

Cv Valve

COMPACT VACUUM VALVE

Features & Benefits

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

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.

Description

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.



Description (cont'd)

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 undesirably low. Male and female twist-lock connectors are standard.

Specifications

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

Ordering Information

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

Add the options to the price of the body, for example: CVNL-K2-NCCV-120.
¹ For LC, NO and NC actuator types only. SPV - Solenoid Pilot Valve.
 * VCR® and VCO®-compatible parts may be used.



Ordering Information

Cv Angle Valve						
Body Style CVXX	Flanging (bottom port) -XX	Flanging (side port) XX	Actuator Type -XX	Bonnet Seal X	Nose Seal X	Control Port Accessories ¹ -XXX
Select 1	Select 1 CV 16 Flanges	Select 1 CV 16 Flanges	Select 1	Select 1 Pneumatic and Toggle Seals	Select 1	Select 1 (or leave blank)
CV 16 ¾" 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*	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 MK Manual Rotary Knob	Manual Knob Seals KC Copper KK Kalrez® KN Nickel KS Silicone KV Viton® KZ Chemraz®		
CV 25 Body	CV 25 Flanges	CV 25 Flanges				
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 body, for example: CV25-K2K2-NCCV-120.
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.

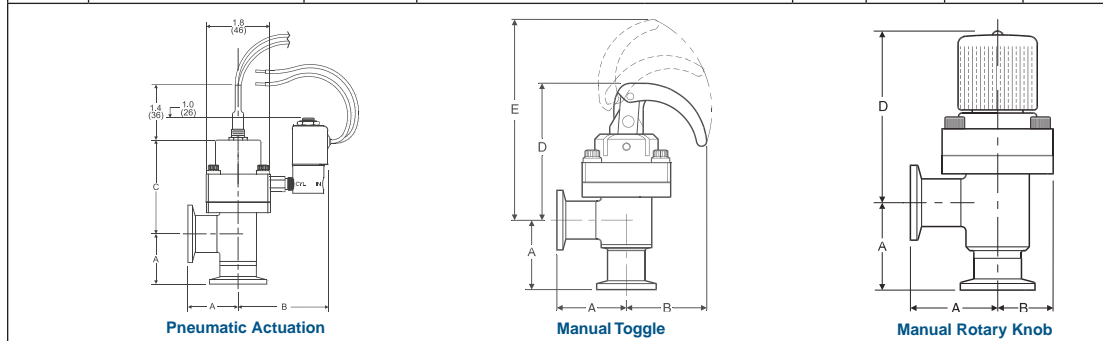
Ordering Information

Spare Parts	
Description	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



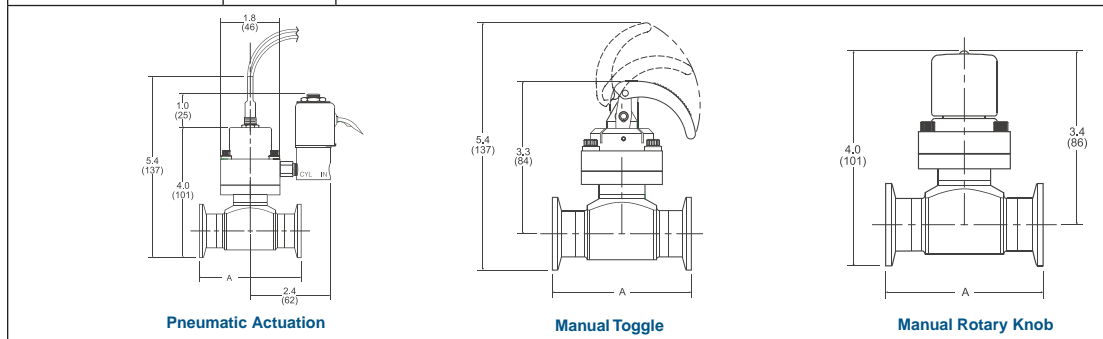
Ordering Information

Dimensions in (mm)												
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) N12 (1/8" NPT-M)	1.6 (41)	CV 16	2.4 (62)	2.7 (69)	4.0 (101)				
	C1 (1 1/3" CF)	1.8 (46)	T12 (1/8" Tube Coupling)	1.5 (39)								
	K0 (KF 10) K1 (KF 16)	1.4 (35)	T4M (4 mm (5/32") Tube Coupling)	1.6 (41)								
	OF (8 VCR®-F*) OM (8 VCO®-M*)	1.6 (41) 2.1 (54)	T25 (1/4" Tube Coupling)	1.7 (43)								
	4F (4 VCR®-F*) 4M (4 VCR®-M*)	2.2 (55)	Solenoid Valve	2.6 (67)								
	RF (8 VCR®-F*) RM (8 VCR®-M*)	2.3 (58)	Manual Rotary Knob	0.9 (22)								
			Manual Toggle	1.6 (41)								
	CV 25	B8 (Weld Stub)	1.8 (46)	* VCR® and VCO®-compatible parts may be used.					CV 25	2.6 (65)	2.8 (71)	4.1 (104)
		C2 (2 1/8" CF)	2.0 (51)									
	C3 (2 3/4" CF)	2.0 (51)										
	K2 (KF 25)	1.4 (35)										



Flanging (Order Code)	A
B2 (Weld Stub - 1/4")	1.7 (43)
B4 (Weld Stub - 1/2")	2.3 (58)
B6, B8 (Weld Stub - 3/4", 1")	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)

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



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