Cv Valve

Compact Vacuum Valve

The Cv Valve has many configurations to suit your system's particular needs. The angle and inline valves include pneumatic or manual actuation. The manual actuation is attained either through a rotary knob or toggle lever. The rotary knob option allows for conductance variability and includes a visual position indicator.

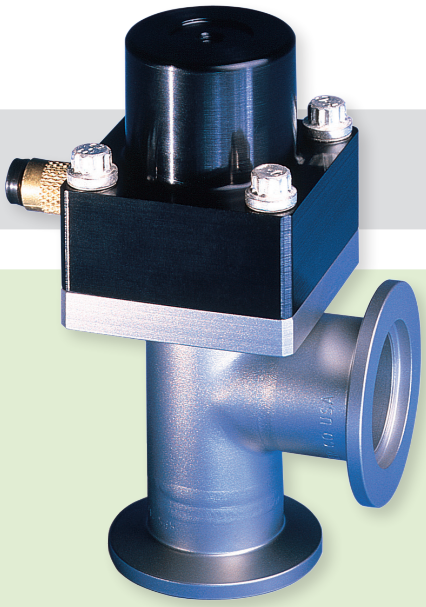
The angle Cv Valve is available in two body sizes, ¾'' and 1''. The inline model is available in the 1'' size. Both models are available with a variety of flange options, including CF and ISO-KF flanges. The body is comprised of high grade, corrosion resistant, 304 stainless steel with non-magnetic properties to ensure more accurate gauge readings. MKS utilizes clean, tungsten inert gas (TIG) welding for significantly fewer entrapment areas.

A formed 321 stainless steel bellows is incorporated into the Cv Valve. The stroke length has been optimized to ensure a longer life cycle while maintaining high conductance.

Seal choices for the Cv Valve include Viton® and Chemraz® elastomers for leak-tight operation with a metal bonnet seal option in UHV applications. Vacuum exposed parts are clean and free of lubricants. Additional options include an air solenoid for electro-pneumatic control and a limit switch for remote indication of the valve's position.

A special feature of the pneumatic Cv Valve is a reversible actuation assembly which allows you to change the actuation from normally open to normally closed. In the event of power or air loss, the valve will fail open or closed, depending on the actuation setting of the spring, in about 100 milliseconds.

All these standard features provide reliable operation with less down time. The Cv Valve is virtually maintenance-free with a bellows life expectancy of 1,000,000 cycles for the pneumatic version.



Product Features

- Used for gauge isolation on semiconductor process systems
- Formed bellows of 321 stainless steel for reduced particle generation and a longer cycle life
- Manual or pneumatic actuation
- Interchangeable actuation for normally open and normally closed pneumatic actuators
- Cycle life exceeding 1,000,000 cycles in clean conditions
- High purity, corrosion resistant, 304 stainless steel
- Assorted seal options to meet process needs

Key Benefits

- Designed for use in vacuum systems as gauge isolation, roughing, bypass, or venting valve
- High conductance improves gauge response time and accuracy of gauge readings
- Compact design for space constrained applications

If you have any special valve requirements, the staff at MKS will gladly assist you in meeting them. We can customize the Cv Valve to meet your process needs. For more information, call 1.800.227.8766. The LTA (Low Temperature Alert) option provides remote notification if a heater's temperature has become undesireably low. Male and female twist-lock connectors are standard.

Applications

The Cv Valve's high conductance, compact, durable and dependable design make it the foremost choice for today's high vacuum process needs. The Cv Valve is ideally suited for the semiconductor industry or research environments. Primarily used for gauge or system isolation, it is also recommended as a venting, bypass, or roughing valve.

In gauge isolation applications, the Cv Valve's high conductance ensures more accurate readings and helps improve gauge response time. The Cv Valve can isolate the sensor from the chamber during venting to atmosphere. If a capacitance manometer is being used, the isolation valve will prevent overpressuring the diaphragm. Where the gauge is used to monitor pressure, and not required for process control, it can be isolated during the process to prevent process gases from contaminating the gauge.

Specifications		
Conductance	**Angle KF 25** **Inline KF 25**	• 4.5 l/sec • 3.4 l/sec
Cylinder Air Pressure		60 to 120 psig
Pneumatic Cylinder Displacement Volume		0.25 in.3 (4.1 cm^3)
Approximate Pneumatic Closing Time		100 msec
Blow-By Pressure		30 psi (1500 Torr) differential
Vacuum Range		Atmosphere to below 10^{-9} Torr
Solenoid Valve Coil Power		• 6.0 watts - AC • 7.0 watts - DC
Helium Leak Test		• Less than 1.0 x 10^{-9} std cc/sec
Typical Valve Weight	**Angle** **Inline**	• 12.8 oz. (360 g) (KF 16 flanges) • 16.9 oz. (480 g) (8 VCR flanges)
Wetted Volume		1.09 in^3 (17.8 cm^3) (Angle KF 16 flanges)
Operating Temperature		-26° to 125° C
Maximum Bakeout Temperature		150° C
Pneumatic Life Cycles		1,000,000
Orientation		Seals against atm at either port
Limit Switch Rating		.5 A - 115 VAC
Single Pole, Single Throw		.5 A - 24 VDC

CV Inline Valve Ordering Information

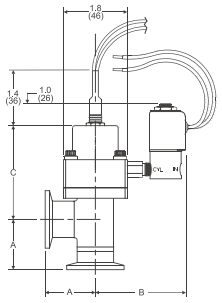
Body Configuration CVXX		Flanging -XX			Actuator Type -XX	Bonnet Seal X Pneumatic and Toggle Seals	Nose Seal X	Control Port Accessories -XXX
Angle	Inline	Angle CV16 Flanges		Inline CV16 Flanges				
		bottom port	side port					
CV 16 ¾'' Port	CVNL 1'' Port	B2 ¼'' Tube Stub B4 ½'' Tube Stub B6 ¾'' Tube Stub C1 1-1/3'' CF K0 KF 10 K1 KF 16 OF 8 VCO®-F* OM 8 VCO®-M* 4F 4 VCR®-F* 4M 4 VCR®-M* RF 8 VCR®-F* RM 8 VCR®-M*	B2 ¼'' Tube Stub B4 ½'' Tube Stub B6 ¾'' Tube Stub C1 1-1/3'' CF K0 KF 10 K1 KF 16 OF 8 VCO®-F* OM 8 VCO®-M* 4F 4 VCR®-F* 4M 4 VCR®-M* RF 8 VCR®-F* RM 8 VCR®-M*	B2 ¼'' Tube Stub B4 ½'' Tube Stub B6 ¾'' Tube Stub B8 1'' Tube Stub K1 KF 16 K2 KF 25 4F 4 VCR-F* RF 8 VCR-F*	LC Normally Closed w/ Limit Switch MT Manual Toggle NC Normally Closed NO Normally Open	C Copper K Kalrez® N Nickel S Silicone V Viton® Z Chemraz®	K Kalrez S Silicone V Viton* Z Chemraz	F12 1/8'' NPT-F N12 1/8'' NPT-M T12 1/8'' Tube Coupling T4M 4 mm (5/32'') Tube Coupling T25 ¼'' Tube Coupling 24A 24 VAC 50/60 Hz SPV 24D 24 VDC SPV 12D 12 VDC SPV 100 100 VAC 50 Hz SPV 120 120 VAC 50/60 Hz SPV 208 208 VAC 50/60 Hz SPV 240 240 VAC 50/60 Hz SPV NONE 10-32 UNC-F
					Manual Knob Actuation	**Manual Knob Seals**		
CV25 Body		**CV25 Flanges**	**CV25 Flanges**		MK Manual Rotary Knob	KC Copper KK Kalrez KN Nickel KS Silicone KV Viton KZ Chemraz		
CV 25 1'' Port		B8 1'' Tube Stub C2 2 1/8'' CF C3 2 ¾'' CF K2 KF 25	B8 1'' Tube Stub C2 2 1/8'' CF C3 2 ¾'' CF K2 KF 25					

Add the options to the price of the body, for example: CV25-K2K2-NCCV-120 (Angle); CVNL-K2-NCCV-120 (Inline). [1] For LC, NO and NC actuator types only. SPV - Solenoid Pilot Valve. VCR® and VCO®-compatible parts may be used. Note: Add the price of the base heater to the price of the options. Sample part number: 9815-0130-1105-2-11. All heaters require two (2) heatable clamps. Power cables are not included with heaters and must be ordered separately. Do not exceed 12 amps draw per power cord.*

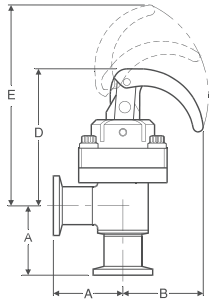
Spare Parts	Part Number
Rebuild Kit, Pneumatic, Viton O-Rings	100004937
Rebuild Kit, Pneumatic, Chemraz O-Rings	100008317
Rebuild Kit, Toggle, Viton O-Rings	100008311
Rebuild Kit, Toggle, Chemraz O-Rings	100008313
Rebuild Kit, Knob, Viton O-Rings	100010491
Rebuild Kit, Knob, Chemraz O-Rings	100010492
O-Ring Seal Kit, Viton®	100012281
O-Ring Seal Kit, Chemraz®	100012282
O-Ring Seal Kit, Kalrez®	100012283
O-Ring Seal Kit, Silicone	100012284

Dimensions

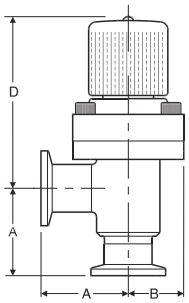
Body	Flanging (order code)	A	Control Port (order code)	B	Size	C	D	E
CV 16	B2, B4, B6 Weld Stub	1.6 (41)	F12 1/8'' NPT-F	1.6 (41)	CV16	2.4 (62)	2.7 (69)	4.0 (101)
	C1 1 1/3'' CF	1.8 (46)	N12 1/8'' NPT-M	1.6 (41)	CV 25	2.6 (65)	2.8 (71)	4.1 (104)
	K0 KF 10	1.4 (35)	T12 1/8'' Tube Coupling	1.5 (39)				
	K1 KF 16	1.4 (35)	T4M 4 mm (5/32'') Tube Coupling	1.6 (41)				
	OF 8 VCO-F*	1.6 (41)	T25 ¼'' Tube Coupling	1.7 (43)				
	OM 8 VCO-M*	2.1 (54)	Solenoid Valve	2.6 (67)				
	4F 4 VCR-F*	2.2 (55)	Manual Rotary Knob	0.9 (22)				
	4M 4 VCR-M*	2.2 (55)	Manual Toggle	1.6 (41)				
	RF 8 VCR-F*	2.3 (58)						
	RM 8 VCR-M*	2.3 (58)						
CV 25	B8 Weld Stub	1.8 (46)						
	C2 2 1/8'' CF	2.0 (51)						
	C3 2 3/4'' CF	2.0 (51)						
	K2 KF 25	1.4 (35)						



Pneumatic Actuation



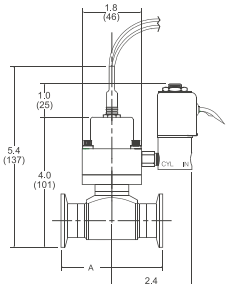
Manual Toggle

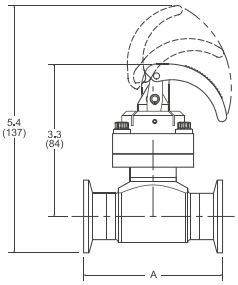


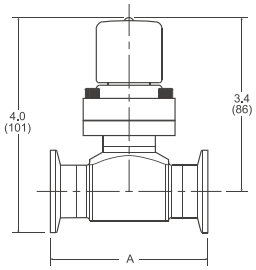
Manual Rotary Knob

** VCR® and VCO®-compatible parts may be used.*

Flanging (order code)	A
B2 ¼'' Weld Stub	1.7 (43)
B4 ½'' Weld Stub	2.3 (58)
B6, B8 3/4'', 1'' Weld Stub	2.0 (51)
K1, K2 ISO-KF NW 16, NW 25	3.0 (76)
4F 4 VCR-F*	2.8 (71)
RF 8 VCR-F*	3.5 (89)







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