

C15 Valve Miniature Cartridge Liquid Valve

15 mm Miniature Liquid 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 a 2-way configuration, the valve is manifold mounted utilizing a simple securing system reducing assembly time.

Typical Markets

- Analytical Chemistry
- Clinical Diagnostics
- Environmental Monitoring
- Print

Typical Applications

- Reagent Addition
- Wash
- Waste
- Flow Control
- Large format Inkjet systems

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)
Media: Gases* and Liquids
(See details in gas 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

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	2-Way	2-Way	2-Way
Max Vacuum & Pressure	PSI	145	116	58
	Bar	10	8	4
	Cv	0.01	0.032	0.058
	SCCM (water)	400	1160	1670

Electrical

Voltage (VDC):
12 and 24 VDC ± 5%
(Other voltages available on request.)
Electrical Connections:
3.2 in (80 mm) Flying Leads
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
FFKM available on request

Performance Characteristics

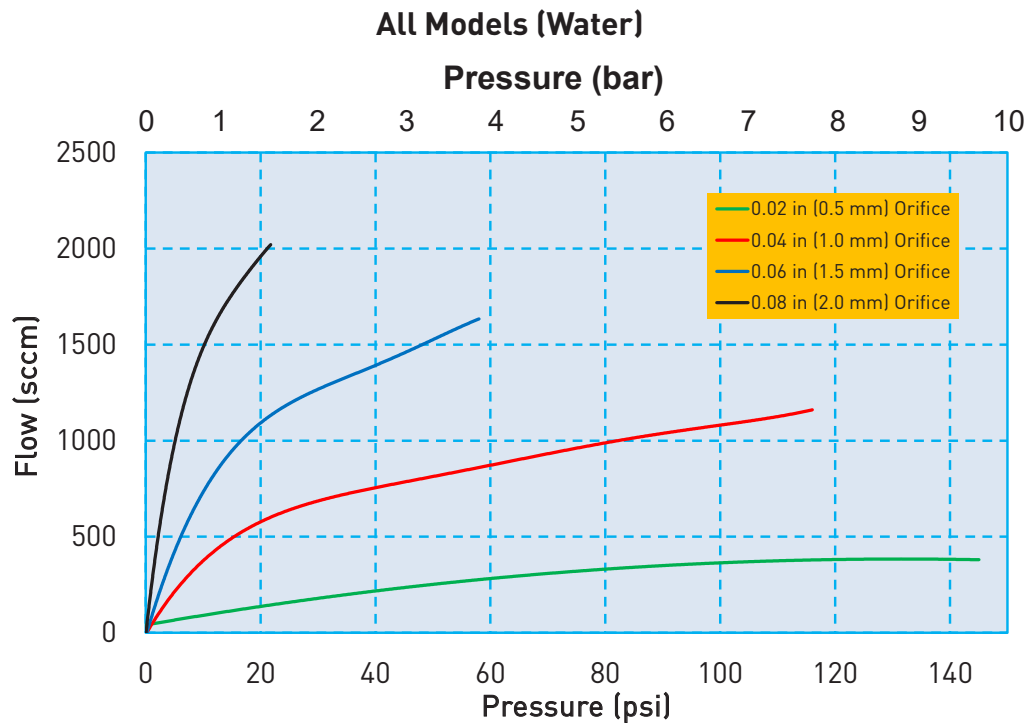
Response:
10 ms Maximum, Cycling
Proof Pressure:
120% of Rated Maximum Pressure
Recommended Filtration:
10 µm
Reliability:
2-Way: 500 Million Cycles
0.90 Reliability Factor
95% Confidence



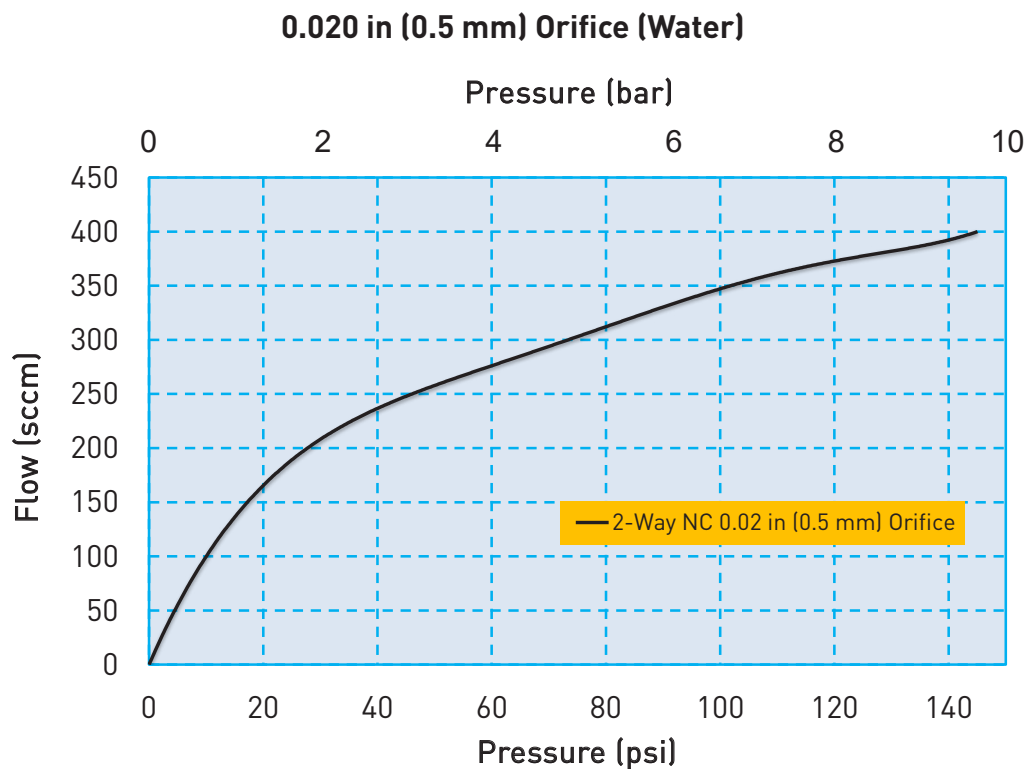
*Please contact factory for additional details on gas compatibility.

C15 Miniature Liquid Cartridge Valve

Flow Curve

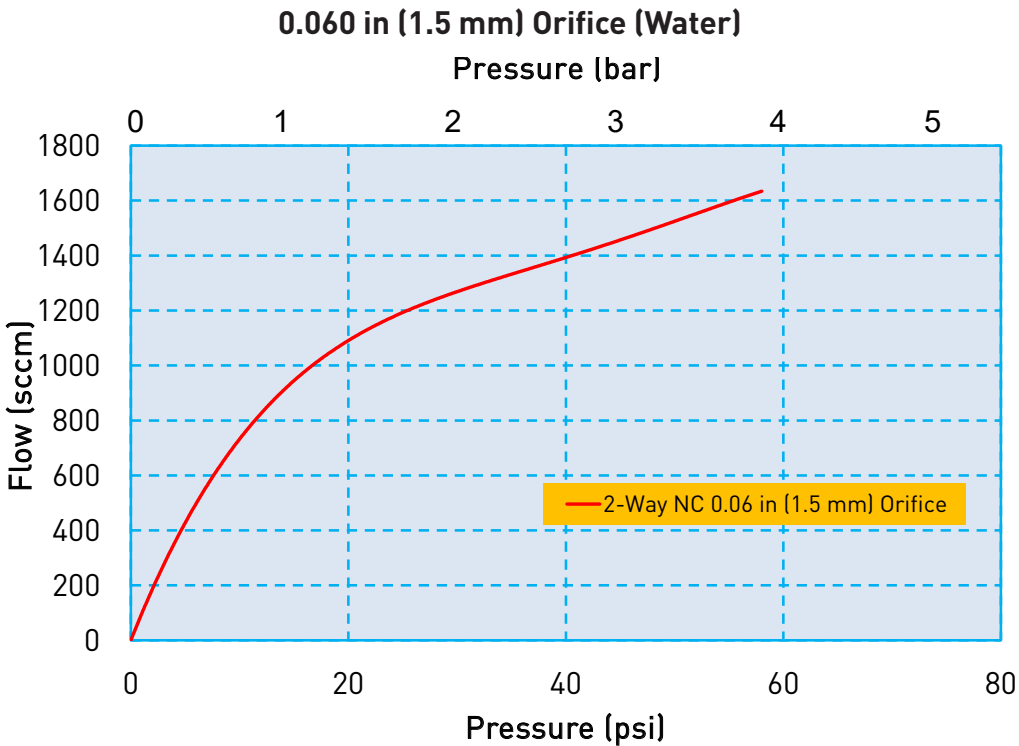
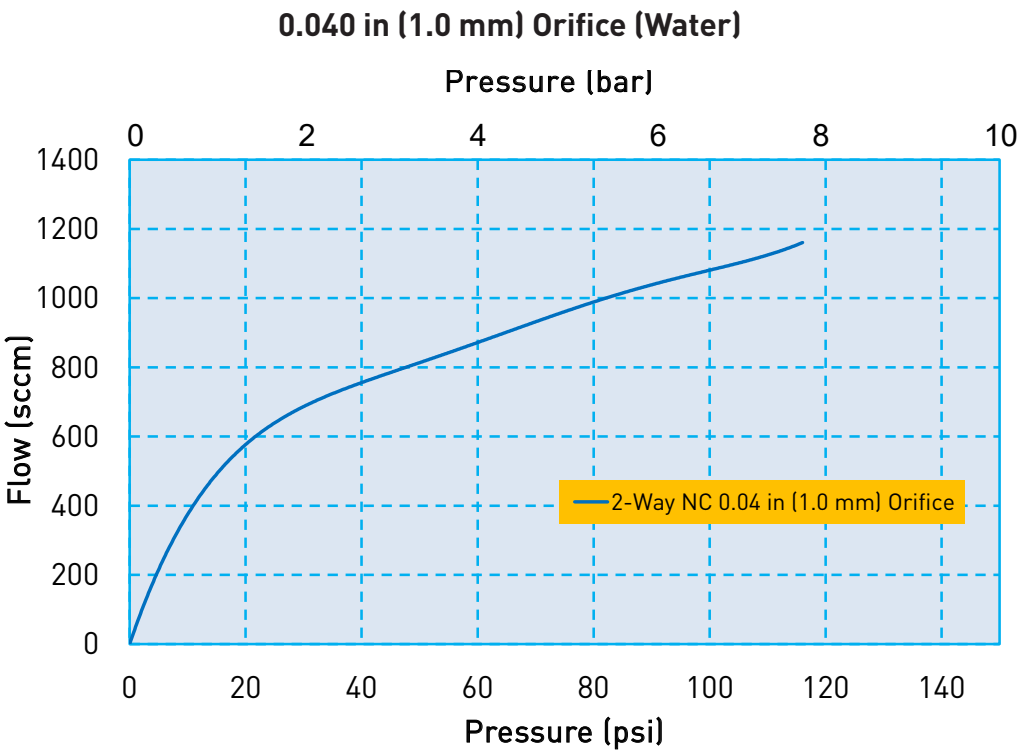


Flow Curve



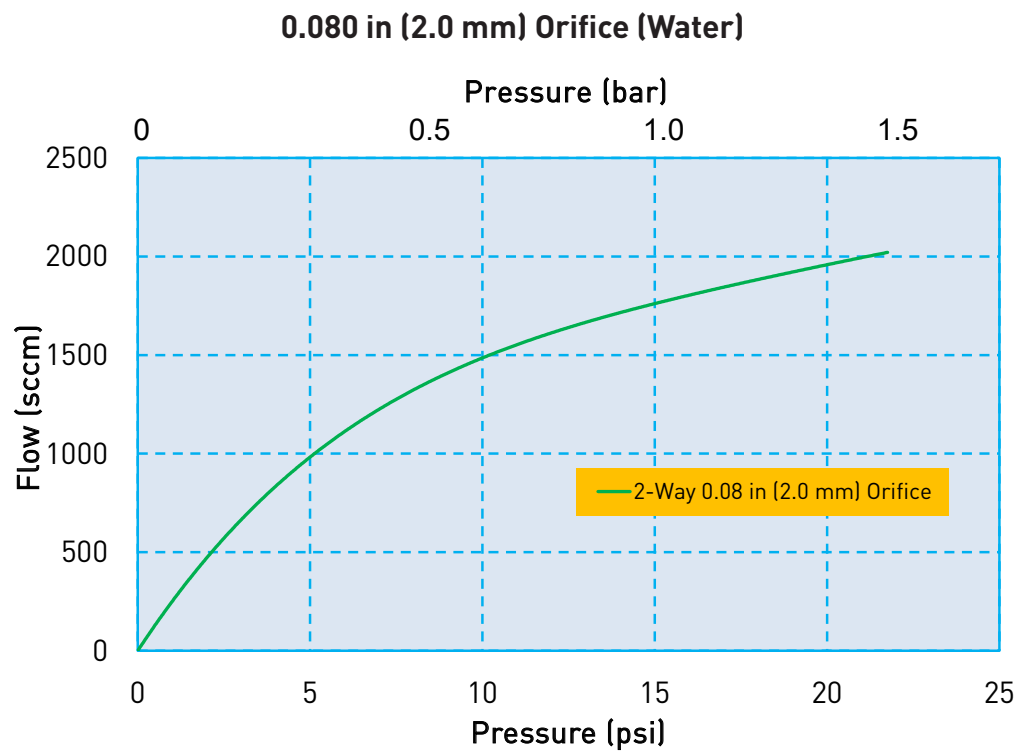
C15 Miniature Liquid Cartridge Valve

Flow Curve



C15 Miniature Liquid Cartridge Valve

Flow Curve



Electrical Interface



Wire Leads

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

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Electrical Requirements

Table 1

Orifice	0.02 in (0.5 mm)		0.04 in (1.0 mm)		0.06 in (1.5 mm)		0.08 in (2.0 mm)	
Valve Type	2-Way		2-Way		2-Way		2-Way	
Voltage (VDC)*	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
Resistance (Ohm)**	132	525	85	361	85	361	85	361
* $\pm 5\%$, other voltages available on request ** $\pm 5\%$ @ 68°F, 20°C								

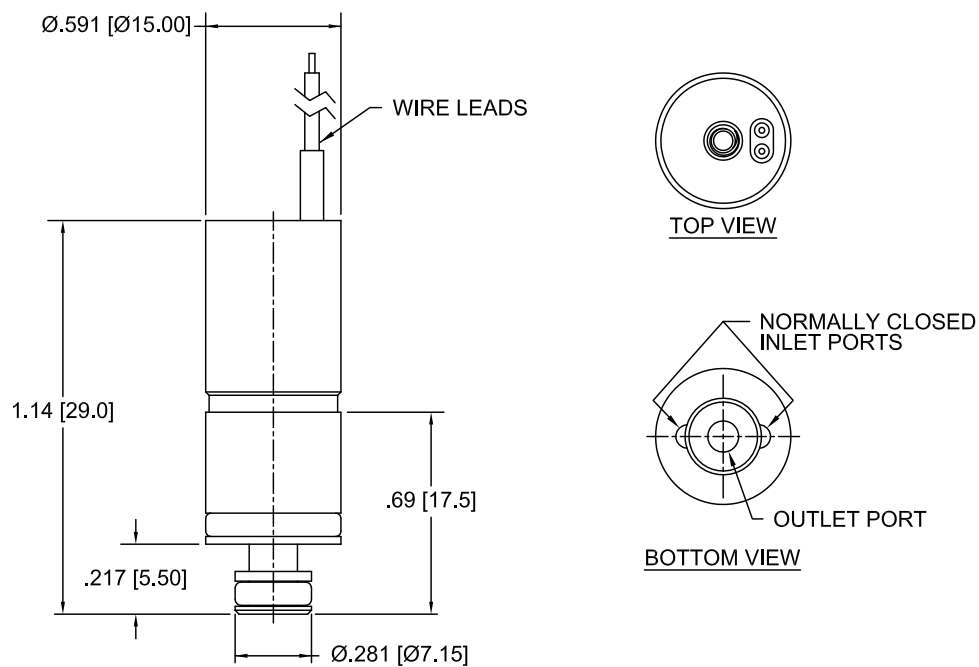
Liquid Interface/Mechanical Integration



C15 Miniature Liquid Cartridge Valve

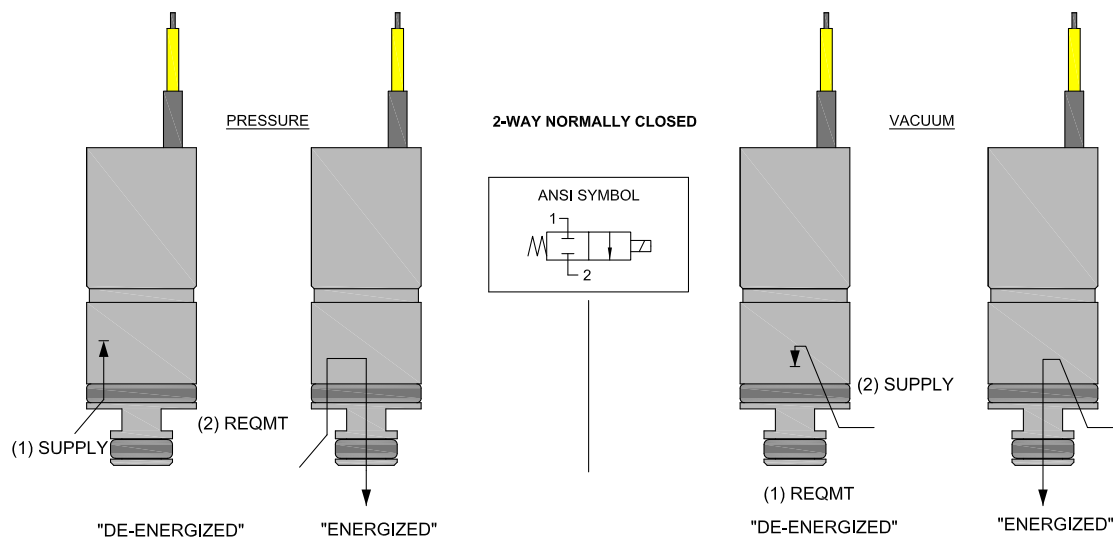
Dimensions

2-Way Valve Configuration



ANSI Symbols

2-Way Normally Closed

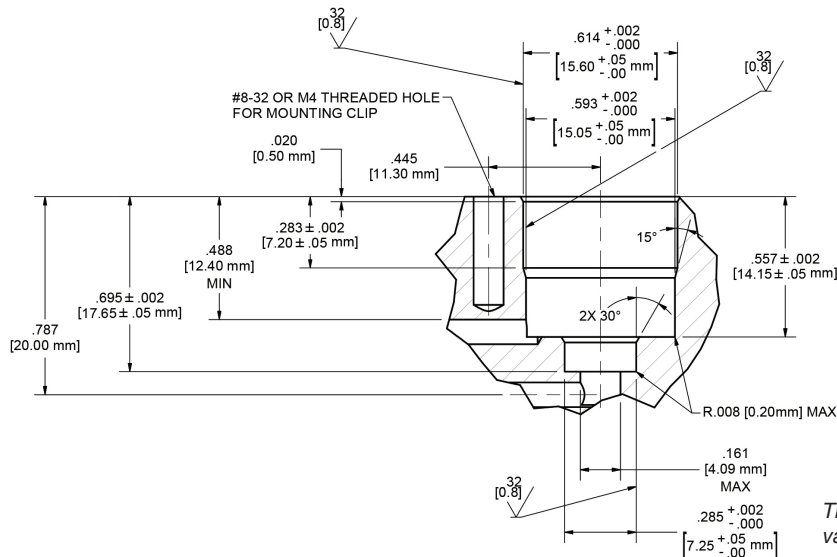


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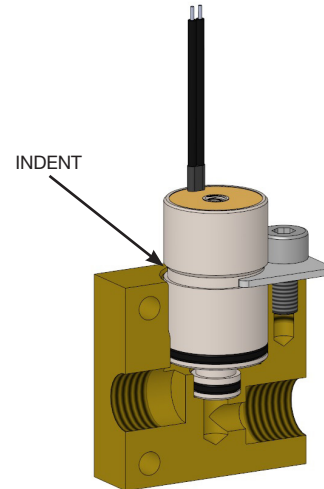
Installation and Use

During installation of the C15 valve, the maximum force allowed to press it into the manifold is: 22.48 lbf (100 N)
Lubrication is recommended (I.E. alcohol or DI water depending on compatibility constraints)

Recommended Valve Manifold Dimensions



Recommended Valve Mounting

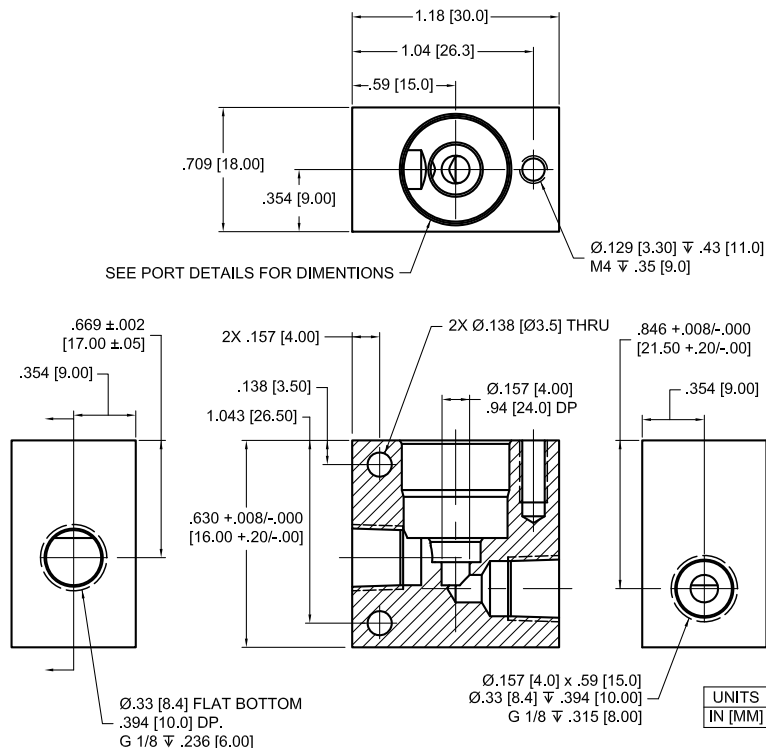


The correct location to use when holding the valve in place in the manifold is the indent at the middle of the valve body. If the top of the valve is used to hold the valve in place, the working pressure the valve will see, can push the valve upward and exceed the maximum insertion force for the valve. This could damage the valve.

Installation and Use

C15 Evaluation Manifold Dimensions and Design

C15-MCS



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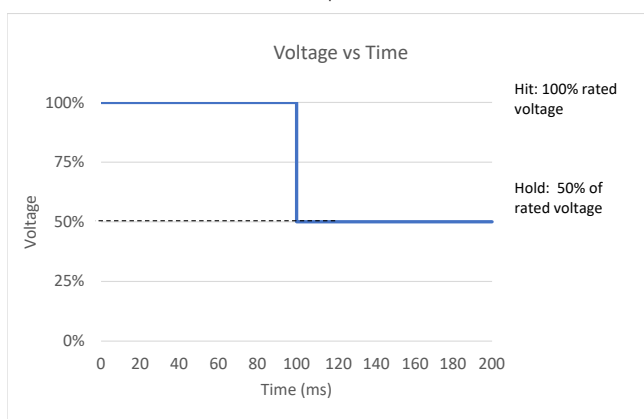
Installation and Use

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 Liquid Cartridge Valve

Chemical Compatibility Chart*

Chemical	Seal Options			Other Wetted Materials
	FFKM	FKM	EPDM	Stainless Steel
DI Water	1	1	1	1
Methanol	1	4	1	2
Isopropanol	1	1	1	1
Ethanol	1	3	1	1
Acetonitrile	1	4	1	
Tetrahydrofuran	1	4	4	
Toluene	1	2	4	1
MEK	4	1	1	3
Organic Acids - Dilute	1	1	1	4
Non Organic Acids - Dilute	1	1	1	2
Bases - Dilute	1	1	1	1
Saline	1	1	1	2
Bleach 12%	2	1	1	4
Sodium Hydroxide 20%	1	2	1	2

Compatibility Legend

- EXCELLENT
Minimal or no effect
- GOOD
Possible swelling and or loss of physical properties
- DOUBTFUL
Moderate or severe swelling and loss of physical properties
- NOT RECOMMENDED
Severe effect and should not be considered

*The above is an Abbreviated Chemical Compatibility Chart. Please consult factory for additional information.

Accessories

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



Replacement Clip for C15-MCS C15-C



Replacement Screw for C15-MCS C15-S



Replacement O-Ring for C15 Valve, Large C15-LG (FKM) C15-LGE (EPDM)



Replacement FKM O-Ring for C15 Valve, Small C15-SM (FKM) C15-SME (EPDM)



C15 Miniature Liquid 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 24: 24 VDC	EP: EPDM FK: FKM	05: 0.020 in (0.5 mm) 10: 0.040 in (1.0 mm) 15: 0.060 in (1.5 mm) 20: 0.080 in (2.0 mm)	F: Face Seal	F: 3.2 in (80 mm) flying lead		000: Standard
Accessories										
C15-MCS: C15 Evaluation Manifold with Clip and Screw, Not supplied with the valve.										
C15-C: Replacement Clip used on C15-MCS*										
C15-S: Replacement Screw used on C15-MCS*										
C15-LG: Spare O-Ring for C15 Valve, FKM, Large**										
C15-LGE: Spare O-Ring for C15 Valve, EPDM, Large**										
C15-SM: Spare O-Ring for C15 Valve, FKM, Small**										
C15-SME: Spare O-Ring for C15 Valve, EPDM, Small**										
* Not Supplied with Valve, Replacement Part for C15-MCS ** Supplied with Valve										

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_LiquidCartridgeValve), 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.

PPF-MSV-002/US March 2019

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

