton®	1/8" Tube Coupling	8 VCR® M †	8 VCR® F †	KF NW 16	Left Handed	IDA-LEV
Viton®	Viton®	1/8" Tube Coupling	8 VCR® M †	8 VCR® F †	KF NW 16	Right Handed	IDA-REV
Chemraz®	Chemraz®	1/8" Tube Coupling	8 VCR® M †	8 VCR® F †	KF NW 16	Left Handed	IDA-LEZ
Chemraz®	Chemraz®	1/8" Tube Coupling	8 VCR® M †	8 VCR® F †	KF NW 16	Right Handed	IDA-REZ
Viton®	Copper	1/8" Tube Coupling	8 VCR® M †	8 VCR® F †	KF NW 16	Left Handed	IDA-LMV
Viton®	Copper	1/8" Tube Coupling	8 VCR® M †	8 VCR® F †	KF NW 16	Right Handed	IDA-RMV
Chemraz®	Copper	1/8" Tube Coupling	8 VCR® M †	8 VCR® F †	KF NW 16	Left Handed	IDA-LMZ
Chemraz®	Copper	1/8" Tube Coupling	8 VCR® M †	8 VCR® F †	KF NW 16	Right Handed	IDA-RMZ

† VCR®-compatible parts may be used.

Optional Accessories

ISO-KF NW 16 Blank off Kit for reference/access port, includes: Toggle clamp with lanyard,Viton® and stainless steel centering ring, stainless blank-off flange	100008221
ISO-KF NW 16 Toggle Clamp with Lanyard	100318801-L

Spare Parts

O-Ring Seals, all Viton®	100008363
O-Ring Seals, all Chemraz®	100008364
O-Ring/Metal Seals, Viton® nose, Copper bonnet	100008361
O-Ring/Metal Seals, Chemraz® nose, Copper bonnet	100008362
Internal Assembly, pneumatic, with Viton® seals	100004937
Internal Assembly, pneumatic, with Chemraz® seals	100008317
Internal Assembly, pneumatic, with Viton®/Copper seals	100008312
Internal Assembly, pneumatic, with Chemraz®/Copper seals	100008314
Internal Assembly, toggle, with Viton® seals	100008311
Internal Assembly, toggle, with Chemraz® seals	100008313

Seal kits comprise two seal sets. Internal Assembly comprise one set.

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