



Electromagnetic Cv™ Valve

COMPACT VACUUM VALVE

Features & Benefits

- Valve actuation utilizes direct current (VDC). No need for house air or bottled gas supply.
- Because the electromagnetic solenoid does not require pneumatic actuation, the result is fast, inexpensive installation.
- Proven coil saver circuit minimizes heat generation, reduces power consumption, and is most suitable for temperature sensitive applications.
- "Quick and quiet" electric actuation accessory provides silent isolation for any low vibration requirement.
- Flexible actuator assembly design can be configured as normally open or normally closed, and is retrofittable to any pneumatic or manual Cv valve.
- High conductance body and formed bellows design exceeds 1,000,000 cycles in clean conditions.
- Assorted seal options offered to meet specific process requirements.

Applications

The Electromagnetic Cv™ (ECv) valve is designed for a variety of today's high-vacuum process needs and is ideal for applications requiring a simple, compact high conductance electric valve.

Ideal for pump systems, portable vacuum stands and benchtop analytical systems, the ECv valve installs easily and economically without the need for pneumatic connections, gas bottles, or costly house air facilitization.

The ECv's coil saver circuit design minimizes the heat typically generated by most conventional electric valves, making it the most suitable option for temperature sensitive gauge isolation. The Electromagnetic Cv valve is also recommended for installation into cabinets or other non-ventilated areas where any excessive heat generation would be problematic or dangerous (up to 60°C).

Without the need for pneumatics, the ECv valve provides a dampened, low vibration actuation for use in or on sensitive and expensive analytical instrumentation. It can be installed without bellows connections or any other vibration isolation considerations.

Description

The Electromagnetic Cv valve can be used in place of any existing Cv valve where electric actuation is preferred over pneumatic or manual actuation. The ECv valve is actuated by a direct current electric power supply, and consequently, does not require the use of a pneumatic system. The ECv valve's actuation system is retrofittable in any current Cv valve.

The Electromagnetic Cv valve features a low profile, linear solenoid mounted to the top of the valve, that serves as the valve actuator. When power is applied to the solenoid, the solenoid is energized, causing the valve to open or close, depending on the configuration.

Each Electromagnetic Cv valve includes a coil saver circuit integrated with the input power cable. The coil saver circuit offers a more efficient solenoid coil operation by limiting the power usage of the coil, once the valve has been actuated. This in turn allows the valve to operate without excessive heat generation, remaining safe to the touch.



Description (cont'd)

Valve actuation can be switched between normally open and normally closed without any additional parts. Solenoid options are available in either 12 VDC or 24 VDC.

The Electromagnetic Cv valve is offered in the angle and inline configurations with multiple fitting options. The body is comprised of high grade, corrosion resistant, non-magnetic 304 stainless steel. The formed bellows assembly is made of 321 corrosion resistant stainless steel.

Metal bonnet seals of either nickel or copper are available as

standard options. Kalrez®, Silicone, Viton® and Chemraz® are also options for both the bonnet seal and nose piece.

For remote indication of valve position, a limit switch option can be specified within the part number ordering system.

While the ECv valve is primarily used as a gauge or system isolation valve, its high conductance, low vibration design, and low temperature operation, make it the most versatile solution to your compact and economical valve requirements become undesireably low. Male and female twist-lock connectors are standard.

Specifications

Voltage Requirements	12 VDC 24 VDC		
Amperage Requirements	12 VDC 24 VDC	2.6 A (initial) 1.3 A (initial)	0.6 A (running) 0.3 A (running)
Solenoid Coil Power	32 W (initial)	7 W (running)	
Opening / Closing Response Time	60 msec		
Blow-By Pressure	N/C N/O	35 psi 50 psi	
Vacuum Range	Atmosphere to below 10 ⁻⁹ Torr		
Helium Leak Test	Less than 1.0 x 10 ⁻⁹ std cc/sec		
Typical Valve Weight	38.7 oz (1090 g) (Angle KF 25)		
Wetted Volume	1.09 in ³ (17.8 cm ³) (Angle KF 16 flanges)		
Operating Temperature	-26°C to 60°C		
Maximum Bakeout Temperature	150°C (with solenoid coil removed)		
Life Cycle	1,000,000 cycles		
Orientation	Seals against atm at either port		
Limit Switch Rating	.5 A - 115 VAC .5 A - 24 VDC		
Compliance	CE		

Ordering Information

Electromagnetic Cv Inline Valve						
Body Style	Flanging	Actuator Type	Limit Switch	Bonnet Seal	Nose Seal	Control Port Accessories
CVXX	-XX	-XX	X	X	X	-XXX
Select 1	Select 1	Select 1	Select 1	Select 1	Select 1	Select 1
CVNL 1" Port	B2 ¼" Tube Stub B4 ½" Tube Stub B6 ¾" Tube Stub B8 1" Tube Stub K1 KF 16 K2 KF 25 4F 4 (¼") VCR®-F † RF 8 (½") VCR®-F †	EC Electromagnetic Normally Closed EO Electromagnetic Normally Open	N No Limit Switch No Damping L With Limit Switch With Damping	C Copper K Kalrez® N Nickel S Silicone V Viton® Z Chemraz®	K Kalrez® S Silicone V Viton® Z Chemraz®	12DC 12 VDC Solenoid 24DC 24 VDC Solenoid
Add the price of the options to the price of the body. Sample part number: CVNL-K2-ECNVV-24DC.						



Ordering Information

Electromagnetic Cv Angle Valve							
Body Style	Flanging (bottom port) -XX	Flanging (side port) XX	Actuator Type -XX	Limit Switch X	Bonnet Seal X	Nose Seal X	Control Port Accessories -XXXX
CVXX							
Select 1	Select 1 CV 16 Flanges	Select 1 CV 16 Flanges	Select 1	Select 1	Select 1	Select 1	Select 1
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 (½") VCO®-F † OM 8 (½") VCO®-M † 4F 4 (¼") VCR®-F † 4M 4 (¼") VCR®-M † RF 8 (½") VCR®-F † RM 8 (½") 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 (½") VCO®-F † OM 8 (½") VCO®-M † 4F 4 (¼") VCR®-F † 4M 4 (¼") VCR®-M † RF 8 (½") VCR®-F † RM 8 (½") VCR®-M †	EC Electromagnetic Normally Closed EO Electromagnetic Normally Open	N No Limit Switch No Damping L With Limit Switch With Damping	C Copper K Kalrez® N Nickel S Silicone V Viton® Z Chemraz®	K Kalrez® S Silicone V Viton® Z Chemraz®	12DC 12 VDC Solenoid 24DC 24 VDC Solenoid
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 price of the options to the price of the body. Sample part number: CV25-K2K2-ECNvv-24DC.
† VCR® and VCO®-compatible parts may be used.

Spare Parts

Description	Part Number
Internal Rebuild Kit: 12 VDC Solenoid, Normally Closed, Viton O-Rings	100012027
Internal Rebuild Kit: 12 VDC Solenoid, Normally Open, Viton O-Rings	100012028
Internal Rebuild Kit: 24 VDC Solenoid, Normally Closed, Viton O-Rings	100012029
Internal Rebuild Kit: 24 VDC Solenoid, Normally Open, Viton O-Rings	100012030
Retro Fit Kit: Limit Switch, Normally Closed	100012185
Retro Fit Kit: Limit Switch, Normally Open	100012186
Retro Fit Kit: Damping, Normally Closed	100012187
Retro Fit Kit: Damping, Normally Open	100012188
Retro Fit Kit: Limit Switch and Damping, Normally Closed	100012189
Retro Fit Kit: Limit Switch and Damping, Normally Open	100012190
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

ECv Angle Valve Dimensions		in (mm)	in (mm)	Dimensional Drawing	
Body	Flanging (Order Code)	A	B	Electromagnetic Cv Angle Valve	
CV 16	B2, B4, B6 (Weld Stub) C1 (1 1/3" CF)	1.6 (41)	3.7 (93)		
	K0 (KF 10) K1 (KF 16)	1.8 (46)			
	OF (8 VCO®-F)	1.4 (35)			
	OM (8 VCO®-M)	1.6 (41)			
	4F (4 VCR®-F) 4M (4 VCR®-M)	2.1 (54)			
	RF (8 VCR®-F) RM (8 VCR®-M)	2.2 (55)			
		2.3 (57)			
	CV 25	B8 (Weld Stub) C2 (2 1/8" CF) C3 (2 3/4" CF) K2 (KF25)	1.8 (45) 2.0 (50) 2.0 (51) 1.4 (35)		3.8 (97)
ECv Inline Valve Dimensions		in (mm)	in (mm)		Dimensional Drawing
Body	Flanging (Order Code)	A	B		Electromagnetic Cv Inline Valve
CVNL	B2 (Weld Stub – 1/4")	1.7 (43)	4.3 (110)		
	B4 (Weld Stub – 1/2")	2.3 (58)	4.4 (112)		
	B6 (Weld Stub – 3/4")	2.0 (51)	4.4 (112)		
	B8 (Weld Stub – 1")	2.0 (51)	4.3 (109)		
	K1 (ISO-KF – NW 16)	3.0 (76)	4.4 (112)		
	K2 (ISO-KF – NW 25)	3.0 (76)	4.3 (109)		
	4F (4 VCR®-F)	2.8 (71)	4.3 (110)		
	RF (8 VCR®-F)	3.5 (89)	4.4 (112)		



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