

C15 Valve Miniature Cartridge Solenoid Valve

15 mm Miniature Cartridge Valve



The Series C15 is a miniature cartridge style solenoid valve with a unique design that combines small size, light weight and low power consumption with high flow repeatability and fast response time over an exceptionally long life, up to 500 million cycles. Available in 2-way and 3-way configurations, the valve is manifold mounted utilizing a simple securing system reducing assembly time.

Markets

- Medical and Analytical Gas Control
- Respiratory & Anesthesia

Applications

- Portable/Transport Ventilators
- Negative Pressure Wound Therapy
- Air Over Liquid Dispense
- Sidestream CO2 measurement
- Portable/Hand held environment monitoring

Features

- Variety of orifice sizes with pressures up to 145 PSI (10 bar).
- Floating frictionless plunger enables reliable and repeatable operation up to 500 Million cycles.
- Low power design reduces heat and energy consumption.
- Cartridge configuration enables compact integration saving space and weight.
- Simple mechanical fastening prevents valve being dislodged due to vibration or pressure spikes.
- RoHS & REACH compliant.



Product Specifications

Mechanical

Valve Type:
Solenoid Cartridge Valve
2-Way Normally Closed (NC)
3-Way Normally Closed (NC)
Media: Gases and Liquids*
(see details in liquid datasheet)
Operating Environment:
32°F to 122°F (0°C to 50°C)
Storage Environment:
-40°F to 158°F (-40°C to 70°C)
Dimensions:
- Diameter: 0.59 in (15 mm)
- Length: 1.14 in (29 mm)
Porting:
Cartridge Seal
Weight:
0.78 oz (22 g)
Internal Volume:
2-Way: 391 µL
3-Way: 461 µL

Orifice	0.020 in (0.5 mm)		0.040 in (1.0 mm)		0.060 in (1.5 mm)		0.080 in (2.0 mm)		
Type	2-Way	3-Way	2-Way	3-Way	2-Way	3-Way	2-Way	3-Way	
Max Vacuum & Pressure	PSI	145	145	116	102	58	50.8	21.8	14.5
	Bar	10	10	8	7	4	3.5	1.5	1
	Cv	0.01	0.01	0.032	0.028	0.058	0.048	0.093	0.076
	SLPM (air)	18	18	55	43	55	41	44	29

Electrical

Voltage (VDC):
12 and 24 VDC ± 5%
(Other voltages available on request.)
Electrical Connections:
3.2" (80 mm) Flying Leads [24 AWG]
Power:
Typical 1.1W - 1.7W
(Please see Table 1 for more details)

Wetted Materials

Body:
Stainless Steel Series 300 and 400
Seals: (Internal and External)
FKM, EPDM

Performance Characteristics

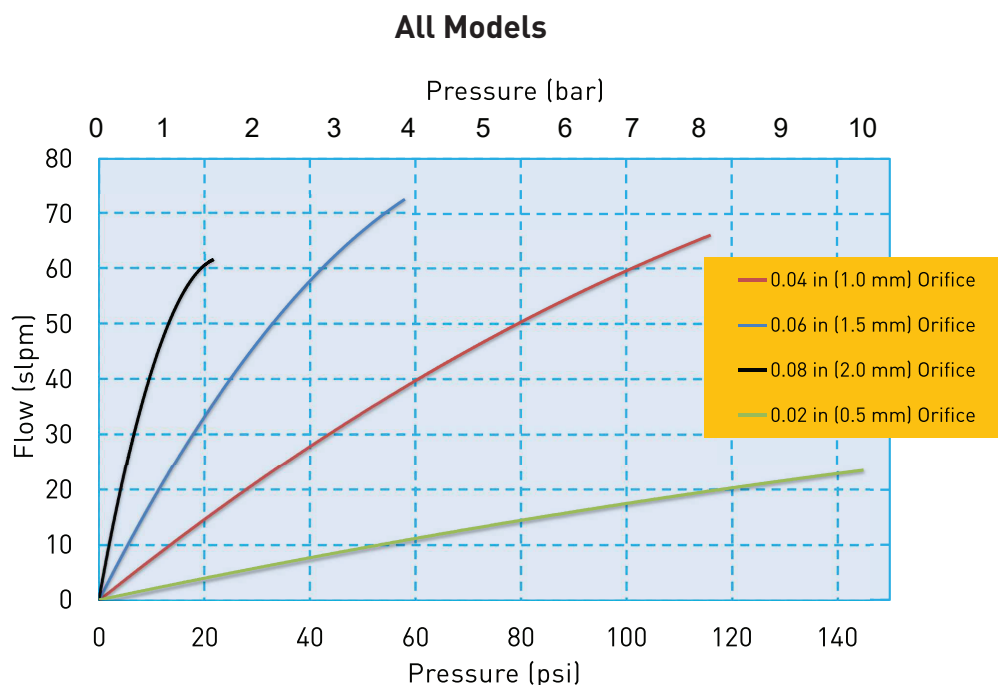
Response:
10 ms Maximum, Cycling
Proof Pressure:
120% of Rated Maximum Pressure
Recommended Filtration:
10 µm
Reliability:
2-Way: 500 Million Cycles
3-Way: 200 Million Cycles
0.90 Reliability Factor
95% Confidence

*Please contact factory for additional details on liquid compatibility.

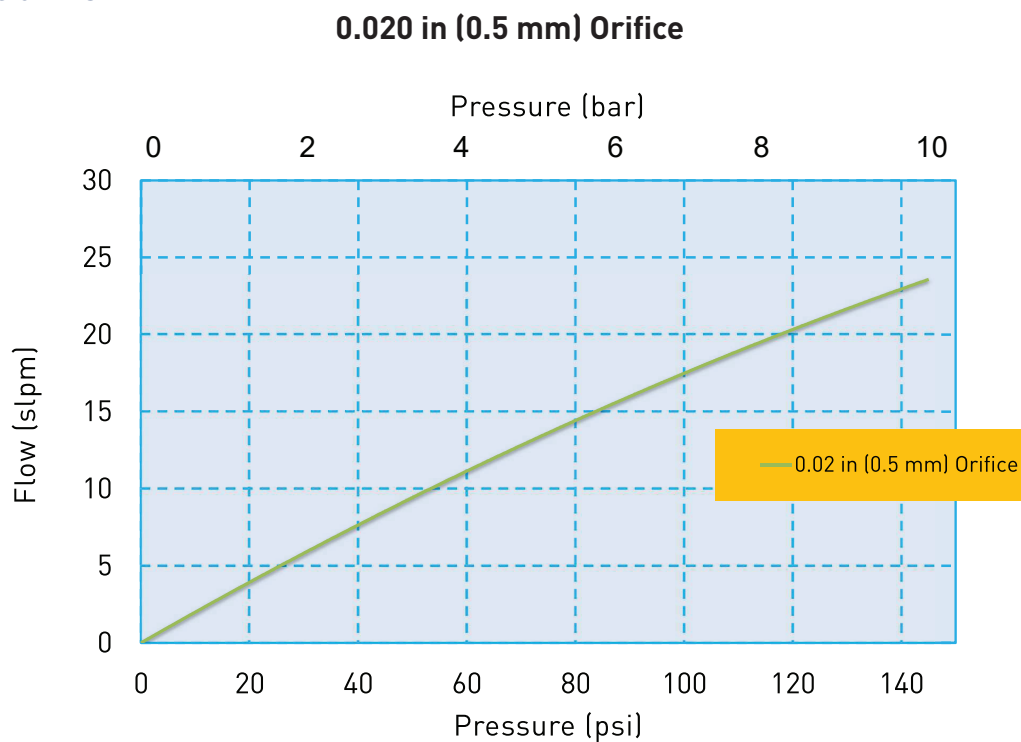


C15 Miniature Cartridge Valve

Flow Curve

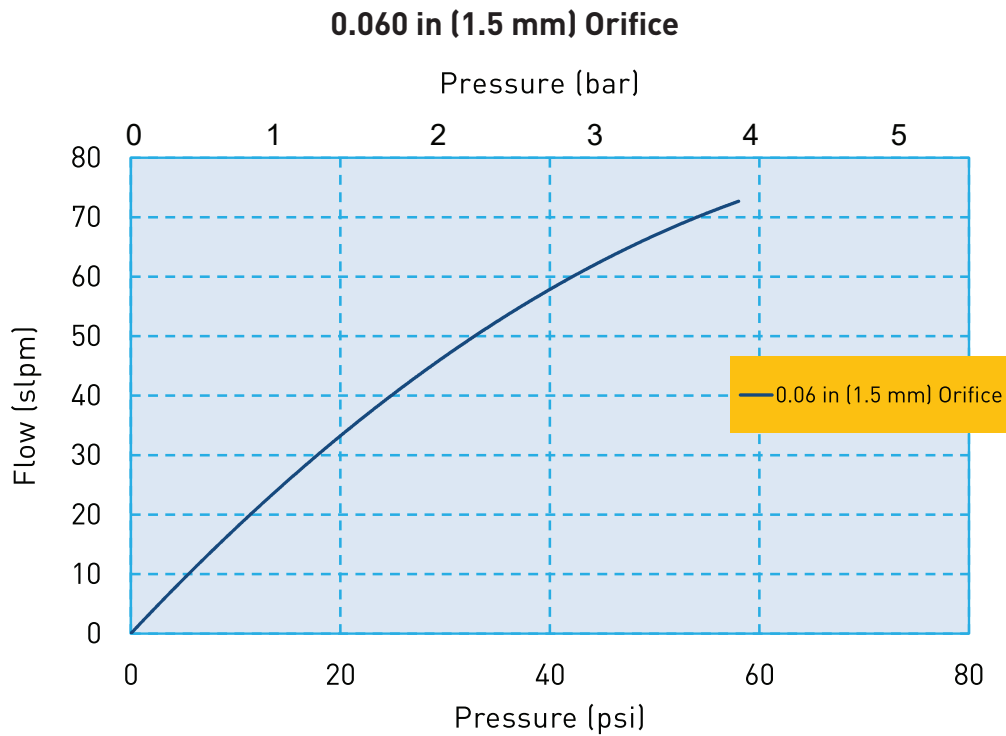
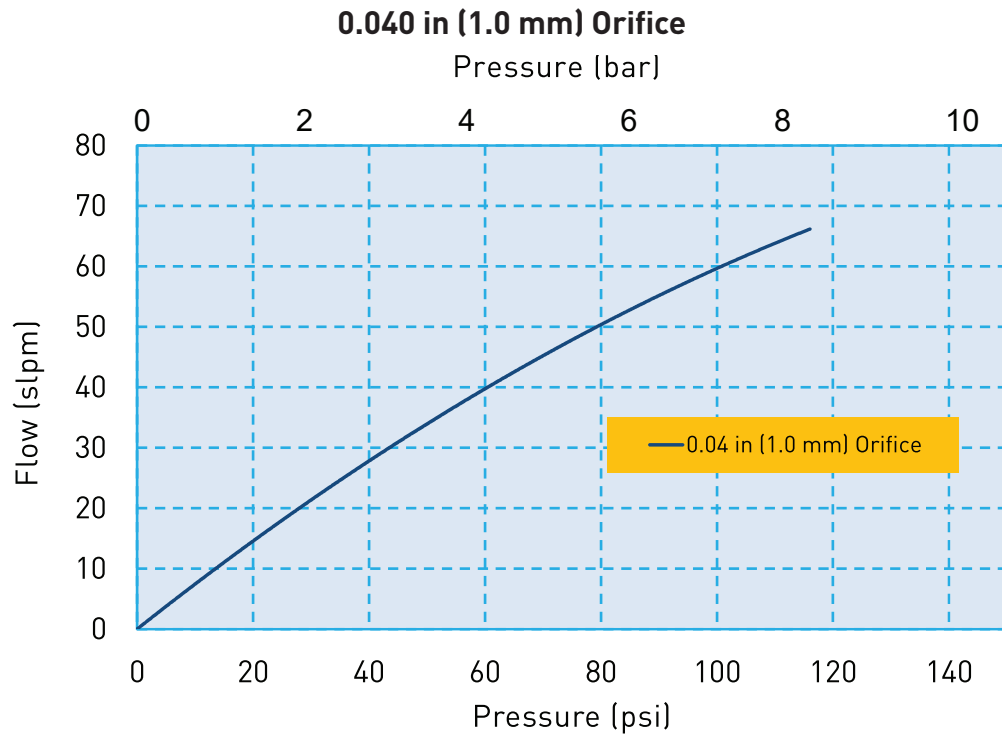


Flow Curve



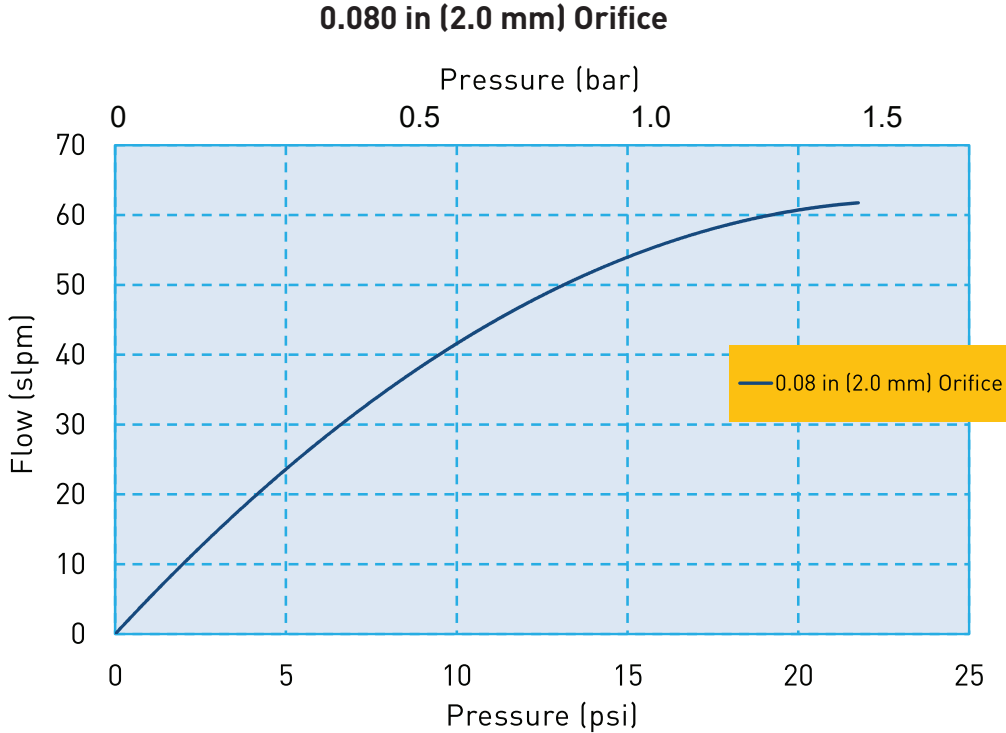
C15 Miniature Cartridge Valve

Flow Curve



C15 Miniature Cartridge Valve

Flow Curve



Electrical Interface



Wire Leads

Standard: 3.2 in (80 mm) Wire Leads, stripped at end

C15 Miniature Cartridge Valve

Electrical Requirements

Table 1

Orifice	0.020 in (0.5 mm)				0.040 in (1.0 mm)				0.060 in (1.5 mm)				0.080 in (2.0 mm)			
Valve Type	2-Way		3-Way		2-Way		3-Way		2-Way		3-Way		2-Way		3-Way	
Voltage (VDC)*	12	24	12	24	12	24	12	24	12	24	12	24	12	24	12	24
Power (Watts)	1.1	1.1	1.7	1.6	1.7	1.6	1.7	1.6	1.7	1.6	1.7	1.6	1.7	1.6	1.7	1.6
Resistance (Ohm)**	132	525	85	361	85	361	85	361	85	361	85	361	85	361	85	361

* ± 5%, other voltages available on request
 ** ±5% @ 68°F, 20°C

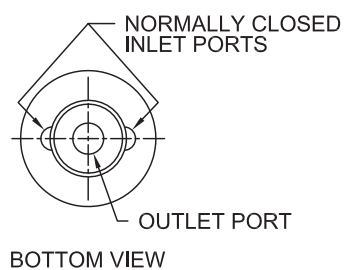
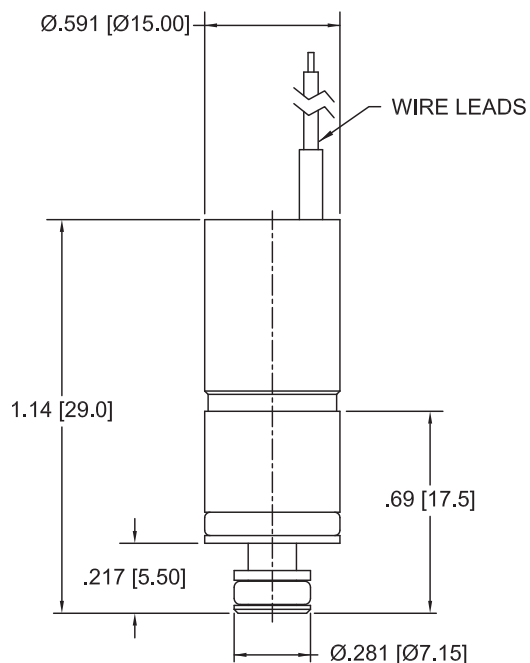
Pneumatic Interface/Mechanical Integration



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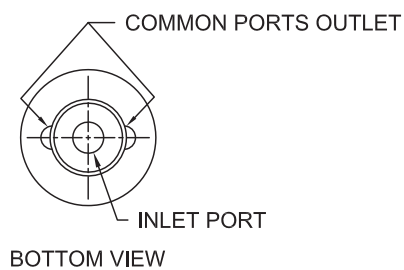
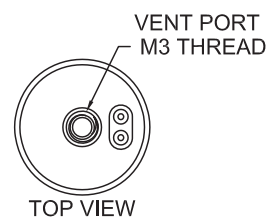
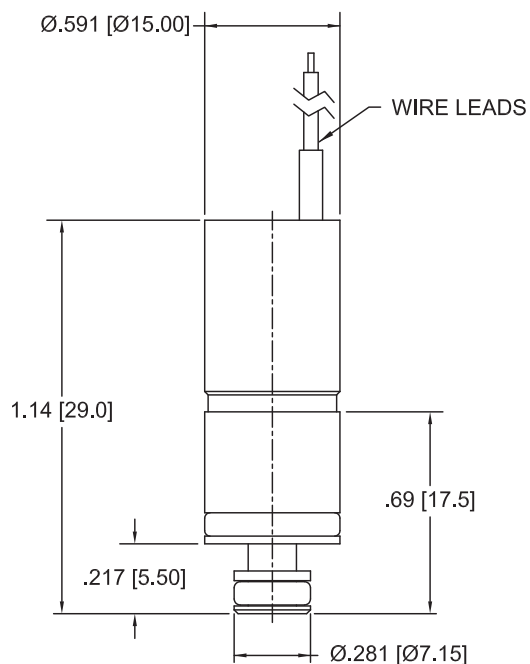
Dimensions

2-Way Valve Configuration



UNITS
IN [MM]

3-Way Valve Configuration

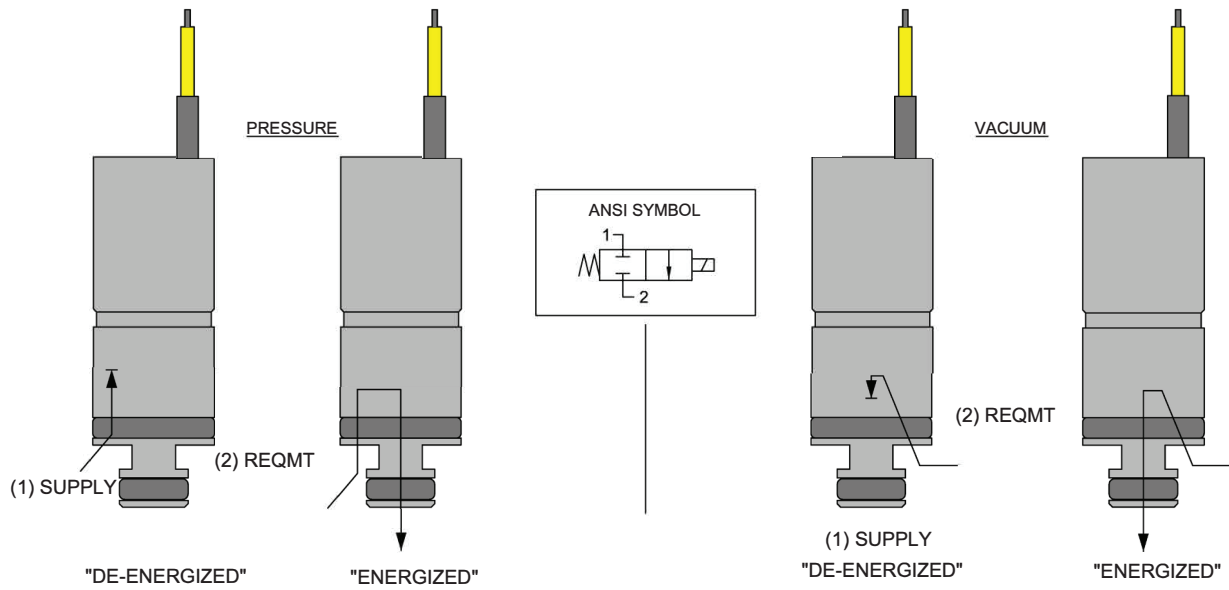


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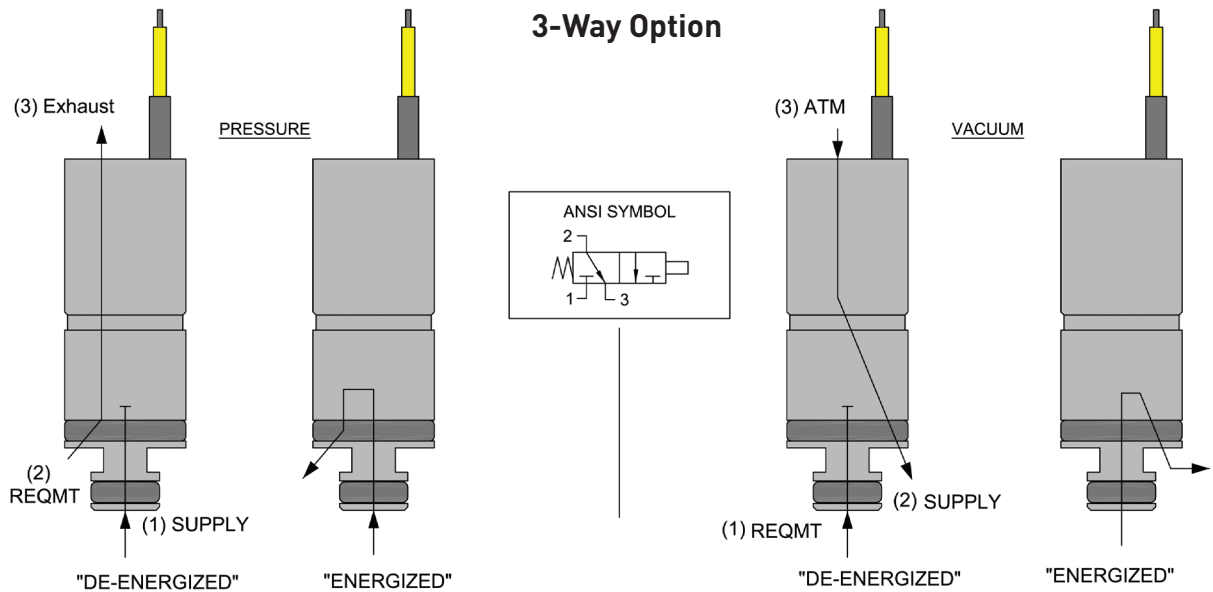
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ANSI Symbols

2-Way Normally Closed



3-Way Option



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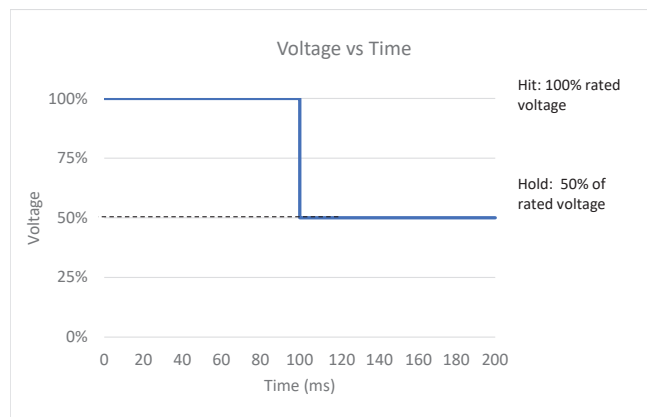
Installation and Use

Optional Reduced Power Control Method

“Hit and Hold” is an optional control method to increase power efficiency for the C15 series valves.

Hit and Hold is a common control method used to reduce component power consumption and heat generation without sacrificing performance. The “Hit” or “Spike” state refers to the rated voltage required to actuate the valve. The “Hold” state is a substantial reduction in the rated voltage (normally 50% of the rated voltage) that maintains the valve in an actuated state.

Hit and Hold control can be incorporated using several different approaches, including discrete component circuits or programmable logic. The graph below illustrates a voltage “Hit” and “Hold” control method, however pulse width modulation (PWM) is also an acceptable control method.



C15 Hit and Hold Specification	
Hit Voltage Level	Rated Voltage
Hold Voltage Level	50% of Rated Voltage
Minimum Hit Time	100 ms
Maximum Hit Time	N/A
PWM Frequency (Minimum)	1 kHz
Hold Nominal Duty Cycle	50%

This method greatly reduces power consumption because the valve only draws full current for a short period of time making it ideal for applications with sensitive power budgets.

Note: 50% duty cycle is a general recommendation; therefore, it is recommended that specific application testing is completed to verify the proper “hold” requirement. Factors that could impact hit and hold voltage levels include vibration, shock, pressure variation and pressure locations that are driven from specific usage. The hit and hold circuit design, combined with Parker’s valve, need to be validated for each specific application to ensure the valve will actuate under all usage conditions. **Contact Factory for more details.**

C15 Miniature Cartridge Valve

Accessories

C15 Evaluation Manifold with clip and screw (Valve not included)

C15-MCS



Replacement Clip for C15-MCS

C15-C



Replacement Screw for C15-MCS

C15-S



Replacement O-Ring for C15 Valve, Large

C15-LG



Replacement FKM O-Ring for C15 Valve, Small

C15-SM



C15 Miniature Cartridge Valve

Ordering Information

Sample Part ID	C15	-	2	24	FK	05	F	F	-	000
Description	Series		Configuration	Coil Voltage	Elastomer	Orifice	Mounting Style	Electrical Interface		Custom
Options	C15: 15 mm Cartridge Valve		2: 2-Way	12: 12 VDC	EP: EPDM	05: 0.020 in (0.5 mm)	F: Face Seal	F: 3.2 in (80 mm) flying lead		000: Standard
			3: 3-Way	24: 24 VDC	FK: FKM	10: 0.040 in (1.0 mm)				
						15: 0.060 in (1.5 mm)				
						20: 0.080 in (2.0 mm)				

Accessories
<p>C15-MCS: C15 Evaluation Manifold with Clip and Screw, Not supplied with the valve.</p> <p>C15-C: Replacement Clip used on C15-MCS*</p> <p>C15-S: Replacement Screw used on C15-MCS*</p> <p>C15-LG: Spare O-Ring for C15 Valve, Large**</p> <p>C15-SM: Spare O-Ring for C15 Valve, Small**</p> <p style="text-align: center;">* Not Supplied with Valve, Replacement Part for C15-MCS ** Supplied with Valve</p>

NOTE: For Evaluation - Please Add C15-MCS To Your Sample Order. All Valves Ship With O-Rings Installed

NOTE: In order to provide the best possible solution for your application, please provide the following requirements when contacting Applications Engineering:

- Media, Inlet & Outlet Pressures
- Minimum Required Flow Rate
- System Supply Voltage
- Media & Ambient Temperature Range



Please click on the Order On-line button to configure your C15 valve. For CAD models and more detailed information, please visit us on the Web (www.parker.com/precisionfluidics/C15_GasCartridgeValve), call (+1.603.595.1500) or email at ppfinfo@parker.com.

Parker Hannifin Precision Fluidics Division reserves the right to make changes. Drawings are for reference only.

For more information call +1 603 595 1500 or email ppfinfo@parker.com
 Visit www.parker.com/precisionfluidics

